

The coconut industry has been at the forefront of debate and controversy for over three decades now. The situation stems from many sources: from the “commanding” presence of the industry in the rural sector, to its being the “orphan child” of Philippine agriculture, and to its claim to large assets – the coconut levy fund.

Why is the industry that important? First, coconut farms are reportedly present in 69 out of 79 provinces. Second, coconut farms cover some 3.3 million hectares (ha), nearly 30% of farmlands. Third, coconut regions host among the largest number of rural poor. Predominantly coconut areas are almost always the sites of insurgency. Fourth, coconut products contribute nearly half of agriculture exports. Fifth, coconut lands have among the largest potential for diversification among the major crops. Last but not the least, it has a huge, untapped resource pool for industry development (the coconut levy funds) which has been locked in legal battle since 1986.

While the debates continue, the coconut industry is caught in a “time warp” of stagnating production and, in turn severe poverty. Resource flow to the industry is limited. And yet, this orphan child of Philippine agriculture has among the highest potential for growth through productivity enhancement, diversification, and industry value adding. If managed well, it can be instrumental in rural industrialization and job creation.

Industry Status and Performance

This section will discuss the industry performance over the past two decades (1986-2005) in terms of production and exports, as well as analyze trends and structures. It will also utilize the agro-industrial cluster and supply chain framework as tools for analysis.

Farm Production. The coconut industry by any measure is a major agriculture industry. According to the 2002 Census of Agriculture, coconut lands comprised 1.4 million farms, or 29% of all farms. This level is surprisingly higher than rice lands at 1.35 million. Similarly, physical area of coconut lands totaled 3.32 million ha (34% of total), higher than rice at 2.5 million ha and corn at 1.4 million ha. By island group, Luzon had 20%, Visayas 34%, and Mindanao 46%.

Areas. Coconut farms averaged 2.4 ha and are bigger compared to rice at 1.8 ha and corn at 2.0 ha, but

smaller than sugarcane, 5.4 ha. The farms are spread in 2.54 million parcels, equivalent to about 1.8 parcels per farm compared to the overall average of 2.

Altogether, two-thirds of all farms are owner-operated, and 23% tenanted or leased. The average farm size shrank by a third to 2.4 ha in 2002 from 3.6 ha in 1991, in part due to the advent of the Comprehensive Agrarian Reform Program (CARP) in 1988, as well as increases in number of farms to 1.4 million in 2002 from 0.76 million in 1991.

Productivity. At some 40 nuts per ha (750 kg copra /ha), coconut has the lowest farm value per ha among crops. It is only half of corn, a fifth of rice, and a sixth of sugarcane. It generates less than a third of the average for all crops. This is due to low yield, mono-cropping, and underutilization of lands under the coconuts.

Much has been written about the coconut industry. Observers such as Villegas and Esteban (1980), Habito (1988), Intal (1988), the World Bank (1987, 1989, 1998, 1999), Magat and Carpio (1997), Olander and Johansson (1998), Aragon (2000), and Romero (2005) have noted the various challenges facing the industry. These challenges include: low productivity, limited intercropping, and in turn, high poverty. The causes include:

- (a) Large areas are planted with low genetic potential
- (b) Vast areas are not fertilized while actual labor inputs are only half of optimal;
- (c) One third of the coconut trees are senile; and
- (d) Coconuts are planted on marginal lands.

Coconut-based Industries. The coconut industrial sector spans many activities. They are characterized, however, by over-capacity due to the stagnant farm sector. The industry comprises:

- (a) Some 65 coconut oil mills with an installed copra crushing capacity of 4.54 million tons a year;
- (b) 45 oil refineries with installed capacity of 1.53 million tons of cochin and refined, bleached and deodorized (RBD) oil a year;
- (c) 10 desiccated coconut plants with installed capacity of 132,700 tons a year; and
- (d) Eight oleo-chemical plants making intermediate coconut-based chemicals like fatty alcohol,

fatty acids, methyl ester, and glycerin (UCAP, 2004).

