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THE CONSEQUENCES OF SMALL RICE FARM MECHANIZATION PROJECT

Working Paper No. 85

A REVIEW OF PAST, PRESENT AND PROPOSED
MECHANIZATION STRATEGIES IN
THE PHILIPPINES

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by

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MECHANIZATION STRATEGIES IN
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Reynaldo M. Lantin**

In the world today, mechanization -- especially in agriculture -- occupies a special nook in the hearts and minds of people concerned with development aspects. Owing to its ambiguity, mechanization as an effective partner of progress and socio-economic well-being still has a long way to go. Pinning it down for a better understanding of its many ramifications can be likened to watching the interplay of the varying hues and shades of a rainbow that makes definite observations truly difficult.

Mechanization as a development tool becomes a doubly ticklish issue in the socio-economic context of any Third World country. Mainly, there is the problem of technology choice to suit local conditions while at the same time optimize benefits for the major population. Competing national priorities in the light of unabated population boom with its consequent decreasing ability for food self-sufficiency and the adverse world market conditions inevitably affect the government's decision to mechanize or not. And if so, the type, level, degree, scope, cost/benefit ratios, socio-economic impacts and similar balancing factors arise. Like many similarly situated countries in the dawn of national development and modernization, the Philippines would have to delicately weight the effects of mechanization on its national economy and its people. Social, economic and political considerations necessitate extensive studies before national policies could be promulgated.

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PAST MECHANIZATION STRATEGIES

Until about the sixties, agricultural mechanization in the Philippines referred to a great extent to animal power (e.g. carabaos) and to simple, manually operated farm tools like plows, harrows and hand implements. In many cases, these aids were used by small farmers and crafted domestically by small-scale artisans using indigenous materials. On the other hand, large agricultural estates on sugar, rice, etc. were already utilizing mechanical powered equipment. Mechanization in those times was deemed analogous to "tractorization" and only rich landowners could afford its advantages. This local trend was precipitated in fact by the global promotion of "borrowing capital-intensive, big-scale technologies" to hasten the growth of underdeveloped countries. It can be said that little regard was placed on the social, economic and political outcomes of such infusions to countries like the Philippines.

Thus, the growth of mechanization in the Philippines followed principally a natural pace based on the dictums of commercial viability and profitability. Because it was cheaper to import rather than to manufacture locally, problems on quality standards, servicing, suitability, etc. gradually surfaced. The government in general played a passive role in introducing a suitable mechanization program in the country. Perhaps this was due to the government's pre-occupation with other more important post-World War II reconstruction and rehabilitation problems or to the prevalent misconceptions about mechanization or pre-conceived ideas that such a strategy would only lead to more drainage of foreign exchange to import agricultural machinery and worse, a fear that such would cause social problems due to labor displacement in agriculture. This passiveness of the government continued even when the government embarked in the fifties on a massive land settlement program that included the use of heavy equipment for land-clearing and the distribution of animal-drawn farm implements to settlers.

The national picture brightened in favor of mechanization towards the end of the sixties and during the whole decade of the seventies. This period witnessed a rapid transformation of development thrusts in favor of countryside development. On a worldwide scale, this was also true. Such mottoes as "small is beautiful", "national self-sufficiency and determination", "appropriate technology choice", etc. paved the way for the following national events that changed the mechanization concept, among others:

1. The Green Revolution and its accompanying packages of technologies that promised improved socio-economic opportunities;
2. The growing discontent with imported, albeit unsuitable, technologies that encouraged locally developed technologies and local entrepreneurship (an example is the wide adoption of the IRRI-designed power tiller which was fabricated by both small and medium scale welding and machine shops);

3. The national policy shift in favor of agricultural and rural development in conjunction with small- and medium-scale industrial development;

4. The increasing awareness and appreciation of the advantages of adopting suitable technologies among members of the government bureaucracy, the academe, and the private sector;

5. The worldwide easy access to existing scientific and technological knowledge accompanied by increased participation of nations in international exchanges/collaboration;

6. The worsening position of the country in the international market that necessitated the exploration of other facets of national survival, e.g. quest for export and energy alternatives to conserve the national wealth;

7. The various post-martial law period declarations that sought to hasten national growth and social equality through such acts as agrarian reform, financial assistance, infrastructure construction, etc.;

8. The voluntary decision of many members of the private sector to police themselves and to cooperate with the government, which is especially noticeable in the linkages between the commercial manufacturers/dealers of agricultural machines and the government sector.

Given all these interrelated events, mechanization in the Philippines gradually emerged as an important tool for national development. Accordingly, herewith are some of the strategies implemented by the government in coordination with the private sector:

1. Research and technology development on mechanization aspects was stressed with the creation of an appropriate research commodity (agricultural engineering) in the national research system of the Philippine Council for Agriculture and Resources Research Development (PCARRD) to take advantage of fast scientific advancements here and abroad;

2. Introduction in the Ministry of Agriculture (MA) and its agencies of such programs as "Bakahan sa Barangay", "Maisagana", post-harvest handling/storage/marketing, extension and training programs aimed at the extensionists, target farmer-users and barangay residents in which mechanization forms an integral part and which are all aimed at increased agricultural production and productivity;

3. Strengthening of the functions of the National Irrigation Administration (NIA) for improved irrigation servicing and expanded irrigation infrastructures with emphasis on the cooperative organization of small farmers in order to maximize cropping intensities in all types of agricultural lands;

4. Introduction by government lending institutions of progressive credit schemes for both the local manufacturers/dealers and the target end-users to enable them to optimize their roles in agricultural development, in conjunction with private and foreign funding agencies;

5. Implementation under the overall supervision of the Ministry of Trade and/or the Central Bank, as the case may be, of joint public/private sectoral accreditation, testing, evaluation projects that highlight the cooperative interlinkages of the two sectors;

6. With the MA and the Ministry of Natural Resources (MNR) and their agencies at the helm, the exploration and conservation of the country's natural resources as well as the search for alternative energy resources were given added impetus through such programs as "Biyaya ng Dagat", reforestation and promotion of gasifiers, alcohogas, biogas energy alternative, windmill and solar energy sources, etc.;

7. Intensification of international and bilateral tie-ups and technical data exchanges with such agencies as the United Nations and its Agencies, the World Bank, the U.S. Agency for International Development (USAID) and the Association of Southeast Asian Nations (ASEAN) resulting in cooperative undertakings, generation of funds through loans and donations and others.

