BIBLIOGRAPHIC DATA SHEET	1. CONTROL NUMBER PN-AAH-429	2. SUBJECT CLASSIFICATION (695) AE30-0000-G732

3. TITLE AND SUBTITLE (240)

Workshop on Technology for Rural Development, Manila, Philippines, 1978; summary report

4. PERSONAL AUTHORS (100)

5. CORPORATE AUTHORS (101)

National Research Council. Board on Science and Technology for Int. Development; Workshop on Technology for Rural Development, Manila, Philippines, 1978

6. DOCUMENT DATE (110)	7. NUMBER OF PAGES (120)	8. ARC NUMBER (170)
1978	75p.	RP3Ø1.35.N277

9. REFERENCE ORGANIZATION (130)

NAS

10. SUPPLEMENTARY NOTES (500)

11. ABSTRACT (950)

12. DESCRIPTORS (920)

Agribusiness
Agricultural planning
Energy
Integrated development
Farming systems
Technology
Appropriate technology
Food supply
Technology transfer
Small scale industries

13. PROJECT NUMBER (150)

931122300

14. CONTRACT NO.(140)	15. CONTRACT TYPE (140)
AID/ta-C-1433	GTS

16. TYPE OF DOCUMENT (160)

AID 590-7 (10-79)

STAFF SUMMARY REPORT

WORKSHOP ON TECHNOLOGY FOR RURAL DEVELOPMENT

Held in Manila, Philippines
September 12-15, 1978

Sponsored by

National Science Development Board
Republic of the Philippines

and

Board on Science and Technology
for International Development
Commission on International Relations
National Academy of Sciences - National Research Council
United States of America

NATIONAL ACADEMY OF SCIENCES
Washington, D.C.

This report is a summary of the Workshop on Technology for Rural Development held in Manila, Philippines, September 12-15, 1978. The workshop was jointly sponsored by the National Science Development Board of the Philippines and the U.S. National Academy of Sciences.

Participation by the National Academy of Sciences was made possible through funds provided by the Office of Science and Technology, Bureau for Development Support, U.S. Agency for International Development, through Contract AID/ta-C-1433.

C O N T E N T S

I. INTRODUCTION

A working group report from the Workshop on Technology for Rural Development included this arresting statement:

> By the year 2,000, the Republic of the Philippines will face these realities: a doubled population; decreased farm size; increased energy costs and decreased availability of imported fossil fuels; increased costs of improving agricultural productive potential; increased income disparities between regions of high agricultural potential and those with lower potential.

Jointly sponsored by the Philippines' National Science Development Board (NSDB) and the U.S. National Academy of Sciences (NAS), the Workshop was conceived as a mechanism for sharing ideas and information on how science and technology can be used to help address the urgent, complex realities described above. The crucial dimension of these problems is the human factor, for they affect the way in which people live and the way in which they can face the future.

The context of the rural development challenge in the Philippines was spelled out in detail by a background paper prepared for the Workshop by a Ministry of Agriculture official (see Appendix A):

> The rural area is primarily agricultural, characterized by high tenancy rates. With limited land, expansion of production can only be achieved with increases in productivity. Production is dependent on the combination of inputs such as land, labor, seeds, fertilizers, etc. It is also very much

affected by the vagaries of the weather. Consequently, the farmer tries to maximize his output by relying heavily on the productivity of the land and the costs of production inputs.

Land inputs such as fertilizers and irrigation, designed to make land more productive, require large capital investments which the farmers alone cannot afford. The rising costs of other inputs have further aggravated the problem. Extension services are made available by the government to introduce new techniques and high-yielding varieties but the farmers are often afraid to take the risks of using modern technology. Hence, the traditional method has contributed to the low productivity of agricultural production.

The rural population has a per capita income of P4,745, far below the national average of P5,840 in 1975. This makes it even more difficult for them to improve the productivity of their farms. Although credit is available for financing production inputs and farm development, the amount available has always been inadequate.

The low per capita income has affected literacy in the rural areas to the extent that higher education is a privilege of the few who can afford it. Twenty-nine (29%) per cent of the rural sector are illiterate as compared to 13% of the urban sector. Malnutrition is prevalent, especially among the children. Since

production is seasonal, the unemployed and under-employed are difficult to estimate although it is estimated that of the 4.2% unemployed, 2.95% belong to the rural sector.

Roads that link farms to the market are inadequate. The costs of transporting the produce are often substantial enough to discourage farmers from selling directly to end-users. As a result, the role of the middlemen has increased and has become significant.

The lack of political consciousness among the rural population has made development static. Farmers are not involved in the planning of the different rural programs. As such, most of the programs failed to tackle the real issues and problems.

Despite the apparent magnitude of the problems in the rural area, its potential for development cannot be ignored. The slow pace of growth in the rural area has slowed down the development of the whole country. It is very rich in at least one specific resource - labor. Although the skills may not be what is demanded, literacy rates are significantly high, implying that labor skills can be improved. Programs must provide the support services which will bring about changes both in living and working environment.

Discussions in early 1978 with staff members of the Board on Science and Technology for International Development (BOSTID) of the NAS led to a suggestion by the NSDB for collaboration in a workshop on technology for rural development. The proposed workshop reflected the intention of the Philippines

Government to use the country's scientific and technological resources for social and economic development, and the consequent interest of the NSDB in formulating programs that are responsive to the needs of the country's large rural population.

Three main topics were suggested for consideration in the workshop:

1. means for indentifying and developing technologies for rural use, with emphasis on resource surveys and behavioral and other factors related to the acceptability of technologies;

2. mechanisms for effective transfer of rural technology, with emphasis on policy needs, organizational procedures, incentives, and institutional cooperation;

3. assessment and evaluation of technology transfer, with emphasis on methodology, modification and reinforcement of policy, and implementation mechanisms.

An interagency steering committee led by the NSDB suggested that the issues to be discussed should include the following. How can government help identify technology relevant to rural development and how can this technology be transferred? What are the implications for policy and incentives between technologies that are likely to be concerned with the private sector and those that may involve public programs? How can traditional technologies especially pertinent to rural development be adapted and be more widely spread? How can government deal with the problems of acceptability of new technologies to potential users? How adequate are the institutions mandated to carry out policies and plans for rural technology? What are the needs for personnel, money, and coordination mechanisms among those organizations concerned with rural development and technology?

As workshop plans progressed, it was decided that the discussions of rural technology needs should focus on particular sectors. Accordingly, special emphasis was given to food production, energy, and small industry development. The outcome of these discussions is presented in section III of this report.

As in any country, the scientific & technological resources of the Philippines are located in a wide range of public and private institutions. Moreover, the complex problems related to social & economic development in the rural areas of the country are addressed by a considerable number of governmental organizations and by some private bodies. To a great extent, then, the challenge of finding ways to use science and technology more effectively in rural development must begin with a sorting-out of resources, responsibilities, interests, and potential, holding all these to the light of the realities of rural needs.

The workshop represented a concern to develop a clearer sense of purpose, coordination, and effectiveness in bringing science and technology to bear on issues of high national priority. As a result, the participants mostly examined policy and institutional needs. At the same time, there was a clear recognition that detailed exploration of technology needs and specific sectoral and regional programs must follow.

II. AGENDA AND PARTICIPANTS

The workshop formally opened on the morning of September 12 at a plenary session in a conference room of the Intercontinental Hotel in Makati, a suburb of Manila. During the next two days, background presentations were made by selected Philippine and U.S. participants. On the third day, the participants met in four working groups to discuss rural technology needs related to food production, energy, and small industry development, plus the educational needs underlying the entire topic of technology for rural development.

The fourth day of the workshop was spent in plenary session for discussion on the reports of the working groups, consideration of cross-cutting issues, and brief concluding ceremonies. The detailed workshop agenda follows.

Tuesday, September 12

AM	Registration	
	Opening Remarks	Minister Melecio S. Magno Chairman National Science Development Board
	Coffee Break	
	Plenary Session	
	1. Remarks	Dr. Segundo V. Roxas Vice-Chairman & Executive Director National Science Development Board and Head, Philippine Panel
	2. Remarks	Dr. William Hughes Director, Engineering Energy Laboratory Oklahoma State University and Head, U.S. Panel

3. Preliminary Discussion of Workshop Program
   (a) Workshop Agenda
   (b) Additions/Changes

4. Organization of Small Group Sessions/Designation of Respective Chairmen and Rapporteurs

5. Discussion of Preparation of Conference Report and Recommendations

PM — Lunch Break

Continuation of Plenary Session

Presentation of Philippine Paper — Dr. Segundo V. Roxas

Discussion/Open Forum

Coffee Break

Presentation of Position Paper
Rural Development Challenges for Science and Technology — Dr. Manuel Alba, Deputy Director, National Economic and Development Authority

Discussion/Open Forum

Reception by
Minister Melecio S. Magno

Wednesday, September 13

AM — Continuation of Plenary Session

Presentation of Position Paper
"Behavioral Considerations for Technology Development/ Transfer in Rural Areas" — Fr. Jaime Bulatao, S.J., Ph.D., Professor, Department of Psychology, Ateneo de Manila University

Discussion/Open Forum

Coffee Break

Presentation of Position Paper "The Integrated Rural Development Program"	Mr. Jaime Uyloan Project Director Samar Integrated Rural Development Project Ministry of Agriculture

Discussion/Open Forum

PM Lunch Break

Presentation of Position Paper "Grassroots Experience on Technology Development, Transfer and Use"	Dr. Juan Flavier President International Institute of Rural Reconstruction

Discussion/Open Forum

Coffee Break

Presentation of U.S. Paper	Dr. William Hughes Dr. Malcolm Bourne Dr. Rodney Tyers

Discussion/Open Forum

Thursday, September 14

AM Discussion by Small Groups

Group I. Food

Resource Speakers:

1. Mr. Francisco Rentutar, Director
   Bureau of Agricultural Extension
   Ministry of Agriculture

2. Mr. Ernesto Garilao
   Executive Director
   Philippine Business for Social Progress

Group II. Small-Scale Industry

Resource Speaker:

Mr. Paterno Viloria, Director
Institute for Small-Scale Industries
University of the Philippines

GROUP III. Energy

Resource Speaker:

Mr. Gary Makasiar, Head
Planning Service
Ministry of Energy

GROUP IV. Education

Resource Speaker:

Dr. Abraham Felipe, President
Fund for Assistance to Private Education

Friday, September 15

AM Closing Plenary Session

Presentation of Findings of Small Group Sessions

Coffee Break

Final Discussion

Conference Recommendations

Closing Ceremonies

Closing Statement	Dr. William Hughes
Closing Statement	Dr. Segundo V. Roxas

Seven panelists and one BOSTID staff member attended the workshop on behalf of the NAS. The panelists and the sectoral topics to which they were assigned are listed below:

Dr. William Hughes (Chairman), Director -- (energy)
Engineering Energy Laboratory
Oklahoma State University

Dr. James Beebe -- (education)
Consultant

Dr. Malcolm C. Bourne -- (small-scale industry)
Professor of Food Science and Technology
New York State Agricultural Experiment Station
Cornell University

Dr. Harlan Davis, Director -- (small-scale industry)
International Studies and Programs
Board of Regents
University System of Georgia

Dr. Richard Harwood, Director -- (food)
Organic Gardening & Farming Research Center
Rodale Press, Inc.