Agro-industrial Cluster. The coconut agro-industrial cluster is fairly complex compared to other Philippine agriculture products. The industry's products and by-products are detailed in Table 1 (Agustin 2005).

Table 1. Coconut Product Map

Primary	Value adding	Byproducts	Value adding
NUT	Desiccated coconut Coconut milk & powder Buko juice Virgin coconut oil Delicacies	Coconut shell	Shell charcoal Activated carbon
		Husks	Coco Coir Coir dust (mulch) Geo-textiles
COPRA			
Coconut Oil	Cochin oil RBD oil (a) Intermediate oleo-chemicals (fatty acids, fatty alcohol, glycerin) Biodiesel	Copra meal	Animal feeds

(a) Refined, bleached, deodorized

Export. Coconut products remain the Philippines' leading agriculture export (US\$ 840 to 900 million a year), comprising 37 products and by-products that are exported to 114 countries. The major exports are crude and refined oil, copra meal, desiccated coconut, activated carbon, and oleo-chemicals. Exports account for 80% of production and 20% are consumed locally (Agustin, 2005).

Industry Assessment

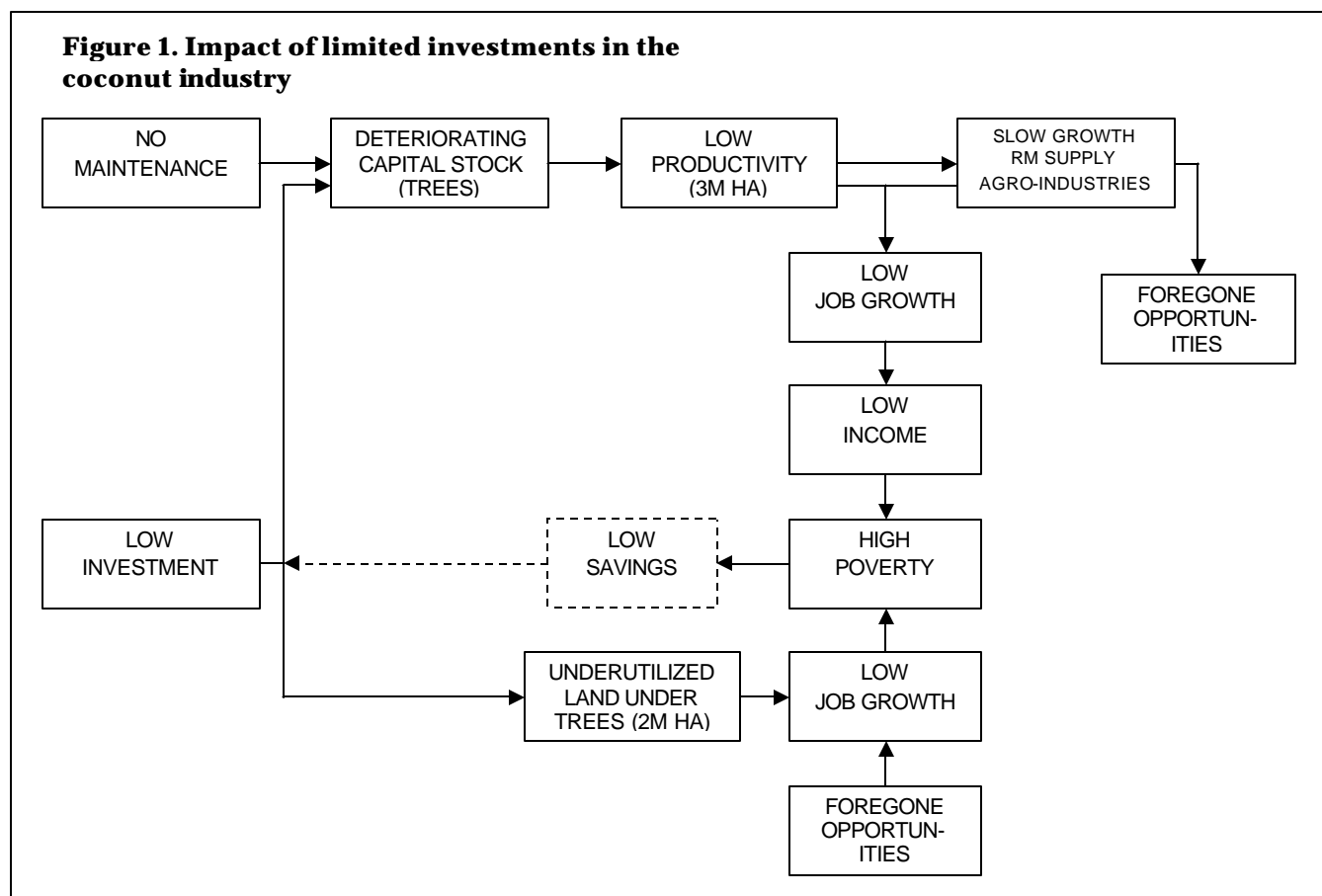
Strengths, Weaknesses, Opportunities and Threats (SWOT). The coconut industry is a resilient one, full of potential but has many weaknesses. While it hosts many opportunities, it also faces many threats. These are considerations in formulating strategic directions later.

