SOME PERSPECTIVES AND INSIGHTS ON AGRICULTURAL DEVELOPMENT

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Part 1 – External Environment and Performance

Food security and effective agricultural development have become a major election issue. Notable agriculturists, economists, and media columnists have written their analyses and comments on recent performance, and recommendations on what need to be done. However, based on research and analyses, most have been tried before and everybody knows the outcome. We at **Madecor Group** as agricultural practitioners and experienced development services providers for the past 40 years in Asia, Africa, and the Pacific Rim countries have done some homework, and would like to contribute to the discourse as politically neutral professionals by presenting analyses, perspectives, and views which may be contrary to popular beliefs.

Madecor is pro-farmer/fisherman, not anti-farmer/fishermen. We want them to be prosperous and competitive. However, we need to change the paradigm in addressing agricultural development. When we expect Filipino farmers to be responsive to market signals, we view it from the top-down perspective. We may have to view things from the bottom up rationality or from their points of view where the market signal is not the only consideration. With only 1.89 hectares (ha) to cultivate within the right season, they can only think of survival or follow what their neighbors do. No amount of efficiency can make them rich and very few major crops can lift the farmers from poverty. Filipino farmers need wider areas to farm to be well off. They must avail of technologies, access to appropriate inputs and market channels, and policy environment that enable them to expand their operations in order to stand among their counterparts in ASEAN with heads held up high in the knowledge that they can be just as good. Collectively, as a nation, we now have to change the paradigm for an "Equitable and Sustainable Farming based on the principles of Responsible Management and Stewardship of Family Farmland" (ESFARMS) instead of that sole top-down paradigm of "the rationality and guiding hand of market".

We will present first the global scenario, the ASEAN situation, and discuss possible implications of ASEAN Economic Community (AEC). We will be comparing with neighbors or other developing countries with hard facts and other important determining factors. Then we will dissect the Philippine resource and needs situations to understand the challenges of Philippine agriculture. Along the way, we share some perspectives and insights gleaned from our experiences working in many developing countries. We will offer some ideas on how to operationalize and implement already agreed major programs which hopefully will redound to achieving our national aspirations in food security, poverty alleviation, and robust and inclusive economic development.

Globalization. We are now in the age of the millennial and era of globalization. Under globalization, our agriculture is part of global supply chain like our electronic industry. We can import some raw materials, add more value and then re-export to the next level of value chain. AEC is now effective so we are no longer isolated but part of a bigger and dynamic economy where we are producers, suppliers, and service providers but also as consumers that could benefit from abundance of choice of affordable products and services, but our partners are also our competitors, therefore bane to unprepared and inefficient producers or service providers. Most of ASEAN countries are now prepared to compete and expand under AEC. While the Filipino consumers will greatly benefit from abundant and cheaper agricultural commodities and better quality products under AEC, many Filipino farmers will be marginalized and cannot compete. Parts of our contribution are to show how some farmers can survive and a forward plan to create jobs for the marginalized farmers, otherwise there would be serious social problem in the countryside.

To put into perspective our agriculture in relation to other Asian countries, we present in **Table 1** below the relevant statistics.

Table 1. Comparative Statistics among Selected Asian Countries.

Parameters	Units	Philippines	Indonesia	Thailand	Malaysia	Myanmar	Vietnam	Bangladesh
Land area (WB 2013)	ha	29,817,000	181,157,000	51,089,000	32,855,000	65,308,000	31,007,000	13,017,000
Agricultural Land (WB, 2013)	% of total land area	41.7	31.5	43.3	23.9	19.3	35.1	70.0
	Arable area Ha/cap	0.055	0.092	0.249	0.031	0.199	0.068	0.0048
Irrigation potential (AQUASTAT, 2013)	ha	3,126,000	10,886,000	12,245,000	413,700	10,500,000	9,400,000	6,933,000
Rice production (FAOSTAT, 2014)								
Volume, paddy rice	X1000 mt	18,968	70,846	32,620	2,645	26,423	44,974	52,231
Area	ha	4,739,672	13,797,307	10,834,504	689,732	6,159,207	7,093,691	11,820,000
Yield	Mt/ha	4.00	5.13	3.01	3.83	4.29	6.34	4.42
Rice supply, paddy equivalent (FAOSTAT, 2013, Malaysia: 2011)	kg/capita/yr	179.07	201.83	171.77	119.82	199.10	216.73	257.46
Rice supply, milled equivalent	kg/capita/yr	119.44	134.62	114.57	79.92	132.80	144.56	171.73
Cost of production of paddy rice (FAOSTAT, producer price, Annual, 2012,2014)	USD/ton	452.18 (2014)	876.27 (2012)	240.63 (2014)	366.86 (2014)	No data	304.81 (2014)	238.02 (2014)
Rice exports (FAOSTAT, 2013)	milled rice equiv.							
quantity	1000 mt	2,014	1,269	6,787,796	10,762	484	3,939	3,651
value	1,000 USD	5,388	1,193	4,429,582	6,662	157,910	1,673,955	3,386
Rice imports (FAOSTAT, 2013)	milled rice equiv.							
quantity	1000 mt	399,137	472,239	21,306	889,820	20,000	6,251	260,256
value	1,000 USD	172,527	246,002	12,951	503,580	14,000	4,350	118,506
Value of agricultural produce (FAOSTAT, 2013)	current million USD	32,906	126,047	40,944	26,091	*not available*	40,153	17,344
Agriculture value added (WB, 2014)	% of GDP	11.30	13.40	10.50	8.90	*not available*	18.10	16.10
Value of Agri exports (FAOSTAT, 2013)	1,000 USD	4,882,919	34,873,537	30,877,359	26,991,412	1,410	10,100	451,144
Value of Agri imports (FAOSTAT, 2013)	1,000 USD	6,534,783	17,648,369	10,986,560	17,564,412	1,782	15,036	7,193,350
Population (FAOSTAT 2015)	million	101.80	255.71	67.40	30.65	54.16	93.39	160.41
Total labor force (FAOSTAT, 2015)	million	44.67	131.23	38.68	13.99	32.57	51.08	78.18
Labor force in agriculture (FAOSTAT 2015)	million	13.79	49.99	17.25	1.43	21.30	31.16	31.78
Value added/agricultural worker, 2010	current US$	1,150	750	700	6,600			520
Prevalence of under nutrition	%	17	9	7	-5			17
GDP (PPP) per capita (WB, 2014)	current US$	6,969.0	10,157.0	15,735.0	25,639.0	*not available*	5,629.0	3,123.0

Sources: Philippine Statistics Authority, FAO Stat, WB and ADB reports; CIA Intelligence report, etc.