8. Inclusion of course offerings on the manufacture, operation, maintenance and management of agricultural machines in such institutions as the National Manpower and Youth Council (NMYC), U.P. Institute of Small-Scale Industries (UPISSI), Ministry of Human Settlements (MHS), Technology Resource Center (TRC), Ministry of Local Governments (MLG), and the MA.

9. Corollary to (8), the College of Engineering and Agro-Industrial Technology of the U.P. at Los Banos (formerly the Institute of Agricultural Engineering and Technology) came into being in response to the felt need to provide the necessary trained manpower in agricultural engineering. Presently, the College is host to the UNDP/ESCAP's Regional Network for Agricultural Machinery (RNAM) and serves as its national counterpart through the Agricultural Mechanization Development Program (AMDP). It implements the Agricultural Machinery Testing and Evaluation Center (AMTEC), a joint project between MA and the UPLB. It is also playing a pivotal role in the conceptualization and organization of an inter-ministerial policy-making body on agricultural mechanization named Permanent Inter-Agency Committee for Agricultural Mechanization (PICAM).

PRESENT MECHANIZATION STRATEGIES

The eighties was ushered in by a highly volatile peace situation in the world. This is aggravated by widening socio-economic gaps and political differences between the developed and the developing countries. On the national scene, the increasing inability of the government to meet target development goals underlined the exigencies of implementing viable projects with great time constraints. While the past was premised on the natural flow of events, the present has to forcefully concentrate on means of coping with harsh realities, with national survival itself at stake. In a country already smarting from the pangs of lopsided development, this is not indeed an easy matter!

The current Five-Year Development Plan of the National Economic and Development Authority (NEDA) includes the adoption of appropriate mechanization as one of its long-range objectives. Unfortunately or fortunately, NEDA left out the mechanics for attaining such goal. In effect, involved public and private agencies were allowed to map out their own strategies supportive of this goal. Presently, the various mechanics discussed earlier are still ongoing, with modifications being made to reflect changing situations.

In the past ten years or so of extensive development activities with mechanization as a factor, many have expressed the common opinion that mechanization in the country could fare better if it follows definite policy guidelines that would conserve resources, avoid duplication of efforts and shorten the time for goal-attainment. It is not sufficient that the government is now playing an active role; it has to assume the key role in formulating and promulgating policies for the compliance of everyone concerned. Specifically, four major areas requiring stringent policy guidelines were identified:

1. Research and Technology Development
2. Education, Training and Extension
3. Manufacture, Supplies Procurement, Operation/Maintenance
4. Marketing, Financing for Manufacturers and Credit for Users.

The existing number of organizations working on some, or all, of the above areas naturally results to delays and conflicts of interests not to mention miscommunication, waste of resources and unsatisfactory results. The end-goals of mechanization are not well served if the agencies are not bound by common views. Although it was mentioned earlier that the mechanization program in the Philippines enjoys a unique camaraderie between the public and the private sectors, both could work together more harmoniously if they know their respective responsibilities.

This observation was supported by RNAM, which urged the Philippine Government to organize a national body that would set the pace for the various mechanizations activities in the country. The RNAM Regional Office requested other participating countries to form national Farm Mechanization Committees.

The enthusiasm of RNAM was readily picked up by the MA and NEDA through the instigation of UPLB not only because it was formal resolution of RNAM, but more importantly due to the fact that these agencies themselves are feeling the need for such a body. The Enabling Act for this conceived organization, initially called National Agricultural Mechanization Council (NAMC) has been in the process of obtaining government imprimatur for five years. It's latest version, the Permanent Inter-Agency Committee of Agricultural Mechanization is now with the Prime Minister for his approval. As an inter-ministerial policy-making body, PICAM would require very little funding support for the maintenance of a skeletal work force based at the AMDP. Expectedly, the major activities would still be conducted by the member-agencies which would be grouped into the technical committee and operational sub-committees along the four areas requiring policy guidelines enumerated earlier.

Even as the Memorandum Circular creating the PICAM is being awaited for signature by the Prime Minister, its four sub-committees have already been working on draft policy statements and strategies for consideration by the Technical Committee which will then make appropriate recommendations to the Cabinet Committee of PICAM for approval. These draft statements² were presented by the various chairmen of the Sub-Committees at the Technical Committee meeting on November 29, 1983. The next meeting of the Technical Committee will be in early January 1984 for the second reading.

It may be interesting to note that in the midst of the government's passive attitude toward mechanization, a proposed bill called the "Magna Carta of Mechanized Agriculture" has been pending in the National Assembly (Batasang Pambansa) since the early 70's. It sought for the creation of an "Agricultural Mechanization Authority" which would implement a progressive, massive and integrated agricultural program designed to mechanize, industrialize and commercialize Philippine agriculture. It has never been and perhaps never will be calendared for formal consideration owing to certain factors and very

¹See Appendix A for the Draft Memorandum Circular, Terms of Reference and Organizational Set-up of PICAM.

²See Appendix B for draft policy/strategy statements.

controversial provisions. If and when it is considered, it would have to jibe with the existing organizational and administrative policy guidelines for better results.

On its own, PICAM would require the assistance and voluntary cooperation of all sectors concerned. After all, policies are effective only if they serve the goals for which they were directed. The present enthusiasm and open support of the private sector which is amply represented in PICAM augur well its future viability.

FUTURE MECHANIZATION STRATEGIES

The present uncertainties in the country and elsewhere should serve as a rallying point for the pursuit of a more vigorous and dynamic mechanization program in the country. The suitability of selected technologies should properly match existing conditions, and short- and long-range goals. Perhaps efforts to combine resources and identify mutually beneficial policies would pave the way for increased interest in, and commitment to, mechanization as a development factor. While it is acknowledged that a number of conditions have to be balanced carefully to optimize benefits, we must not lose sight of the end-goals of development which are the national progress and socio-economic well-being of our people.

The great number of mechanization strategies currently being carried out would, hopefully, lead to the successful "grafting" of suitable mechanization technologies given local conditions. Let us take the sugar industry which provides one of the country's major exports. The cultivation of sugarcane has long been a labor-intensive industry in the Philippines. Recent events, unfortunately, required the shifting to mechanization that would displace many of workers and their families who have long lived on sugarcane production through generations. Given current events, the issue is no longer labor displacement and its concomitant social disadvantages, but the very survival of the industry itself in the face of a highly competitive world market.