The present supply chain of the industry is generally characterized by cost-increasing rather than cost-reducing conditions. These include:

Table 2. Coconut Industry: SWOT Analysis

ADVANTAGES	CONSTRAINTS
STRENGTHS	WEAKNESSES
Inputs	
1. Availability of good clones	1. Only 1% of the areas are planted with good clones
	2. No irrigation system in coconut areas
Farm Production	
2. Favorable climate in most areas	3. Senile trees (30% of stands)
3. Availability of technologies	4. Only 1% of the farms apply fertilizers
	5. Plantings in marginal lands
	6. Intercropping in only 30% of the land
Logistics	
4. Established marketing system	7. High assembly costs due to poor roads & fragmented, small holdings
5. Export facilities	8. Multi-layered marketing channels
Milling	
6. Presence of many mills	9. Underutilized mills
7. Presence of refiners	10. Underutilized refineries
	11. Shortage of raw materials
	12. High assembly costs
	13. Low quality copra
Other Value Adding	
8. Many product possibilities	14. Cost of raw materials
Institutions	
9. Multi-stakeholders	15. Frequent changes in PCA leadership
	16. Lack of program support; too dependent on coco levy resolution
OPPORTUNITIES	
1. Stable and growing export and domestic markets	1. Poor global image in supply reliability
2. Good prospects for value added products (VCO, geotextiles, etc)	2. Perception of government inaction
3. Alternative fuel (coconut methyl ester- biodiesel) demand	3. Competition from other tropical oils (i.e. palm oil and palm kernel oil)
4. Low domestic oil consumption	4. Development of rapeseed and cuphea with high lauric content
	5. More stringent sanitary & phyto-sanitary (SPS) standards
	6. Unregulated cutting of trees
THREATS	

Figure 1. Impact of limited investments in the coconut industry



- (a) Unorganized and dispersed small holdings which affects economics of scale in input supply, primary processing and marketing;
- (b) Low yields caused by poor genetics, nil fertilization, and limited replanting of tree stocks;
- (c) Inadequate nut supply causes over-capacity of processing plants;
- (d) High cost of logistics due to small production lots and high transport costs;
- (e) Global market threats from tariff and non-tariff barriers such as minimum residues levels and labeling regulations.

policies have made investment in long gestating crops unattractive (World Bank, 1999).

The long-term bias for rice self-sufficiency and, therefore, for irrigation projects have inadvertently led to the neglect of coconut development as an instrument of poverty reduction. While the Government is willing to fund irrigation projects to the tune of Php100,000 to 400,000 per ha, in addition to the operations and maintenance (O&M) subsidy for national systems, support for coconut has been far less (World Bank, 1999). Today, rehabilitation of national systems requires at least Php150,000 per ha. By contrast, coconut replanting would only require Php 50,000 per ha. This means that three coconut rice farmers can be benefited for every irrigated rice farmer!