While various countries have different resource endowment, our farmers' performance is not too far different from those of neighboring countries. It is more the policy taken by the respective governments that made a lot of difference in the productivity and welfare of the people/farmers. Malaysia opted for modest rice sufficiency target of 80 percent, which it later reduced to 60 percent and instead encouraged their farmers to be in the high value commercial crops that were pre-established and turned over to them when they start producing. Thus, Malaysia has the highest GDP contribution for agricultural labor/farmer at US$6,600/year as compared to Philippine, US$1,150/year; Indonesia, US$750/year and Thailand, US$700/year. The lower value of Thai farmer contribution to their GDP is because they have very low prices of agricultural produce in their domestic market. In terms of productivity of paddy rice (palay) in metric tons per ha, Vietnam is the most productive with 6.34, followed by: Indonesia, 5.13; Bangladesh, 4.4; Myanmar, 4.29; Philippines, 4.0; and Thailand, 3.01. In terms of cost of production per ton of paddy rice for 2014, Bangladesh was the most efficient with US$ 238.02 followed closely by Thailand at US$240.63; then Vietnam at US$304.81, Malaysia at US$366.86, Philippines at US$ 452.18 and the highest cost was Indonesia at US$ 874.27. One of the reasons why we have a high cost of production of rice in the Philippines is the practice of crop sharing for labor during critical stages such as harvesting and threshing amounting to PhP6,900/ha or 17 percent of the total cost. Farmers also hire labor during land preparation and planting costing PhP7,160/ha, an amount they could have saved if they do them themselves since they have plenty of idle labor. Nonetheless, they still get relatively high return to the labor they spent at PhP3,137/man-day (md), for 10 days in one cropping of 1.2 ha rice.

Available arable areas among most South and Southeast Asian countries are relatively small so they have to be efficient in use either through relay, inter- or multi cropping. In terms of arable area per capita, the largest is in Thailand with 0.49 ha, followed by Myanmar, 0.199 ha; Indonesia, 0.092 ha; Vietnam, 0.068 ha. The Philippines and Bangladesh have the smallest with 0.055 ha and 0.048 ha, respectively. With the advent of AEC, we have a common market within ASEAN with no tariff barriers. We compete on the basis of productivity or efficiency, or cooperate by being part of global value chain, or taking advantage of seasonal difference in harvest where we can export during off season to neighbors and import during their peak production at our lean months. Under such situation, timely and accurate information are valuable to producer-exporter groups.

Philippine Agriculture Situation. Philippine agriculture is varied and complex comprising of several subsectors and many commodities. Each major commodity is confronted with unique challenges, complicated by climate change, requiring unique creative responses. No solutions can fix all problems. Seasonality in most crops and fishing activities and archipelagic geography pose formidable challenges in balancing use of resources and that of production and utilization; and increasing and diversifying production to meet the varying needs of growing population. Agriculture also uses several shared resources such as land, water, energy, etc. that requires Solomonic wisdom in harmonizing and balancing fair or equitable usage among those in needs. Sound policies and strategic deployment of resources will ensure food security and still produce high value commercial crops and products for exports.

The latest Census for Agriculture and Fisheries (CAF, 2012) and the Socio-economic Characteristics of Filipino Farm Households study in 2012 of the Philippine Statistics Authority (PSA)/Bureau of Agricultural Statistics (BAS) have been the bases for characterizing and citing the performance of Filipino farmers. The Philippines has 4.9M households (HH) owning 5.56 M holdings in 7.89 M parcels for an aggregate area of 7.1 M has. The farm household cultivates an average of 1.46 parcels or an average area of 1.89 has. There are 4,924,723 HH, with the following breakdown by occupation: crop only, 53.14 percent; livestock only, 3.12 percent; poultry only, 1.88 percent; crop & livestock, 10.72 percent; crop and poultry, 12.56 percent; and Crop, livestock and poultry, 17.04 percent. The non-permanent crops planted are: 56.64 percent palay; 7.07 percent fruit vegetables; 1.39 percent leafy vegetables; 6.25 percent legume; and 3.02 percent spices and condiments.

The permanent crops planted are: 39.17 percent coconut; 23.65 percent banana; 9.23 percent avocado, mango; papaya; guava, guyabano, jackfruit, santol; lanzones, pomelo; mandarin; orange; mangosteen; marang; durian; 3.63 percent non-food like abaca, rubber, bamboo, nipa, rattan; 2.83 percent coffee, cacao and palm oil. Pineapple is usually planted under coconut or coffee. The livestock raised are: 67.52 percent swine; 59.9 percent is for meat; 21.21 percent breeding; 18.88 percent for both. The poultry raised are: 95.31percent chicken (native, layer, and broiler); 89 percent for meat; 29.7 percent for eggs; 27.76 percent breeding. *It is curious why the BAS survey did not mention cattle, carabao and pineapple in the crops raised by Filipino farm households. Commercial farms are in a different category.*

The CAF showed that most Filipino households own or have owner-like status to their shelter. They want to have land as legacy to leave behind to their children. Educated children, especially those who work abroad are their social security.

Being in the humid tropics, we can produce most tropical crops. We are leading exporters of several major commodities such as coconut products, sugar, banana, pineapple, and tuna. While we produce more than 50 commodities, we are still net importer of agricultural products such as cooking oil, peanut, mongo, coffee, chocolate, and farm inputs. We need to increase the production and consumption of vegetables by 20 kg per capita. Based on PSA/BAS crop utilization data, we are not using about 60 percent of our major fruit production which goes wasted. This is valuable resource for processing, and if mixed with nut, coconut meat, root crops, sugar, etc., we can produce high value exotic food products like the variety of energy bars. By harnessing our other resources and locally produced commodities, we should shift towards producing higher value processed products or conveniently prepared food products. For livestock, we need not export whole carcass, we can fabricate them into ingredients of high value convenience products and export only the prime parts with high value.

Part 2 – Notable Achievements and Policy Failures in Agricultural Development

Achievements in Agriculture. Foresight of our earlier leaders to invest in agricultural education and technology development in the 50's and 60's sending legions of scholars to leading universities abroad had produced critical mass of agricultural human capital and state-of-the art facilities; and the dynamism of private agribusiness enterprises in commercial crops, feeds, poultry and piggery among others, that enabled us to carry out our share in the ***green, blue and livestock*** revolutions. The period just before and the early years of Martial Law was the watershed of modern agricultural development in the country. In the early 70s when our population was 36 million, there were more than 300 PhDs in various agricultural disciplines; half of them were based in Los Baños. Our agricultural education curricula were updated by returning doctorates and the research system were rationalized with the creation of Philippine Council for Agricultural Research (PCAR) and the regional research consortia composed of state universities and colleges (SUCs) and specialized commodity research centers had been organized and their programs coordinated to be more efficient and responsive to regional needs, and their facilities modernized. New research and technology development institutes such as the Institute of Plant Breeding (IPB), National Institute of Molecular Biology and Biotechnology (Biotech), National Crop Protection Center (NCPC), Farming Systems and Soil Resources Institute (FSSRI), etc. were established and funded. Together with some recently established institutions such as the Philippine Carabao Center (PCC) and Philippine Rice Research Institute (PhilRice) have been recognized as Centers of Excellence in their respective fields.

In parallel, our government with the help of the World Bank (WB) and other foreign aid agencies invested in important agricultural infrastructure such as the national irrigation system to complement existing communal irrigation systems established since the Spanish period. The national system built huge reservoir to store rain water which were gradually released to irrigate rice during the dry season. They have complementary hydro-electric generation system where released water for irrigation pass through turbines to generate electricity. The reservoirs also supplied domestic water to nearby urban centers. *(Unfortunately, since we are in the wet tropics, efficiency in the use of water was never considered a design factor).*

The outputs from these investments and initiatives weaned us from the dread of recurrent famine, and made the Philippines mecca for policy makers and technical specialists to learn of the advancement in rice production, commercial crops production, aquaculture, forest products technology, among others. Our newly modernized agricultural universities became popular destinations for higher education and graduate studies of scholars from neighboring countries. Our trailblazing was studied by our neighbors and adopted the best features appropriate to the culture and conditions in developing their own capabilities. .Now, these neighbors with their modern agricultural universities and laboratories (*adapted from our experiences)*, but who are more disciplined and better paid personnel have now well-crafted long-term development plans have become major exporters of a variety of agricultural products, many finding their ways to Philippine markets.