It is too early to equate the experiences in the sugar industry with other agricultural crops owing mainly to differing agronomic, social, economic and technological realities. Research studies of the effects of mechanization have so far produced conflicting findings that tend to highlight the general consensus that it is indeed hard to identify common grounds for comparisons.

Accordingly, the following policy issues are being thrown to the participants for consideration in their discussions:

1. What could be the agricultural scenario by the year 2000 A.D. in view of the technological findings and scientific advancements we have attained to date? What is the place of mechanization in it?

2. Assuming massive labor displacements to accommodate agricultural mechanization that promises higher rates of return, how could the problem be tackled for the good of all concerned? What alternatives are open where and for whom?

3. Based on the present legal, organizational and administrative set-ups of the public and private sectors involved in mechanization, what would be the best management strategy on a mechanization system? How could coordination and linkages be strengthened and identified problems or goals pursued, especially along the four major areas of operation discussed earlier? Which agency should play the key role in policy-setting and in implementing projects along the four major areas of operation?

We at AMDP-CEAT have just started compiling the necessary background data to support our programs and plans of work. You, on the other hand, have already the experiences of your respective agencies to back up your contentions. Please do not, therefore, hesitate to open up your minds to us for we are relying on you to support our conceptualization of PICAM and our commitments at AMDP on the other hand, and CEAT on the other.

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APPENDIX A
Draft Memorandum Circular,
Terms of Reference and
Organizational Set-up of PICAM

PICAM
MEMORANDUM CIRCULAR

MEMORANDUM

F O R : Honorable Cesar E. A. Virata
F R O M : Minister Arturo R. Tanco, Jr.
S U B J E C T : Creation of the Permanent Inter-Agency Committee for
Agricultural Mechanization (PICAM)
D A T E : October 14, 1983

I am pleased to submit for your signature the attached Memorandum Circular creating the Permanent Inter-Agency Committee for Agricultural Mechanization (PICAM). The terms of reference of the Committee were formulated in consultation with the representatives of the various agencies which would compose the Committee. We had the benefit of the participation in this consultation of Minister Valdepenas and Minister Javier.

The concept of creating a body that would "manage the agricultural mechanization program of the country" was actually first endorsed in December 1980 by the First Agricultural Mechanization Policy Workshop which was convened by the Ministry of Agriculture. It was enthusiastically supported by the Agricultural Machinery Manufacturers and Distributors Association (AMMDA) and the Philippine Society of Agricultural Engineers. Since that time the preoccupation of its proponents has been the structure of that body, and the most appropriate modality for its creation. This request reflects the consensus of the proponents on the issue.

For the Prime Minister's consideration/approval.

(Original Signed)
ARTURO R. TANCO, JR.
Minister

ESAI/vcg

Republic of the Philippines
OFFICE OF THE PRIME MINISTER
Manila

MEMORANDUM CIRCULAR NO. _____

CREATING THE PERMANENT INTER-AGENCY
COMMITTEE FOR AGRICULTURAL MECHANIZATION (PICAM)

1. Pursuant to the Agenda for Action in Agriculture, 1983-87 and the country's participation in the Regional Network for Agricultural Machinery, a UNDP/ESCAP Project based at the University of the Philippines at Los Banos, there is hereby created a Permanent Inter-Agency Committee for Agricultural Mechanization to be constituted as follows:

Chairman : Minister, Ministry of Agriculture

Vice-Chairman : Director-General, National Economic and Development Authority

Members :

- : Minister, Ministry of Finance
- : Minister, Ministry of Trade and Industry
- : Minister, Ministry of Labor and Employment
- : Minister, Ministry of Agrarian Reform
- : Minister, Ministry of Energy
- : Director-General, National Science and Technology Authority
- : Administrator, National Food Authority
- : Governor, Central Bank of the Philippines
- : Chairman, Philippine Sugar Commission

The Chairman shall create a Technical Committee and Sub-Committees as he deems necessary for the performance of the PICAM's functions.

2. Functions and Responsibilities:

- 2.1 The Committee shall formulate agricultural mechanization policies and strategies related to the following:

- a. The research, design and development, manufacture, marketing, financing, popularization and use of agricultural tools, machines, implements and equipment for agricultural production and post-harvest processing employing human, animal, mechanical, electrical and renewable sources of energy;

- b. The need for short and long range strategies/programs in the implementation of the country's agricultural mechanization program suited to agro-ecological and socio-economic conditions and consistent with the national plans and policies to increase agricultural productivity and income of farmers and rural workers and to be competitive in the world market;
- c. The need to coordinate, integrate and evaluate all policies, strategies, programs and activities for modernization of agriculture through appropriate blending of biotechnology, chemical technology and mechanical technology including those for the development of agro-industries.

2.2 The Committee shall submit, through the Prime Minister, its recommendations to the President for final approval.

- 3. The Committee is hereby empowered to call on other concerned government agencies and the private sector for assistance in carrying out its functions and responsibilities.
- 4. The Committee shall meet at least once in six months; however, it may meet as often as necessary.
- 5. The Secretariat of the Committee shall be the University of the Philippines at Los Banos through the Agricultural Mechanization Development Program.

This order takes effect on October _____, 1983.

CESAR E. A. VIRATA
Minister

Manila, October 1983

PERMANENT INTER-AGENCY COMMITTEE
FOR AGRICULTURAL MECHANIZATION

TERMS OF REFERENCE

The following are the terms of reference to be adhered to by the committees of the Permanent Inter-Agency Committee for Agricultural Mechanization (PICAM).

Organization:

General

1. The PICAM is composed of the Cabinet Committee, the Technical Committee and the Sub-Committees. It is supported by a Secretariat which is based at U. P. at Los Banos.

2. The Cabinet Committee reviews and takes appropriate actions on policy/strategy, recommendations of the Technical Committee. It meets at least once every six months or as often as necessary. However, should the Cabinet Committee fail to meet urgent matters may be approved by referenced.

3. The Technical Committee reviews and integrates the recommendations of the Sub-Committees and submits a final recommendation to the Cabinet Committee. It meets once a month or as often as necessary.

4. The Sub-Committees initiate the formulation of policies, strategies and programs related to their areas of concern. Initially, these areas are research and development; education, training and extension; manufacturing; and marketing/finance and credit. Each Sub-Committee meets at least once a month or as often as necessary.

5. The Secretariat provides administrative support to the PICAM at all levels and acts as clearing house of all information emanating from the committees and outside sources for the perusal of the committees. It gathers information on implementation of policies and strategies from the concerned agencies for feedback to the Committee.