Current Policies and Programs

Policies. Government policies are generally biased against tree crops in general, and coconut in particular. First, public sector investments have focused on irrigated rice. This is a result of the decades-old drive for rice self-sufficiency. Second, slow implementation of CARP has bred investor uncertainties, and militated against investment in long-gestating tree crops. Third, limited grace period for tree crops and the high real interest rates resulting partly from Government macro

CARP. The advent of CARP discouraged farm investments. Stringent provisions of eligibility and transferability have distorted the rural land markets. There has been no replanting or intercropping in most commercial estates since 1988. In the case of coconut, there had been cutting of coconut trees by landowner as lumber. The uncertainties created by land acquisition and transferability provisions of the law caused the decline of private investments.

Coconut Levy Fund. The levy fund has a long history. The levy is a potentially rich resource for the development of the coconut industry. The current market value of the assets could be in the order of Php100 billion for San Miguel shares, the Coconut Industry Investment Fund (CIIF) mills, United Coconut chemicals, and other companies (Jose Romero, Jr and Efren Villasenor, June 2006). However, the age old reliance on the "recovery" of the levy as means to develop the industry has boomeranged.

AFMA. Government policies for agriculture and fisheries, in general, are enshrined in AFMA (Republic Act 8435) since 1997. It called for modernization of agriculture and fisheries: *"the process of transforming the ...sectors into one that is dynamic, technologically advanced and competitive yet centered on human development, guided by sound practices of sustainability and the principles of social justice"* (underscoring by the authors).

There is, however, a wide chasm between policies and practice. The AFMA budget between 1999 and 2004 has declined in real terms in contrast to a large increment (Php 15 to 20 billion each year) for agriculture and fisheries under the law on top of the budget of the Department of Agriculture. The funding constraint is severely exacerbated in the case of coconut where support is miniscule relative to needs.

Programs. During the nineties and prior to AFMA, the main program of significance was the World Bank-supported Coconut Farms Development Project (CFDP) that was implemented in 1991-1999. Under DAR, the agrarian reform communities (ARCs) program, there are 645 coconut-based ARCS with some 350,000 beneficiaries. Coconut-based ARCS account for nearly 40% of all ARCS (1,633) (DAR, 2006).

The GMA Coconut program which took off from the Maunlad na Niyugan Tugon sa Kahirapan Program was launched under EO 210 of February 2000. The Maunlad Program aims to improve coconut productivity and increase the annual income of coconut farmers from P10,000 to P100,000 per hectare through an efficient integrated coconut-based farming system. It also seeks to increase coconut production through conservation, replanting and rehabilitation of the palm population. The Maunlad program entails the establishment of model coconut farms, coconut replanting and establishment of local nurseries, and provision of agricultural infrastructure. Sadly this program has not lived up to its targets.

The Medium-Term Philippine Development Plan (MTPDP), 2004-2010, Agribusiness Chapter envisions the development of two million ha of agribusiness lands in order to create two million jobs. Of these, 1.35 million

ha will be in coconut lands: about 80% for replanting 1.08 million ha and 270,000 ha for intercropping. This would mean, replanting of about 180,000 ha per year which would require some 24 million seeds nuts a year. Since the supply from seed farms is only 2 million, there is a shortage of about 22 million a year. Selected farm seed nuts can give about 12 million a year and that leaves a shortage of 10 million a year, or nearly 75,000 ha a year for replanting.

The budget required for 14 million seed nuts will be about Php70 million a year. On the other hand, fertilizer for 100,000 ha per year (at 6 bags per ha) will need about P480 million, or some P550 million a year. Compare this with the PCA MOOE of P41 million a year. Given the mismatch of MTPDP coconut targets and resources, the agribusiness targets must be revisited.

