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REVIEW AND ASSESSMENT OF RURAL DEVELOPMENT PROGRAMS AND PROJECTS IN THE PHILIPPINES

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REVIEW AND ASSESSMENT OF RURAL DEVELOPMENT PROGRAMS AND PROJECTS IN THE PHILIPPINES

COMPONENT: COUNTRYSIDE AGRO-INDUSTRIAL DEVELOPMENT STRATEGY (CAIDS)

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REVIEW AND ASSESSMENT OF RURAL DEVELOPMENT PROGRAMS AND PROJECTS IN THE PHILIPPINES

Component: Countryside Agro-Industrial Development Strategy (CAIDS)

I. Introduction:

The Philippines Newly Industrializing Country (NIC) status in the year 2000 prescribes that all the geopolitical regions be given equal opportunity for growth and development. Among the multifaceted approaches to the attainment of NIC 2000 development goals is Rural Industrialization (RI). The Medium-Term Philippine Development Plan 1993-98 clearly indicates the commitment of the Philippine Government to rural industrialization as the vehicle to propel the countryside into the mainstream of economic development.

The importance of rural industrialization has long been recognized by the planners and policy makers of government. However, rural industrialization has remained largely unattainable and has eluded the numerous development programs of government for well over the past three decades. The present countryside scenario of a rapidly expanding population, exacerbated by a contracting land resource base, calls for even more decisive and drastic measures, which for the present have not been provided by government and its constituencies. Experience has shown that the government apparatus and that of the public sector in general are not designed to ensure effective program implementation. The

task calls for the active participation of the private sector and an empowered rural community possessed of a high level of entrepreneurial skill and properly motivated in order to circumvent this constraint.

The Countryside Agro-industrial Development Strategy (CAIDS) that was conceptualized in 1989 is to be the framework of rural industrialization for the participation of both the public and private sector in rural development.

The lessons and experiences gained from the CAIDS is the subject of this review. Other developmental views in the rural industrialization processes not limited to CAID strategy or its various modes of implementation form part of the review. This paper attempts to identify both successes and constraint in the rural industrialization processes and recommends alternatives to accelerate agro-industrialization.

A. BACKGROUND

The CAID strategy calls for the rationalization and attainment of a rapid, sustainable and equitable growth in the rural sector through:

- Modernization and increased productivity of agriculture;
- Industrial competitiveness;
- Growth and dispersal through agri-based industrialization; and
- Economic integration of the country.

To focus on the developmental approaches of the CAIDS, several implementing modes were designed for adoption in various government programs. These delivery modes are as follows:

1.0 Agro-Industrial Development Areas (AIDA)

The AIDA is a concrete and focused mode of implementing CAIDS that was hoped to initiate the implementation of the CARP's Strategic Operating Provinces (SOPs) and the selection of resettlement sites of families displaced by the Mt. Pinatubo eruption. A smaller version of the PIE, the idea of AIDA is to group small successful projects in one small area to initially reinforce each other and to draw enough strength to economically uplift a village.

The key components in the framework of the AIDA are as follows:

- **Capability Building** - This is the enhancement of the knowledge and the skills of organized farmer groups through hands-on training on production and processing methods as well as heki-ling the consciousness for environmental protection and conservation, cooperative development, and values formation. Local academic institutions will be tapped to provide the training, and where

there are none, farm schools can be established as exemplified by the one in Lipa, Batangas.

- **Livelihood Development** - This involves the development of livelihood programs to enhance rural employment and income opportunities. Technical assistance will be extended to farmer groups for the packaging of the projects, for sourcing funds and for management skills in operating the project. A local NGO in the area can provide these services. Another scheme is to tap existing processing centers as extension brokers for the organized cooperatives through the contract-based production of raw materials for the processing sector.
- **Rural Infrastructure Support** - This includes the provisions of basic infrastructure and facilities to encourage private investments in the area, such as access roads, irrigation, electricity, water systems, communication, financial services. These services are expected to be provided effectively and efficiently by the government, as well as an assurance of policy

support conducive to agro-industrial development.

Initial implementation of this framework will be adopted in CARP's Strategic Operating Provinces (SOPs) in the following areas:

- An integrated feedmill, livestock and poultry production project in Naguilian, Isabela;
- An integrated feed processing cum livestock production project in San Isidro, Leyte;
- A rice-based rural development project in Sta. Josefa, Agusan del Sur;
- A cotton-based development project in San Juan, Ilocos Sur (a non-SOP area)

2.0 People's Industrial Estates (PIEs)

One of the implementing modes of CAIDS is through the PIEs. In the PIE concept, an anchor (or core) processing activity is established utilizing the abundant raw materials in the areas. Related manufacturing and production endeavors are supported and can be centered around the anchor processing activity.

The development of PIEs takes into consideration the following:

- Establishment and viable operation of appropriate processing plants and common

service facilities organized by the private sector;

- Linkage of farmers to market centers and processing areas;
- Provision of basic infrastructure support/facilities;
- Enhancement of agricultural production to ensure a steady and sustained supply of raw materials.

The coordination of the PIEs will be by DTI with the implementation at the regional level by the Regional Development Council (RDC) and at the provincial level by the Provincial Development Council (PDC) and the People's Economic Councils (PECs).

Initially identified project sites are:

- San Fernando, La Union
- Cauayan, Isabela
- Hermosa , Bataan

3.0 Regional Industrial Centers (RICs)

The Regional Industrial Centers are envisioned as show-cases of agro-industrial growth in particular stretches of geographic areas defined by political boundaries and are to be located in each of the country's regions where the

full range of infrastructure needed by industries would be established. The defined areas can be one specific growth center or when expanded will be comprised of interconnected centers (growth network) within the adjacent regions. It is planned that the RICs will supply the technology and other inputs needed by the PIEs. This mode aims to indirectly transform agriculture-based rural areas into industry-based growth centers that can produce and supply processed inputs to other industries and/or finished products as consumer goods.

The identified RICs are:

- Metro Cebu
- Cagayan de Oro City
- Cavite City
- Mariveles, Bataan
- Subic, Zambales
- Baguio City
- Iligan City
- Davao City
- Parang, Maguindanao
- San Fernando, La Union
- Batangas City
- Iloilo City
- Zambaonga City
- Legaspi City
- Tacloban City
- Cauayan, Isabela
- Sta Ana, Cagayan
- Gen. Santos City
- Cotabato City

The identified growth networks are:

- Cavite - Laguna - Batangas - Rizal - Quezon - CALABARZON
- Cagayan de Oro - Iligan
- Northwestern Luzon growth quadrangle (Laoag - San Fernando - Dagupan - Baguio)
- South Cotabato - Davao - Zamboanga
- West Central Luzon (Bulacan - Bataan - Zambales)
- Cebu - Iloilo - Tacloban
- Tuguegarao - Ilagan - Cauayan

B. STUDY FRAMEWORK:

The review and assessment of rural development programs in the Philippines is focused on CAIDS as a specific component of this study. The study draws from the experiences of rural programs as formulated by:

- BOP agencies which encompass the delivery mode(s) of CAIDS either by design or as an integral part of the rural development process, i.e. DOST's STAND; DA's KPA, DENR's ISF and NRMP;
- Both LGUs and the private sector, i.e. Calabarzon and Subic Bay Development zone; and
- Institutional-funded programs from international donors and bilateral agreements between governments, i.e. NRMP, RRDP, etc.

The study framework includes the following:

1.0 Review of Rural Industrialization and the CAIDS;

2.0 Review of present rural development programs of particular GOP agencies (DA; DENR and DOST) in support of Philippine 2000;

3.0 Selected regional consultation on:

- CAIDS program in some government sectors;
- Industry profiles of existing successful agro-industrialized commodities;
- Conduct of mini-workshop and the agro-industrialization prospects in specific regions; (This workshop involved the Rural Enterprise Development (RED) network of the Science and Technology sector.) and
- Actual field visits to project sites.

C. SCOPE AND LIMITATIONS:

The present study examines only the broad implications (positive or negative) of the CAIDS to the rural develoopment programs of government. Hence, CAIDS, strictly speaking, is a general guideline for the attainment of industrialization in the rural sector. Various programs of government, even those under the CAIDS delivery modes, are not necessarily offshoots of the CAID strategy. Therefore, the success or failure of these rural development p.ograms cannot be solely

attributed to CAIDS or its delivery modes, AIDA's, PIE's or RIC's. However, some of the present sectoral programs of government closely adhere to the developmental tenets of the AIDA and RIC which have been evaluated on their own merits.

In view of the overlapping programs of various government agencies, the scope of study was extended to include an overview of the privatized agro-industrialization process for specific commodities, i.e. banana, pineapple and seaweed. The commonalities of the successes and problems in the agro-industrialization processes of these established industries and the shifting production impetus focused on community-based contract growing, became the bases for the recommendations of the developmental alternatives for rural industrialization.

II. Status of Rural Industrialization and the CAIDS

Rural development (RD) is a dynamic evolutionary process that encompasses a whole gamut of integrated activities performed by independent government agencies and the private sector and which includes a very diverse group of farmer-producers. The RD process, with its inherent complexities, requires a well-orchestrated program in order to attain a holistic development perspective.

The holistic countryside development perspective is taken to mean:

- A rural-based economic system which recognizes the basic principles of free enterprise as the venue for sustained productivity of the countryside resource base;
- The access of the rural communities to market-driven product technologies through the infusion of Science and Technology (S and T) support for rural enterprises;
- The provision of essential rural infrastructure and services to fast track the delivery of needed logistics for enterprise building;
- The legislation of market-friendly government policies and reforms to effect a wider participation of the rural sector in the decision-making process;
- The incipience of an institutionalized and sustained intervention and management mechanism activities and resources.

The rural industrialization program and CAIDS were reviewed vis the context of the countryside holistic development perspectives and the attainment of their specific program objectives and/or the constraints thereof.

D. RURAL INDUSTRIALIZATION

Rural industrialization continues to be a slow and elusive pursuit in the Philippine countryside. This is not to say that attempts in rural industrialization have not succeeded in any measure, but rather the initial successes

could not be sustained to a degree where global competitiveness could be achieved. Thus the "boom and bust" economic cycle of commodity programs have become a developmental norm.

Basic to industrialization is the successful conversion of a natural or introduced resource to a processed or fresh finished product that can withstand competition in the market place. Clearly, the fundamental issues that must be addressed in the industrialization process are:

"What is the Product?" and

"Where is the Market?"

In very simplistic terms, industrialization progresses when there is a product to sell and a market to buy the product. Once this has been identified, the intervening processes can then be determined.