However, misplaced beliefs that our vast tropical forest, seasonally abundant pelagic and migratory fish species can regenerate or replenish itself and are nearly inexhaustible, caused wanton or uncontrolled exploitation, and this belief has been disproved by experiences in the past decades. With abundant rainfall, we always believed that we have surplus supply and did not anticipate the days when we have to buy bottled purified water for our daily needs. During the heady days of selective harvesting of our forests in the 70s and 80s, many forward looking forest concessionaires wanted to replant cleared areas with rubber and coconut but were not allowed by forestry policy makers due to their notion that tropical forests have to be replaced with similar native species. The result is that, due to weak enforcement of replanting policy and inability to prevent forest encroachers, most of our logged over forests became open grassland prone to heavy erosion and recurrent fires

losing faster their fertility and biodiversity that forest policies then meant to conserve. The forest rich regions eventually became the poorest and economically lagging regions and fertile hotbeds of insurgency. On the other hand, Malaysia replaced much of their peninsular forest with rubber and oil palm while Indonesia transformed the forest in the outer islands into agro-settlement complete with urban amenities in support of commercial development of rubber, oil palm, coconut, cacao, or commercial species of pulpwood; and these countries are now major exporters of products of introduced tree species on large scale contributing significantly to their GDP and maintaining large areas under green cover.

In recent years, there were also other well-meaning initiatives introduced by the government with mixed results or performance. Agricultural credit was strengthened with the Agri-Agra Law, and Crop Insurance system was also introduced. In the spirit of social justice, Comprehensive Agrarian Reform Program (CARP) for rice landholdings became the landmark policy of the Cory Administration but its implementation extended to non-irrigated areas became unjust to land owners. Early beneficiaries of CARP especially of irrigated rice fields became prosperous so that many became landlord themselves tapping landless farmers to cultivate their lands. With initial success in irrigated rice fields, the government became over enthusiastic in expanding the coverage of CARP to include commercial crops which requires high inputs for high productivity and large scale operation for economic use of machineries for competitive cost of production. Commercial crops for exports are also vulnerable to cyclical price fluctuations due to interplay of supply and demand in the world market. It was unfortunate that when the commercial plantations were subdivided and given under CARP to beneficiaries coincided with the breakdown of the International Commodity Agreements under the auspices of UN. The commodity prices dropped, and the CARP beneficiaries could not pay their amortization to Land Bank nor were able to provide the necessary inputs to their commercial crops, forcing them to become subsistence farmers planting food crops intercropped to their commercial crops. CARP is not practical for non-irrigated areas. The landholdings are already small to start with. One needs to farm a wider rainfed area to earn a decent living.

Also, with the intent to be more effective in providing basic services to the people, there was decentralization of agricultural program operations to Regional Field Units (RFUs) and devolution of agricultural extension to local government units (LGUs). Over the years, there was a lot of investment on farm-to-market road (FMR), which also served as crop drying pavements. The constructions of FMR were implemented with varying specifications, put up in hamlets of favored voters but seldom completely connected to the main arteries to enable efficient transport of farm produce to the market. With our entry to Word Trade Organization (WTO), we enacted the Agriculture and Fisheries Modernization Act (AFMA) in 1997. In 2013, we enacted the Agricultural and Fisheries Mechanization (AFMech) Law.

Our main constraints why we lagged in comparison with our neighbors can be attributed to the conflicting or reinforcing effects of our culture and history and influence of our colonizers in the spirit of divide, conquer, and rule. The tangible effects are the individualism or self-centeredness at the personal level and a sectorally or disciplinary segmentation of the organized institutions at higher levels, leaving diffused, uncoordinated and less integrated any major action by any program, or any administration. Generally, different agencies optimize their respective sectors without considering the possible adverse effects on other sectors or other elements of society. Even with a convergence program, our officials prefer to stay within their segment boundaries whereas among Commonwealth countries, strong cross-linkages overlap, or redundancy is encouraged in their bureaucracy.

Our agricultural experts, legislators, and bureaucrats know what is best for agriculture, and have introduced a lot of innovations that when adopted by other countries gave consistent positive results. However, same innovations could not be sustained in the Philippines. Aside from short planning horizon and short attention span, one thing we Pinoys are different from our Asian neighbors is that the self-centeredness and that divide and conquer phenomenon in official affairs does not allow us to think and work as a community. And for agriculture, we

give more attention to crops segmentation, animals or fish distinctions but hardly on the farmer or the fisherman and his livelihood and who integrates all efforts. Our agricultural colleges have Departments of Agricultural Economics, while Indonesia, Thailand and Malaysia have Departments of Socio Economics which focus first on the farmers and then their various crops. They can describe accurately their typical farmers but we report our statistics by crops and in hectares giving the misimpressions that farmers cultivate by the hectares as if in large holdings. We assume that most Filipino farmers are market oriented, but many backyard raisers of livestock and poultry have other purposes and considerations that do not follow market rationality, raising animals or crops to pay for the tuition of their children, and not necessarily to suit the market. Their family cash flow requirements override the need to match consumers demand resulting in seasonal imbalance.

While we read the same agricultural textbooks and study the same economic theories and principles, we interpret them from the Western individualist perspective while our Asian neighbors interpret them from the perspective of general good for the family, community and country inclusive of the less privileged. The Western influenced individuals with less developed ethical values are prone to greed and easy prey to temptation even for respected individuals with lofty stature. For instance, the unusual spike of commodity prices in the world market in 1974 for sugar followed the following year by prices of coconut products would have been a bonanza for the sugar and coconut industry stakeholders. However, the potential windfall profit from the spike in commodity prices was too tempting for the Martial Law Administration not to exploit for personal gains, so that it nationalized the export trading of these commodities through newly created state trading corporations: the Nasutra for raw sugar, and the Unicom for coconut oil. Most private copra mills were nationalized under Unimills and copra for exports were to be processed under any of the facilities of Unimills but the products were to be exported through Unicom. For sugar, we had an export quota to the US of 2 million short tons at a price of US$0.64/lb, but it was reported then that Nasutra paid only 22 cents/lb to sugar producers, the balance of 42 cents/ lb estimated at US$1.68 billion or PhP12.6 billion at the exchange rate of PhP7.50 to a US dollar was stranded abroad. The pattern of capturing windfall profit and stranding them abroad was applied to coconut oil the following year but the values were much less than that for sugar, but still estimated to be about few billion pesos. It was the tradition of the Sugar Barons who were used to getting only 12 to 14 cents a pound to get crop loan from the Planters Bank or PNB up to 80 to 90 percent of their expected revenue. The planters, having fore knowledge of what the US would pay for Philippine quota allocation, went on spending spree buying new tractors, installing irrigations system, and a few even indulged in luxurious and ostentatious consumption. When their sugar crop was finally liquidated at 22 cent/lb, many were bankrupted and their new investments in movable assets were repossessed by their banks. Likewise, many coconut farmers who were diligently paying the levy for the export of their produce were disappointed not to receive a fair share of the export price of their crop. At that time average, WB development loans were about 40 to 50 million US$ while the Asian Development Bank (ADB) loans were about 14 to 20 million US$. We could only speculate what 20 WB development projects or 40 ADB development projects could have done to our economy and society if most of the stranded or exported profits were invested in the Philippines to develop infrastructure and agro-industries and social services. The stranding or exporting of the windfall profit abroad, to our view, was the beginning of the decline of two of our major export earners that have not recovered to this date. It also marked the loss of trust by neutral or non-partisan populace on the Martial Law regime that culminated in the EDSA People's Power revolt. In contrast, Indonesia, a richer country with more export commodities also had sizable windfall profits. The big difference was that most of the export revenues went back to the country; even the shares of the ruling regimes were repatriated as foreign direct investment and invested in modernizing their transport infrastructure and in leapfrogging of their telecom industry.