Dr. Joseph Metz, Director -- (food)
International Agriculture
Cornell University

Dr. Rodney Tyers -- (energy)
Resource Systems Institute
East-West Center

Mr. John Hurley, Deputy Director
Board on Science and Technology
for International Development
National Academy of Sciences

Five of the seven panel members have previous living and working experience in the Philippines, some for periods of several years. The panel chairman, Dr. Hughes, served as chairman of the study committee that issued the 1976 NAS report Energy for Rural Development : Renewable Resources and Alternative Technologies for Developing Countries.

An eight-member Philippine panel was counterpart to the U.S. group. Its members were:

Dr. Segundo V. Roxas (Chairman)
Vice-Chairman & Executive Director
National Science Development Board

Dr. Manuel Alba, Deputy Minister
National Economic and Development Authority

Dr. Jose Conrado Benitez
Political Deputy Minister
Ministry of Human Settlements
and Environmental Management

Mr. Cesar Macuja, Deputy Minister
Ministry of Industry

Mr. Paterno Viloria, Director
Institute for Small-Scale Industries
University of the Philippines

Dr. Cesar Sarino, President
Economic Development Foundation

Dr. Abraham Felipe, President
Fund for Assistance to Private Education

Mr. Jaime Uyloan, Project Director
Samar Integrated Rural Development Project

Mr. Dominador Reyes, Chief of the Education and Public Affairs Service, NSDB, served as chairman of the Philippines interagency steering committee that was responsible for overall workshop planning and organization

In addition to the two panels, about 25-30 Philippines participants attended the workshop each day. The majority are listed in connection with the working group reports in section III. Participants came from a wide variety of organizations, including the following: National Science Development Board, National Economic and Development Authority,

Ministry of Industry, Ministry of Human Settlements and Environmental Management, Ministry of Agriculture (Bureau of Agricultural Extension, Samar Integrated Rural Development Project, National Council for Integrated Area Development), Ministry of Energy, Economic Development Foundation, University of the Philippines, Institute for Small-scale Industries, Fund for Assistance to Private Education, Ateneo de Manila University, International Institute of Rural Reconstruction, Philippine Business for Social Progress, Philippine Council for Agricultural and Resources Research, National Institute of Science and Technology, Forest Products Industry Development Commission, Commission on Volcanology, National Research Council of the Philippines, Technology Resource Center.

III. WORKING GROUP REPORTS

After two days of plenary discussion on background presentations, the workshop participants divided into four separate working groups. The working groups considered rural technology needs in the more specific context of food production, energy, small industry, and education.

Each working group had a chairman, a rapporteur, and a resource speaker to begin the deliberations. The four meetings were informal and the discussions candid and vigorous.

The chairmen, rapporteurs, and secretariat staff worked long after the group sessions were finished to produce summary reports for presentation in plenary session on the following day. Those reports follow.

FOOD GROUP

Chairman : Mr. Ernesto Garilao
Executive Director
Philippine Business for Social Progress

Rapporteur: Mr. Santi M. Dapul
Ministry of Agriculture, NACIAD

Members: Dr. Richard Harwood
Rodale Press

Dr. Joseph F. Metz, Jr.
Cornell University

Dir. Telesporo Vea
Bureau of Agricultural Extension
Ministry of Agriculture

Ms. Milagros A. Ramos
National Institute of Science
and Technology
NSDB

Mr. Flaviano Pagador
National Science Development Board

Ms. Providencia Nolasco
Cagayan Integrated Area Development Project

Mr. Alan Ortiz
Ministry of Agriculture

Ms. Lilia Faigmano
Philippine Council for Agriculture and
Resources Research

Mr. Simon Cruz
Bureau of Agricultural Extension

Administrative Support:

Ms. Rebecca L. Santiago
National Institute of Science & Technology
NSDB

Ms. Magdalena Esmilo
National Institute of Science
and Technology
NSDB

FOOD: POLICY STATEMENTS

In the pursuit of increasing our capability in providing food as the basic necessity of every Filipino, the group has laid down the following policies which, if presently carried out, should be fully emphasized or, if not, should be immediately considered.

1. The need for technology planning.

By the year 2,000, the Republic of the Philippines will face these realities:

a doubled population; decreased farm size; increased energy costs and decreased availability of imported fossil fuels; increased costs of infrastructure relative to the price of food; increased costs of improving agricultural productive potential (areas remaining for development are becoming more marginal); increased income disparities between regions of high agricultural production potential and those with lower potential.

The above considerations will definitely affect the availability of food in the country. It is imperative that projections be made on national food requirements by commodity, on a five-year increment up to the year 2,000. The total needs should be translated to a needed increase in per hectare yield. Careful evaluation should therefore be made of the technologies needed to achieve those yields within the framework of the above constraints.

It is recommended that a small team of the very top scientists of the nation, representing the various disciplines involved in food production, preparation and consumption (to include social considerations), review and evaluate technology needs on a periodic basis. This team will be strictly technical in its mission and will not be concerned with economic planning. The team will preferably operate through an existing agency and will report to a central Government agency with nationwide responsibility for development.

2. The Farm Systems Approach.

The development agencies should adopt the goal of reaching every rural Philippine family with at least some aspect of technology to improve well-being. For the severely disadvantaged, that technology may be a small modification of existing practice, preferably having a low delivery cost, since extension agencies are not adequately equipped to serve every Filipino.

Some sectors of rural society have been bypassed because of their limited food production resources, with little potential for increasing the physical resources. Large numbers of people will continue to be supported on marginal lands. It is essential that expertise be developed within the scientific community on food production, processing, storage and delivery technologies for

resource-limited environments. Such technologies are concerned with integration of component parts (crop and animal) into systems; in cases of limited resource situations, these systems stress total biological yield, tillage power, farm nutrient cycling and minimizing postharvest food losses. The systems will preferably be designed to reduce needs for high-cost, energy-intensive infrastructure support.

It is recommended that the NSDB take the lead in encouraging and supporting scientific capabilities in improving food production systems within given physical and socio-economic environments.

3. Food self-sufficiency for the Rural Family.

The initial strategy for regions which make little use of recently-developed technology should focus on achieving "food self-sufficiency" among the farmers. This includes producing enough food for the family needs, with emphasis on improving nutrition. Rural non-farming families should be assisted to meet their dietary requirements. Initial new technology should be simple and low cost and should have a measureable influence on yields.

It is recommended that the introduction of new technology in these regions be a collaborative activity between the government agency or private agency and the local community. Local participation in the identification of existing farming systems and related information should provide an opportunity for involvement of local individuals. In addition, the training of people at the local level for barangay project planning and implementation should be encouraged.

4. Agri-Business to Increase Rural Income.

Private enterprise is one of the principal motive factors in the mobilization of technical, human and physical resources for rural development. Hand-in-hand with the policy of food self-sufficiency for rural families, increased opportunities for rural families to engage in agri-business activities should be promoted. The package of incentives necessarily includes increased access to credit facilities, more extensive dissemination of information on available technology, improved marketing and transport facilities, and intensive education/training in agri-business management. Increase in the income of rural families is a principal objective. However, the underlying motivation for agri-business promotion is an improvement of the quality of life in the rural areas through corollary effects of income increases, namely, increased access to better education and consequently the acquisition of managerial/technical expertise needed in the development of rural leaders.

Noting the existence of an agri-business incentives priorities plan, it is therefore recommended that technology germane to the production of cash crops, livestock, fish and poultry be more intensively developed and adapted to local conditions for use by agri-business enterpreneurs.

5. NSDB Participation in the Rural Development Process.

Recognizing the importance of technology transfer in our area development program, the participation of the NSDB in the National Council on Integrated Area Development (NACIAD) and in the Regional Development Council should be formalized to provide the necessary policy and implementing guidelines in the field of rural technology.

The NSDB and its affiliated agencies should strengthen its role as a research and development body in science and technology with emphasis on socio-economic development. A strong linkage should be established between agencies and institutions in food research and those in food production to insure the development of appropriate technologies for the rural sector and their efficient application at the grassroots level. Particularly, the need to strengthen the technology-continuum matrix from technology generation to verification and from packaging to dissemination should be emphasized in these linkages. This would include not only the national government institutions but also the regional government and educational agencies as well as the private sector.

6. RP-US Institutional Relationships.

The existing linkages between Philippine and American institutions involved with basic and applied research in food and other rural technologies should be strengthened and additional ones encouraged, preferably on a long-term basis.

The working relationship between NSDB and NAS should be continued. Local institutions are encouraged to avail themselves of each other's expertise as well as the NAS network in identifying basic and applied research which can be locally utilized or modified.

7. Government incentives for corporations involved with critically needed research.

The government should consider providing incentives to private corporations involved with food and other basic and applied research certified by NSDB as critically needed.