Specific

The composition (resource persons may be invited from time to time as deemed necessary) and functions of the Technical Committee and the Sub-Committees shall be as follows:

I. Technical Committee:

A. Composition

The Technical Committee shall be composed of senior officers of the following agencies/organizations and shall be appointed by the Chairman of PICAM.

1. Ministry of Agriculture
2. National Economic Development Authority
3. Ministry of Trade and Industry/Board of Investment
4. Ministry of Agrarian Reform
5. Ministry of Labor and Employment
6. Ministry of Finance
7. Ministry of Energy
8. National Science and Technology Authority
9. Philippine Sugar Commission
10. National Food Authority
11. Central Bank of the Philippines
12. University of the Philippines at Los Banos
13. Agricultural Machinery Manufacturers and Distributors Association
14. Philippine Society of Agricultural Engineers
15. National Congress of Farmers' Organizations
16. Pambansang Katipunan ng mga Samahang Nayon
17. Philippine Chamber of Commerce and Industry

B. Functions

1. The Technical Committee shall review, evaluate and recommend approval of all policy statements, plans, strategies and programs submitted to it by the Sub-Committees and from other source.
2. It shall submit its report and recommendations to the Cabinet Committee for consideration.

II. Sub-Committees:

The Sub-Committees shall be composed of senior officers of the agencies/organization indicated for each Sub-Committee and shall be appointed by the Chairman of the PICAM upon recommendation of their respective heads.

Research and Development

A. Composition

1. National Science and Technology Authority -
Philippine Council for Agriculture and Resource
Research and Development.
2. Philippine Council for Industry and Energy Research
and Development.
3. University of the Philippines at Los Banos -
College of Engineering and Agro-Industrial
Technology.
4. Philippine Sugar Commission
5. National Food Authority/National Post-harvest
Institute for Research and Extension
6. Philippine Inventions Development Institute
7. Agricultural Machinery Manufacturers and
Distributors Association
8. Ministry of Labor and Employment/Institute of Labor
and Manpower Studies
9. National Economic Development Authority

B. Functions

1. The Sub-Committee on Research and Development shall
initiate the formulation of research and
development policies, strategies, plans, programs,
projects and studies on agricultural mechanization
in close coordination with the Philippine Council
for Agriculture and Resources Research and
Development and the Philippine Council for Industry
and Energy Research and Development and other
Sub-Committees of the PICAM.
2. It shall formulate policies and strategies to
ensure the coordination among state universities
and colleges, government agencies, corporations and
instrumentalities and the private sector regarding
research and development programs and activities
related to agricultural mechanization.

3. It shall submit its report/recommendations to the Technical Committee for action.

Education, Training and Extension

A. Composition

1. Ministry of Agriculture - a Bureau of Agricultural Extension/Bureau of Cooperatives Development
2. Ministry of Agrarian Reform - Agrarian Reform Education Service
3. National Food Authority/National Post-harvest Institute for Research and Extension
4. University of the Philippines at Los Banos - College of Engineering and Agro-Industrial Technology
5. Agricultural Machinery Manufacturers and Distributors Association
6. National Manpower and Youth Council
7. Association of Colleges of Agriculture in the Philippines
8. National Congress of Farmers' Organizations
9. Pamansang Katipunan ng mga Samahan Nayan
10. Ministry of Labor and Employment/Bureau of Rural Workers
11. Philippine Training Center for Rural Development
12. Philippine Society of Agricultural Engineers
13. Institute of Small Scale Industries

B. Functions

1. The Sub-Committee on Education, Training and Extension shall initiate the formulation of policies, strategies, plans, programs, projects and studies relating to the education, training and extension aspects of agricultural mechanization

in close coordination with the other Sub-Committees of the PICAM.

2. It shall formulate policies and strategies to ensure the coordination among state universities and colleges, government agencies, corporations and instrumentalities and the private sector regarding education, training and extension programs and activities related to agricultural mechanization.
3. It shall submit its report/recommendations to the Technical Committee for action.

Manufacturing

A. Composition

1. Ministry of Trade and Industry/Bureau of Industrial Development
2. Board of Investments
3. University of the Philippines at Los Banos
4. Agricultural Machinery Manufacturers and Distributors Association
5. Representative from Small-Scale machinery fabricators

B. Functions

1. The Sub-Committee on Manufacturing shall initiate the formulation of manufacturing policies, strategies, plans, programs, projects and studies on agricultural mechanization in close coordination with the other Sub-Committees of the PICAM.
2. It shall formulate policies and strategies to enhance the coordination among state universities and colleges, government agencies, corporations and instrumentalities and the private sector regarding manufacturing programs and activities related to agricultural mechanization.
3. It shall submit its report/recommendations to the Technical Committee for action.

Finance, Credit and Marketing

A. Composition

1. Technical Board for Agricultural Credit
2. National Economic Development Authority
3. Ministry of Human Settlements/Kilusang Kabuhayan at Kaunlaran
4. National Food Authority
5. Ministry of Agriculture
6. Land Bank of the Philippines
7. Development Bank of the Philippines
8. Philippine National Bank
9. Agricultural Machinery Manufacturers and Distributors Association

B. Functions

1. The Sub-Committee on Finance, Credit and Marketing in coordination with the Sub-Committee on Manufacturing shall assess the Finance, Credit and Marketing aspects of agricultural machinery requirements of the country, giving special attention to the real needs and problems of the farmers.
2. The Sub-Committee on Finance, Credit and Marketing shall initiate the formulation of policies, strategies, plans, programs, projects and studies on agricultural mechanization in close coordination with the other Sub-Committees of the PICAM.
3. It shall formulate policies and strategies to ensure the coordination among government agencies, corporations and instrumentalities and the private sector regarding finance, credit and marketing programs and activities related to agricultural mechanization.
4. It shall submit its report/recommendations to the Technical Committee for action.

PERMANENT INTERAGENCY FOR
AGRICULTURAL MECHANIZATION

PICAM'S ORGANIZATIONAL POLICIES/STRATEGIES

The Permanent Interagency for Agricultural Mechanization (PICAM) is an inter-ministerial policy-making body that is saddled with the primary responsibility of formulating policy guidelines on agricultural mechanization, e. g. adoption of suitable machineries, cost/benefit effects of mechanization, aspects of mechanization on the labor market, users, manufacturer, the economy, etc.