Our neighbors were usually late signatories to join the Word Trade Organization (WTO) or ASEAN Free Trade Area (AFTA), but when they decided to join, their whole cabinet were mobilized to align their respective programs in support for one coherent national

competitiveness strategy sans the diffused effect of the divide, conquer and rule. Thailand, for instance, saw their potential contribution to the world and announced in a fully concerted national and international declaration that they would be the kitchen of the world ready to supply or export whatever is in demand. This solidified the nation from top to bottom to top again in a program that made everyone to act in concert.

The altruistic efforts of our colonizers to educate us made more of us exceptional conceptual thinkers, as compared to our Asian neighbors, with quickness in arriving at new or innovative solutions, but no patience to think through the critical facets or logical steps in implementing successfully the identified solution nor the resources needed and of human or institutional capability to implement them. Our culture and horizon does not encourage long term planning or thinking. We are the only country in Asia without long-term development plans; only medium term plans coinciding with the term of an elected President, and medium term national plans are translated into sectoral and regional development plans, but the plans are not well communicated to the cross section of society. We have the habit of changing programs midstream with every change in administration or head of office, thus no sustainability of programs except for special few. Again, this is a reflection of that same divide, conquer and rule principle, which exclude certain regions, favouring certain pet areas and the result is again diffused. Nonetheless, the implementation of the Public-Private Partnership (PPP) contracts under the Department of Trade and Industry (DTI) is a shining example of our relative competence in implementing vital national programs. In procurement for big ticket projects, certain shortcomings allowed judiciary relief for TRO thus delaying further implementation. Any delay or perceived anomaly invite Congress to conduct its own investigation in aid of legislation.

Also, our recent history left us with revolutionary government after Peoples Power in 1986 where the professional bureaucracy were replaced down to the assistant director level, and the practice continued up to the current administration with the same selectivity and favouritism from the divide and rule spirit. We have practically three presidential terms with no hiring policy depleting our government agencies and institutions with experienced professionals. The gaps were filled by temporary casuals or job-order personnel who cannot be trained or capacitated further for their increasingly complex challenges. Many agricultural agencies including schools and colleges have been weakened to become least effective. The remaining capable officials have to be multi-taskers and more often pre-occupied going from one crisis to another.

Moreover, we have been led to believe that we have limited resources so we were forced to cope using a least cost approach in our development programs and even in most private investments, until it was shown under '***daang matuwid***' that with controlled leakages, we have enough resources to implement programs with long lasting productive life and other co-benefits. The consequence of all these shortcomings is mediocre performance in agriculture with average growth rate of 1.3 percent against our population growth of at least 1.9 percent. While we have aspirations to have self-sufficiency in rice supported by statistics showing that we produce enough rice harvest, we are also one of the highest rice importers contributing to the high price of rice in the world market, importing for a more politically profitable and expedient buffer for lean months rather than from a technical rationality. In the meantime, global demographics, geopolitics, climate change, technological development, and changing lifestyle have changed the agricultural landscape in the last 40 to 50 years. Let us now use newly available resources to improve our productive capacity.

Part 3 - Paradox and Imperatives of Agricultural Development

Paradox in agriculture in general and Philippine agriculture in particular. Except for livestock, agricultural activities are generally seasonal. Farmers have to produce efficiently only what they can market. Focusing on increasing production alone is self-defeating. If farmers have been successful in producing more than what the market can absorb prices drop and they lose money. In developed countries, the governments buy and store the surplus production to stabilize local prices. They use the surplus for relief operation or as food aid. More often, the recipient countries of food aid developed a liking for the food commodity thereby developing new export market for the donor. In the Philippines, we do not have that luxury nor the capacity or technology for long term storage of surplus production in humid tropics.

A paradox in the Philippines is that farm households generally do not like to farm; Filipinos like to own farms but they prefer to hire workers or have tenants. During the early implementation of CARP, the initial beneficiaries immediately became landlords and got tenants to farm their new lands. In the Cost and Return Studies of PSA/BAS, small farms hire more laborer-days than what their family work in their farms. This behaviour is contrary to the principle of social justice and intent of agricultural modernization and mechanization laws. CARP was meant to give land to the landless. We cannot go back to few landlords and plenty of landless seasonal farm workers. In most countries, farm modernization means increasing production and productivity per farming households. Recently, this trend is also shifting when the farming family retires, their children prefer to work elsewhere, and so most family farms are being consolidated and taken over by large agribusiness companies. The consolidated farms are packed up to the limit of their capacities, are operated using hired managers, and tried to operate them like factory assembly lines. It is still too early to know the impact of this latest trend.

Rice farmers practically sell their entire palay crop at harvest and then scrounge around for loan to buy milled rice at other times. In Nueva Ecija, for example, they ship out a lot of rice from October to December but import back rice from June to August.

Another paradox in the Philippines is that with increased expenditure of the government in irrigation system, probably the biggest single item of expenditure in agriculture in the past decade, irrigation has not contributed to the increase in rice productivity. Yet, everybody knows that crop especially rice needs water to produce and investment in irrigation can be considered as one of the most sensible investment in climate change adaptation. Where is the expenditure for irrigation being applied? Or, are our irrigation systems inefficient or poorly utilized?

Also in the Philippines, there is decreasing enrolment in Agriculture, Fisheries and Forestry because people do not see much opportunity in farming. Yet, with increasing population we need more food, clothing and shelter. However, our agriculture education are still organized by discipline or crops/commodities, based on technical and research considerations, but what we really need is the entrepreneurial acumen on how to manage production, processing, distribution and marketing system of agriculture, fisheries or forestry products in a globalized world, not deeply infused into every agricultural specialist. As can be seen, Agriculture or Veterinary Medicine graduates with a few years' experience as managers of integrated agribusiness operations are being lured to work abroad. If old farmers retire, and the young generation do not want to go into agriculture, the future generation would have a bleak future of likely food shortage.