SMALL SCALE INDUSTRIES GROUP

Chairman: Dr. Harlan Davis, Director
International Studies and Programs
University System of Georgia

Resource Person: Director Paterno Viloria, UP-ISSI

Dr. Malcolm Bourne
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Com. Felipe Santillan, PIC, NSDB

Mr. Mario Perilla, RDS, NEDA

Miss Maria Luisa Echevarria, TRC

Mrs. Guillermina Mañalac, NIST, NSDB

Rapporteur: Mr. Emmanuel Almonte
CSMI, Ministry of Industry

Administrative Support:

Miss Bella G. Vilela, CSMI, MI
Miss Linda Solis, NSDB

WORKSHOP ON TECHNOLOGY FOR RURAL DEVELOPMENT

RECOMMENDATIONS ON POLICIES AND PROGRAMS ON TECHNOLOGY FOR RURAL DEVELOPMENT -- SMALL-SCALE INDUSTRY

Rationale for small - and medium-scale industries

Small-scale industries, within the Philippine context, are those industries with total assets worth P100,000 to P1,000,000. Industries with assets above P1,000,000 up to P4,000,000 are classified as medium-scale. In terms of number of employees, small-scale industries are defined as manufacturing enterprises with 5 to 99 employees and medium-scale industries are enterprises with employees from 100 to 199.

Small and medium industries constitute more than 85% of the aggregate number of manufacturing industries in the country. Within the framework of the national goals and policies embodied in the five-year development plan for 1978 to 1982, substantial mention has been included on the role to be played by the small and medium industry (SMI) sector. The challenge of development in the years ahead poses, among others, the following urgent problems to be faced.

Inadequacy in Basic Needs

A relatively large segment of the country's population, especially in the rural areas, still does not enjoy the basic needs in life such as food, clothing, shelter and minimum education.

Income Inequality

Despite the achievements in the past years in the performance of the economy, the provision of social services,and the reforms in the government machinery, an equitable distribution of income for the people is still to be attained.

Unemployment and Underemployment

There is a marked shortage of employment opportunities all over the country which detracts from the elevation of the standard of living of the people, and aggravates the inequitable income distribution already existing.

Regional Growth Disparities

There are regions of the country that lag behind others in economic growth and employment opportunities. Hence, migration to urban areas where job opportunities are supposed to be has posed housing, health, employment and other congestion problems.

Utilization of Indigenous Natural Resources

The Philippines has an abundant supply of indigenous raw materials, the country being very rich in natural resources. In spite of this natural advantage, however, our country has not developed a competitive edge in the production of goods, a factor that we have to correct if we are to develop natural markets and penetrate international markets.

The selected problems above dictate that the national development goals incorporate tangible projects that mobilize the involvement of the entire nation in resolving these problems. Translated into concrete activities, our people's resources must be organized into economic activities to provide the impetus.

In organizing for these economic activities, the most accessible grouping of resources is at the level of small-and medium-scale industries. It is at this level where people develop the sensitivity to harness the resources available to them and translate these to economic activities.

Multiply this effort to create a large enough base and we create the necessary economic support system to bring us to the level of economic self-sufficiency we aspire to achieve.

In spite of the various government programs for small and medium industries, there are still so many gaps; hence, the following are hereby recommended to accelerate the development of SMI and the utilization of appropriate technology by them:

1. Identification of possible technologies for application and propagation in specific regions.

Various studies show that, on the one hand, technologies have been developed in the resource institutions but such technologies fail to reach the end-users because of the absence of the delivery system from the resource to the end-users; thus the following should be undertaken by the government agencies concerned:

(a) surveys to identify the available appropriate technologies in the resource institutions and the needs of the end-users.

(b) a survey on existing industries in the twelve regions of the country with the end view of identifying appropriate technology that could be utilized by existing industries. A study of small industries that might be developed in each region has already been completed by the U.P. Institute for Small-Scale Industries. Results of this study are attached.

(c) a study on other commodities that may be produced in the regions, identifying at the same time appropriate technologies that could be used for their production.

Also, we recommend a study of small- and medium-scale industries which could serve as "stepping-stones to primary industrialization" and at the same time achieve a dispersal of industry.

(d) collate existing market studies which have already been conducted by various government and private agencies.

2. Establishment of institutional linkages between the US and RP.

There seem to be sufficient linkages at present between the research institutions in the Philippines and research institutions in the US and other parts of the world. However, there is a need to strengthen the linkages which have been established thus far.

3. Integration of Government inputs/efforts pertaining to regional programs.

It has been established that various agencies are undertaking programs on regional development. In this regard, the following are hereby recommended for study and/or implementation to accelerate the promotion and development of SMI.

(a) Study the expansion of industrial development services and the strengthening of the linkages between the field extension service and the financial institutions.

(b) Assistance in project development should be strengthened and expanded by improving the technical capability of the SBAC staff, extending financing to front-end project development, expanding linkages with resource institutions, and expanding SBAC's area of operation.

(c) Information and promotion campaigns should be conducted so that the SMI sector would know what assistance or services are available from various government institutions.

(d) To encourage SMI development, a concessionary financing program should be introduced in terms of providing development assistance with interest rates more favorable than those being given to large industries.

(e) To gear the country towards primary industrialization and to bring about the dispersal of industry, linkages between large and medium industries should be strengthened chiefly through the promotion of subcontracting.

(f) To improve the capability of SMI subcontractors to meet quality specifications of large industry contractors, appropriate technology should be introduced through appropriate equipment, training, and consultancy.

(h) Appropriate raw materials substitution should be studied by the research agencies and an education program should be conducted regarding their use and advantages.

4. Strengthening of the roles of institutions and provision of appropriate technology.

There is a felt need that the resource institutions should take a more aggressive posture in their role in providing appropriate technology. In this connection, the following are hereby recommended:

(a) As a channel for the delivery of appropriate technology to SMI client firms, the capability of the SBAC to identify appropriate technology should be improved through further training.

(b) To facilitate identification of technological needs of SMI, this industry sector should be unified into industry associations and such associations should be made part of the mechanism for technology transfer.

(c) Further to the development of the capability of field assistance units in identifying appropriate technology, the training capability of the U.P. Institute for Small-Scale Industries should be strengthened and its range of training expertise should be widened.

5. Establishment of coordination mechanism for SMI development.

To maximize the utilization of resources and facilities of agencies engaged in the development of SMI, the following are recommended:

(a) The CSMI should develop an efficient coordinating mechanism among its member agencies which are engaged in SMI development.

(b) A small industry investment priorities plan should be developed by CSMI.

(c) To facilitate access by SMI to the available services from the government, the establishment of the Regional SMI Councils of the CSMI should be accelerated. Such councils should be strengthened and equipped to provide services needed by the entrepreneurs in their respective regions.

(d) To facilitate a better system of identifying SMI needs, particularly on appropriate technology, regional industry associations should be organized and such associations should establish constant dialogue with Regional SMI Councils.

6. Utilization of feasibility-tested technology techniques.

Various inventions such as machinery, mechanical tools and processes have been developed and tested as far as feasibility is concerned. Nevertheless, the private sector is reluctant in putting into commercial production these inventions and utilizing newly-invented processes because of high investments involved. As a solution to these problems, it is recommended that a private foundation be organized to support and test the commercial viability of said inventions.

7. Identification of deterrent factors regarding adaptation of technologies by end-users.

According to a study conducted by the U.P. Institute for Small-Scale Industries, SMI development in general, and adaptation of appropriate technologies in particular,

are affected by (a) difficulty in getting development funds; (b) lack of equity capital; (c) unreliability of supply of raw materials; (d) access to markets; and (e) non-availability of skilled labor.

Of the problems mentioned above, it is recommended that government agencies concerned, particularly the Commission on Small and Medium Industries, consider and study in more detail the recommendations made in this paper.

ENERGY GROUP

Chairman:	Dr. William Hughes, Director Engineering Energy Laboratory Oklahoma State University
Rapporteur:	Ms. Jane Guerrero Ministry of Energy
Resource Speaker:	Mr. Gary Makasiar, Head Planning Service Ministry of Energy
Members:	Dr. Rodney Tyers East-West Center
	Commissioner Gregorio Andal Commission on Volcanology
	Ms. Ileana Cruz National Institute of Science and Technology (NIST)
	Ms. Lirio Calixto National Economic & Development Authority (NEDA)
	Mr. Aldwyn Santos Ministry of Energy
Administrative Support:	
	Miss Melba B. Salazar National Research Council of the Philippines (NRCP)
	Miss Julita B. Ferido National Research Council of the Philippines (NRCP)

ENERGY

With the recent increase in the relative cost of commercial energy sources, greater attention has been focused on the need for information on energy resources and the structure of energy use so that explicit policies with respect to the supply and use of energy in both rural and urban areas can be formulated. Although energy planning within the Ministry of Energy is conducted at a highly sophisticated level, the mix of energy resources exploited, the indigenous technologies used and the characteristics of the demand for energy in rural areas have not been well quantified for the country as a whole. There is a general need to estimate the social value of alternative rural end uses for energy in the context of national development goals and to design technological development strategies to best achieve mixes of energy sources appropriate to the environments and levels of development.

As part of this process it is necessary to select in rural areas from the wide range of indigenous and non-indigenous technical alternatives, some of which are discussed in association with the following list of priority end uses:

1. WATER

Water needs include potable water for human consumption, water for irrigation, occasional water removal from the fields, etc. The technologies involved are pumping from deep wells, or moving water for irrigation. In addition, water purification is an important need.

Water pumps in electrified areas will most certainly be connected directly to the electric grid. In that situation, the choices are between indigenous hand-operated pumps, engine-driven pumps, windmills, or perhaps solar-driven pumps.

If one can judge from the wind data presented in the Summary Report of the Ministry of Energy, dated January 1978, over much of the Philippines wind does not present an encouraging alternate source of energy, although there are obviously isolated cases where this statement is not valid. Current solar water pumping systems, while technically possible are not competitive with other systems now or in the foreseeable future. Therefore, water pumping will probably be done manually by some sort of internal combustion engine for the foreseeable future in areas where electricity is not available. The problem is that fuel is increasingly expensive. Fortunately, biomass is reasonably abundant in the Philippines, and engines can be made to run from the gas products of biomass pyrolysis.

The strong encouragement of the development of pyrolysis systems probably should be a national policy, not only for fuel generation for water pumping, but for other uses as well.