The discussion of the rural industrialization process is limited to the natural resources sector (Agriculture, Forestry and Fishery) as the primary focus of this review.

1.0 Product Technology vis Productivity

The raw materials production orientation of our developmental programs for most of our major commodities has resulted in the "boom-bust" cycle in our development. Our inability to shift to product lines that are current in the market place negates the so-called "competitive edge" of these commodities.

Following are a few examples of the "boom and bust" cycles of selected commodities:

Beverages - Coffee and Cacao. The boom years (1959-65) were in response to the recurrent frost in Brazil and the disease infestations in the major coffee regions of Africa. Cacao enjoyed a short-lived revival in the seventies but fizzled out very quickly. Cacao products, such as chocolates, are gradually gaining popularity in the local market. Cocoa butter is still a primary export product, but cacao trade, centers on raw beans.

Natural Rubber - The rapid decline of latex yields from old plantations coupled with a shift to synthetic materials from the traditional market of raw rubbers spelled the virtual bust of the industry. Ironically, the clamor for natural rubber in the late 80's due to the non-biodegradable nature of most synthetics has not triggered a corresponding "boom" or revival of the industry. On the contrary, there are more rubber trees

being cut down today than are being established.

Spices and Condiments: Vanilla & Black Pepper

These commodities with very high added value as finished products enjoyed a production boom in the fifties and early sixties. After that very short period, with virtually no product technologies to speak of for lack of updated processing technology, the production of these commodities virtually came to a halt.

There are a whole gamut of examples of production-oriented programs that have gone into a cyclical "ups and downs" pattern, and yet, there is a propensity for government programs to be basically production-oriented. Our perennial grains problem stems from the repetitive, controlled-production programs orientation rather than the development of grain "products" that compete freely in the market. As a consequence, there is virtually no quality rice produced in the country that can withstand competition with the long grained glutinous, "no-broken- kernel "rice products in the world market. The argument that the Philippines traditionally does not place premium on quality is precisely what binds the production sector to mediocre

productivity. Certainly, however, the rice scientists and even the farmers can argue that the technologies for quality rice production are indeed available locally.

On the other hand, there are prime examples of successful agro-industrialization that have witnstood the roller coaster cost-price upheaval in the marketplace. The stability and competitiveness of these industries are anchored on the raw material's being converted into finished products, whether fresh or processed that have found niches in the local and the international markets.

Canned and Fresh Fruits - Pineapple and Banana

Pineapple was an industry before World War II and continues to enjoy a stable foothold in the world fruit trade. The dominant products of pineapple are canned slices, chunks, tidbits, concentrates and juice packs. Fresh fruit occupies a smaller volume but higher value in the local and export market. The stability of canned and fresh pineapple in the market is boosted by the brand names attached to the products that immediately suggests quality and familiarity.

The Banana Export Trade is an established industry in Central and South America before its introduction in the Philippines. In the very short period since its beginning in 1968, the industry became a major foreign currency earner. Fresh Cavendish banana is a household table product that has become entrenched in the fruit diet of Japan and the Middle East. While the international trade is controlled by the Multi-national Corporations (MNCs) it was still possible to penetrate the trade with local brand names because the product has a very strong market demand.

SEAWEED - Eucheuma Sp. - A more recent example of agro-industrialization is the processing of Eucheuma seaweed into the higher-valued product carrageenan with its competitive status in the world market. Prior to the development of Natural Pure Grade (NPG) carrageenan in the Philippines, the only export grade product was powdered seaweed. This "sunrise" industry exemplifies the basic principle that a product technology with a known

or created market demand is what leads to the industrialization process.

This fundamental principle of product and market identification leading to industrialization process must form the basic framework of the Science and Technology sector (S and T) where it to lead the agro-industrialization development in the countryside. On the other hand, where Science and Technology have been set aside in favor of purely economic gains, the disastrous results of this oversight have led to irreversible damage to the environment and have added untold misery to the nation. Such is the sad story of the Philippine Timber Industry with its very sophisticated resource utilization technologies that were used in the past with wanton disregard of damages to the environment and the accompanying ecological backlash.

2.0 Trends and Indicators

2.1 Export Trends

With all the seemingly negative biases towards agro-industrialization in favor of straight manufacturing industries the last quarter of 1993 clearly shows that our country has made some fairly significant strides towards its desired diversification of both export products and export markets (Bulletin, January, 1994).

The traditional big four foreign currency earners of the Philippines are copra, sugar, logs and copper concentrates with hardly any processed products to speak of. The country's export market was Europe for copra, U.S for sugar and most of our logs and copper concentrates were marketed in Japan. In the early 1960's, the establishment of another pineapple processing complex in Mindanao triggered further agro-industrialization with the introduction of Cavendish banana for the export trade late in the decade. This decade also saw the emergence of processed agricultural products such as rubber and fruits. In the 1970's furnitures and woodcrafts started to replace logs, and well into the 1980's abaca and woodchips are processed into pulp for paper; and processed marine products like shrimps, sardines and canned tuna were competing in the world market.

Today, none of the traditional commodities exported as basically raw products, except for sugar, dominate the export trade. The top earners cornered by industries are electronics et al., textile, ready to wear and others. Others are woodcrafts and furnitures to replace logs; banana, pineapple, mango; shrimps and seaweeds. Gold dominates the export of minerals replacing copper concentrates.

The top ten markets of Philippine products are the United States, India, Japan, United Kingdom, Germany, Hongkong, Netherlands, Singapore, Taiwan and Korea. The Middle East, China, and our ASEAN neighbors present opportunities for market expansion which for the moment has not been exploited.

On the whole however, the Philippines continues to penetrate the international market with products that are far more competitive and has a lot more added-value than it has ever done before.

2.2 Indicators

The data on the distribution of plant sites and employment for BOI - new and expansion projects shows a definite shift towards the countryside (Table 1.0)

Table 1.0 BOI Approved New and Expansion Projects

	1986	1987	1988	1989	Jan-Oct 1990
A. No. of Plants					
ALL REGIONS	118	429	647	1,023	670
NCR	60	255	306	483	290
OUTSIDE NCR	58	174	341	540	380
% OUTSIDE NCR	49.15	40.56	52.70	52.79	56.72
B. Employment					
ALL REGIONS	26,287	82,101	128,052	153,490	98,186
NCR	19,317	54,526	64,633	73,429	37,478
OUTSIDE NCR	6,970	27,575	63,419	80,061	60,708
% OUTSIDE NCR	26.52	33.59	49.43	52.16	61.83

Source: The Philippine Management Review (1991)

While it could be argued that the shift does not really indicate a substantial dispersal of industries to the countryside, the plant sites being located near the NCR, there is still a definite movement towards the region (Salazar, 1991).

Moreover, the labor component has shifted towards more regional concentration with 61.83% of the employment outside the NCR.

The distribution of the labor force is found in the following table.

Table 2.0 Distribution of the Labor Force by Area in ('000)

1989 (3rd Quarter)	Phils.	%	URBAN	%	RURAL	%
Total Labor Population	36,916	-100.00	14,788	- 40.06	22,128	- 59.94
Labor Force						
Employed	22,154	-60.01	8,074	- 54.60	14,080	- 63.63
Unemployed	904	- 2.45	543	- 3.67	361	- 1.63
Not in the Labor Force	13,858	-37.54	6,171	- 41. 73	7,687	- 34.74

Source : National Statistics Office
Cited from : The Philippine Management Office

Roughly 60% of the labor force are found in the rural areas (Table 2.0). However, most of the countryside labor are not in industry but in agriculture and services (Salazar, 1991).

Looking even further, the most recent statistics in investments in various industries would show that a very minimal 2% of actual paid-up capital investment was the share of Agriculture, Fishery and Forestry as percentage of total industries (Table 3.0). The investment period was from September 1992 to July 1993.

Table 3.0 Initial paid-up capital of newly established domestic corporations and partnerships in industry group (September 1992 - July 1993)

	Amount ('000)	Percentage (%)
a. Agriculture, Fishery and Forestry	170,917	2
b. Mining and Quarrying	77,563	a/
c. Manufacturing	1,564,458	14
d. Electricity, Gas and Water	112,852	1
e. Construction	338,037	3
f. Wholesale and Retail	1,141,231	10
g. Transportation, Storage and Communication	566,434	5
h. Financing, Insurance Real estate and Business Services	6,991,872	62
i. Community, Social and Personal Services	487,226	4
All industries	11,450,594	100

a/ Less than one percent

Source: Securities and Exchange Commission

It must be admitted that rural industrialization has moved at a very slow pace in the Philippines despite the promotion of accelerated rural development and agricultural production programs over the last three decades. It must also be pointed out that there are definitive signs of positive changes in the rural industrialization process.

3.0 Constraints and Inferences

It is often viewed that the bureaucratic and institutional weaknesses of government systems and agencies has been a major drawback in rural development. While this may be true to a very

significant degree, the more basic requisites of the rural industrialization process are the ones highlighted in the review as a departure from the usual "lack of" argument levied against government and its constituencies, as the major constraints to rural industrialization. Typically, the litany of ills that besets rural industrialization includes the following:

- Bureaucratic red tapes
- Too Centralized Authorities
- Lack of Infrastructure
- Regulatory Policies on Entrepreneurship
- Lack of Financial Resources
- Peace and order situation
- Dearth of skilled manpower and managerial skill

All of these have been subjected to various remedial measures and programs initiated by different government institutions and international funding agencies. The importance of addressing the factors of constraints to rural industrialization cannot be overemphasized. However, in view of numerous studies on these very specific topics, the discussion in the review focuses on the broad implications of sectoral and disciplinary participation in the rural industrialization process. The more important considerations perceived in the review are the

definitions of roles of stakeholders in rural industrialization.

E. SCIENCE AND TECHNOLOGY: ITS ROLE IN RURAL INDUSTRIALIZATION.

1.0 Science and Technology (S and T) as Precursor and Mainstay of Rural Industrialization.

The NIC 2000 has ushered in a very serious concern for producing new and more innovative strategies for countryside development. One of the local thrusts of the new strategies is the aggressive infusion of S and T into the production sector. To infuse S and T into the production sector, accessibility of the results of scientific investigations must be ensured and the technologies must address the needs of rural industries, the facilitating mechanisms must be in place, and the policy environment must be conducive to the utilization of science and technology.

The promotion of rural-based, small and medium industries (SMIs), coupled with a judicious resources management and conservation strategy, is one of the apparent development alternatives.

To encourage the development of rural industries, investors must be convinced of the viability of technologies. Convincing them involves a number of factors, among which are capital requirements, investment returns, entrepreneurial skills, availability of support services (e.g. markets,

infrastructure, farm inputs, credit, etc.), and manageable risks.