Agricultural Imperatives. We at **Madecor** believe that with proper policy, well-selected sites for specific crops or proper crop zoning, adequate infrastructure up to the market, and proficient implementation, we can have a high income prosperous agriculture. We believe that most farmers are poor because they do not fully utilize their most important asset, their labor. About 13.79 M is the labor for in agriculture. We need only 4.1 million farm labor for

the volume of our agricultural activities if we maintain a proportionate share of labor force to the agriculture contribution to GDP. That means we have 9.69 million excess or underutilized labor in the farms, for which we have to look for or create a meaningful regular employment. The Philippines have limited arable land in relation to available farmers, so we have to intensify cropping pattern where appropriate and consolidate farms to enable efficient farmers cultivate a larger areas (at least five hectares) where they can utilize fully the available farm labor. In conjunction, find other lucrative employment for those who should leave the farm (3.45 for every one efficient farmer left behind) by establishing more agro-industries that uses locally seasonally abundant local materials for export or for sale to urban consumers and relief operations. Since it takes time to establish agro-industries and create market, utilize in the interim displaced labor in work for food (WFF) program in building or retrofitting agri productive infrastructure, market centers, marine sanctuaries, fish ports, and in agro forestry development of the low elevation less steep open forest lands. Under AEC, we could no longer deceive ourselves that we can be self-sufficient in everything particularly rice or staple food at competitive prices. We should aim to produce high value rice that we can export at a premium price to Africa and to other advanced countries with numerous prosperous overseas Filipino workers (OFWs), produce rice for domestic consumption only where we can be competitive to Vietnam, Burma or Thailand, and buy the rest cheaper in the world market. We should also revise the idea of making all resource poor farmers into entrepreneurs, unless we give them the appropriate tools and resources. (Japan "exported" a lot of its farmers to Latin America who are now the leaders in agriculture of those countries and now supplying food and other resources to Japan. Philippine-born Okinawans displaced during the World War II now lead soybean and rice farming in Bolivia and Brazil, abaca and banana farming in Ecuador, black pepper and ornamental farming in the Amazons and Colombia, vegetables and potato farming in Perú and cattle farming in Argentina and Brazil.)

Our analyses showed that farmers need not be poor regardless of which crop they prefer to grow provided they have big enough area to cultivate in order to use most of their family labor and be able to sell all their produce. In terms of return to labor, most crops give very high return per day of work, few multiple of the minimum wage in the locality (see **Table 2**). The efficient ones are competitive with ASEAN neighbors. The problem is that our farmers, through inheritance or because of CARP, have small cultivable area and use at most only one-third of their available labor, so they remain poor. Lifting them from poverty is the priority of any administration. Our government support system reliant on traditional economic and agricultural theories does not realize this and therefore incapable of addressing it rationally and sustainably.

Table 2. Summary of Farm Size, Income, Return to labor, and Labor Utilization.

Commodity Group	Ave. Farm Size, ha	Farm Income/yr, PHP	Return to labor/day, PHP	Labor used/ farm, MD/yr
Highland vegetables	0.28	64,390	1,004	86
Lowland vegetables	0.31	24,200	600	52
Legumes	0.50	11,794	1,635	11
Spices	0.40	80,170	3,900	113
Root Crops	0.75	33,750	870	53
Banana	0.16	13,090	3,300	8
Pineapple	0.47	41,340	3,900	23
Climate Type 1 Fruits	0.28	16,200	2,030	3
Climate Types 2-4 Fruit trees	0.10	13,000	3,600	8
Beverage Crops	0.43	8,300	956	13
Industrial Crops	4.23			

A farming family needs to raise a combination of at least three of the above crops to earn enough above the poverty threshold.

Madecor's Advocacies. Hence, we at **Madecor** would like to advocate a ***shared vision for agricultural development that would eliminate rural poverty by making agriculture a high income enterprise through sustainable means, and employ in agriculture adequately compensated labor force, the number of which should preferably be proportionate to the share in GDP.*** We believe that the development programs should be comprehensive and sustained over the terms of three to four presidents with minor refinements, and guided by general principles shared by all stakeholders. Specific sub-sector or commodity or area specific interventions should be implemented by competent authorities or stakeholders with appropriate expertise. We do not need 7.4 million farmers to feed the country. Other countries use less than three percent of their population to feed their people, and they still have enough surplus for buffer stock or for export.

Guiding principles. For smooth and effective implementation of agricultural and poverty eradication programs, we advocate the following guiding principles or rules of thumb:

a. We start as one unified country as we are now, without blaming who were at fault for our shortcoming or failure in the past, but, cognizant of that past. We must implement seriously and comprehensively all major programs, legislations or policies already agreed upon such as land use plan, AFMA, AF Mechanization, etc. adapted to local conditions, together with agro-industrialization. By advancing our agriculture to be globally competitive and increase farmers' income, it is necessary to intensify crop production where appropriate, but consolidate other small parcel farms and let them be managed by more efficient and enterprising farmers. About three-fourths of the farmers tilling their small parcels of land should therefore be retrained and relocated in other better paying jobs for longer periods every year;

b. Let us take seriously as a given the new normal climate (NNC) under climatic change, and insure adequately our farmers/fishermen and simplify adjustment procedures so they can get back on their feet immediately after calamities; Part of agricultural subsidy should be used for no-fault insurance coverage; The insurance coverage should include the loan for inputs and family living expenses until they harvest the new crop. In other words, the insurance should protect both the farmers and the banks;

c. Require government financial institutions alone or in partnership with the private sector to finance producers' inventories and educate and encourage farmers to use warehouse receipts where they can sell part of their produce when they need money and wait when prices are good to dispose of their other produce;

d. Franchise private sector service providers along the value chain (e.g. seed, fertilizer, pesticide and/or farm equipment suppliers, tractor pool, mechanization services, logistic facilities, etc.) that can be hired at competitive rates by small producers. The franchisees should be accredited to operate in a given territory, and regulated by competent authorities to be fair to their clients. Where government resources are limited, this can be a priority coverage of the PPP program;

e. Develop PPP project for commonly used agricultural facilities (e.g. modern rice mills that can grade and package rice according to variety and quality, Triple A abattoir for local public markets or for exports, community food processing centers or SME processing zone) in the strategic areas outside urban centers;

f. Let us invest our agricultural support in public goods such as common infrastructure, FMR, primary post-harvest facilities where needed, community food processing facilities, etc. that can lower the cost of production and use some of these infrastructure

as a means of promoting cooperation among agricultural stakeholders and convergence of support from various government agencies;

g. Honor and exploit our commitments to WTO and AFTA, but defer joining Trans-Pacific Partnership (TPP) until we can fully benefit from AEC;

h. Adopt especially sustainable good agricultural practices (GAP) for our archipelagic nature of small islands and strive to be globally competitive producer. Prioritize use of land for major commodity according to suitability; irrigable areas for rice; rainfed arable land for high value crops; slopy areas for high value permanent crops; low elevation and less steep slope watershed areas for agro-forestry; relocate from the peri-urban areas commercial poultry and piggery farms spread out along the foothills and given status of export processing zone;

i. Earmark enough land particularly those with irrigation for food security and for proper nutrition of Filipinos by island groups, and the rest should be used for high value exportable crops. Start proper nutrition in schools by supporting their vegetable gardens and use of locally produced shelf-stable nutritious food products in school feeding programs for under nourished kids;

j. Let us rethink an unrealistic thought that all small farmers can become entrepreneurs and simply leave them to their own resources. We should organize them to be partners of bigger and viable agro-enterprises who should also be guided and regulated for corporate social responsibility with efficient value chain up to ultimate consumers and/or export market;

k. Let us be market-oriented enterprises the ‘Asian Way’ unlike exploitative market players generating great wealth without adding value but by exploiting weakness of the system either due to incomplete info, time lag or other causes or by exploiting human weaknesses;

l. Strengthen relevant institutions to become more effective in supporting our farmers and fishermen, in formulating appropriate policies and regulations, and in effective enforcement of regulations and in implementation of development programs from central down to the LGUs;

m. Streamline and attune agricultural education and research and development (R&D) in support of the Sustainable Development Goals and new trends in globalization; and provide enough incentives to retain highly trained scientists and technologists to work in the country;