Preamble

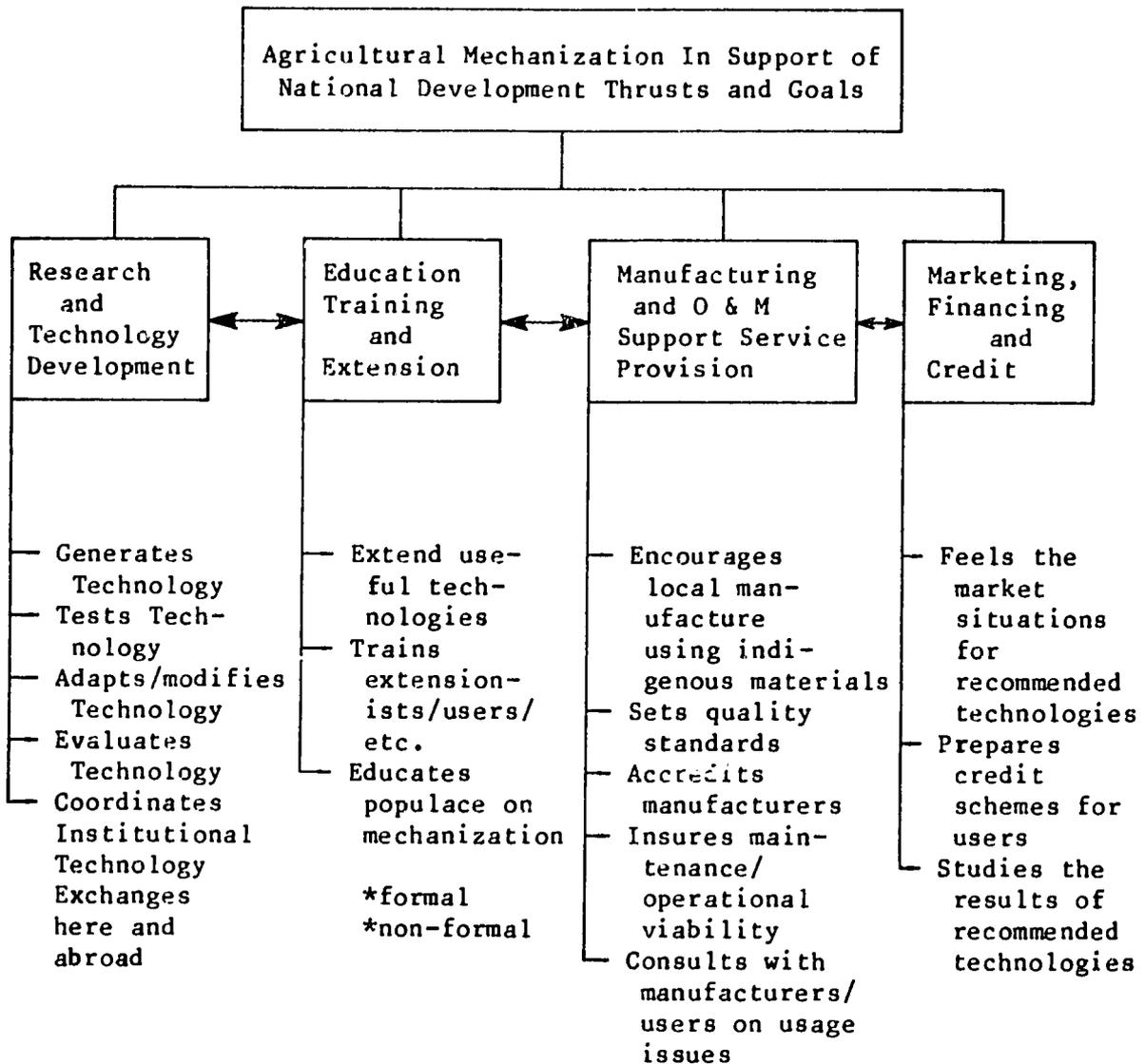
The PICAM's creation and continued viability hinges on its ability to actively support the Philippines' development goals, particularly its agro-industrial programs. Accordingly, PICAM's primary concern is the successful adoption of an agricultural mechanization system that:

1. bolsters agricultural (i.e., crops, livestock, fisheries and forestry) production and productivity for food and economic purposes;
2. provides farm and non-farm employment and income generating opportunities mainly in the rural areas, taking into account the effects of agricultural mechanization on the labor market and on the economy;
3. promotes a lucrative but supportive agricultural machinery industry that emphasizes local manufacture/service at the medium and small-scale levels using indigenous materials;
4. conserves and/or optimizes both natural and human resources, especially those that are scarce, expensive, imported and dwindling;
5. takes full advantage of suitable technologies available within the country and abroad through a cooperative network of technical and information exchanges;
6. encourages the spread and growth of agricultural mechanization as a positive partner of national development by a continuing program of awareness/appreciation; and finally;
7. improves the quality of human life as a result of more social, economic and individual opportunities for betterment through agricultural mechanization.

Areas of Operation

Pursuant to the aforementioned, PICAM's modes of operation center on the following four major areas: research and technology development; education, training and extension; manufacturing and supply/service provision; and marketing, financing and credit.

The interdependent, interrelated relationships of these four modes of operation are thus illustrated:



Actual implementation would be done by the concerned public and private agencies under the overall policy umbrella of PICAM.

Each mode will be discussed in detail later.

Overall Strategies

PICAM as a policy-making body acknowledges the difficulties of formulating, coordinating and monitoring a national agricultural mechanization program owing to the following factors among others. Firstly, the program's concept itself has various interpretations that makes consolidation of agency goals a great task. Secondly, the term "mechanization" still causes negative and unsympathetic reactions on a majority of target clientele. Lastly, having emerged lately as a major development concern, the program is currently handled by a number of public and private institutions whose managements may not welcome the entry of a body like PICAM. Given these cited limitations, PICAM proposes the following strategies:

1. Invite the representatives of involved organizations to become members of the PICAM's technical committee and/or various sub-committees that serve as venues for open, constructive undertakings.

2. Using the systems approach, initiate and implement in close coordination with all concerned a dynamic agricultural mechanization program that takes cognizance of the policies enumerated in the PICAM's preamble.

3. Along the four modes of operation mentioned above, ensure the establishment of close working linkages with similar scientific, educational, public, private, funding, etc. agencies here and abroad.

4. Draw up and pursue a timetable of activities that will "mechanize" the Philippines for the advantage of all concerned, given a certain period of time and considering existing conditions.