2. CROP DRYING

The problem of drying grain and other products independent of the vagaries of the weather requires the availability of low grade heat. This can come from many sources, but the most obvious is the

enclosed solar dryer, or an enclosed dryer operated from biomass (probably agricultural wastes). Of course, the produce gas, or gas from pyrolysis, or char from pyrolysis can also be used. However, in this case, the thermal efficiencies are probably greater when the waste is burned directly.

3. REFRIGERATION

In those areas where vegetable or fruit production occur, or in fishing villages, refrigeration can make significant reductions in post harvest food losses. Refrigeration can be available (at significant capital cost) in areas without electricity through the use of absorption refrigeration systems. The prime energy is simply a source of low grade heat at above 200F to 300F. That source can be solar, but also can be conventional or non-conventional fuels. Biogas, produce gas, or gas from pyrolysis can all be used effectively. Char, or ordinary wastes, could also be used, but precise control would be difficult.

Where electricity is available, refrigeration electrical consumption can sometimes be significantly reduced through the use of "earth coil" techniques.

4. LIGHTING FOR HOMES

Lighting has been established as a national priority. Without doubt, the source of lighting will tend towards electricity in the near future. In areas where the electric grid is not available, the electricity will most likely come from engine generators (with their accompanying fuel problems), or micro-hydroelectric installations, or perhaps in a few cases from solar photovoltaic sources with intermediate battery storage.

In remote areas, significant efforts should be made to develop micro-hydroelectric systems operating either from fast-flowing streams or retention dams.

There have been some recent conceptual and experimental improvements in micro-hydroelectric systems. It is now technically practical (at an additional cost of $100 to $150 per installed kilowatt) to provide absolutely constant frequency and good voltage regulation for electric generators with wide variations in shaft speed. These developments have the potential of greatly simplifying the control problems of small hydroelectric sources as well as making them adaptable to existing retention dams without significant investment in dam rebuilding. They are also applicable to fast-flowing stream installations.

5. HOME COOKING AND FOOD PROCESSING

In rural areas where most mechanical energy is not provided by fuel combustion but instead through human and animal labor, the fuel used in home cooking, drying or parboiling represents the greater part of overall fuel consumption. Although many rural households have adopted stoves which burn LPG or kerosene, the vast majority apparently burn wood, agricultural wastes and other biological fuels. The energy efficiency with which foods are cooked on these stoves cannot exceed 15 percent, while the efficiency of common commercial fuel-burning stoves is as high as 50 percent. Considering the prospect that the relative scarcity of biofuels in rural areas may increase with time as population grows and as more land is cleared for agriculture, a high priority should be given to improving rural cooking efficiencies where biological fuels are used.

To summarize with respect to technologies, it appears that the highest priorities for alternate energy development in rural areas of the Philippines should be in the areas of advanced micro-hydroelectric systems, pyrolysis of biomass to create gases and perhaps high density liquid and solid fuels, and solar heating and drying systems where appropriate. Areas such as wind energy, solar electric systems using photovoltaics, etc. should not be ignored, but their priorities should probably be lower than micro-hydroelectricity and biomass pyrolysis. This recommendation assumes that efforts on macro-hydroelectricity, nuclear, coal, oil exploration and geothermal will continue as currently in the national plan.

Incentives for fostering rural energy conversion technology

1. The scale requirement for profitable manufacture of some energy conversion methods corresponds to demand-related risks which potential producers have been justifiably unwilling to take.

2. The magnitude of capital required by an economic-sized manufacturing unit is not readily available at costs competitive with other government-preferred industries.

3. Research and product development costs are substantial. For the producer-user type of energy technology such as biogas, one constraint on its production and use is a general awareness of existing available technology and accessible credit sources.

Below are suggested policy instruments and action areas that may be considered to encourage entry of investors into energy conversion industries for rural users.

(1) Preferential loans or loan quotas

(2) Tax holidays

(3) Free or low-cost technical assistance from the NSDB, through the NSDB coordinating a "Technical Consortium", or via the Technology Resource Center (TRC)

(4) Marketing assistance

(5) Directory of selected technology economics, including estimates of investment requirements. Possibly, the Ministry of Energy could initiate this in collaboration with the TRC

(6) Incentives for potential consumers of the product to generate demand in the form of loans, tax credits, or demonstrations or pilot installations

(7) Protection for industry and indigenous technology especially with respect to those distortions in various sectors of the economy which unduly favor importation of foreign technology.

Institutional Recommendations

In the energy field, public research is conducted by a diverse set of Ministries, line agencies, boards, commissions and councils. Those research activities falling under the NSDB which bear on the energy sector include some of the work of the Philippine Inventors Commission, projects on the utilization of agricultural and industrial wastes and on substitutes for fossil fuels under the National Institute of Science and Technology, projects on geothermal energy and the domestic use of low pressure natural

gas under the Commission on Volcanology, as well as the work of the Forest Products Research and Industries Development Commission and the Philippine Textile Research Institute. Other institutions responsible for research and aspects of energy use and rural development include the Ministry of Energy through the Bureau of Energy Development, Bureau of Utilization, the National Electrification Administration, the National Power Corporation, and the Philippine Atomic Energy Commission (PAEC). In addition to these institutions, agencies such as the National Council for Integrated Area Development (NACIAD) have been established with responsibility of coordinating programs for rural development which bear on the process of technology transfer and the fostering of indigenous rural technology. Some further agencies whose work also touches on technology and rural development include the Ministry of Natural Resources, through its responsibility with respect to land use and forestry, the Ministry of Human Settlement through the Technology Resource Center (TRC), and the Philippine Council on Agriculture and Resources Research (PCARR). Although gains cannot necessarily be expected from the consolidation of the responsibilities for these research activities in one institution, it is apparent that there is a need for additional clarity in the designation of the responsibilities of each participating institution in relation to overall rural development goals.

With the recent increase in the relative cost of commercial energy resources, greater attention has been focused on the need for an explicit energy policy. With the abundant biological and geothermal energy resources of the Philippine Islands, a real scarcity of energy need not be a matter of concern in the medium term. However, since the non-conventional energy resources continue to be especially expensive to

exploit, there is an important need for the careful coordination of policies and research activities bearing on technology development and transfer related to the exploitation of these non-conventional energy resources. The NSDB, with its long history in the Philippines of monitoring and fostering research relating to rural technology is especially well-suited to the maintenance of a balanced approach to the consideration of these diverse technical alternatives.

One important aspect of these research activities is the study of the existing economic and social structure of the rural areas and the indigenous mix of exploited energy sources associated with agricultural, domestic and other indigenous technologies. These studies, essentially both science and social science in nature, are most appropriately carried out through the coordinating activities of a scientific institution such as the NSDB. As a result of this research, the role of non-conventional technology and technology available overseas can be identified. The responsibility, then, for the development and testing of these technologies in rural areas and the provision of appropriate economic and institutional incentives for their adoption should lie with the agencies such as the Ministry of Energy, the Technology Resource Center and the Ministry of Agriculture.

SUMMARY OF RECOMMENDATIONS

1. Rural sector-wide studies of the methods of energy use and energy demand.

2. Estimates of the social value of energy and uses in relation to development objectives for the purpose of allocating public resources among policy alternatives.

3. Rural biological energy resource surveys for resource assessment, including potential fuel availability, animal power and instances of human labor samples.

4. Clarification of the role of the NSDB in the study of the rural energy economy and indigenous rural technologies in relation to the role of other institutions engaged in energy research and development.

5. Formulation of suitable economic and institutional incentives for the manufacture and adoption of both indigenous and non-indigenous technical alternatives in association with the Ministry of Energy, the TRC and other agencies.

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TECHNOLOGY IN RURAL DEVELOPMENT
THE ROLE OF EDUCATION

The national development plan, containing 5-year, 10-year, and long-term perspectives stretching up to the year 2000, sketches an outline of national objectives for rural development. Such perspectives suggest technological inputs needed to help realize the objectives of the plan. This provides the proper beginning in exploring the role of education in using technology for rural development.

The scenario for rural development has as its main themes: (a) social justice, that is, the just and equitable distribution of economic opportunities and social amenities among all classes of people; and (b) productivity, that is, the increase in the capability to produce and make available the material necessities of life.

In addition, there is a concern for the physical and social environments of the Filipinos, managing and planning their use so that they continue to remain habitable and hospitable to human needs.

Two types of technology are needed to help realize this vision:

1. Technology that can bring about structural changes in the rural areas in order to occasion development. Examples are: technology to build roads, hospitals, schools and other infrastructure faster and better; provision of electrification, industrial and agricultural equipment, fertilizers, and irrigation; etc. This type of technology consists mostly of hardware and facilities necessary to bring about economic advancement and deliver social necessities.

2. Technology necessary to make efficient use and application of hardware and facilities so that they yield maximum value over time. Examples are: how to care for health and physical well-being; how to conserve energy and use it efficiently; how to maintain and repair industrial and other equipment; how to use fertilizers efficiently; etc. This type of technology is the soft-ware variety, consisting mostly of techniques and methods of planning, management, and use of equipment and facilities.

Education is essential both for making available the technologies needed to achieve national objectives and for showing people how to use them intelligently and productively. It provides the background for identifying problems, for assessing possible existing technological solutions or developing new ones, and for monitoring the consequences of technological change.

Education is a life-long learning process which should aim at the balanced personal development of the individual while also providing skills for obtaining livelihood and achieving a better quality of life. To achieve these personal objectives while also addressing community and national needs requires an effective blending of educational approaches with science and technology. The following specific measures are recommended:

1. To undertake a regional inventory of development resources (technological, manpower, natural, etc.), which can serve, among other things, as inputs for school teaching-learning activities.

2. To identify classes of educational institutions and provide appropriate support incentives related to the following roles:
   a. research and development;
   b. diffusing the products of research and development; and
   c. working with the people who will make use of these technologies, both in developing the technologies and in training people to evaluate technological options.
3. To reformulate in the NSDB a definite development plan for science and technology with a specific budgetary investment for research and development, to be recommended for incorporation into the regional and national development plans, and defining, among other matters, the relationship of NSDB with education.