n. For development programs, let us provide optimum inputs in timely manner and monitor for results or outcome not on expenditure of inputs;

o. Introduce a program to help develop agriculture in other countries that need the discipline of our technical professionals, the well-knit and resourceful farming families who need land and the well- connected and respected teachers and scientists who can help other countries. This can be investments that can have high returns to the Philippines in the future just as fast, or even faster than the more self-centered Balikbayan Program that we do not talk about anymore. Many of our farmers and professionals can adjust to most Asian, African and Latin American cultures with ease in languages, in food culture and even excel in education abroad as proven by our OFWs who have become a workhorse in international projects. These can also be our base for exporting our processed products that can become a motor of increasing export receipts;

p. Work with neighbors and even other continents for synergistic collaborations in agriculture, natural resources and environment. This is even done by Japan, USA, and even Brazil and India. This is not anymore a self-centered strategy, but, a fruitful two-way lane that benefits both sides in a globalized world that seeks mutual benefits among themselves; and

q. Develop projects that allow us to highlight and give high value to products of sustainable agriculture such as mangoes, milkfish, crafts (fibercrafts, shell-crafts and woodcrafts), textiles and fibers, specialty rice, carabao milk and meat, pearls, pineapple, bananas and other tropical fruits, organic sugar, coconut products, etc. This flashes out to the world a big campaign the strategy for a sustainable and responsible stewardship of family farmlands.

Part 4 - Recommended Programs

The priority programs should consist of but not limited to: a) Food Security; b) Crop Intensification; c) Farm Consolidation and Crop Diversification; and d) Rural Job Generation. **Madecor** recommends that we implement comprehensively and proficiently our earlier agreed programs and fulfil our international commitments. Let us take the case of AFMA. To modernize means we have to be globally competitive in sustainable way. That means making agriculture and fisheries highly profitable enterprises and high income to investors and workers, with optimal use of inputs, energy, labor, etc. It also means to utilize fully available farmers' labor in growing a marketable produce. The complementary side of this approach is to create remunerative jobs for marginal or most likely to be displaced farmers. It means training and capacitating them in new skills needed by modern society in cooperation with other competent agencies.

Food Security. In essence, we propose that all areas with reliable irrigation in various islands should be planted with two crops of high yielding hybrid varieties per year that could be competitive with rice from Vietnam, mainly for food security. After the second crop, the area should be planted to vegetables whichever is appropriate and in demand, and if more areas are still available they should be planted to mungbean and peanut. If the rice production in irrigated areas exceeds the local requirement, premium hybrid varieties like those produced by SL Agrictech will be planted in the excess areas for exports. In all these cropping option, the energetic and efficient farmers should be assisted to lease or go on crop sharing with other landowners so they would have enough area to farm and utilize fully their labor. The concept of farming non-owned farms is currently being practiced especially in the Ilocos region and possible elsewhere. OFWs wants to own land but they cannot farm them so they get tenants or lease them for finite period but renewable upon mutual agreement.
In practical terms, we use only irrigated areas for producing hybrid rice. To stimulate discussion and debate, we will present some simulation of possibilities and their implications. A simulation study has been undertaken under two scenarios: 1) use only the irrigated areas and plant two crops of hybrid varieties being promoted by the Department of Agriculture (DA); and 2) plant 20 percent of irrigated areas in the Ilocos, Cagayan Valley and Central Luzon regions with premium hybrids such as those developed by SL Agritech and the rest with DA hybrids for two crop per year. The results shown in **Table 3** indicate that if we can plant all irrigated areas with DA hybrids, we would be more than self-sufficient. If 20 percent of the three major growing regions in Luzon is planted with premium hybrids and the rest with DA hybrids, we will not only be self-sufficient but have up to 1.5 million metric tons of premium rice we can export to Africa, and other developed countries with plenty of well-paid OFWs. This leaves us with the unirrigated areas which we can plant to other high value crops. If two crops hybrid or GMO corn and one crop of peanut are planted to rainfed areas, we would also be self-sufficient with feed corn (14.3 M MT) as well as peanut (3.3M MT). If we explore other options for profitable agriculture, our future programs should concentrate on the high earning options as envisaged in the passage of the AFMA in 1997.

Table 3. Food Security Analytics.

REGION/PROVINCE	POPULATION		RICE REQIUREMENTS, MT		PADDY RICE EQUIVALENT, MT				
	2010	2016	at 116 kg /capita	% Distribution	at 66.7% milling recovery	% Distribution	PR Prodn, MT	Surplus/ Deficit, MT	Actual MR Prodn. Mt
PHILIPPINES	96,406,992	105,000,000	12,180,000	100.00	18,260,870	100.00	18,149,838	-111,032	12,105,942
		1.09							
NCR	12,339,794.10	13,439,672	1,559,002	12.80	2,337,334	12.80		-2,337,334	
CAR	4,888,036.63	5,323,720	617,552	5.07	925,864	5.07	267,408	-658,457	267,408
ILOCOS REGION	1,673,294.51	1,822,440	211,403	1.74	316,946	1.74	1,185,340	868,394	1,185,340
CAGAYAN VALLEY	3,334,635.34	3,631,860	421,296	3.46	631,628	3.46	1,660,595	1,028,967	1,660,595
CENTRAL LUZON	10,623,960.00	11,570,901	1,342,225	11.02	2,012,331	11.02	2,203,975	191,644	2,203,975
CALABARZON (IV-A)	13,505,326.12	14,709,091	1,706,255	14.01	2,558,103	14.01	262,069	-2,296,034	262,069
MIMAROPA (IV-B)	2,866,764.94	3,122,287	362,185	2.97	543,006	2.97	721,583	178,576	721,583
BICOL REGION	5,600,760.27	6,099,971	707,597	5.81	1,060,864	5.81	843,387	-217,478	843,387
WESTERN VISAYAS	7,343,084.51	7,997,593	927,721	7.62	1,390,886	7.62	1,371,902	-18,984	1,371,902
CENTRAL VISAYAS	7,072,133.07	7,702,491	893,489	7.34	1,339,564	7.34	224,241	-1,115,322	224,241
EASTERN VISAYAS	4,223,619.48	4,600,082	533,609	4.38	800,014	4.38	637,458	-162,556	637,458
ZAMBOANGA PENINSULA	3,547,095.67	3,863,258	448,138	3.68	671,871	3.68	441,404	-230,467	441,404
NORTHERN MINDANAO	4,483,216.43	4,882,817	566,407	4.65	849,186	4.65	483,655	-365,531	483,655
DAVAO REGION	4,660,038.42	5,075,400	588,746	4.83	882,678	4.83	294,726	-587,952	294,726
SOCCSKSARGEN	4,336,172.09	4,722,666	547,829	4.50	821,333	4.50	861,527	40,193	861,527
CARAGA REGION	2,508,074.69	2,731,626	316,869	2.60	475,065	2.60	321,035	-154,031	321,035
ARMM	3,400,986.13	3,704,125	429,678	3.53	644,196	3.53	325,639	-318,556	325,639

Table 3. Food Security Analytics (Continuation)