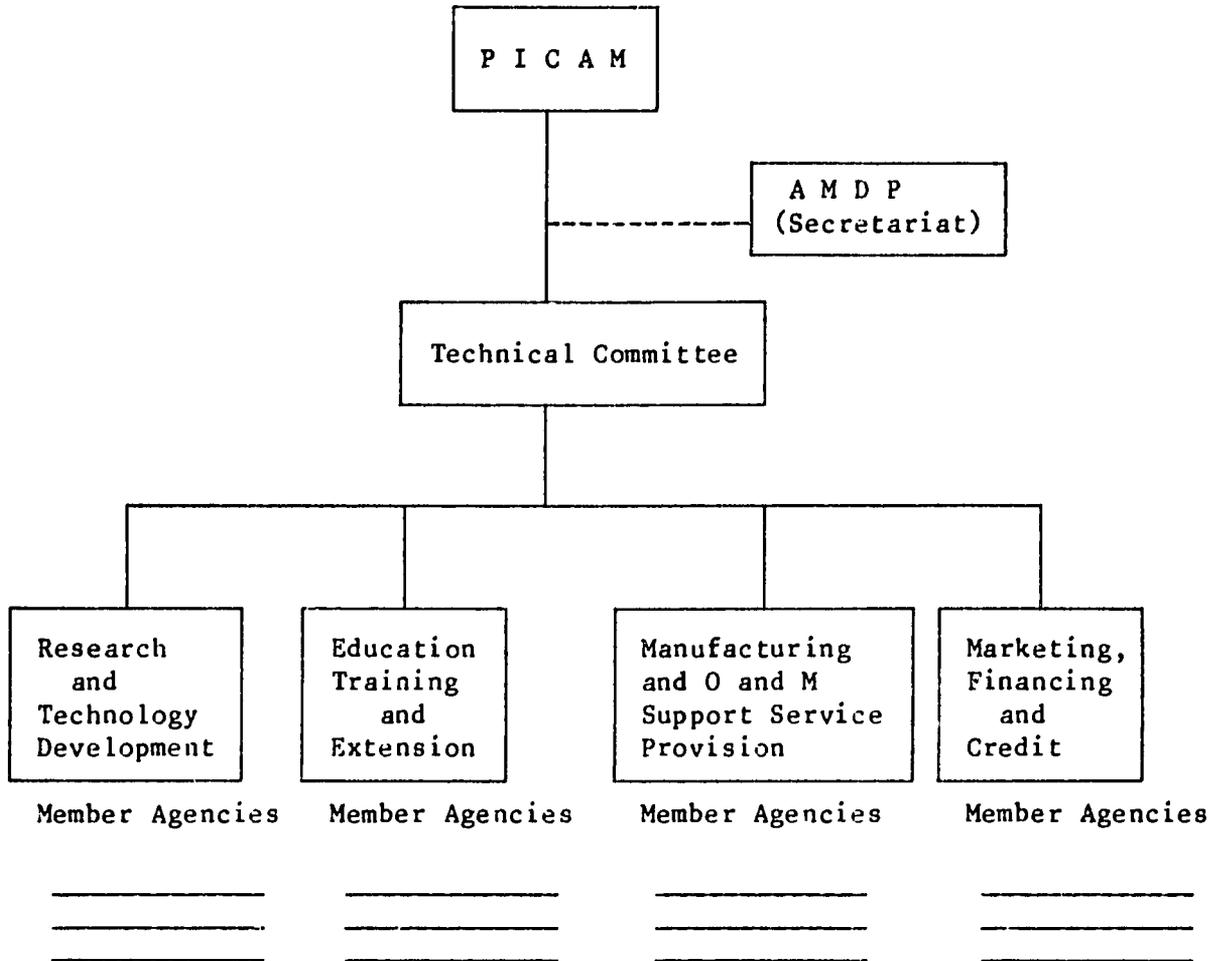
5. Consolidate the resources and energies expended by the public/private institutions on agricultural mechanization through enumeration and promulgation of effective national policies.

Organizational Set-up

It is to be emphasized that PICAM, being an inter-ministerial agency, would rely on its member agencies for its manpower requirements. A skeletal work force would be working on full-time basis with the Agricultural Mechanization Development Program (AMDP) that is serving as its Secretariat.

While PICAM, sitting en banc would be meeting a minimum of twice a year to review and decide on policy issues, the recommendations on such issues would emanate from the Technical Committee that meets at least once a month to discuss/recommend on issues submitted by the four sub-committees representing the duly-discussed modes of operation.

In effect, actual work programs will be implemented by the agencies that are presented in each of these committees.



Financial assistance for PICAM's operations would be provided by the member agencies themselves on an "agency commitment" basis. It is hoped, however, that a more definite source of budget would be identified later on.

APPENDIX B
Draft Policy/Strategy Statements

Second Revision 02-1-84

EDUCATION, TRAINING AND EXTENSION
POLICY STATEMENTS AND STRATEGIES

A continuing, long-range, comprehensive and multi-disciplinary education and training program in agricultural mechanization shall be instituted to develop skills of all concerned from farmers, extension workers and rural artisans to engineers, mechanics and dealers. To ensure adequate supply of skilled manpower, this kind of training shall be included in the curricula of educational institutions offering vocational, technical and agricultural courses.

The government shall provide adequate funding mechanisms to support a sustained educational, training, and extension program in agricultural mechanization.

STATEMENT OF POLICIES

1. A continuing education and training program in agricultural mechanization shall aim to develop skills, without discrimination to sex among:
 - a) farmers, owners, and operators
 - b) mechanics and technicians
 - c) extension workers
 - d) dealers
 - e) manufacturers, fabricators, craftsmen and rural artisans
 - f) engineers

STRATEGIES/APPROACHES

- 1.1 Government and private institutions could be tapped in conducting trainings for all the clientele in the agricultural mechanization program.
- 1.2 Non-formal trainings, i.e. short and certificate courses conducted by dealers, public and private agencies could include non-degree programs for the target clientele.
- 1.3 All channels of communication, whether personal and/or mediated could be utilized to disseminate information on agricultural mechanization development.
- 1.4 Government and private agencies and programs like the National Media Production Center, Philippine Council for Agriculture Research and

Resourced Development (PCARRD) and the Bureau of Agricultural Extension, National Extension Program and other related agencies could be tapped to develop and produce educational materials on agricultural mechanization development.