2.0 Science and Technology Implications in Rural Industrialization

S and T must lead undisputedly in countryside development if there is to be a rational basis for the conservation and management of the resource base. In the Philippines, S and T still has to flow into the mainstream of countryside development if the goals of improved equity, higher productivity, environmental sustainability, and finally, the eradication of poverty are to be achieved. The promise of self-reliance can only be fulfilled if the lives of the poorest of the poor fully benefit from the fruits of scientific enterprise.

S and T directions for rural enterprises must focus on the various technologies such as:

- Products or tangible goods;
- Processes, methods or systems;
- Services and;
- Information

all of which are designed to improve the lives of the people in various ways.

The R and D component in enterprise ensures the long-term viability of the enterprise through the optimization of the resource base, thereby

maintaining a high level of growth and productivity, and consequently, competitiveness, in the market place.

2.1 Product Technology

Products or tangible goods are designed to satisfy market demand. Consumer products, equipment and machinery, production inputs (i.e. new plant varieties, fertilizers, feed formulations, bio-inoculants) and others, are normally directed toward a specific market demand or to meet human needs in general.

2.2 Process Technology

Process technologies, that is, methods or systems that are applied to rural-based enterprise, are aimed at increasing productivity and self-sufficiency, thus saving time, labor, and energy. Process technologies may save on costs and ensure the competitiveness of a given enterprise, but cannot by themselves create a tangible market for their use.

2.3 Services and Information Technology

Service and information technologies may be adjuncts to a developmental program and

may enhance its effectiveness, or it may be both cost and profit centers, as exemplified by the software components of the computer industry. Information technology has to do with the design, programming, and applications of accurate and relevant data to aid the management decision-making process. Service technology, on the other hand, emphasizes the importance of training and workshops in the build-up of skills and the technology application and diffusion needed in enterprise development.

The developmental imperative of "increased productivity and self-sufficiency of the rural poor" is the primary focus of S and T efforts of those government agencies, research institutions, and the academe involved in the agricultural and natural resources exploitation in the country today. This developmental strategy has led to the emphasis on commodity improvement programs that lead to increased yields. The basic approach is the introduction of high-yielding varieties (product technology) primed with all sorts of action programs and methodologies, e.g. in farming, the multiple-cropping systems approach, crop diversification, etc. (process technologies). In almost all the R and D of action

programs, the thrust is geared toward innovations in the production systems, giving rise to a proliferation of new processes and systems approaches to meet production targets. Market demand and economic performance were secondary considerations to the increase in yields and outputs.

In the newly industrialized countries (NIC) and the developed economies of other spheres, the demand-driven technologies (product or tangible goods) have spearheaded the development of economies of scale. Market demand and economic performance have become the stimuli to energize the S and T system into product innovations that serve as the prime movers of enterprise, which in turn, have triggered the industrialization process.

Most, if not all, enterprises are built around a product or tangible goods and their innovations. A product innovation can often lead to a process technology, but not the other way around. Consequently, enterprises will require the renovation or acquisition of equipment and machinery, the input of skilled labor, management capabilities, marketing structures, and the necessary infrastructural support systems.

Demand-driven technology (products), will, of necessity, shift to an R and D thrust in production to a market orientation. Process technology as an offshoot of product technology is innovated on to provide the mechanism (manufacturing) and methodology (production systems) to package the technology into a commerciable form. Service and information technologies serve as auxiliary tools to sustain the enterprise.

3.0 The National Agriculture and Resources Research and Development System (NARRDS)

In assessing technologies and developmental research under the NARRDS, it is of value to have a clear understanding of how the system functions, and how R and D is directed and operationalized. While the functions and management of the NARRDS are being addressed in more detail by other investigative reviews and study, it will be relevant to highlight some of the more important aspects of the present process.

Priority Setting

R and D priority setting in public-funded research institutions more or less follows a general pattern. Priority considerations are determined by the following:

National Develoomen Goals (NDG)

The NDG is a comprehensive statement of the macro agro-industrial objectives, which are prepared by the National Economic and Development Authority (NEDA) under the Office of the President. The NDG becomes an act of legislature from which sectoral resource allocations are predetermined. The main thrust of the NDG is in formulating strategies long-term plans as the fundamental basis for national development.

Sectoral Agency Development Objectives (SADO)

The SADO translate the NDG into sectoral programs based on national problems and identified priority commodities. At this level, the performance indicators are increased productivity of and self-sufficiency in a particular commodity on the short term, with specific programs or action plans generated to attain specific program objectives.

R and D Support Objectives (R and D SO)

The NARRDS designs and coordinates the networking of the R and D support system for the SADO in terms of existing scientific knowledge and resource capabilities within the network. The R

and D directions in support of the SADD are regionalized in order to harness the most efficient environmental and R and D capabilities for identified commodities in the region.

Institutional Research Programs (IRP)

The national research institutions, with their limited budget for independent research development, and in spite of a greater unrealized potential and competence in the area of scientific research, are relegated to designing research programs following the national mandate and sectoral objectives. These research programs are translated into specific projects or experiments that are necessarily limited by the amount of funds allocated to the different research institutions.

The above R and D priority-setting process has been the norm for well over the past two decades. This system for public-funded R and D projects has spawned a proliferation of production-oriented technology packages (ie. rice-based or coconut-based production systems; integrated pest and disease systems; farming systems approach to development, etc.) which have their own merits and benefits, but are inadequate

in alleviating rural poverty. Practically none of the program-oriented process or systems technologies can be equated with direct financial returns to the end-users. The cost/benefit ratio for the R and D investments can be mathematically projected by extrapolating the "increases-in-yield" parameters to monetary values; but this exercise is more appreciated on the macro level in support and justification of the institutional commodity-based experiments.

The more serious consequence of the present system is the general perception that our scientists and researchers have become "passive" on the one hand, and "elitist" on the other , and the S and T institutions become more and more irrelevant.

The R and D in the industrialization process takes the view that scientists and researchers can be "proactive" and creative when they are able to regain independence as individuals or as a team in innovating product technologies in response to specific S and T needs. Due to the very meager support being given to product technology research - it being viewed as a long-term investment in time and public funds without the assurance of definitive success - the research invariably focuses on the more acceptable developmental types of research. There are exceptions, and these are

funded by grants and special funds from donor institutions and the private sector.

F. THE PRIVATE SECTOR AS PRIME MOVER OF RURAL INDUSTRIALIZATION

The private sector acts as motivator for rural industrialization and provides the multiplier effects in the mass production and the marketing of proven technologies. To realize the goals of countryside development through rural industrialization, the private sector must provide the structure and innovate systems that derives maximum leverage both from traditional knowledge and from the opportunities offered by modern technologies.

1.0 Resource Mobilization

The private sector plays an essential role in the mobilization of resources such as credit, industrial and technical inputs, manpower and market linkages. The very core of enterprise building and industrialization lies in the ability of the private sector together with the LGUs and the farmers to mobilize all the resources within their control into cohesive productive unit. The integration of support services and logistics from outside sources is best secured through the private sector and its linkages.

2.0 Technology Packaging

The S and T sector is acknowledged as the technology generators for enterprise. The job of technology packaging however, is best accomplished by the private sector. Technology packaging as an essential step towards industrialization has only recently been recognized by our R and D institutions and the private corporate group. In the highly industrialized systems, Technology packaging by itself is a recognized institution and a profit center. This awareness was recently translated in the institutionalization of Technology piloting and packaging as the mainline of the legislated Technology and Science Parks. In this concept, the private sector makes use of the facilities and manpower of the R and D institutions to package technologies with specific fit to the needs of the consumers or clientele.

In the countryside the S and T sector and government entities engaged in research has very minimal capabilities to bridge the needs of rural industrialization. The most recent move of the Department of Science and Technology (DOST) towards reaching out to the countryside is the assignment of two (2) S and T Officers per province to initiate the piloting and

commercialization of matured technologies. With the complexities of rural enterprise building, it is very doubtful that the independent undertakings of the provincial S and T Officers can create a major impact in rural development. The present countryside scenario requires that the risk takers in enterprise be the ones to package technologies precisely to minimize their own risk.

3.0 Management Experience

Management expertise is virtually nil in most of the Philippine countryside. More often than not, management skills must be introduced in rural enterprises.

In rural entrepreneurship, there is tremendous need to augment production know-how with management savvy. The management systems adapted in the rural areas are the results of imitating others. There is no access to sources of information on the proper management of technology, production and operations, which are the basic tools in entrepreneurship. At best, the management of the technologies being promoted are laboratory textbook models, which, when applied, do not fit into the existing production systems and may cause more problems.

The failure of technologies to take hold in a given production system often times can be traced to mismanagement of the technology. The evolution of procedural know how in technology application is a direct result of the packaging and commercialization of technology. The learning-from-experience management principle requires that technology commercialization should be done with the farmer to fit his needs, and not for the farmer to adjust to textbook and laboratory models.

The strengthening, and awareness of, and the provision for, management training in all aspects of entrepreneurship must be built-in program in rural development. The success stories in enterprise and industry are directly a result of management savvy.

6. THE CAIDS PROGRAM

National goals, as legislated in the past, are all-embracing, multiple, and complex. The performance indicators of increases in the GNP, GDP, sectoral growth, per capital income, and overall poverty alleviation are often in conflict within the socio-economic, cultural, political and environmental context of the rural communities. Thus, the attainment of GDP

targets does not necessarily translate into increases in per capita income for the rural poor.

In 1950, agriculture's share to real GDP was around 39.23% while industry posted a low of 22.19%. In 1988, agriculture was 23.06% of GDP while industry had increased to 35.54%. In 1992, the contribution of agriculture including fishery and forestry is down to 21.20% while industry was 33.27% of GDP.

From the GDP performance of the industrial and agriculture sectors from 1950 to 1992, it seems that there is a real shift from agriculture to industry, as the statistics would show. On the other hand, roughly 62% of the labor force is still in agriculture while employment in industry is on a decline. The more popular notion is that industry is capital intensive, export oriented, and is basically import dependent. Thus, the develoement efforts in industrialization had been biased towards urban centers instead of the rural areas.

CAIDS was borne out of the realization that agricultural modernization alone cannot possibly alleviate the plight of a mushrooming rural population. The setting up of small and medium enterprises which substantially creates employment opportunities in the rural communities has become a priority program of government. The CAIDS is a framework towards a more

balanced agro-industrialization program in order to achieve rapid, sustainable growth in the countryside.