REGION/PROVINCE	Corn Requirement, MT				
	Corn Prodn, MT	Corn Reqt @ 21.93 kg/ capita	Livestock/ Poultry, MT	Total req't, mt	Corn surplus/ deficit, MT
PHILIPPINES	7,518,756	2,302,650	3,445,139	4,605,300	2,913,456
NCR		294,732			(294,732)
CAR	237,823	116,749			121,074
ILOCOS REGION	490,943	39,966			450,977
CAGAYAN VALLEY	1,801,194	79,647			1,721,547
CENTRAL LUZON	271,319	253,750			17,569
CALABARZON (IV-A)	64,823	322,570			(257,747)
MIMAROPA (IV-B)	125,492	68,472			57,020
BICOL REGION	243,908	133,772			110,136
WESTERN VISAYAS	350,391	175,387			175,004
CENTRAL VISAYAS	150,051	168,916			(18,865)
EASTERN VISAYAS	91,145	100,880			(9,735)
ZAMBOANGA PENINSULA	220,180	84,721			135,459
NORTHERN MINDANAO	1,216,302	107,080			1,109,221
DAVAO REGION	224,100	111,304			112,796
SOCCSKSARGEN	1,239,275	103,568			1,135,707
CARAGA REGION	118,774	59,905			58,869
ARMM	673,036	81,231			591,805

Table 3. Food Security Analytics (Continuation)

REGION/PROVINCE	Irrigable Area, if planted to:				Irrigable Area, if planted to:			
	Rainfed, ha	Rainfed rice. OPV		% sufficiency for rice	Rainfed GMO Corn	% sufficiency for corn	Rainfed OPV Corn	% sufficiency for corn
		mt paddy	mt milled eq.					
PHILIPPINES	3,019,609	12,863,722	7,718,233	63%	14,343,352		4,571,755	
NCR				0%				
CAR	97,310	414,541	248,724	40%	462,223		147,327	
ILOCOS REGION	262,744	1,119,289	671,574	318%	1,248,034		397,794	
CAGAYAN VALLEY	456,898	1,946,385	1,167,831	277%	2,170,266		691,744	
CENTRAL LUZON	480,783	2,048,136	1,228,881	92%	2,283,719		727,905	
CALABARZON (IV-A)	85,929	366,058	219,635	13%	408,163		130,097	
MIMAROPA (IV-B)	138,719	590,943	354,566	98%	658,915		210,021	
BICOL REGION	239,440	1,020,014	612,009	86%	1,137,340		362,512	
WESTERN VISAYAS	189,934	809,119	485,471	52%	902,187		287,560	
CENTRAL VISAYAS	46,158	196,633	117,980	13%	219,251		69,883	
EASTERN VISAYAS	84,081	358,185	214,911	40%	399,385		127,299	
ZAMBOANGA PENINSULA	74,952	319,296	191,577	43%	356,022		113,477	
NORTHERN MINDANAO	113,631	484,068	290,441	51%	539,747		172,037	
DAVAO REGION	147,313	627,553	376,532	64%	699,737		223,032	
SOCCSKSARGEN	286,263	1,219,480	731,688	134%	1,359,749		433,402	
CARAGA REGION	159,249	678,401	407,040	128%	756,433		241,103	
ARMM	156,249	665,621	399,372	93%	742,183		236,561	

Table 3. Food Security Analytics (Continuation)

REGION/PROVINCE	WORKING IRRIGATION SYSTEM				Proposed utilization if DA hybrrid			
	Irrigated area, ha	Two crops of DA Hybrid		% sufficiency w/ DA Hybrid	Surplus for NCR	Surplus for Reg IVa	Surplus for Visayas	Surplus for Mindanao
		mt paddy	mt milled eq.		1,559,002	1,706,255	2,354,819	2,897,667
PHILIPPINES	1,708,063	19,813,531	12,878,795	106%				639,463
		Paddy	milled equiv		1,559,002	1,706,255	2,354,819	2,258,204
NCR		0.00		0%				
CAR	89,727	1,040,833	676,542	110%	58,990			
ILOCOS REGION	169,659	1,968,044	1,279,229	605%	1,067,826			
CAGAYAN VALLEY	275,987	3,201,449	2,080,942	494%		890,117	639,545	
CENTRAL LUZON	291,830	3,385,228	2,200,398	164%	432,186			425,988
CALABARZON (IV-A)	47,889	555,512	361,083	21%		361,083		
MIMAROPA (IV-B)	69,387	804,889	523,178	144%		160,993		
BICOL REGION	132,846	1,541,014	1,001,659	142%		294,062		
WESTERN VISAYAS	115,858	1,343,953	873,569	94%			873,569	
CENTRAL VISAYAS	42,771	496,144	322,493	36%			322,493	
EASTERN VISAYAS	68,861	798,788	519,212	97%			519,212	
ZAMBOANGA PENINSULA	45,270	525,132	341,336	76%				341,336
NORTHERN MINDANAO	60,953	707,055	459,586	81%				459,586
DAVAO REGION	64,241	745,196	484,377	82%				484,377
SOCCSKSARGEN	116,199	1,347,908	876,140	160%				328,311
CARAGA REGION	71,018	823,809	535,476	169%				218,607
ARMM	45,567	528,577	343,575	80%				343,575

Table 3. Food Security Analytics (Continuation)

REGION/ PROVINCE	If 20% if IA in Reg. 1,2,3 are planted to SLA HS, the rest W/ DA Hybrid					Proposed disposition if mixed SLAH and DA Hybrid				
	PR Prod w/ 20% SLAHS	PR Prodn wi DA Hybrid	Total PR Prodn, MT		Surp/Def. w/ mixed PH & DA Hybrid	Surplus for NCR	Surplus for Reg IVA	Surplus for Visayas	Surplus for Mindanao	For Export
	mt paddy			mt milled eq.		1,559,002	1,335,728	594,684	(222,343)	
PHILIPPINES	2,424,821	18,102,586	20,527,408	13,691,781	1,511,781					1,511,780
	Paddy					1,559,002	1,335,728	594684	-62034	
NCR				-	(1,559,002)					
CAR		1,040,833	1,040,833	694,236	76,684	76,684				
ILOCOS REGION	557,839	1,574,436	2,132,274	1,422,227	1,210,824	1,210,824				
CAGAYAN VALLEY	907,445	2,561,159	3,468,605	2,313,559	1,892,264	271,494	1,161,052			459,718
CENTRAL LUZON	959,537	2,708,182	3,667,719	2,446,369	1,104,144			52,082		1,052,062
CALABARZON (IV-A)		555,512	555,512	370,527	(1,335,728)					
MIMAROPA (IV-B)		804,889	804,889	536,861	174,676		174,676			
BICOL REGION		1,541,014	1,541,014	1,027,856	320,259			320,259		
WESTERN VISAYAS		1,343,953	1,343,953	896,417	(31,304)					
CENTRAL VISAYAS		496,144	496,144	330,928	(562,561)					
EASTERN VISAYAS		798,788	798,788	532,791	(818)					
ZAMBOANGA PENINSULA		525,132	525,132	350,263	(97,875)				(97,875)	
NORTHERN MINDANAO		707,055	707,055	471,606	(94,801)				(94,801)	
DAVAO REGION		745,196	745,196	497,045	(91,701)				(91,701)	
SOCCSKSARGEN		1,347,908	1,347,908	899,055	351,226			176233	176,233	
CARAGA REGION		823,809	823,809	549,480	232,612			46110	46,110	
ARMM		528,577	528,577	352,561	(77,117)					