Major Problems and Issues Confronting the Current Programs

There are several issues that confront the coconut industry. These are: (a) top level commitment; (b) financing development; (c) resource allocation criteria; (d) institutional; (e) implementation; (f) engaging the civil society; (g) global market access; and (h) CARP and other laws.

Top Level Commitment

Coconut as the *orphan child* has resounding evidence in the absence of a sustained roadmap for the industry. It is also manifested in constant changes in PCA management, and negligible funds budgeted for development. The constant changes in PCA leadership (as in the DA leadership) do not augur well for continuity of programs. The lack of political resolve by past administrations since 1986 has led to lack of a serious development program. The low budget for the coconut lands relative to its land and farming population is difficult to comprehend to outside observers, in part caused by too much reliance on resolution of the coco levy funds issues is a drag on the industry. This malaise contrasts with the resource commitments for the rice industry.

Financing Development

Serious shortage of long-term financing for perennial crops remains a significant constraint on development, and on crop diversification. The financing of the replanting program for coconuts is an outstanding example. However, the use of the banks for financing planting or replanting of perennial crops has been less successful in developing countries. Given the political difficulties in collecting levies or cesses, as well as the unwillingness of banks to finance smallholder perennial crops, the issue appears complex. There is need to

explore various options for the establishment of effective financing mechanisms for perennial crops (World Bank, 1998).

Resource Allocation Criteria

Coconut plantations host the largest expanse of idle and underutilized lands today. The potential for investment and job creation are high. But rice receives by far more budget allocation than coconut on per ha or per farmer basis. There must be resolve in letting market forces decide on what to plant and where to plant in the context of replanting, conversion or intercropping.

A planted hybrid coconut shows good economic returns. On the basis of an average peak yield of three tons copra per ha during year 9 to 16, the economic rate of return is 42% (with zero opportunity cost of land). By contrast, that of a local coconut tall is still good at 27% (peak yield of 1.9 tons copra per ha). The ERRs are comparable to those of oil palm (38%), rubber (23%) and mango (41%), and all are higher than the hurdle rate of 15%. Both assume development costs per ha of US\$720 and US\$727, respectively at constant 1998 prices. The long-run financial rates of return are also acceptable at 32% and 21%, respectively (World Bank, 1999).

Institutional

The PCA has been given the mandate to provide leadership in the development of the industry. For the past years, industry growth has been much delayed due to low level of investments, characterized by too many under-funded, short duration programs which have been unable to generate a sustainable impact. This has demoralized both the farmers and the PCA extension staff. As a result, there is little or no application of fertilizers or other inputs, and replanting has been very slow and poorly maintained (World Bank, 1999).

The World Bank (1999) found the PCA Research Branch has achieved important breakthroughs in breeding, agronomy, plant protection and coconut wood utilization, but their adoption has been limited by the absence of sustained outreach programs and unpredictable funding. More emphasis is now needed on the management of the research program to restore its momentum and make it more dynamic and smallholder related. In order for the coconut industry to be vibrant, strong leadership is required and improved policies need to adopt which encourage the performance of PCA staff. Today, PCA has developed at least ten clones for various agro-climatic conditions but has no resources for multiplication.

Implementation

Some sectors felt that program implementation in the industry could benefit by engaging the stakeholders - the LGU, the private sector, the civil society, and the academe. With respect to LGU participation or cost sharing, there appears to be limited involvement in replanting and rehabilitation. LGUs prefer investments in infrastructure and buildings as well as short gestation projects. Moreover, fourth to sixth class LGUs with low incomes have little resources for agriculture development.

Engaging civil society

Majority of the civil society organizations (i.e., NGOs, POs, producer groups, etc) appreciate the need to use the levy funds to address the declining farm productivity. They suggested in a workshop in Mindanao not only to focus on replanting and production issues, but, more importantly, examine the whole gamut of problems besetting the sector such as the slow implementation of agrarian reform, the potential of downstream and upstream activities, the need to dismantle the existing monopolies in the sector, and the abject poverty that is prevalent among the coconut-dependent households (Mindanao consultation, World Bank, 1999).