1.0 Status of CAIDS and Its Implementing Modes

CAIDS strategy was adopted by the cabinet in December 1989 through Resolution No. 39 as the centerpiece development strategy for rural industrialization. The main features of the CAIDS includes the following:

- o Modernization of agriculture
- o Industrial competitiveness
- o Rapid growth dispersal through agro-based industries and
- o Integration of economic activities in the country

The development initiative shall be provided mainly by the private sector with key logistics and policy support coming from the government.

The major components of the strategy are:

a) attainment of agro-industrial development;

b) provision of a proper macro economic and finance environment;

c) investment in human resource development;

d) provision for physical infrastructure support;

e) promotion of environmental protection;

f) better policy integration and closer inter-departmental coordination in program planning

and implementation with in a more decentralized administrative structure;

g) encouragement of NGOs and community participation in development programs as a method of empowerment and;

h) closer coordination between the civilian and military sectors in addressing peace and order which is essential to the implementation of the economic program.

2.0 Problems and Constraints

In operationalizing the CAIDS, the various implementing modes (PIEs, RICS, AIDAs) have met common problems and constraints summarized as follows:

- lack of clear implementing policy guidelines;
- inter-agency coordination is non-existent in the project level;
- difficulties in fund sourcing;
- no conscious effort on the sectoral agencies to enforce the CAIDS in the implementation of their development programs;
- The interpretation of the strategy and its implementing modes by sectoral agencies varied according to situation and fund donor;
- The basic government support on infrastructure and logistics are lacking;
- There was lack of local political support and security of tenure for the projects;
- There was no sustained technology intervention.

With these constraints, the implementation of the PIE and RIC modes have not proceeded as envisioned.

However, the expanded version of the RICS (i.e. growth networks) is one of the developmental strategies for agro-industrialization which is adopted as a primary developmental approach in the NIC 2000 Program.

There are major programs of sectoral agencies which have been implemented as independent efforts to develop agro-industrial areas, i.e. Livelihood Enhancement for Agricultural Development (LEAD) of the DA, the Dutch Rural Development Program (DRDAP) of the DAR, Integrated Social Forestry Program (ISF) and Natural Resources Management Program (NRMP) of the DENR, Provincial Science and Technology Center (PS and TC) of the DOST, which have successfully piloted various components of the CAIDS delivery modes.

3.0 The CAIDS in Perspective

For rural industrialization to proceed, the basic infrastructure requirements must be in place. In the Philippine countryside, it is not just the absence of infrastructure (i.e. roads, electricity and water systems) that is a problem, but that the existing structures are in a sad state of deterioration and disrepair. In this respect alone, the CAIDS given its sound intentions, cannot possibly proceed with rural industrialization without such attendant problems. The government bureaucracy, even with the legislation of

the local autonomy code, still exercises central control over rural development programs. On the other hand, with the devolution of functions of government agencies to the local government, partisan politics is playing a major role in the appointment of needed personnel who more often than not are unqualified to take over the devolved functions. The seeming inability of government agencies in the regions to work together as well-oiled machinery contributes to the well-accepted notion that the government apparatus and that of its ancillaries are not designed to ensure effective project implementation. In view of these and other constraints, it may be construed that the public sector is inappropriate for achieving the defined goals and objectives of CAIDS. This is not to negate that the public sector must play a key role in development, but rather that in situations where project objectives are best attained through the private sector, they should be given the incentives and encouragement by the government.

The CALABARZON Project

A prime example of industrialization in an suburban area is the large-scale multisectoral agro-industrial complex in Region IV known as CALABARZON, which includes Cavite, Laguna, Batangas, Rizal, and Quezon provinces.

These provinces are contiguous to the National Capital Region (NCR) and have become the catchment basin of migrant populations seeking opportunities in the NCR. The growth rate in the CALABARZON was estimated at 4.3% per annum in 1980-1987 as compared with 3.10% for Metro Manila, and 2.6% for the entire Philippines during the same period. In 1990, the estimated population within the CALABARZON was 8,261,000, representing 13.7% of the national population. Land area coverage is 16,229 square kilometers, or 5.4% of the total land area of the country.

The Project CALABARZON, as originally envisioned, was to transform the agro-based rural economies into highly industrialize urban economies. In order to have well-rounded industrialized economies, the Project must encompass all sectors:

- Economic sectors – agriculture, livestock, fishery, manufacturing, commerce, mining, tourism, and other services;
- Infrastructure sectors – water, transportation, telecommunications, energy and utilities;
- Social sectors – education, health services, livelihood development and others;

The development goals for the CALABARZON may be summed up as follows:

- To spur the industrial growth and an active rural economy for Region IV and the country through the modernization of agriculture and the marketing of outputs in the growing urban markets;
- Decentralization of economic activities to accommodate the spill-over population of Metro Manila without causing social problems;
- To attract foreign and domestic investments and to contribute to foreign trade and foreign currency earnings;
- To provide a better natural environment and a higher level and quality of life.

These development vision fashioned by government, in particularly the Department of Trade and Industry and supported by NEDA, was to be one of five special projects financed under the Philippine Assistance Program (PAP) or the Multilateral Assistance Initiative (MAI) and private investors.

The CALABARZON is probably one of the more dynamic growth networks in the country today. In assessing the successful implementation of this Project, several requisites of the rural industrialization process must be highlighted.

- The basic infrastructure network must be in place. Road access throughout the area should be linked to the NCR and between provinces. Additional roads continue to be built and existing ones maintained.
- Power units continue to be upgraded and the no-brown-outs pronouncement of NAPOCOR, starting this summer of 1994, will boost the manufacturing sector's productivity. Water, a very essential need in rural industrialization, is adequate but will need to be augmented in the very near future.
- Direct access is needed to the centers of commerce, the NCR, for its market and the Manila and Batangas Ports for the distribution of goods around the globe.
- Present communication systems can provide direct linkage to any business centers around the world. Information access is quick and updated.

The enterprises within the CALABARZON are varied, from the basic food processing and textile manufacturing to the more high-tech computer, electronics and automotive industries. Agro-industrialization has been minimal due to the scarcity of raw materials within the zone and the restrictive transport costs of raw products from outside sources, including imports. For the manufacturing sector, there are no problems encountered in sourcing raw materials because most are imported or are industrial semi-processed

products. This is exemplified by the garments industry and the plastic products factories. On the whole, these enterprises within the industrial complex exhibits certain features and attributes that largely contribute to their successes. These may be summed up as follows:

- The enterprises/industries are market-oriented and technology-based. The products have niches in specific markets. Product competitiveness and quality is sustained through the application of updated technologies. Product quality has become the key ingredient for sustainability in the market place;
- A self-contained production system is a major feature of the enterprises and integrates the production component with the processing component for finished products. This integration can take the form of corporate affiliation and equity in a production operations or contract growing, as in the case of fruit processing;
- Enterprise management is done through the corporate organizational structure. Management is becoming more and more participative and team-oriented rather than the more restrictive, hierarchial system. Management incentive packages are fairly common practices with the more progressive enterprises;

- The workers are disciplined and skilled in their trade. With the stiff competition for job opportunities in the urban centers, the level of competence of the urban workers is high. It is not uncommon to have college graduates doing skilled trade jobs in urban industries.

With the notable progress in industrialization in the CALABARZON, major areas of concern have also surfaced that must be given attention if the gains in development are to be sustained. The more prominent areas of concern are:

- The rapid conversion of prime agricultural lands into real estate and industrial sites, a situation that has caused the displacement of rural farmers and their families and has contributed to loss of productivity;
- Ecological stress, environmental degradation and pollution brought about by improper waste disposal and excessive demands on resources, such as water and land;
- The inherent lack of coordination among the local planners and policy makers, who have been remiss in the provision of the basic human amenities and social services for a rapidly expanding population;

- The lopsided development of the provinces within the CALABARZON, which could be traced to partisan politics, or simply the result of poor leadership in some of the provinces.

These problems, while not insurmountable, require a very determined integrated approach to effect exacting corrective measures. The combined political will of the LGUs and private sectors delivered in coordinated fashion, can resolve these problems.

The CALABARZON as a prime example of the extended RICs can be emulated in other identified industrial growth areas. Certainly, the Subic Base conversion to an industrial complex and hub of economic development in the area was primed by the existence of an excellent infrastructure system, a well-supported management team, the Subic Base Management Authority (SBMA), and a determined local constituency.

The expanded RICs as a delivery mode of CAIDS has definitely taken a foothold in the processing and manufacturing sector for advancing the goals and objectives of the Philippine NIC 2000. The key features of the RICs are:

- The provision of a well-coordinated management team composed of the Regional Development Council (RDC), the development

planners of the LGUs, and key representatives of the private sector;

- Improved infrastructure systems central to the development zones;
- The participation of the private sector as investors and prime movers of industry;
- The provision of employment to a large number of the working population in the area;
- The expanded RICs provide spin-off enterprises for small entrepreneurs.

PIE

The PIEs concept centers around the provision of a core processing center in identified areas where raw materials are readily available, and the program specifies the participation of the private sector, particularly the Provincial Agricultural and Fisheries Council (PAFC). The lead agencies in the program are DTI, which is primary responsible for program coordination; NEDA and the RDCs, for identification of the sites and various project mixes; DAR, for the operationalization of the concept in Strategic Operating Provinces (SOPs) with the participation of LGUs; DA, for the incorporation the concept in their Livelihood Enhancement for Agricultural Development (LEAD) Program; and DENR, for the development of Integrated Social Forestry (ISF) areas as models for CAIDS with the introduction of the agro-processing component.

The funding mechanism relies primarily on the agencies' capabilities to allocate funds from their own resources. For instance, DAR is supposed to tap PIE funds from a special fund provided by EO 406, which allocates 15% of the Annual Agrarian Reform Fund for soecial projects. The Dutch Rural Development Assistance Program (DRDAP) can draw from the proceeds of fertilizer sales granted by the Dutch government to the Philippines as part of a bilateral grant agreement. Both DA and DENR are to allocate funds from their LEAD and ISF programs respectively in order to operationalize the PIE concept.

With all the good intentions of trying to get the PIE mode initiated by government agencies, the results of this sectoral interpretation and operationalization of the concept has been fraught with failures. The DA's LEAD projects proceeded on its own, but for the most part, could not be sustained by the farmer participants. Many were unable to repay their loans. Many of the DENR ISF programs will be running out of funds by 1994, and the accomplishments so to speak of, are the formation of organized upland communities and the training in agroforestration, as with the Sloping Agricultural Land Technology (SALT), but basically without the enterprise component of the PIE mode. Other government initiatives have had very minimal success in implementing the PIE concept.

In retrospect, the PIE delivery mode cannot really be considered as a logical framework for agro-industrialization. The core intervention of providing a processing plant as the center for localized economic activity presupposes that all the needed structures, and logistics are in place and that the production of specific products in the community is a viable activity. Unfortunately, the agricultural sectors, except for the large corporate plantations, cannot as yet provide sustained production volumes to warrant processing of their produce.