   The plan also would identify areas for which it will be useful to promote guided research work on identified scientific and technological area-specific needs, and will identify technical and scientific personnel needs related to rural development.
4. To provide an appropriate scientific and technological educational environment and practical experience in schools and in non-formal training situations to generate early scientific and technological awareness and innovation, especially in the rural areas.

5. to establish an efficient compilation and communication system of R&D outputs, both on the domestic and international levels.
6. To formulate greater curricular relevance to area-specific science and technology needs and resources.
7. To develop effective methodologies of communication which can facilitate transmittal of science and technology to the end-users.
8. To adopt a system of university resource involvement and utilization for rural community planning and development, and to promote university community extension services and community manpower resource utilization.
9. To develop and support more authentic mechanisms to ensure local community participation in the identification of needs and the formulation and evaluation of possible scientific and technological solutions.
10. To promote education for local entrepreneurship and to prepare the training capability to impart this aim.

IV. PERSPECTIVE

NSDB-NAS Cooperation

The Workshop on Technology for Rural Development continues the close cooperation between the NSDB and the NAS. This cooperation, begun in 1965, has included five previous workshops, as well as periodic consultation at the staff level.

The first Philippines - U.S. Workshop on Scientific and Technological Cooperation and Development, held in Manila in November 1965, focused on the challenges and potential for science and technology in the Philippines, scientific manpower needs, requirements for applied and basic science facilities, and mechanisms for increasing scientific cooperation between the Philippines and other countries.

In November 1966 a second workshop at Asilomar, California, recommended four areas for further cooperative activitity -- industrial research, oceanography and fisheries, food and nutrition, and demography. A third workshop (Manila, December 1967) addressed problems of fisheries and oceanography; a fourth (Baguio, January 1969) examined problems of industrial research. A fifth workshop -- Education and Training Needs for Environmental Programs in the Philippines -- examined the demand for professional and technical personnel to plan, manage, and regulate national environmental programs, plus effective ways to provide the needed skills.

Planning and Organization

Discussions in early 1978 by BOSTID staff members with Dr. Perfecto Guerrero, Philippine Science Attache in Washington, led to a suggestion by the NSDB for collaboration with the NAS in a workshop on technology for rural development.

When the workshop topic was agreed upon, a Philippine workshop steering committee was formed, led by Dominador O. Reyes, Chief of the Education and Public Affairs Service, National Science Development Board. Steering committee members represented a number of agencies, including the National Economic Development Authority (NEDA), the Technology Resource Center, the Department of Agriculture, the Department of Industry, the National Institute of Science and Technology, the Economic Development Foundation, the Forest Products Research and Development Corporation, the Science Foundation of the Philippines, and the Department of Natural Resources.

John Hurley of the BOSTID staff visited Manila in April, 1978, and met with Mr. Reyes and the steering committee. The workshop date was selected, the major issues to be considered were suggested, and a general format was devised.

In early July, John Hurley and BOSTID Director Victor Rabinowitch briefly visited Manila and conferred with Mr. Reyes on workshop plans. They also met with USAID/Philippines officials (Dennis Barrett, Deputy Director, and Keith Sherper of the Office of Agricultural Development) to discuss workshop plans and to invite AID participation in the meeting.

During the remaining two months before the workshop, backgroumd materials were exchanged by the NSDB and the NAS and further organizational matters were worked out through correspondence and cables. A briefing session for NAS participants was held on the evening of September 11 in Manila.

The support and cooperation of the Philippine workshop organizers and hosts were excellent, and the administrative and logistical aspects of the meeting were well-organized. The support provided by the workshop secretariat deserves special note; at the concluding ceremonies the U.S. panel chairman reflected the opinion of his colleagues when he commended the secretariat as being "the best I have encountered at any meeting, anywhere in the world".

The NSDB provided lunch each day of the workshop, an event that not only was pleasant but also provided for a helpful informal exchange among the participants. Another pleasant occasion for interaction was a reception given by Science Minister M.S. Magno on the evening of September 12.

Press Coverage

Members of the local press attended most plenary sessions of the workshop. In addition, a press conference was held on the evening of September 15 after the concluding session so that reporters could meet and question Minister Magno and members of the Philippine and U.S. panels.

A sampling of newspaper articles on the workshop is given in Appendix B.

BOSTID Staff Support

John Hurley of the BOSTID staff coordinated NAS participation in the workshop.

Hurley arrived in Manila on September 7, and on September 8 and 9 made contact with local AID and NSDB officials. He spoke with Mr. Keith Sherper of the AID/Philippines Office of Agricultural Development concerning arrangements for the workshop and NAS participation and to urge that interested staff members from AID attend any or all sessions of the workshop. Hurley also spoke with Deputy Mission Director Dennis Barrett to invite him to attend the workshop or to have lunch with the NAS participants.

In his pre-workshop meeting with Mr. Dominador Reyes of the NSDB, Hurley reviewed final workshop arrangements and procedures and met the workshop secretariat staff. Background papers prepared by Philippines participants for the workshop were given to Hurley.

The seven NAS participants arrived in Manila on September 8, 9, and 10, and met with Hurley on the evening of September 11 for a final discussion of workshop plans and objectives.

Following the conclusion of the workshop, Hurley again met with Mr. Reyes of the NSDB to discuss the workshop report and related matters, and also met with Keith Sherper of AID to discuss the workshop and possible follow-up. Hurley then left Manila on September 18.

Perspective

The site of the workshop may deserve comment, since several participants commented on the apparent incongruity of considering rural problems in a comfortable hotel in the midst of a large city. The

site was chosen, however, because it seemed to provide particular advantages such as adequate facilities to enable the secretariat to produce documents quickly, and convenience to the participants who were invited from a wide range of local organizations.

Disadvantages of the site were that its very convenience made it easy for participants to be called away by the inevitable demands of nearby offices. Since the local participants were commuting to the meeting, moreover, the informal interaction between U.S. and Philippine participants was not as extensive as it might have been had everyone been living together at a meeting site away from the normal demands of office and home. Additionally, a rural site might have provided participants with greater opportunities to visit development projects, farms, and villages.

Since a basic purpose of the workshop was an exchange of information and experience among U.S. and Philippine participants, it seems unlikely that the exchange that took place was much affected by the choice of site. A different location might have provided for a wider range of opportunities to carry out the exchange, however.

The overall attendance at the workshop was 35-40 most days, and the quality of participation was good -- many background presentations were outstanding, discussion in plenary sessions was lively, and the size of the working groups was good.

The NSDB was faced in the workshop with the difficult task of creating awareness of a set of complex, multidimensional problems that involve overlapping responsibilities -- or lack of responsibilities --

in a variety of public and private institutions. As a result, the discussions focussed mainly on policy and institutional matters, rather than on an assessment of specific technologies or rural programs.

The workshop seems to have been a useful first step, however, in addressing the problems of rural development and technology. The participants agreed on the need for more urgent attention to rural technology problems, and for the creation of meaningful ways to involve rural people in the planning of development projects and the choice of technologies relevant to their needs. They suggested a number of steps necessary for the ongoing, practical application of technology to rural needs. It is clear, however, that the task begun by the workshop is a continuing one, and that considerable attention will have to be given to followup studies and to implementation of recommendations.

In connection with follow-up, it is gratifying to note that the NSDB plans to establish an implementation group to pursue recommendations that grow out of the workshop. Additionally, future meetings are planned on rural technology needs in specific sectors such as food production or energy supply. The NAS has expressed its willingness to help in any way possible with these ongoing activities.

APPENDIX A

THE INTEGRATED RURAL DEVELOPMENT PROGRAM

I. INTRODUCTION

A. The CCC-IRDP

The President's creation of the Cabinet Coordinating Committee on Integrated Rural Development Projects (CCC-IRDP) by virtue of Letter of Instruction No. 99 signalled the institutionalization of a novel approach to rural development in the country on July 10, 1973, the instruction empowered the Committee to coordinate all integrated rural development projects. This involved the participation of five cabinet members, namely: Secretary, Department of Agriculture and Natural Resources as Chairman; Secretary, Department of Public Works, Transportation and Communications; Secretary, Department of Finance; Secretary, Department of Local Governments; and Secretary, Department of Agrarian Reform as Members.

The Committee, through Resolution No. 1, Series of 1974 (February 7), created an inter-agency coordinating committee (IACC) headed by an Executive Director and composed of the following agencies: National Economic and Development Authority; Department of Public Works, Transporation and Communications; Department of Finance; Department of Agriculture; Department of Agrarian Reform; Office of the President; Department of Local Governments and Community Development;

National Irrigation Administration; and Budget Commission.

On October 2, 1975, Presidential Decree No. 805 implemented the Mindoro Integrated Rural Development Project and at the same time revised the composition of the Cabinet Coordinating Committee on Integrated Rural Development Projects. The Cabinet Committee included the following: Secretary, Department of Agriculture as Chairman; Secretary, Department of Public Works, Transportation & Communications as Vice-Chairman; Executive Secretary, Office of the President; Director-General, National Economic and Development Authority; Secretary, Department of Finance; Secretary, Department of Local Governments and Community Development; Secretary, Department of Agrarian Reform; Secretary, Department of Natural Resources; and Secretary, Department of Public Highways; as members.

The membership of the Committee defines the multi-sectoral nature of the rural development strategy. In the Philippine case, it means maximizing the utilization of scarce resources under an integrated and systematic approach.

B. The NACIAD

In pursuit of greater emphasis on the integrated area development of the countryside, P.D. 1378 was promulgated last May 17, 1978 creating the National Council on Integrated Area Development (NACIAD) in lieu of the CCC-IRDP. Through this

mandate, the Council is empowered to:

1. institutionalize the implementing mechanism for integrated area development through formal planning, monitoring and budgetary controls;
2. formulate an integrated framework plan to guide the development of depressed areas;
3. rationalize the participation of the rural people through their local governments in development planning and implementation;
4. initiate small-scale, high impact integrated projects utilizing existing indigenous resources;
5. mobilize efficiently multi-sectoral resources and properly channel these into integrated rural development projects.

Chairman of the NACIAD is His Excellency, President and Prime Minister Ferdinand Marcos. The Minister of Agriculture acts as the Vice-Chairman with the Ministers of the Ministry of Local Governments and Community Development, the Ministry of Agrarian Reform, the Ministry of National Defense, the Ministry of Natural Resources, the Ministry of Public Highways, the Ministry of Public Works, Ministry of Finance, the Ministry of Economic Planning, and the Ministry of Budget as Council members.