Global Market Access

The campaign of overseas soybean interests has hurt the coconut oil (CNO) in the US food usage. Labeling requirements of trans-fatty acids in consumer products and wrong attribution of the negative impact on all saturated fats, including medium chain triglycerides from coconut oil, have affected the industry. These non-tariff barriers will not abate as lowering of tariff barriers makes many countries impose technical barriers to trade.

Laws: CARP and Coconut Cutting Law

The CARP has discouraged private investments following its provisions on retention limits as well as transferability. Efren Villasenor (2006) claimed that small farmers receive land but remain poor due to the loss of traditional support system. He strongly suggests sparing coconut lands from further agrarian reform.

Furthermore, the Coconut Cutting Law (RA 8048) is a dated law and may have to be repealed.

Impact of Government Policies and Programs (DA and LGU) on the sector and their alignment with AFMA goals

The "low intensity" approach to solving the problems of the coconut industry meant lost opportunities in the areas of poverty alleviation, global competitiveness and sustainable development in the last two decades.

It is a sad commentary of what development management is not. Coconut provinces continue to be equated with high poverty and, in many cases, insurgency. The coconut industry is not globally competitive due to failure to put in place competitive strategies and actions. Agriculture is under threat as many coconut regions are unable to provide good incomes. In the process, out-migration becomes the option for the rural poor.

Poverty Alleviation and Social Equity

Returns to coconut lands have not improved as productivity diminished in recent years. Farm yields during 1998 to 2004 practically stagnated at about 750 kg copra per ha, except in 1999 when it fell to 420 kg/ha due to the effects of El Niño. Copra prices on the uptrend provided some relief. Nevertheless, at its peak in 2004, gross return per ha was barely only Php16,000, or P32,000 per farm.

Poverty abounds in the 3.3 million ha of coconut areas. Based on the Human Development Report, regions with disproportionately coconut areas tend to have high poverty incidence. This is certainly the case for Bicol with 40.5% of families in 2003, Eastern Visayas (35.5%), Zamboanga Peninsula (44.1%) and Caraga (47.3%) and ARMM (45.7%). This is even more evident at provincial levels. As there had been little changes in coconut farm productivity through yield and/or intercrops, success in poverty reduction appears limited, except in areas where there are alternative employment opportunities like Davao City and Laguna.

The slow growth in production has affected raw material supply to agri-based industries such as coconut oil milling and activated carbon. In turn, this affected investments and job creation.

Global Competitiveness

Global competitiveness is defined as the ability of a product to sustainably compete with exports in the global market or with imports in the local market. As most coconut products, are exported, the premier measure is cost competitiveness.

A sound strategy for competitiveness is coconut-based farming system comprising two elements: replanting with good clones; and market-based intercropping with other crops and/or livestock. Marginal lands with senile trees, if not suitable for intercrops because of distance from market and other constraints must be shifted to other use such as timber or fruit trees.

Sustainable Development

Sustainable development has three aspects: economic, social and environmental (UNIDO, 2002). On the first

aspect, the low financial and economic returns to coconut farming and its concomitant high poverty have fuelled insurgency and urban migration. On the social aspect, the CARP has caused land redistribution but poverty continues due to lack of investments and weak program support. On the environmental aspect, coconut has provided “forest cover” to some 10% of the total land mass, but its plantings in the hilly and steep areas may not be the best use of land. Perhaps timber species and fruit trees would be best in hilly areas. Altogether, antiquated, low-input coconut farming technology may not be sustainable.

Conclusions and Recommendations

The coconut industry is a study in contrasts. The coconut farmers form among the largest stakeholders in Philippine agriculture but are among the most impoverished. Land diversification potential is among the highest but derives among the least support from the government. If the Government desires high growth in agriculture and job creation in the medium-term, it has to look at the coconut lands as a major vehicle.