AIDA

Having a more focused mode of CAIDS, AIDA projects include: a) capability building; b) livelihood development; c) rural infrastructure support; and d) active involvement of non-governmental organizations (NGOs). The involvement of the private sector as a market conduit and as technology brokers is given importance in this delivery mode. The LGUs are tapped to fund AIDA-related activities that strengthen grassroots participation with the projects. The private financing institutions can provide financing assistance through their lending/credit facilities.

Operationally, the AIDA projects were to be situated in the SOPs of DAR. In 1993, DAR had 77 AIDA projects in the Agrarian Reform Communities (ARCs) that benefit 9,000 farmer participants. The total cost of these projects was P 319 M.

AIDA involves the identification of areas/villages as strategic centers for agro-industrial development. The delivery is through sectoral agencies who will orchestrate the performance of all sectors involved in the areas of development. NGOs are relegated to setup, manage, and operate the farm schools and rural development centers. The private sector is to put up equity, operate, and manage the agro-processing plants, and the government sector is to provide technical assistance.

For the present, the AIDA projects are being implemented through government sectoral agencies, in particular, the DAR in the SOP area. Area coverage is from 5 to 15 hectares, situated within 100 km. from Metro Manila, 15 to 45 km. from a regional capital, and 5 to 15 km. from a provincial capital or major town. These specific requirememts for the AIDA projects to be small and manageable and with immediate access to commercial centers, readily ensures product and supplies movement from farm to market and vice versa. The role of NGO's as facilitators of technology development and transfer indicates that sustainability of the production sector can be assured. With technical assistance and infrastructural support being provided by the government sector, the private sector business interest can easily be drawn into the AIDA projects. Funding can then be provided by commercial banks inas much as the projects would then be considered bankable.

In generic terms, the AIDA concept, in its address of the needs of the lesser favored rural sector, is a viable option. The concept of bringing in applied technology adapted to local conditions is the essence of "bottom-up" enterprise packaging. The on-farm educational system being advocated and a well-organized community of entrepreneurs secures the enterprise on solid footing. An empowered population is the anchor of rural development.

In actual application, the synchronized delivery of development programs by sectoral agencies has been a difficult one, but is not an impossibility. While it was not possible for the consultant to observe the AIDA projects of DAR to be able to draw from these experiences, other similar models presently being applied were studied, in particular with the Technology Development and Transfer (TDT) component of the Natural Resources Management Program (NRMP) of DENR-USAID. These technology-based commercialization projects involving the upland communities of Regions II, IV, X, and XI, can serve as examples of a fully integrated interagency program centered in the local NARRDS consortia as project coordinators. These experiences are discussed in the government programs for NIC 2000.

Strategic Inference

The CAIDS, which encompasses a host of generic implications, has been adopted into various programs of

government, both in the past and for the present. While these are indications that agro-industrialization is indeed progressing a bit slowly in the countryside, it is fairly difficult to quantify the development that may have, in fact, resulted from the CAIDS. On the other hand, there are several factors that have been identified as drawbacks to the CAIDS. Granting, however, that the basic requisites and requirements of infrastructure, logistics, and including fund resources are present and available, are there any perceived strategic inferences from CAIDS and its delivery modes that could be construed as a blueprint for successful agro-industrialization? The answer to this question is rather difficult because CAIDS and its modes are not imbued with delivery and management systems nor standard operating procedures that could serve as bases for evaluation. From within the governments sectoral programs, CAIDS has been included on paper, but does not necessarily form the basis nor program implementation. There are no implementing guidelines for the strict adherence to the CAIDS in any of the sectoral programs.

In the review of government programs in support of NIC 2000, DENR, which barely gave notice to any of the CAIDS and its delivery modes, has, in fact, an on-going program that approximates the requirements for the successful implementation of AIDA projects, in the TDT-NRMP.

The private sector, on the other hand, is a direct prime mover of the expanded RICs. The basic motivation for the large corporate group is profit, and they will always be on hand whenever the return on their investment is secure and the attendant risks in the business are manageable. Most of the multinational corporations will pioneer an agro-industrial undertaking in any circumstances where all the operational and production factors can be self-contained. All the country needs to do for private equity investment to pour in, is to liberalize the policies on foreign investments and protect capital retrieval. This seems simple enough and certainly has a basis, in fact, from the experiences of other newly industrializing economies. "How" and "when" the country will be ready for an open-door on foreign investment will probably depend on the experiences of CALABARZON, the Subic Base Conversion Plan, the existing Export Processing Zones (EPZs), and others. Probably the single most important contribution of self-contined MNCs is the generation of immediate employment in the areas where they operate. The strategy is not without its negative implications, but certainly should be considered in the light of fast-tracking rural industiralization.

More basic to the formulation of various programs for rural industrialization is the need to understand the fundamentals of rural development in an island system such

as the Philippines. The levels of intervention between regions and within regions may differ due to the following factors:

- The bio-physical characteristics of island systems are uniquely individualistic and will require different levels of intervention. For example, Palawan, with more than 50% forest cover, but with a very fragile ecosystem, is presently treated in a similar manner as Mindoro and the rest of Southern Luzon in government regional programs, and yet, there are no commonalities in the islands bio-physical make-up.
- Socio cultural differences are very pronounced within provinces and among the islands. From the poor tribal communities to the more affluent lowlanders and the poor coastal dwellers lay a vast gap in the perception of needs and wants that have to be clearly identified, pinpointed and addressed properly.
- Environmental concern may, to a large extent eventually dictate the nature and direction of agro-industrial development. For instance, Cebu, which boasts of a highly industrialized economy, has practically run out of a bsic commodity - water. With only less than 2% effective forest watershed and the continuous population pressure

both in the urban and upland communities. Cebu is now contemplating, the piping of potable water from Bohol, an equally forest-denuded island.

- Climate and soil changes continue to baffle both scientists and layman farmers. In Ilocos Norte and Ilocos Sur, the seven months of dry season and five months of intermittent rain with flash floods is considered normal contrary to prior weather patterns. The organic changes in soils heavily subjected to chemical fertilizers and pesticide has resulted in a drastic reduction of yields of rice and other commodities. International Rice Research Institute (IRRI) scientists would admit that there is a general reduction of up to 30% less yields for the HYV varieties even at optimum conditions. With these changes in climate and soil occurring in all regions of the country - in fact, in the world - the innovations of technologies must conform to the dominant abnormal conditions and treat this as the norm.

There are other prevailing factors such as politics and economics that are as equally important in addressing the agro-industrialization processes and the attendant issues, but these are probably better addressed in the more macro concerns of the regions.

Given the magnitude of problems in the rural industrialization development process and the very limited public resources devoted to it, the delivery systems and interventions must be self-sustaining throughout each stage of the industrialization cycle. With the correct impetus and incentives, the private sector with public support can lead in a sustained intervention process toward rural industrialiation.

III. FIELD OBSERVATIONS AND EXPERIENCES

During the course of the review, the consultant had occasion to visit various regions for observation and consultation on the status of industrialization projects, their prospects and problems. The consultations took the form of mini-workshops for two regions (Regions X and XI) to establish the profiles of important industries, and interviews with key informants, coupled with field observations of existing rural agro-industrial projects, particularly in Regions II and V. The venue used for the regional consultations were the NARRDS consortia, which is participated in by various governemnt agenices such as DA, DENR, DTST, NEDA, DTI, the State Colleges and Universities (SCUs), some NGOs, and the private sector.

An actual program review is presently on-going with the DA's GPEP program; the DENR's NRMP is in progress and the consultant has had the opportunity to personally participate

in the packaging of TDT projects; and the DOST - STAND program was reviewed from its implementational aspects in the Philippine Council for Agriculture and Resources Research and Development's (PCARRD's) programs. Audience was afforded by the Secretaries of the DOST and DENR and an Undersecretary of the DA.

The agro-industrialization status of existing and promising industries was the product of consultations and dialogues with officials and the technical staff of the corporate entities involved in the industry, cooperative members presently tapped as producers for the large corporate group, individual farmers, technical workers of government and some local government officials.

This broad cross-section constitutes the majority of the game players in rural agro-industrialization today. The view presented in this review is a composite of the actual status of rural industrialization.

H. CAIDS APPLICATION IN NIC 2000 PROGRAM

1.0 DOST's Science and Technology Agenda for National Development

STAND Philippines 2000 spells out the definitive areas that will be the focus of scientific and technological efforts within the medium-term plan in 1993 to 1998. It is a market-oriented, private sector-led action plan that emphasizes the technologies with

high level of competitiveness in the world market. STAND is the DOST's flagship program geared towards the attainment of Newly Industrializing Country (NIC) status.

It has two components: a priority list of products and services, and the S and T programs. The products and services were determined as high priority areas in the National Technology Agenda as embodied in the Science and Technology Master Plan.

At the launching of the Philippine 2000 during the first multisectoral Forum on Science and Technology (S and T), President Fidel V. Ramos, in support of STAND Philippines 2000, cited in his speech that "... the national technology agenda shall teach our people, especially ordinary Filipinos, to use technology to enhance our skills and optimize our productivity, to give us greater access and control of our resources in people and in nature, and to propel us into modernized agriculture and an industrialized status."

To achieve a balance in adhering to the national thrusts of global competitiveness and people empowerment, the STAND is focused on export winners, basic domestic needs, support industries, and on the coconut industry.

Moreover, the DOST realigned all projects and allocated 70% of R and D funds for STAND prospects distributed as follows:

- o 50% for export winners
- o 20% for basic domestic needs
- o 20% for support industries
- o 10% for coconut industry

The priority areas for agro-industrialization are wood-based products for fashion accessories, toys, houseware, fruits, and marine products all geared as export winners.

Technologies catering to basic domestic needs include those related to food, clothing, shelter, energy, etc.. Special attention is given to the coconut industry because one-third of the population depends on it directly or indirectly, and three million hectares of arable lands is planted with coconut.

The STAND programs are established in identified S and T development areas which are found suitable for specific products and/or commodities. Technologies are infused through technical assistance.

The STAND Philippines 2000 and CAIDS

The DOST's STAND Philippines 2000 was developed independent of CAIDS. Although selected components of the CAIDS are found in some programs, these are more coincidental than intended.

This can be exemplified by the STAND's coconut industry programs. With full S and T intervention and support, it is projected that coconut production will be improved by 200% from the national average of .85 ton/ha. (in copra equivalent) and that the coconut average export value, US$ US$ 585M in 1991, will be increased to at least US$ 800M by the turn of the century.