- 2.1 A long range comprehensive multi-disciplinary training program shall be instituted to ensure adequate manpower for agricultural mechanization.
- 2.1 Through inter-agency collaboration with the Ministry of Education, Culture and Sports (MECS), the concept and importance of agricultural mechanization could be introduced in the work education subjects in the elementary and included in the practical arts subject in the secondary level. This is envisioned to develop awareness and instill in the minds of the young the importance of agricultural mechanization.
- 2.2 The educational programs of all member institutions of ACAP and other agricultural schools should not be limited to the technical aspects alone but shall consider the social, economic and cultural implications as these relate to man.
- 2.3 Educational/training institutions offering agricultural courses shall include in their curricula the training of people who shall be competent in all phases of manufacturing and utilization of agricultural machinery.
- 2.4 Curricular offerings on machinery manufacture, design and utilization should be strengthened. These

could be done by awarding fellowships and study grants to the deserving training clientele.

- 2.5 Students/researchers of agricultural and other related fields could be given incentives in the form of thesis support/assistantship/fellowships, research grants if they undertake research on education, training and extension of agricultural mechanization development.
3. The government shall provide adequate funding mechanisms to support sustained educational and training programs in agricultural mechanization.
 - 3.1 Funding for educational and training programs may be administered by the Ministry of Agriculture in cooperation with related government and private agencies. Non-government agencies should be encouraged to provide supportive funds for educational and training programs.
4. Institutional linkages among public and private agencies which conduct education, training and extension activities related to agricultural mechanization shall be established with a central body that will manage and coordinate these activities.
 - 4.1 The education, training and extension functions of agricultural mechanization program may be implemented by the Ministry of Agriculture through the Agricultural Mechanization Development Program, related agencies and other existing programs. It shall also, formulate the necessary training curricula to meet the needs of specific target clientele and establish institutional linkages for support mechanisms/services for the program.
 - 4.2 Necessary arrangements shall be made to government and private agencies to support the agricultural mechanization development program.

Second Revision 02/9/84

RESEARCH AND DEVELOPMENT:
POLICIES AND STRATEGIES

In support of the food and nutrition and energy programs, research and development in agricultural mechanization shall be directed to the attainment of an efficient or higher level of mechanization whenever appropriate. It shall encourage the private sector, particularly the farmer inventors, to undertake/develop promising researches and inventions related to agricultural mechanization. It should emphasize more on applied research and shall be followed through by extension work for effective dissemination and utilization.

Policies

1. Research and development shall be directed to the development of more efficient levels of mechanization whenever appropriate
2. Research and development shall encourage further development of promising inventions, design and processes related to agricultural mechanization
3. Research and development shall support the food and nutrition program of the government

Strategies/Approaches

- 1.1 Identify relevant research areas considering the needs of farmers in collaboration with PCARRD, PCIIRD and other agencies.
- 1.2 Identify and select from available technologies and determine specific requirements under given conditions
- 2.1 Provide incentives such as reasonable royalties to inventors
- 2.2 Give grants to inventors to conduct research in universities, colleges and other institutions whose research facilities, curricular offerings or research capabilities make such arrangements possible.
- 3.1 Provide more R & D funds to support national programs like Masagana 99, Maisagana, etc.
- 3.2 Develop tools/equipment to help farmers produce more food at lower costs.

4. Research and development shall provide more emphasis on developing and utilizing indigenous energy resources
 - 4.1 Undertake applied researches on substituting fossil fuel with non-fossil alternatives
 - 4.2 Encourage research on the utilization of agricultural wastes and other by-products and other indigenous resources like wind, solar and hydro as alternative energy source in agricultural mechanization
5. Both the government and the private sector shall encourage the development of promising agricultural mechanization researches
 - 5.1 Increase funding support to R & D activities
 - 5.2 Provide incentives like research grants, fellowships, tenure and research facilities
 - 5.3 Strengthen the research capabilities of R & D institutions
6. Research and development shall be followed through by extension work for effective dissemination and utilization
 - 6.1 Identify agency(ies) for extension of proven and verified technologies
 - 6.2 Strengthen linkages between R & D institutions with extension agencies
 - 6.3 Strengthen capability of extension workers through trainings, seminars, etc.
 - 6.4 Support local manufacturers through proper technical dissemination

First Revision 10-14-83

**EDUCATION, TRAINING
AND EXTENSION
POLICIES AND STRATEGIES**

A continuing, long-range, comprehensive and multi-disciplinary education and training program in agricultural mechanization shall be instituted to develop skills of all concerned from farmers, extension workers and rural artisans to engineers, mechanics and dealers. To ensure adequate supply of skilled manpower, this kind of training shall be included in the curricula of educational institutions offering vocational, technical and agricultural courses.

The government shall provide adequate funding mechanisms to support a sustained educational, training, and extension program in agricultural mechanization.

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 - c) extension workers
 - d) dealers
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- 1.1 Government and private institutions could be tapped in conducting trainings for all the clientele in the agricultural mechanization program.
- 1.2 Non-formal trainings, i.e. short and certificate courses conducted by dealers, public and private agencies could include non-degree programs for the target clientele.
- 1.3 All channels of communication, whether personal and/or mediated could be utilized to disseminate information on agricultural mechanization development.
- 1.4 Government and private agencies and programs like the National Media Production Center, Philippine Council for Agriculture Research and Resources Development (PCARRD) and the Bureau of Agricultural Extension, National Extension Program and other related agencies could be tapped to develop and produce educational materials on agricultural mechanization development.

2. A long range comprehensive multi-disciplinary training program shall be instituted to ensure adequate man-power for agricultural mechanization.
 - 2.1 Through inter-agency collaboration with the Ministry of Education, Culture and Sports (MECS), the concept and importance of agricultural mechanization could be introduced in the work education subjects in the elementary and included in the practical arts subject in the secondary level. This is envisioned to develop awareness and instill in the minds of the young the importance of agricultural mechanization.
 - 2.2 The educational programs of all member institutions of ACAP and other agricultural schools should not be limited to the technical aspects alone but shall consider the social, economic and cultural implications as these relate to man.
 - 2.3 Education/training institutions offering agricultural courses shall include in their curricula the training of people who shall be competent in all phases of manufacturing and utilization of agricultural machinery.
 - 2.4 Curricular offerings on machinery manufacture design and utilization should be strengthened. These could be done by awarding fellowships and study grants to the deserving training and clientele.
 - 2.5 Students/researchers of agricultural and other related fields could be given incentives in the form of thesis support/ assistantship/fellowships, research grants if they undertake research on education, training and extension of agricultural mechanization development.
3. The government shall provide adequate funding mechanisms to support sustained educational and training programs in agricultural mechanization.
 - 3.1 Funding for educational and training programs maybe administered by the Ministry of Agriculture in cooperation with related government and private agencies. Non-government agencies should be encouraged to provide supportive funds for educational and training programs.
4. Institutional linkages among public and private agencies which conduct education, training and extension activities related to agricultural mechanization shall be established with a central body that will manage and coordinate these activities.