Some strategies have been derived based on the SWOT analysis across the supply chain (Table 2), issues and program analysis. The SWOT strategy matrix outlines directions the industry should take.

Table 3. SWOT Strategy Matrix

	Opportunities (O)	Threats (T)
Strengths (S)	O-S Strategies	T-S Strategies
	Planting & replanting program – O1: S1, S2, S3, S5	Expand production – T1: S1, S2, S3
	Establish standards & enhance marketing – O2: S3, S4, S7	Enhance public sector support – T2: S1, S3, S4
	Expand production – O3: S1, S2, S3, S6	Long term industry strategic plan – T2: S1, S3, S5, S6
		Expand production & improve quality – T3: S1, S2, S3
Weaknesses (W)	O-W Strategies	T-W Strategies
	Expand replanting & fertilization – O1: W1, W2, W3, W4, W9, W10	Expand replanting & fertilization – T1: W1, W2, W3, W4, W9, W10
	Expand production & marketing – O2: W1, W2, W3, W4, W5, W10	Enhance public sector support – T2: W1, W4, W5, W6, W7, W8

	Expand production – O3: W1, W2, W3, W4, W10	Expand production & improve quality – T3: W1, W4, W5, W6, W7, W8, W9, W10
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The SWOT Matrix generated the following strategies given the industry's external opportunities and threats and its internal strengths and weaknesses.

O-S STRATEGIES

- **Planting and replanting program**

The industry has to expand the planting and replanting program to increase production to supply a stable and growing market. This must be done in strategic areas identified as having the most potential for growth.

- **Establish standards and enhance marketing**

Given the prospects of value added products, it is imperative that national standards be established which are acceptable in the international markets. Corollary to attaining this is the creation of village level processing plants as close to the market to arrest quality deterioration.

- **Expand production**

The use of coconut oil for biodiesel will need a few thousand hectares given a 1% blend of biodiesel and petroleum diesel. To avoid compounding the already poor supply reliability in the export market, there must be expansion of production.

O-W STRATEGIES

- **Expand replanting and fertilization**

A focused replanting program must be complemented by a fertilization strategy for low yielding palms in non-senile areas.

- **Expand production and marketing**

The prospects of value adding can materialize with enough raw material production to ensure supply reliability and through a sustained marketing information campaign.

T-S STRATEGIES

- **Expand production (see above)**

- **Enhance public sector support**

The public sector support for the industry through the Philippine Coconut Authority should find its way to the farmers. PCA seed gardens should be strategic with

available supply of high-yielding varieties. The PCA should act as catalyst and look at possibilities for the Lugs and private sector/farmer to establish their own seed farms and nurseries. A major source of government support would be the utilization of the coconut levy funds.

- **Long-term industry strategic plan**

The coconut industry strategic plan 2020 (under consideration by the National Academy of Science and Technology) should provide a roadmap where the industry wants to go and map out the interventions to reach the goals. This must be clearly understood and endorsed by industry players within the supply chain.

- **Expand production and improve quality**

In measuring up to the competition from other oils, it may not be sufficient to expand production to address supply reliability but quality aspects as well since there are cheaper oils.

T-W STRATEGIES

- **Expand replanting and fertilization**

- **Enhance public sector support**

Moreover, to address the AFMA goals and to enact the above strategies, the authors recommend the following:

- Formulate an industry roadmap consistent with the AFMA and MTPDP goals. This will cover replanting, fertilization and intercropping targets subject to market and economic returns;
- Allocate AFMA budget for coconut roadmap without waiting for the coconut levy resolution;
- Install a continuous quality improvement program for copra, products and byproducts;
- Strengthen the PCA as a major implementation agency;
- Revisit the idea of an independent coconut R&D center such as the government-run Philrice and the private sector-led Philsurin; and
- End CARP land acquisition and transferability provisions in 2008;
- Formulate PCA-LGU cost sharing schemes for industry development; and
- Engage the civil society organizations (NGOs, POs, producer groups, etc) in roadmap development implementation, and monitoring.

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