The strategies to revitalize the industry and reverse its decline is the infusion of improved technologies in both agricultural production and the coco-based industrial sector, and specifically to add value to products and to their export potential. The research and development components to support programs on revitalizing the coconut industry are geared toward the generation and transfer of appropriate production and processing technologies, development of products for domestic and export markets and the provision of sufficient information for proper technology utilization.

The program is divided into three major components, namely:

- Varietal improvement and mass production of selected planting materials for the coconut replanting development program;
- Development and technology transfer of selected production and primary processing technologies and;

- Development, promotion, and commercialization of selected coconut processing technologies.

These components were identified and attendant projects determined by analyzing the strengths, weaknesses, opportunities, and thrusts of the industry.

The implementation strategy of these components does not specifically identify areas where specific intervention can be established, but it does promote the establishment of processing plants with relevant technologies to address problems in local-based products, such as aflatoxin, for example.

2.0 DENR's - Technology Development and Transfer (TDT) Component of the Natural Resources Management Program (NRMP)

The NRMP program is the result of a bilateral agreement between the U.S.A. and the Philippines, with the former funding various studies for the conservation and management of the Philippines residual forests. The GOP counterpart provides R and D funds to support the policy studies. DENR is the implementing agency and USAID, the funder. The NRMP policy studies, with five components (of which TDT is tasked with technology commercialization, product research, directed research and training), were implemented in focal regions where the residual forests remain intact.

The TDT projects, which closely approximate the AIDA mode of CAIDS, are those of the Technology Commercialization (TC) components. The TC projects deal with the commercialization of technologies into viable enterprises, by integrating the production sector with the processing sector to manufacture products or goods for an identified market. The production sector are upland dwellers in ISF and some in the CARP areas, who produce raw materials from local sources for processing while at the same time, conserving and even expanding the forest base. The interim enterprises are meant to address the immediate needs of the upland populace for viable sources of income, while the growing of tree species is for sustainable utilization of the resources on a long term economic rotation basis. The private sector provides the processing capabilities for wood or non-wood-based products, with the added value being equitably shared with the upland sector.

Major innovations introduced into the Technology Commercialization projects are the provision of:

- <u>Seed Fund:</u> For use in enterprise and forestry rehabilitation. This is a no-interest, no-collateral fund with very easy repayment terms in varying periods of time, according to the needs of the

enterprise. The recipients are made responsible through a MOA with the local project management office (PMO).

Localized PMO: The sustained intervention through technology infusion and enterprise management is coursed through a local Project Management Office (PMO) which is a member of the NARRDS consortia. The PMO is a "lean" office staffed with a project manager, a coordinator, project supervisors, and an accounting clerk. The number of supervisors increases with the number of projects to be managed.

The PMO together with the project implementors identify the project. Project listings of basic assumptions are validated through the Rural Enterprise Development (RED) process, which is also used in the project packaging of detailed business plans. All the projects packaged through the RED process for TDT are considered bankable. The PMO is responsible for the application of technology by recipients and co-manage the projects in the interim period up until the farmers

are able to manage their affairs independently. The PMO also provides the venue for a conduit to the processors and the market.

S and T network: The PMO by itself cannot possibly provide the necessary technical and managerial services to its clientele. The backstaffing necessary for the provision of needed skills and expertise is provided by the S and T network of the NARRDS.

In the very near future, the TDT projects can provide some very basic lessons in rural industrialization. It should be mentioned that the approval of the TDT projects were subject to an evaluation by a committee composed of representatives from the DENR, Environmental Research and Development Bureau (ERDB), PCARRD, USAID, and the WINROCK INT., and their technical staff. There are four (4) integrated TC projects:

a. the endemic species nursery, to forest establishment, and woodworks at Palawan;

b. an agro-forestation project with a commercial nursery component at San Mateo, Rizal, a watershed area of Metro Manila;

c. a plantation for the rehabilitation of Mamalis, a lesser-known species with high commercial value for wooden wares and accessories. The processing tie-up is with a private sector members who has the capabilities to develop and fabricate innovative wood-based products. The production area benefits the upland cooperatives of Maligaya, Bukidnon, and Opol, Misamis, while the affiliate private processor is at Valencia, Bukidnon;

d. In Davao, bamboo establishment and utilization projects at New Bataan, Maco, and Panabo are directly linked with the banana plantations to market the bamboo poles.

3.0 DA - Key Production Area (KPA)

The KPA development approach defines specific production areas where particular commodities have the best agro-climatic conditions for optimum growth and productivity. By pinpointing the production of specific crops, livestock, and fishery products only in suitable production areas, the KPA approach seeks to increase the cost-effectiveness of agricultural and fishery enterprises.

The KPA concept draws from similar models of the NICs in Asia, particularly Taiwan and Korea, where a modernized agricultural sector provided the case for industrialization. As income rises from increased farm productivity, the demand for consumer goods also rises, and consequently expands the domestic needs for industrial goods. There is no question that raising farm productivity, which is equated with rising incomes and increased savings, can propel the countryside into rural industrialization. The KPA approach seeks to achieve a modernized agricultural sector with empowered farmer and fisherfolk's groups as the main actors in the action programs. The DA sees the liberation of the countryside from poverty with programs such as Project Self-Reliance to establish the viability of farmer's organization. Under this program, the DA supports the gradual take over of existing governemnt warehousing operations, including that of NFA by qualified farmer's cooperatives and federations. This move will enable farmers to directly procure rice, corn, and other goods from their members and to sell these to specific markets. The farmers having gained self-reliance in handling their own affairs, agriculture can thus become a profitable business.

The Grains Production Enhancement Program (GPEP)

A major project to operationalize the KPA is the DA's GPEP. This project seeks to rationalize the production of this country's most important commodities, rice and corn. While rice production increased by 2% annually, the increasing population demand grew by 3% per annum. With this production demand gap, the country imported rice from 1984 to 1986, and in 1988 to 1990, import of 622,000 mt of rice. The agricultural sector is again contemplating in the importation of rice for 1994.

Corn hardly fared any better than rice. An annual importation volume of approximately 218,159 mt is required to fill the demand of local feedmillers. Unfortunately, imported corn is cheaper than locally produced corn, a situation that further aggravates the problem of production sector.

Using the KPA approach in implementing the objectives and priorities in the agricultural medium-term development plan, the DA will implement the GPEP in Key Grain Areas (KGA) that are suitable for optimum rice and corn production.

For rice, the identified KGAs are irrigated rice land in the following provinces:

CAR	:	Kalinga Apayao
Region 1	:	Ilocos Norte Pangasinan

Region II :	Cagayan Isabela Nueva Viscaya
Region III:	Bataan Bulacan Nueva Ecija Pampanga Tarlac
Region IV :	Laguna Oriental Mindoro Occidental Mindoro Quezon
Region V :	Albay Camarines Sur Sorsogon
Region VI :	Aklan Antique Iloilo Negros Occidental
Region VII:	Bohol
Region IX :	Zamboanga del Sur
Region X :	Bukidnon
Region XI :	Davao del Norte Davao del Sur South Cotabato Surigao del Sur
Region XII:	North Cotabato
ARMM :	Maguindanao

For conn, these are:

Region I :	Pangasinan
Region II :	Cagayan Isabela
Region III:	Pampanga Tarlac
Region IV :	Batangas

Region V	:	Albay Camarines Sur
Region IX	:	Zamboanga del Norte Zamboanga del Sur
Region X	:	Bukidnon
Region XI	:	South Cotabato Sarangani
Region XII	:	North Cotabato Sultan Kudarat
ARMM	:	Lanao del Sur Maguindanao

Objectives

- The general objective of the GPEP is to increase and sustain rice and corn production at the levels required to meet the country's needs through the provision of necessary production input subsidies and agricultural support services from CY 1993-94 to CY 1997-98;
- To stabilize the prices of rice and corn at levels equitable to both consumers and producers; and
- To ensure the productivity and profitability of rice and corn farming over the long term.

Targets

- The program aims to increase rice production to 12 million mt by CY 1997-98.
- The program also aims to increase corn production to 7 million mt by CY 1997-98.

Program Component

The components of GPEP are as follows:

1.0 Input Subsidy

2.0 Increased Fertilizer Usage

3.0 Irrigation and Structure Support

4.0 Production Technology Updates

5.0 Training of Farmer Trainers

6.0 Financing Support through Quedancor and Agricultural Credit Policy Council

7.0 Postharvest Facilities and Technology

8.0 Transport Infrastructure Support

9.0 Marketing Support

10.0 Information Dissemination

Program Monitoring and Evaluation

GPEP's performance will be monitored monthly, quarterly, and annually. In the interim, an evaluation of the corn component is being implemented with the application of the Rural Enterprise Development (RED) evaluation process at Zamboanga Sur, North Cotabato, Bukidnon, and Isabela. Similarly an evaluation will be conducted for rice to provide the benchmark data for future evaluation. Upon completion of the GPEP program, a post-evaluation study will be conducted in 1998.

Program Management

At the national level, the Program direction and policies will be implemented through a National Management Committee. A program director is designated to coordinate the activities of the Program's various components. Six technical committees and three program support committees are under the Program Director's office. The committees will be responsible for the smooth implementation of their respective program components. At the regional level, a Regional Coordinating Committee headed by the DA Regional Director is established. At the Provincial level, a Provincial Action Committee chaired by the Mayor shall be instituted. At each of these field levels, action officers at the regional and provincial levels shall be identified, while at the municipal level, implementing officers will be designated.

Budget

The 1993-1998 proposed budget is estimated at P74.3 billion to implement the GPEP. From the General Appropriations Act (GAA), P5.7 million has been allocated for various agencies involved with the GPEP. For the rest of the budget for 1994 to 1998, P28.8 billion will have to be sourced from government, and the remaining P39.7 billion will have to be contributed by the official development assistant.

4.0 Prognosis of the Present Government Selected Programs

After three years of stagnation, the prospects for growth have never been as optimistic as they are today. These positive developments, however, are the results of economic reforms made by the Ramos administration and his predecessor, and have had a favorable impact on the country's economic sector. Among them are the lifting of all foreign exchange controls, the breaking up of the monopoly dominating the telecommunications industry, and the privatization of government-owned state corporations. The more dramatic positive changes can be attributed to the streamlining of the bureaucracy, which has buoyed the confidence of investors. Certainly the very immediate resolution of the "brownout" problem has triggered a very enthusiastic response from the manufacturing sector. The performance of the Philippine Stock Exchange could only be considered as exemplary. After a modest increase of 2.5% in 1993, the GNP is expected to grow at 4.5% in 1994.