The mandate views their involvement in the Council as a major step towards carrying out a concerted multi-sectoral attack

on the problems of mass poverty, unemployment, underemployment and social justice. Their participation is deemed essential in integrating the different countryside projects and establishing priorities. These priorities will serve as guides toward a coordinated formulation and implementation of programs and projects aimed at the development of the countryside.

II. THE NACIAD, ITS ROLE IN THE INTEGRATED RURAL DEVELOPMENT PROGRAM

A. The Council Organization

It is certain that the tasks of planning and implementing the coordination of all area development projects require organization to effectively pursue the desired objectives. The NACIAD is not wanting in this regard. As seen from Figure 1, the Council has the appropriate offices to perform its duties. (See Fig. 1).

The President, acting as Chairman, will see to it that Council activities will be given top priority. Acting as Vice-Chairman and concurrently Chief Executive Officer is the Minister of Agriculture who is empowered to convene the Council as often as he deems necessary.

The Chief Operating Officer is the Executive Secretary who is appointed by the President. As the Chief Operating Officer, he is empowered to implement the approved integrated plan of action, recommend policy guidelines, undertake comprehensive studies, program and implement on-going projects, and perform other functions as the Chief Executive Officer may assign.

The Policy Research and Development Department provides the continuous coordination of the policy framework of on-going and pipeline projects vis-a-vis existing policies or area development. It also provides studies on the socio-institutional and technological needs and capabilities of the different priority areas. The Department is assigned the preparation of the long term plan for integrated area development, based on its policy studies.

The Planning and Development Department provides for project planning for both macro and high impact proto-type projects. The Department formulates guidelines and criteria in the identification and design of area-based development projects taking into account the priorities laid down by the policy research and development group. Incentives shall be studied and be made available to Council certified and approved projects.

The Project Management Department has direct supervision and control of on-going integrated rural development projects. This means a closer monitoring of day-to-day operations of these projects. The Department supervises special projects like the Philippine Rural Infrastructure Projects and the Land Settlements Program. Impact projects with city or municipal boundaries are monitored and analyzed for purpose of refinement of the community based proto-type models for integrated area development (IAD).

The Council has three main groups to assist the staff in their day to day activities. The first is the Finance and Administrative

Services which provides the financial and administrative management of the Council. These involve financial plans and evaluation, staff development program, evaluation of commodity and service requirements and the personnel recruitment and relations programs. The second is the Data Services which undertakes data collection and dissemination services. The third is the Communication and Information Services which undertakes the publication of pertinent materials on integrated rural development, publishes the "Countryside" as the official publication of the Council, issues press releases, prepares briefing materials and maintains liaison with other public affairs units or institutions involved in rural development.

B. The Programs and Activities of the NACIAD

1. Framework Plan

From its five years experience with the CCC-IRDP, the NACIAD now looks forward to the formulation and implementation of a long-term plan on integrated area development. The plan is envisioned to contain projections of the profile of the rural sector and the proper resource mix to match the expected conditions.

2. Criteria for Selection of IAD project areas

The criteria for selecting project areas was develop d to help the Council prioriti ze the di fferent areas of the country which require integrated rural development approach. They are:

1. areas with high tenancy rates;

2. relatively underdeveloped areas with development potentials in more than one sector of the economy measured by certain indicators;
3. areas whose inhabitants have incomes within the lowest income bracket - i.e average annual family income below ₱2,500/year;
4. areas with potentials for swift development as measured by certain indicators; and
5. areas requiring relatively small incremental investment to generate high benefits.

Modifications of these criteria will be made from time to time to conform to the development thrusts of the government.

3. Project Monitoring

A coordinating and implementing body needs to be in touch with the day to day activities of on-going projects. For this matter, an efficient system of reporting and evaluation is very important. The system will provide the Council much needed information to maintain its viability as a coordinating body. The NACIAD is continuously developing its own monitoring and evaluation system. Through its major departments and proposed field offices, the Council aims to attain and maintain effective liaison and control over all area development projects.

4. Local participation

There is the problem of evolving a machinery appropriate for the effective planning, execution and monitoring of integrated

rural development projects. Initial attempts revealed that planning and management of integrated rural development projects should be decentralized and participatory in nature, fusing the scientific knowledge and skills of experts with local leadership in the public and private sector. Simply stated, local participation is a must for a successful project. For this reason, the NACIAD will mobilize its field offices and central office departments to conduct regular consultations and joint meetings with local leaders of priority areas to thres out details of the projects. The exercise is aimed at pinpointing the different stages of program implementation where participatory planning, management and execution is possible and practical. In this manner, the project staff does not only get the necessary cooperation of the local populace, they also get to discover and optimally apply the inherent talents of these indigenous human resources.

5 Information Campaign

An information drive regarding integrated area development is also in the process. Seminars, public hearings and conferences on the issue have been programmed by the Council to provide the much needed exposure on the present area development thrusts of the government. This gathering is a concrete example of the Council's efforts on the matter. The purpose of the campaign is two-fold. First, in generating the proper

publicity, additional local and foreign financial sources are tapped. In this manner, NACIAD's view that area development efforts are at best in its initial stages and that new macro and micro projects should be operationalized is adequately supported. Second, the exposure will attune the local leaders and the other segments of the population to the plans and programs of the Council. Again, this will elicit response and possibly participation of these groups in the present development efforts.

6. Mindoro Project

The Mindoro Integrated Rural Development Project (MIRDP) was conceived in 1973 as the first integrated rural development project under the CCC-IRDP. After the loan negotiations for the $50 M were finalized last April 1975, Presidential Decree 805 (October 2, 1975) created the MIRDP. The main components of the project are: Road improvement; Calapan port rehabilitation; Irrigation system improvement; Watershed protection; Agricultural programs; Schistosomiasis Control; and Mangyan assistance.

7. The Bicol Project

The Bicol River Basin Development Program (BRBDP) covers 42 municipalities and 3 cities in the provinces of Camarines Sur and Albay. The BRBDP was launched to increase per capita income in the basin area. In May 1973, Executive Order 412 created the Bicol River Basin Council.

This was modified in April 1976 by PD 926. The project components of the program are:

1. pilot land consolidation; 2. pilot livestock projects; 3. crop production; 4. compact farming; 5. comprehensive water resources; 6. land classification; 7. topographic mapping; 8. hydrometeorological program; 9. water balance and supply studies; 10. agri-business feasibility studies; 11. transportation feasibility studies; 12. socio-economic studies; 13. on-farm water management.

8. The Cagayan Project

The Cagayan Integrated Agricultural Development Project (CIADP), a joint undertaking of the Philippines and Japanese government, covers a net aggregate of 13,200 irrigable hectares spread out in the strategic areas along the Cagayan River in the northeastern part of Luzon. The CIADP was conceived by the CCC-IRDP. After numerous consultation and agreements with the Japanese government, it was formalized by PD 1189 last August 30, 1977 creating the CIADP and providing funds for its operations. The project component of the CIADP are: 1. agricultural development; 2. infrastructure; 3. electrification.

9. The Samar Project

The Samar Integrated Rural Development Project (SIRDP) was implemented by PD 1048 (November 13, 1976) with an over-

riding objective of promoting and sustaining balanced development of the island - socially, economically and physically. The project components of the SIRDP are: 1. irrigation systems; 2. secondary road sub-package; 3. flood control and drainage; 4. water supply systems; 5. power and electrification; 6. fishpond development; 7. health delivery system.

10. Special Projects

The Council is also presently involved in special projects namely the Land Settlements Project (LSP) and the Philippine Rural Infrastructure Project (PRIP).

The LSP covers the provinces of Agusan del Sur, Bukidnon and Capiz. The project, also known as the Second Rural Development - Land Settlement Project, was created through Letter of Instruction No. 547 signed in June 1977. The LSP is financed by the IBRD with a total cost of $15 M and is envisioned to reformulate the land settlement and development program of the government.

The PRIP was implemented by PD 1298 last February 2, 1978 covering the six provinces of Abra, Aklan, Antique, Bohol, Capiz and Kalinga-Apayao. Project components include communal irrigation systems, barangay roads, small ports, rural health stations and rural water supply. The project will be implemented within a period of 5 years.

11. The Pipeline Projects

In addition to the integrated development projects and special projects, the Council has prepared a development package for the Lanao provinces, Bohol and Palawan. Feasibility studies on the different components of the projects are being undertaken. Loan agreements are presently under negotiation to provide the financial base for these projects. When most of the studies are completed and the financial complement are provided for, the necessary implementing legislation shall be issued.

12. Funding

Negotiations for local and foreign financing of the different area development projects are carried out on a project basis. For the Mindoro project, a $25 M loan was granted by the International Bank for Reconstruction and Development (IBRD) with a ₱346 M counterpart from the Philippine government. Foreign financing for the Bicol project comes mainly from USAID with a total of $16.5 M. Other sources are the Asian Development Bank, the IBRD, the Japanese Government, the German Government and the Philippine Government. Total financing for the project amounts to about ₱3.5 B. For the Cagayan project, total investment is US$41 M where 47% will be provided by the Philippine government. Fifty-three per cent (53%) will be provided by the Japanese government through the Overseas Economic Cooperation Fund (OECF). The Samar

Project requires some P1.66 B. Negotiations for local and foreign financing to meet these requirements are going on. The Council expects to finalize additional loan agreements to operationalize the pipeline projects.

III. TRANSFER OF RURAL TECHNOLOGY WITHIN THE NACIAD PROGRAMS

A. The NACIAD's View of the Rural Sector

The NACIAD recognizes the inter-relationships among the physical, economical, social and political factors that make up the environment in the rural sector. Understanding this environment is crucial to the planning and implementation of the countryside development program.

The rural area is primarily agricultural, characterized by high tenancy rates. With limited land, expansion of production can only be achieved with increases in productivity. Production is dependent on the combination of inputs such as land, labor, seeds, fertilizers, etc. It is also very much affected by the vagaries of the weather. Consequently, the farmer tries to maximize his output by relying heavily on the productivity of the land and the costs of production inputs.