- 4.1 The education, training and extension function of agricultural mechanization program may be implemented by the Ministry of Agriculture through the Agricultural Mechanization Development Program, related agencies and other existing programs. It shall also, formulate the necessary training curricula to meet the needs of specific target clientele and establish institutional linkages for support mechanisms/services for the program.
- 4.2 Necessary arrangements shall be made to government and private agencies to support the agricultural mechanization development program.

Second Revision 02-9-84

MANUFACTURING AND SUPPLY SUB-COMMITTEE
POLICIES AND STRATEGIES

In line with the national agricultural mechanization policies, strategies, and programs, it shall be the objective of the Manufacturing and Supply Committee to promote the effective rationalization of the agricultural machinery industry through the adoption of the following policies and strategies:

1. Promote the manufacturing of appropriate agricultural machinery which would be economically viable in line with the following objectives:
 - a) Realize foreign exchange savings for the country through import-substitution of complete equipment or components.
 - b) Earn foreign exchange for the country through export to other countries.
 - c) Create manufacturing activity in various enterprises.

STRATEGIES

- A. Adopt a Progressive Agricultural Machinery Manufacturing Program that would encourage the manufacture of agricultural machinery through a system of incentives, financing, progressive increase in domestic content, accreditation, etc.
- B. Promote the establishment of manufacturing facilities that would be utilized for the manufacture of agricultural machinery and others under the engineering industries.
- C. Assure adequate supply of raw materials and components needed for the agricultural machinery industry at competitive prices.
- D. Rationalization of tariff duties and taxes for complete equipment, components and raw materials.
- E. Provide adequate financing for manufacturers.
- F. Standardization and testing of products, components and parts through the Product Standards Agency, AMTEC and other agencies.

- G. Active promotion of technology transfer through joint ventures, licensing, etc.
 - H. Provision of extension services to manufacturers.
 - I. Removal of disincentives to domestic manufacturers, such as unequal treatment on duties and taxes and tied-in clauses in international grants and loans.
2. Promote export of domestically produced agricultural machinery and components.

STRATEGIES:

- A. Undertake export promotion activities, trade missions, and participation in machinery fairs, in cooperation with CITEM or BFT or other groups.
 - B. Encourage subcontracting arrangements with foreign manufacturers.
 - C. Encourage regional cooperation in ASEAN.
3. Promote the setting up of rural industries, especially small and medium scale.

STRATEGIES:

- A. Encourage rural-based artisans and inventors to undertake repair and fabrication of simple and intermediate agricultural machinery or components.
 - B. Encourage subcontracting arrangements between rural-based industries and larger industries.
 - C. Encourage the setting up of other manufacturing activities in the rural areas that would employ labor displaced as a result of mechanization.
4. Encourage the importation of agricultural machinery or components which are not economically viable for manufacturing and which are in consonance with the national agricultural mechanization program.

STRATEGIES

- A. Provide adequate foreign exchange for such importation
- B. Provide adequate tariff duty concessions.

Second Revision 02-09-84

MARKETING, FINANCE AND CREDIT
POLICIES AND STRATEGIES

POLICIES

STRATEGIES

I. Finance and Credit

A. Financing and credit schemes in support of an agricultural mechanization program shall be provided by the government agencies as well as private lending institutions

1. The government shall ensure availability and proper management of funds for agricultural machinery.
2. Encourage public and private financing institutions to support local manufacturing, importation of raw materials or parts not locally manufactured, distribution, retail sales and lease purchase of agricultural machineries on terms and conditions advantageous to both lenders and borrowers.
3. Both government and private financing institutions should take into consideration technologies and approaches appropriate to special localities.

B. Promote fair and agreeable financing schemes

1. Project viability and the borrowers' credit status should be given more emphasis than equity and collateral requirements.
2. The financing of private firms of farm machinery equipment be considered as part of the agricultural loan portfolio of the bank for which the CBP will open its rediscounting window.

C. Ensure the efficient use of credit and adopt measures to improve farmers payment capability.

1. Maintain, revitalize and improve crop insurance systems now existing to encourage increase productivity.
2. Regular review of farm gate prices and crop price ceilings to determine realistic levels.
3. Appropriate training of end-users in proper farm equipment handling and loan use.

II. Marketing and Distribution

A. Marketing and distribution as it relate to the agricultural mechanization program of the country shall relate to pricing and accreditation standards, exports and promotion of locally manufactured items.

1. Accreditation standards to ensure reasonable quality of agricultural machineries.
2. Discouragement of importation items available locally through banning and/or increasing tariff or duties of imported items.
3. Encouragement of exports for agricultural machineries through the continual provision of incentives such as tax incentives and promotional expenses.

B. Promotion of efficient marketing system.

1. Setting-up of cooperatives as market for agricultural machineries.
2. Establishment of adequate after-sales services in the rural areas by distributors/manufacturers.
3. Disseminating market information through media.
4. Provision of fuel allocation to the agricultural sector.

MARKETING, FINANCE AND CREDIT SUB-COMMITTEE
WORKPLAN FOR 1984

A. Finance and Credit

1. Renegotiate the extension of CB-IBRD fund, Biyayang Dagat and similar funds that might be available with all government involved.
2. Identification of research institutions involved in developing appropriate technology which shall continuously coordinate with government and private financing institutions and to make available information to them.
3. Lobby for the creation of a government guarantee fund similar to the concept of the KKK guarantee fund wherein the government and private financing institutions will not carry 100% risk.
4. Encourage the government to lend to qualified "Samahang Nayon", "Katipunan ng mga Samahang Nayon" Compact Farm Clusters, corporate farming and other farmers' associations.

B. Marketing

1. Gathering of market information and relevant statistics for the promotion and sharing between the government and the industry.
2. Work for the giving of preference to the agricultural sector in the granting of fuel allocation and subsidies.
3. Negotiate with appropriate agencies for the selling of farm machinery/implements through framers' organizations such as cooperatives, compact farms and the making of guidelines to ensure viability of the organization and enable them to provide necessary after-sales service to farmers.