Looking at the agricultural and natural resources sectors, the overall performance of agriculture, forestry, and fishery is a creditable 2.5% in 1993. However, unless the agricultural and natural resources sectors can muster a growth rate higher than the increase in population, the gaps in production and

domestic consumption will have to be sourced from importation.

The Trade for Agricultural and Related Products from 1988 to 1992 is shown in Table 4.0

Table 4.0 (value in US$ 000)

Year	Total Exports	Total Imports	Trade Balance
1988	2,568,807	1,683,208	885,599
1989	1,855,587	2,055,893	(200,306)
1990	1,855,587	1,890,775	(217,603)
1991	1,919,576	2,045,867	(126,291)
1992	1,921,974	2,246,730	(324,576)

Source: National Statistics Office

The programs presented in this paper show that there is a definitive commitment of the government to pursue a modernization of agriculture that will lead to the agro-industrialization of the countryside. Each program has its own merits, and if taken collectively, can become the basic foundation of countryside agro-industrialization. These focused approaches and strategies can be summed up as follows:

- The infusion of Science and Technology in support of industry and agriculture is a key concept of the DOST's STAND program.

- The selectivity of production zones for specific commodities in the DA's KPA program can very well dovetail with the RICs in the Philippine NIC 2000 strategy.
- People empowerment, as espoused in the ISF program of DENR and the more recent Technology Commercialization Projects of NRMP, is geared toward enterprise building closely akin to the AIDA mode of CAIDS.

It is not so much the program concepts and contents therefore, that meet with specific nor general objections, but the inability of the government sector to implement these programs successfully. Looking deeper into the delivery mechanisms in each program, there are general observations that serve as drawbacks to the government's delivery system. These are:

1.0 Too centralized management and control, which makes for bureaucratic red tapes and delays in operation;

2.0 The regional sectoral capabilities, for lack of trained personnel, may be wanting in management skills, such as proposal packaging which is still done in the central offices.

3.0 Interdepartmental coordination is very difficult on the regional and provincial levels.

4.0 Logistic support in funds, utility transportation, and badly needed equipment (communications) is lacking.

We need go no further to see where implementation of government programs in the Philippines is greatly

hampered by the built-in constraints in the bureaucracy.

Another glaring hindrance to the advancement of agro-industrialization development is the very minimal support allocated to Research and Development (R and D) in the agricultural and natural resources (ANR) sectors. In 1982, R and D expenditures of government as percentage share of GNP was 0.29%; in 1992 the R and D expenditures brought the Philippines agricultural and natural resources sectors back to the dark ages. In fact, aside from the seaweed industry's breakthrough in the processing of Philippine Natural Grade (PNG) carrageenan, which is a private sector undertaking, there has not been any technological breakthrough in ANR R and D in the Philippines for the past two decades.

Finally, t e very minimal support of the private sector to government programs does not ensure the programs' sustainability. The very frequent changes of management and administration in the Executive Departments of government greatly diminish the sectoral programs' life and sustainability. The private sector's reticence in becoming partners of government, especially in agro-industrialization, stems from the short life span of long-term government projects.

I. INDUSTRY PROFILE OF SELECTED COMMODITIES IN SPECIFIC REGIONS

Over the past thirty years, very profound changes have been perceived in the framework and structure of established and emerging industries. This is brought about by changes in the global economy's trade systems and alliances, notably: rapid advances in technologies (communications, information, products and services); a growing awareness of ecological and environmental concerns; changes in agro-climate's, and a host of other factors, including the realignments within the social fabric of communities, organizations, and governments.

In the Philippines, several overriding factors/changes must be given consideration in order to redesign a new framework for rural industrialization.

The current status of specific industries in the selected regions are presented in summarized capsule to highlight the different inherent changes as they affect the industry.

1.0 Region II - Timber and Furniture Industry and Agriculture

Region II has always been famous for its timber products manufactured by over 2,000 woodwork enterprises. Cagayan Valley, with its rivers and wide plains, is the seat of

rice and corn production in the region. Rice is a primary agricultural product, and tobacco, a major commercial crop. The region is the second least-densely populated in the country (after the Cordillera Autonomous Region). Agriculture continues to dominate the production sector, with peanuts and mungbean as potential industrial crops.

The logging ban has displaced a sizeable number of the upland labor force, which at present live off of the land by "kaingin" or shifting cultivation.

Agro-industrialization is hampered by the constant damage caused by typhoons on structures and the road network. The region, being landlocked, depends primarily on its road system for moving people and products.

2.0 Region IV – CALABARZON and Tourism in Palawan

Southern Tagalog, from Aurora province to Palawan spans more than one-half of the entire length of the Philippine islands. Today, the region is the most populous of all the regions outside of the NCR. Its population of 8.26 million is 13.6% of the country's total population.

The ongoing expansion of industries in the CALABARZON is depleting prime agricultural lands and driving real estate prices sky high. Laguna lake, at the fringe of the industrial provinces of the region, averages 7.0 meters depth, with 4.5 meters silt, and 2.5 meters water. The wanton destruction of the environment in favor of industrialization projects (e.g. quarrying) has rendered the lake virtually a wasted waterway. Palawan, a virtual paradise with lush green forest and pristine waters, is known as the "last frontier" in the islands. Ongoing oil exploration promises to boost the country's economic recovery. Environmental concerns however, are primary to the industrialization process.

The Palawan Sea is also the richest source of marine products in the country. A fish storage and processing plant can alleviate the plight of the coastal fishermen. Of the 3% population growth in Palawan, 1.2% is due to island migration from Visayas, a factor that has to be considered in the development of enterprise and industries in the province. A major economic

boost comes from tourism. The islands are still untouched and beautiful. Very high profile corporate groups have started to develop islands as tourist spots. Marine Parks and Wildlife Sanctuaries are favored attractions for eco-tourism.

Logging, the most lucrative industry in the island, has been banned. The move has caused 17 local woodwork enterprises to collapse and has displace roughly 5,000 logging concession workers and their families. The DENR-USAID NRMP program has ongoing enterprise projects to alleviate conditions for the displaced workers and to provide substitutes from lowland wood resource materials for the moribund enterprises. The community forestry advocacy of DENR is being modeled in Candes, Puerto Princesa.

3.0 Region V- Rehabilitation of Abaca, Minerals and Geothermal Energy

Bicol is one of the impoverished regions in the Philippines. As such, population growth had been stagnant or even declining due to the migration to other regions.

The region at present does not have the capabilities to generate enough opportunities for a burgeoning labor population.

The region is the origin of the world-famous Manila hemp of commerce. Unfortunately, from the commodity's lofty position as the maritime industry supplier of cordage, abaca has been replaced by synthetic ropes. From a hectarage of over 200,000 hectares, Bicol has less than 30,000 mostly in Catanduanes, and at Sorsogon and Albay. A recent pronouncement of the maritime world industry to stop the usage of synthetics because of its non-biodegradable properties, has given hope for the industry's revival. The paper pulp industry, abaca crafts, wall paper, and others have placed abaca as a major commodity in agriculture. However, the present system of trading abaca must be dismantled and discontinued in favor of a direct marketing of semi-processed products from the producers. The abaca growers must be organized to be able to gain control over the purchase of farm inputs and the pricing of their produce. There has been no

innovation in fiber extraction technology. The Hagutan, has been the same technology used for fiber extraction 100 years ago.

Mineral resources abound and includes gold, copper, chromite iron, and nickel. Non-metallic minerals are limestone, pumice, perlite, clay, phosphate and gypsum.

Geothermal energy sources are one of the highest in the country. Harnessing this vast energy resource base is estimated to produce a total of 482.20 megawatts for the Luzon grid. At present, the region already contributes 332.20 megawatts to Luzon's energy requirement. Ironically, only 59.26% of the total number of "barangays" are provided with electricity.

Government intervention in all the developmental aspects, especially infrastructure building, is required for the region to be "dragged" into the mainline of economic growth. The need for updated technology innovations in agriculture and industry must be the prime concern for both

the public and private sectors.

4.0 Region X- Pineapple Industry, Tomato Paste Processing, Woodworks and Bamboo

Bukidnon is the watershed of the whole of Northern and Central Mindanao. Favored with elevated plateaus at high elevations, cool climate and a vast land area, agricultural pursuits have been the backbone of the economy.

The Pineapple Industry

The pineapple industry was pioneered by a MNC in Bukidnon, Northern Mindanao. Another MNC established a completely integrated production/processing complex in Polomolok, South Cotabato in 1963. All of the land planted to pineapple are leased either from government or from private land holdings. The MNC's operated the pineapple industry as a closed system with only employment and taxes as local benefits. Nonetheless, the industry provided a lot of opportunities for local talents to become technicians and managers. In 1992, pineapple was planted in some 60,588 ha. in the country, with production at 1,135,199 mt.

The pineapple are exported to Japan, U.S.A., Europe, the Middle East and Korea. Pineapple both fresh and canned has had a very steady growth of roughly 3.0 and 2.4% annually. The world demand remains high and is expected to grow by an annual average of 4-7%.

The MNCs at the Bukidnon and South Cotabato lease approximately 8,000 hectares respectively or approximately 16,000 ha., plus another 4,000 ha. in Davao. Formerly, most of the areas were government land owned by the National Development Co. (NDC). With the CARP, the property was turned over to the Department of Agrarian Reform, which in turn transfered the ownership to the Agrarian Reform Beneficiaries Cooperative. The coop, besides becoming the lessors also shares in the MNCs agricultural production cost and 10% of annual net profit. Land lease is P3,000.00/ha.

The agrarian reform program has made a drastic change in the structure of the industry and consequently triggered a change in the production system. The MNCs now include cooperative growouts instead of just in-house corporate farming. This allowed for

technology to be transferred to local growers and for them to become an integral part of the industry.

Tomato Paste Processing

There have been two attempts in establishing tomato paste processing in the Philippines. One is at Pangasinan and the other at Ilocos Norte. Both have not progressed and had incurred losses in those investments. There are several reasons given for these, from poorly designed equipment lines to purely mismanagement of the production operations.

In Bukidnon a new tomato processing complex is being established with 3,000 hectares growout, at Impasugong with a processing plant at Manolo Fortich. From interviews with the farmers at Impasugong, it was learned that the newly formed MNC will engage the farmers cooperatives for growout production of tomatoes. The hybrid tomatoes, with estimated yields of 60 tons/ha, contracted at P1.50 per kg., can gross as high as P90,000.00 per hectare for this 60

days crop. The provisions of input is guaranteed by the company through Land Bank loans to the farmers of approximately P45,000.00/ha. The farmers will still stand to net P45,000.00/ha.