Land inputs such as fertilizers and irrigation, designed to make land more productive require large capital investments which the farmers alone cannot afford. The rising costs of other inputs have further aggravated the problem. Extension services are made

available by the government to introduce new techniques and high-yielding varieties but the farmers are often afraid to take the risks of using modern technology. Hence, the traditional method has contributed to the low productivity of agricultural production.

The rural population has a per capita income of ₱4,745 far below the national average of ₱5,840 in 1975. This makes it even more difficult for them to improve the productivity of their farms. Although credit is available for financing production inputs and farm development, the amount available has always been inadequate.

The low per capita income has affected literacy in the rural areas to the extent that higher education is a privilege of the few who can afford it. Twenty-nine (29%) per cent of the rural sector are illiterate as compared to 13% of the urban sector. Malnutrition is prevalent specially among the children. Since production is seasonal, the unemployed and underemployed are difficult to estimate although it is estimated that of the 4.2% unemployed, 2.95% belong to the rural sector.

Roads that link farms to the market are inadequate. The cost of transporting the produce are often substantial enough to discourage farmers to sell directly to end-users. As a result, the role of the middlemen has increased and has become significant.

The lack of political consciousness among the rural population has made development static. Farmers are not involved in the planning of the different rural programs. As such, most of the

programs failed to tackle the real issues and problems.

Despite the apparent magnitudes of the problems in the rural areas, its potential for development cannot be ignored. The slow pace of growth in the rural areas has slowed down the development of the whole country. It is very rich in at least one specific resource - labor. Although the skills may not be what is demanded, literacy rates are significantly high implying that labor skills can be improved. Programs must provide the support services which will bring about changes both in living and looking environment. Government investments in terms of infrastructures and credit can ease the burden of rising production costs. It is the government's role, therefore, to provide the impetus for the development of the rural sector. Past rural programs have been ineffective due to the lack of coordination among the agencies involved. NACIAD then, becomes the central agency charged with the task of coordinating the efforts towards the development of the rural areas. With NACIAD the rural areas can now provide the push-factor necessary to support national development.

APPENDIX B

THE TIMES JOURNAL

September 12, 1978

Technology transfer seminar on today

What is the most effective way of transferring technology to the rural areas?

The National Science Development Board (NSDB) and the National Academy of Sciences of America will hold a joint workshop on the problem starting today at the Hotel Inter-Continental in Makati.

Theme of the four-day meet will be "Formulation of policy and Program on Technology for Rural Development."

Dr. Segundo V. Roxas, deputy science minister, who heads the nine-man Philippine panel, has listed the following objectives of the workshop:

1. Identification of the technologies that can be readily applied in specific regions of the country.

2. Establishment of a US-RP inter-institution link for technology transfer.

3. Integration of government technology transfer efforts.

4. Strengthening of institutions charged with technology transfer.

5. Establishment of a coordinating body for government agencies involved in rural development.

6. Encouragement of the private sector (with incentives) to produce feasibility-tested technology for countryside development.

7 Identification of the factors that prevent ready adoption of technologies by rural users.

Panel members

Other members of the Philippine panel are Deputy Minister Manuel Alba (NEDA), Director Paterno Viloria, UP; Cesar Sarino, presidents, Economic Development Foundation; Dr. Abraham Felipe, president, Fund for Assistance to Private Education; Jaime Uyloan, director, Samar Integrated Rural Development project; Deputy Minister Jose Conrado Benitez; Ministry of Human Settlements; Deputy Minister Cesar Macuja, Ministry of Industry; Deputy Minister Orlando Sacay, Ministry of Local Government and Community Development.

Composing the eight-man US panel are Dr. William Hughes, Oklahoma University; Dr. Malcolm Bourne, Cornell University; Dr. Harlan Davis, University System of Georgia; Dr. Richard Harwood, Rodale Press, Inc., Dr. Joseph Metz, Cornell University; Dr. Rodney Tyers, East-West Center; Dr. John Villaume, Harvard Institute for International Development, and John Hurley, NAS-US.

BULLETIN TODAY

September 12, 1978

Filipino, US scientists set Makati meet

Top American and Filipino scientists will discuss the thorny problem of bringing technology to the grassroots in a workshop to be held from Sept. 12 to 15 at the Hotel Intercontinental in Makati, Metro Manila.

The participants in the conference — a workshop on technology for rural development — include a panel of experts from the Philippine government and scientists of the United States' National Academy of Science.

Dr. Segundo V. Roxas, vice chairman and executive director of the NSDB, heads the Philippine panel composed of Dr. Manuel Alba, deputy minister of the national economic and development authority (NEDA); Paterno Viloria, director of the University of the Philippines institute of small scale industries; Cesar Sariño, president of the Economic Development foundation; Dr. Abraham Felipe, president of the Fund for Assistance to Private Education; Dr. Jaime Uyloan, project; director of Samar integrated rural development project; and Dr. Jose Conrado Benitez, Deputy Minister of the Ministry of Human Settlements

Projects follow up int'l meet

By MARIO F. CHANCO

A BUMPER crop of starting, ongoing and partly completed projects has given Filipino and American scientists who completed a workshop on appropriate technology in Manila last week high hopes that rural development techniques worldwide are heading for new performance plateaus. The workshop was attended by members of the US National Academy of Sciences and top local scientists under NSDB.

These expectations were embodied in a number of post-conference events strongly supportive of the joint NSDB-USNAS findings that for transfer of technology patterns to be effective in the countryside, the people ought to recognize those patterns in their traditional experiences.

• • •

AMONG THOSE events that came in the wake of the workshop were:

1. Start of a brand-new concept in analyzing medicinal plant evaluations. This came at an NSDB-sponsored conference announcing the forthcoming completion of a new book on medicinal plants.

2. Disclosure that Filipino advances in some special technologies like the use of woodburning systems can rank among the best in both the developing and the developed worlds.

3. Completion of plans to solve simultaneously the problem of kaingin destruction and watershed reforestation by a revival of the "lost" technique of upland terrace-building.

4. Start of two pre-surveys on so-called "endangered countryside technology" in line with the Workshop's conclusions that such a project might give valuable insights on how new technologies can be sent to rural areas.

5. Expansion of institutional liaison between the NSDB and the American Academy of Sciences on an intensive scale, and with the rest of the world, in order to forge a partnership able to deal with "the economic, social and material discontinuities that lie ahead."

• • •

THE WEEK-END package of developments that followed the workshop arose as a consequence of the pointed, often brusque reminders by a battery of speakers including

Projects follow...

(From Page 1)

NSDB Chairman Melecio Magno, Fr. Jaime Bulatao and PRRM President Juan Flavier that current development techniques were getting nowhere fast.

But in the atmosphere of frank soul-searching that pervaded the conference, the Filipinos were matched tit for tat by their American counterparts, chief among them Chairman William Hughes, who noted that even in the so-called developed countries, problems which had once been thought solved were still there, "and they are going to find themselves re-developing in the coming decades along with the rest of the world."

• • •

THE NEW breakthrough in medicinal plant study came Saturday as a result of exchanges made at an NSDB-sponsored forum at the UP in Diliman.

Resource experts in this line told their audience there seemed to be evidence that even in the earliest herbal medicine days, the early healers prescribed not just one but several medicinal plants alternatives in treating sick persons. This wholistic support, which is now standard practice in modern medicine, may explain why current folklore lists many drugs of different healing quality for one ailment. Research into this "total" system of early curing has therefore become very relevant now, it was said.

Also after the workshop, a report was made that at the Bicol River Development Project site, AID-NSDB experts have completed plans of a large-scale effort aimed at recreating the same upland terrace technology of Mountain Province and several other provinces. This was held vital if uplanders who now do kaingin planting are to raise adequate food crops, so they can turn their free time to raising economically viable trees like pili, giant ipil and orchard crops.

• • •

REPORTS also circulated that the so-called survey of "endangered" countryside technology recommended by the workshop as a means of better transmitting new technology to the rural areas has actually started.

One involves three barrios in Rizal province, and the second involves a pre-survey effort to be made in the Bicol region, where abundant evidence already exists to show that such early technology is now disappearing in the wake of vast schemes implemented without considering vital area behavior and social patterns.

EVENING POST

EVENING POST, TUES., SEPT. 26, 1978

Gold countryside technology

In an old Mangyan settlement that looks out through the thick foliage of newly planted trees, toward the China sea, tribal farmers wend their way daily through a plantation of giant ipil ipil trees supporting tendrils of a hardy upland tuber called nam-ei.

The simultaneous cropping of trees and the nam-ei were conceived by an American aid expert whose outspoken ways eventually led to his destierro to a Central American Republic. The Mangyans have mostly forgotten their benefactor. But they haven't forgotten the techniques he taught them, which enables them to simultaneously reforest their denuded hills and at the same time harvest a basic staple of their simple daily diet.

* * *

In a remote sitio somewhere in the Rizal-Quezon boundary, another upland farmer places half the trunk of a large saba banana stalk into a hole he has dug to accommodate it. A few inches above the tip of this buried stalk, he places his ube seedling and walks away humming. He knows that when the time comes for him to harvest his ube, it will have increased in size and concerned its growth in that hole in which the decomposing stalk, now turned after a few months into rich compost, lies buried.

* * *

A Pangasinan farmer has a different technique. He scoops out a hole large enough to bury an oversized cooking pot, and buries the pot to its full depth. The inside portion of the pot is stuffed with rich composted earth matter. The ube he harvests from this container becomes a huge, oval-shaped tuber following more or less the shape and contours of the pot. No stray rootlets escape in all directions to make digging harder, or cause the main tuber to grow smaller.

* * *

Those simple farm practises listed above come from different time frames, but they have one thing in common going for them: they are parts of a large, still untapped reservoir of what is now being called "endangered countryside technology."

The nam-ei intercropped with the giant ipil ipil was introduced in Mindoro by Mike Benge, a US-AID staffer who is now in bureaucratic limbo at Haiti. The two techniques of ube growing must have evolved centuries ago. Few farmers remember the process. Those who remember naturally benefit from practising the old ways. The question eventually rises: how many other such practises exist? How do we find them?

* * *

The search has begun.

It started early September this year when the Philippines' National Science Development Board started meeting with the American National Academy of Sciences in Manila.

All of a sudden, the value of new farm practises formulated for dissemination to farmers below has come under severe scrutiny. No longer is it enough to speak highly of some whiz plan capable of doubling farmers' rice harvests. What will count for most, now and in the hereafter, is how those new technology messages get across to the people.

* * *

That previous messages have not been getting across was evident from the dozens of papers read during the workshop. That there are better ways of transferring technology improvements to farmers through a prior study of their social and behavioral patterns also emerged from the meetings. Finally, that existing traditional countryside technology can be valuable as a means of helping identify new technologies intended to benefit rural dwellers was agreed upon.

The question that remains is: how soon will we be able to get down to the hard business of telling the farmers what they need to know?

* * *

A little start seems to have been made since the workshop ended toward using traditional technologies as a means of enabling the farmer to understand what the new-fangled talk about modern farm technology is all about.

Two private groups have announced the start of pre-survey work to identify, isolate and analyze various types of countryside technology systems. One team has in fact been working since last April in the upland towns of Eastern Rizal province. The other team returned only yesterday from a pre-survey look-over of the vast Bicol Basin Development area, which is expected to cost the government and the private sector close to seven billion pesos to develop.

* * *

What are those teams going to find? What have they discovered?

A lot of old earth lore, no doubt, a mixed grab-bag of absurdities, irrelevancies, bits and pieces of whimsy — and who knows, maybe one or two discoveries that can shake the sand out of the shoes of both farmers and farm technocrats.

It could be an herbal preparation able to relieve if not cure the pains and aches of chronic rheumatism.

An old kind of farm bladed instrument that speeds up harvesting 100 per cent.

A way of preparing leftover rice or corn that builds the food values into the commodity, not in pharmaceutical pills.

A regimen to make men of 80 or 90 move with the sure-footedness of 40 year-old lechers and/or seducers.

* * *

It could be other things.

It could be better methods of doing any of the thousand and one tedious farm chores that are turning away children from the farms and casting them adrift into our bursting cities. Some of these methods could have startling new applications if manufactured into souvenirs for the tourist trade, for export to low-technology countries or for use right here in the Philippines.

It could be that those traditional tools, processes, formulas or artifacts will eventually find themselves programmed into a vast computer network, until some sudden catastrophe wipes out knowledge centers and forces us back to the times and the practises of our forefathers.

* * *

(Continued on page 2)

Or the whole exercise might turn out to be a more productive endeavor than the most optimistic psychologists and sociologists ever encountered, yielding a rich lode of gold from countryside ore. It could be that discoveries will be made that will finally answer the riddle of how best to transfer new technologies to the farmer, and at the same time teach the scientific community a bit of the humility which so few seem to have retained in their narrow climb up the research ladder.

* * *

Such traditional technologies unearthed will, if the researchers are diligent, produce harvests of relevant systems, processes and tools dealing with the whole gamut of rural and urban existence: agriculture, horticulture, energy, education, health and sanitation, medicinal plants and herbs, community life and dozens more.

Once identified, isolated and analyzed, any and/or all of these new discoveries would be valuable in themselves. But used as a framework for better understanding the new systems that have failed to upgrade rural life, they would acquire a more meaningful luster. They could be the means of bridging the enormous gap that separates the rich and the poor in this country.

EVENING POST
"TOMORROW'S NEWS TODAY"
SATURDAY, SEPTEMBER 16, 1978

Problems of technology transfer

The final curtain has dropped upon the Joint Workshop Conference on Transfer of Technology held in Makati from September 12 to 15, 1978 under the joint auspices of the Philippine National Science Development Board and the American National Academy of Sciences; and to the faceless millions all over Asia, Africa and the rest of the developing world who will never even know that such a conference took place, some words of explanation are due.

The first point that can be made is that the Makati Workshop, as such conferences usually go, was only one of many mileposts that remain to be passed on the long journey toward the elusive goal of Truly Satisfactory Appropriate Technology. It was a meeting of technical men charged with the difficult task of studying how to give underprivileged farm populations the tools and processes they need to lead a better life. No presidents, prime ministers or heads of state graced the Workshop with their presence; it is not likely that such exalted men will ever know that such a conference took place at all. It was just another team effort on the part of seriously concerned scientists from two countries to discover why, notwithstanding the huge amounts of development aid being poured into world economies in general and the Philippine countryside in particular, the man of the soil stands no closer to prosperity than his ancestors a century ago.

* * *

The second point that can be made about the Makati Workshop is that because of its limited venue, to say nothing of time constraints and the amount of work that remains to be studied in the appropriate technology field, no earth-convulsing documents or revelations emerged from its deliberations.

The conferees did issue summary statements of studies briefly made on Philippine energy problems, food, education and sundry matters; and a remarkably apposite closing speech was delivered for NSDB Chairman Melecio Magno by Vice Chairman Segundo Roxas. But there were no new prophecies of doom or of great appropriateness to come. Indeed, had the closing papers issued from a battlefield instead of from a Workshop on appropriate technology, they would have provided no more than a couple of paragraphs in a mid-morning communique.

Yet it may well have been the lack of thunder or of drama that invested the Makati Workshop's closing statements with a force they would not otherwise have acquired. In fact the very sparseness of the Workshop's background music may have served to give stronger emphasis to the conclusion, arrived at from different routes by batteries of speakers, that if progress is to take solid root in the countryside at all, it will have to be achieved on the terms and within the limits of the understanding of the rural people.

This conclusion is of course neither new nor astonishing. It has been embodied since the United Nations started operating in countless resolutions, declarations of purpose and policies; it may well have been enunciated in times much earlier than the present century. It is in fact both doctrine and principle in many economic creeds and even in the world's great religions. Yet the fact of its seeming redundance does not make its restatement any less relevant or compelling; one of the tragedies of human existence, as history has shown, is the tendency of all of us to pledge allegiance to one set of principles and to live by another.

* * *

Mere restatement of a doctrine, no matter how valid, is not enough justification for anyone involved in extending aid to the rural inhabitant to lay aside the various skills he has learned in favor of "simple" methods "because people cannot understand or maintain complex sophisticated technology."

In the apt words used by one of the Makati Workshop's concluding statements, "some sophisticated technology may ultimately be cheaper and easier to maintain than some simple technology for the same job. (But) the opposite situation should also be avoided: sophisticated technology should not be introduced simply because it is sophisticated or modern."

* * *

Let us return to the theme of the Makati Workshop, which was, and is, how to find means of successfully transferring useful technology to the countryside. Let us give credit first to the men who staged this event for having prudently refrained from enumerating any sure-fire systems for immediately achieving this goal. They said that technology to be used would gain value "if it is chosen from the almost infinite catalog of available technologies (which could also include current practises) and the criteria for selection should include, besides those previously staged, enthusiastic acceptance by the people themselves and an assurance of tangible incentives at the lowest possible level."

* * *

No one will quarrel with the foregoing methods; hence the question that rises now is why we have not operated in such logical fashion before. What happens in the distributive processes that follow after a top-level decision is made and routed down to the bottom rung of the ladder? Why do simple things get so garbled and complicated by the time they reach the farmer? Why is a project like family planning understood by 85 per cent of the population and practised only by less than 15 per cent?

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Dr. Juan Flavier's classic story of how a countryside mother managed to grasp the principles of birth control offers a case in point on how we might yet get our rural cousins to understand our modern systems better. A worker used a dried bean pod as the model for a woman's ovulatory mechanism. She explained how, during the fertile period of the menstrual cycle, an ovum drops down into the receptacle where conception occurs. And she showed with a dried bean pod just how that process started, how, as the pod grew progressively drier, other beans would drop gradually from it. "We got a willing cooperator right away," Dr. Flavier noted. Because the cooperator realized family planning per se was good? Not quite. Because she understood better how things worked after the explanation given with the dried bean pod.

* * *

The question now arises as to how such a procedure as the one narrated can ever rest easily with extension workers and technocrats attuned to results-oriented technologies. They must, after all, heed the rumble of distant bureaucratic drums. To go into such graphic detail with their wards could well take valuable time away from a quota production goal. But to continue working on the old aimless scale would be to get progressively more indifferent results. Where can one start?

* * *

Easy answers to the foregoing questions are not going to be found immediately, and perhaps it is just as well that we do not tinker too long with the rural human machine. There will be other workshops, other conferences, on local, national and international levels. A few answers may be found to specialized questions now perplexing both our aid givers and their aid receivers. Very likely the other answers will come as a result of the day-to-day reportage that comes from the countryside; and if the people who work with our folk are as conscientious about data-recording as they are about data-gathering, we may yet find a light at the end of the rural tunnel.

* * *

Finally there remains only the harsh and sometimes fractious task of marrying two distinctly different imperatives involved in rural development. The first of these is the imperative of time; it not only takes time to formulate viable and systems, but even more time to make them take hold. Then there is the imperative or politics; this is the imperative that demands results, not today, not tomorrow, but yesterday.

Is a median approach possible? Can we satisfy both the practical and the political viewpoints? Someone else will have to answer those questions.

EVENING POST
TOMORROW'S NEWS TODAY
MONDAY, SEPTEMBER 18, 1978

RURAL DEVELOPMENT

A bumper crop of starting, ongoing and partly completed projects has given Filipino and American scientists high hopes that rural development techniques worldwide are heading for a new performance record.

These expectations were brought out during a technology workshop attended last week by members of the US National Academy of Sciences (NAS) and top local scientists.

They are embodied in a number of post-conference events strongly supporting the joint National Science Development Board (NSDB)-NAS findings that for transfers of technology patterns to be effective in the countryside, the people ought to re-

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cognize those patterns in their traditional experiences.

Among those events, that came in the wake of the workshop were:

1. The start of a brand-new concept in analyzing medicinal plants. This surfaced at an NSDB-sponsored conference announcing the publication of a book on medicinal plants.

2. The disclosure that Filipino advances in some special technologies like the use of woodburning systems can rank among the best in both the developing and the developed countries.

3. The completion of plans to simultaneously solved the problem of kaingin destruction and watershed reforestration by a revival of the "lost technique of upland terrace-building.

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