It was learned that the company has its own line of tomato hybrids which have been tested at Impasugong. In the Luzon operations, the tomato seeds had to be imported from Japan at an exnorbitant price. The hybrid variety is what determines the desired color and solid recovery given optimum conditions.

Granting the success of this venture in Bukidnon, this will trigger the massive production of a spin-off activity, the planting of bamboo for stakes and trellises of the tomato. Another spin-off industry is the production of fast growing species for use as crates, bins and pallets. Typically, the private sector initiative in agro-industrialization is pursued with very minimal support from government. As far as market, the Philipoines imports roughly 95% of its tomato paste requirement.

Woodworks and Bamboo

In the search for alternative materials to replace the Dipterocarp hardwood species, a TDT-NRMP project at Bukidnon has identified at least four lesser known species (LKS) of wood for use as higher valued products. This particular LKS is known as Mamalis (local name) which the natives and uplanders gathers for firewood. It has a very high burning capacity and is also known as the kerosene tree.

In testing different substitute wood species, the Mamalis with its fine grained texture, light but notably dense, with high tolerance to cracking, is a very ideal material for accessories as a replacement for the banned corals, for wooden housewares and furnitures. A plant has already been set-up as a pioneering project for product development and commercialization. With the TDT's principle of integration, two upland communities have been organized, trained, given livelihood options, and being directed (by the PMO), to establish Mamalis plantations as reforestion species within the residual forest.

Another product development that has potential to create a massive economic impact for the countryside, is the use of certain species of bamboo as veneer substitute for plywood. Plyboo, a name coined by the developer of the product, is already a commerciable technology in Abra, Northern Luzon. The voluminous requirement of bamboo materials required to sustain the manufacturing operation is not presently available in one solid area anywhere in the Philippines. Massive plantation development in the magnitude of 10,000 to 25,000 hectares per module will be required. Even so, the implications of what this pure bamboo veneer product can do for countryside development is staggering.

In Bukidnon, an entirely different product development, but even more practicable, is the bamboo-wood combination to replace plywood. The giant bamboo species found in Bukidnon, is being utilized as the outer veneer with fast growing wood species providing the inner core. This very strategic commercial product development can initiate a sizable community base

reforestration with fast growing soft-wood and semi-hardwood species, at the same time rehabilitating the giant bamboo variety for commercial use.

5.0 Region XI- Developments in the Banana Export Industry

Davao province has always been the premier agricultural hub of Mindanao in particular and the top grosser of fruit export for the Philippines. This was brought about by the introduction of the Cavendish banana in 1963 and subsequently the birth of the Philippine Banana Export Industry in 1965. The industry then was purely in the hands of three multinational corporations who either leased lands through local subsidiaries to develop their own plantations or, as in the majority of cases entered into a growers contract with local corporations, where the MNC's provided technology for a fee, and a ready market. The local corporate growers in turn resorted to massive land buying and leasing of lands which in the beginning totaled 25,000 hectares, limited only by an agreed LOI #58, to the aforementioned hectarage. This was further

reduced to 21,000 hectares as the industry experienced market glute and cost-price squeezes brought about by a series of energy crises. While the MNCs prospered together with their local corporate partners, the only contribution that could be attributed to the mass base in Davao is the provision of direct employment to the banana corporations and their ancilliaries, which at peak contributed 27,000 jobs.

Recently, with the possibility of new market opening in Korea and the resolution of the Gulf conflict, some sector have voiced out the opinion that the banana industry must lift• its self imposed limitation of banana hectarage and expand to about 35,000 hectares. The present banana export industry association, would first like to fill up the 4,000 hectares stipulated in the LOI#58 before any new policies can be instituted for further expansion of the industry.

Several radical changes have since then brought about a new structure to the present industry. These are summarized as follows:

- The status of land ownership has changed in view of the CARP. Most

of the leased conditions from individual farmers have been restructured to reflect more direct profit sharing similar to the pineapple cooperatives contract.

- In view of rising input cost and price fluctuations in the Japan market, the local corporate growers have opted to cut down on the daily wage workers in favor of "pakiaw" or contract labor.
- Management of corporate affairs have become more participative together with incentives given, based on performance rather than straight bonuses. This practice keeps management highly competitive within the industry and is deemed necessary in order to survive.
- Most of the land areas have lost their productive potential. Excessive chemical applications have caused concern on environmental degradation and health hazard, both to the workers and consumers.

- The market has become more volatile as the cultural changes in the market place affects the preference for fruit and food in general, with a new generation dominating the major markets specially Japan.

Other Industries

The seaweed industry is a sunshine industry and presents every opportunity for even more economic gains. The mere fact that the Philippine coastal environment favors the growth of a varied number of species and with a vast coastal area basically untapped, industry's developmental strategies must be drawn very clearly from very sound scientific, environmental and economic considerations.

The coconut industry on the other hand needs some very basic policy changes and restructuring if it is expected to survive.

The Seaweed Industry

The Philippines had always been a producer of seaweeds and had been exporting since the early 1950's. All of the production then, was sourced from the wild natural growth that is found all

over the islands. In the early 1960's the pioneering work of Dr. Maxwell Doty and Vicente Alvarez at Ilin island, Occidental Mindoro established the first seaweed cultivation in commerciable volumes. Eucheuma farming in the Philippines was born. Although there are other species (i.e. Caulerpa leucillifera, Gelidiella acuroea, Gracialariz spp., Sargassum spp.) that are commercially utilized and process, Eucheuma clenticulatum, and Kappaphycus alvarezii occupies the majority of the Philippine seaweeds trade with both raw (dried) and processed (carrageenan) products.

The Philippines is currently the leading producer of raw Eucheuma and semi-refined carrageenan, constituting 70% of the world's supply. The Philippines ranks fourth among the world's producers of seawweds and the redgeling industry dierectly involves 350,000 families in seaweed farming.

With the commercial potential of seaweeds for a number of high valued products (i.e. Rose agar from Gracillaria commands a price of $4,000.00/lb) and with our coast lines being 12 times that of the United State, the generation of production and product technologies either introduced or locally

sourced, deserves priority within our S and T sector. As of the moment, the private sector leads in the R and D for product development from seaweed with minimal support from government. On the other hand our neighboring countries, Malaysia and Indonesia have embarked on mass production culture of seaweed coming form the Philippines and developing new products from it.

The Coconut Industry

Roughly 20 million Filipinos are affected directly or indirectly by this industry either as a direct source of income, means of employment or livelihood. The industry is served directly by 1.0 million farmers and around 1.9 million farm workers, who are immediately affected by upheavals and uncertainties in the industry.

The area occupied by coconut is estimated at 3.11 million ha. producing roughly the equivalent of 2.1 million tons of copra. The industry is comprise of 100 oil mills (1.0 to 1.5 mt copra/day); 63 oil refineries (500 to 700 mt copra/day); 15 dessicated coconut processors (107,000 mt annual capacity); 6 activated carbon manufacturers and 6 oleo-chemical plants, all of which contribute to a total of $589.04 million

foreign exchange earnings.

In the past ten years, copra production had dropped from 2.69 million tons in 1986 to 2.059 million tons in 1990. Several reasons which attributed to loss of productivity included poor crop nutrition, increasing number of very old unproductive trees and the more recent coconut lumber cutting including young trees for low cost housing. A massive rehabilitation program has been proposed several times over, but has not taken off for several reasons:

- There is no clear cut policy on land use in coconut areas.
- Coconut farmers income average around P4,020.00/ha annually on copra-base production.
- The industry favors the copra traders and processors at the expense of the farmers.
- Monoculture production of coconut has not been proven to be commercially viable for the small farmers.

The implications of needed policy changes must be addressed if the industry is to survive.

Industry Changes, It's Implications

There are a number of observable changes taken from the selected industry status that will have to be interpreted in terms of the re-assessment of strategic options in policy direction for the existing industries and emerging ones. The more important considerations may be summarized as follows:

Land use:

- o Land ownership of agricultural land are in smaller parcels with new owners as mandated by CARP.
- o A large portion of the upland resources are occupied by upland dwellers who are now afforded custodianship of this resource base.

Production System:

- o Contract growing is fast becoming the predominant production option as opposed to fully contained corporate plantations.
- o Cooperatives and farmers associations are finding their niches in the agro-industrialization process as basic production

units, both for agriculture/fisheries and forestry sectors.

- Chemical agriculture has given rise to a number of environmental concerns and loss of productivity. More environment friendly production systems must be researched and innovated.

Management:

- The MNCs and other large corporation are opting for more participative management with incentives being given with performance.
- A new breed of entrepreneurs from middle management are pursuing their own product development and enterprises.
- Organized farmers group are forming linkages with NGO s, government agencies, and private sector for provisions of management skills and transfer of technologies.

Labor:

- With the rapid increases in wages legislated by government, the agricultural sector in particular have adopted the "pakiaw" or piece-work system to circumvent paying higher wages and benefits.
- Because of urban migration there is a dearth of skilled labor in the countryside for agro-

industrialization. The upgrading of capabilities and skills of rural labor is needed if the countryside is to speed up its agro-industrialization process.

Technology:

- The demand for technology innovations in products or information has not been met to any degree, since the R and D efforts of government or private institutions can only be considered as nominal.
- The rapid degradation of our precious natural resources and the environment requires technologies that can sustain the natural resource base while at the same time, afford the countryside populace a better quality of life.

Organizations:

- There is a general chopping-up of giant corporations into smaller corporate units. While before, the very monopolistic structure of the giant corporations practically encompasses the production, processing and marketing of their own products, the various components of the integrated complex are now being controlled and operated by separate organizations.

- There are a proliferation of smaller companies that have ventured into food production as in the fruit processing and furniture industries. While this is a welcome development for the industrialization process in general, monitoring and control of product quality has become a more complex and difficult job for government.

VI. RECOMMENDATIONS

1.0 With the urgency of the need to draw the countryside into the mainsteam of economic developement, a NEDA initiated comprehensive evaluation of existing sectoral programs is called for, to refocus the sectoral strategies and consolidate resources into a synchronized rural development agenda. The agenda must include the details of the identified interventions and responsibility centers and the desired coordination mechanisms on the ground level to achieve very defined objectives.

2.0 The realignment of global and regional economic zones and affiliations and with the current changes in the local industries, new policies and directions will have to be formulated to guide the

emerging industry structures. The private sector's participation in the formulation of new policies and directions is a must, to allow for wider options in the devlopment of new industries.

3.0 Recognizing that the majority of our rural population are not yet ready to take on the responsibilities of entrepreneurship, a mechanism for sustained technical and management intervention is required in the immediate interim period, for the smooth turnover of functions to the farmers as managers and entrepreneurs.