Crop Intensification. For all intent and purposes, the areas that can be used for crop intensification are those under permanent crops; and from the way the trees are planted, the most likely areas that can be intensified are those planted to coconut. The Philippine Coconut Authority (PCA) has drawn some good plans to intercrop the coconut with commercial crops and we endorse them with some qualifications. All that can be planted to *saba* and pineapple that can be processed and marketed should be planted to these crops. The lowland areas closer to the sea may be intercropped with *Robusta* coffee, but only to the extent of self-sufficiency because we cannot compete with Vietnam. But all interior areas suitable for cacao should be planted to cacao. It would be desirable if we could plant up to ***one million hectares of cacao*** to be a world player. The East and Southeast Asian regions are net importers of cacao or chocolate products. We can compete with West Africa in growing cacao. However, in the initial years while the commercial tree crops are still small, they can also be intercropped with legumes (e.g. mongo, peanut, beans, etc), root crops and spices. **Figures 1** and **2** show possible options of increasing income of coconut farmers through crop intensification strategies, some of which are already being implemented by the Kasaganahan sa Niyugan ay Kaunlaran ng Bayan (KAANIB) program of PCA. For the crop intensification program to succeed, we must use the best quality seeds or appropriate clone, and provide them with optimal inputs at the right time. The proposed crop intensification program if properly funded with the Coco Levy fund and effectively implemented can fully occupy three million coconut farming families or nine million farm workers, and lift them from poverty.

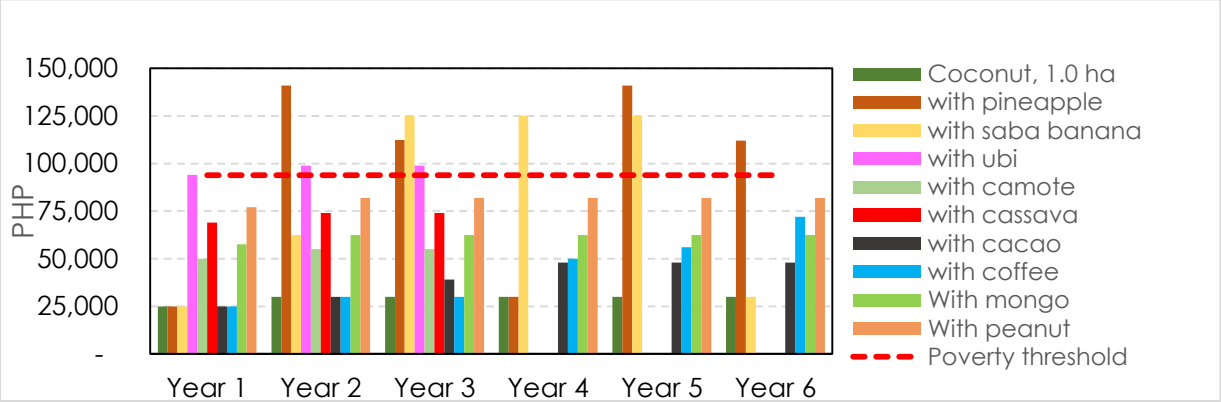

Figure 1. Crop intensification of Coconut with One Other Crop.

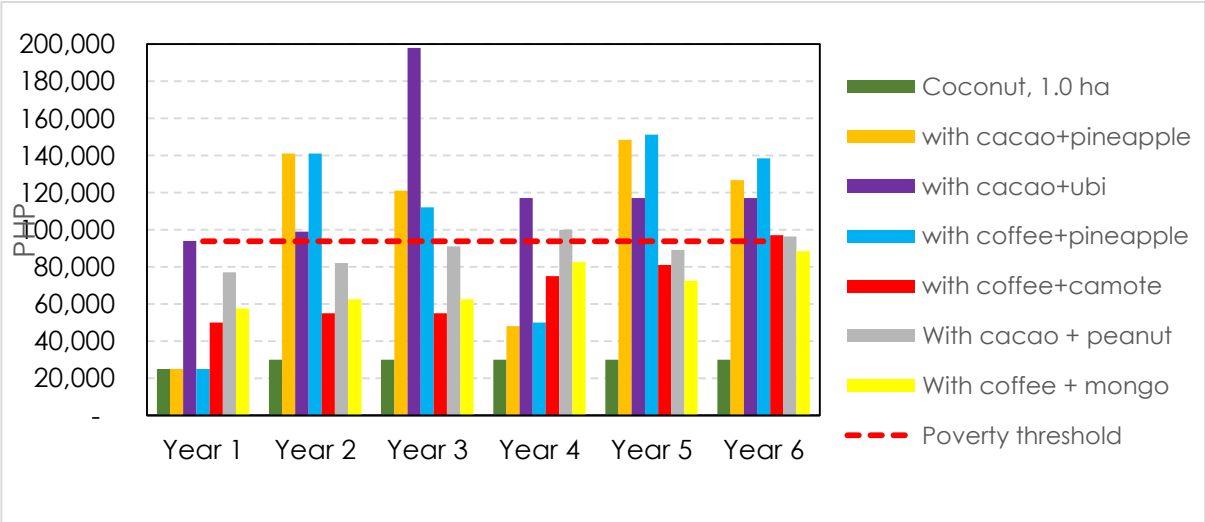

Figure 2. Crop Intensification of Coconut with Two Crops.

Farm consolidation and Crop Diversification. We must consolidate the farms and let them be operated, under equitable sharing of benefits with the landowners or CARP beneficiaries, by efficient farmers or entrepreneurs. With the government program for agricultural mechanization for seasonally labor-intensive activities, fewer farmers are needed in the farms and more jobs have to be created preferable within the locality. For practical purposes, we focus farm consolidation for rice and corn areas only. It means increasing the area or parcels of land an efficient farmer should cultivate and manage; and it does not mean physical consolidation of parcels. The boundaries and technical description of each individually owned land must be maintained, and the area should be the basis for equitable crop sharing or lease scheme. In conjunction, we must go for modern production of high value crops/products or go into crop diversification (not only rice and corn) with the optimal use of inputs applied in the proper time. Under globalization, there is no room for least cost production system.

In regions where we cannot produce enough hybrids, we just fill up the deficit by importing cheaper rice from Vietnam. For the unirrigated areas, these could be earmarked for hybrid or GMO corn. Fallow periods should be used for growing legume, spices, root crops and other high value crops. Non-irrigated areas may be planted to rice or corn during rainy season, but preferable for high value crops for export or specialty rice such glutinous, brown, black, red, etc.

As can be seen in **Table 4**, we can increase the income of farmers' families if we can arrange some form of farm consolidation either through lease or crop sharing. Since the limiting factor is available labor until suitable labor savings machines are available, for irrigated lands we can consolidate **two** farm holdings while for rainfed areas we need to consolidate at least **three** farm holdings so that the remaining families to farm would have decent income, at least twice the poverty threshold. For the families who remain to farm, some of the family members would need to help partly during weekends or holidays. Also for the remaining farmers to succeed, they need to partner with a 'big brother' enterprise, get a **non-collateralized** loan and a subsidized crop insurance that covers both the loan and a major value of the crop. Owners of leased farms would be reluctant to use their land as collateral. The arrangement would require a standardized and regulated four-way agreement among the farmers, the 'big brother', the bank and the insurance firm. If necessary, loan guarantee instead of collateral may be availed of.

Other imperatives. To balance the proposed agricultural development programs, we must also create jobs for the displaced farmers or marginalized farmers due to AEC, most of them are old and perhaps sickly and may not be eligible under CCT program. Some can be organized as roving specialized service providers or supplemental labor when needed. Until new rural agro industries are developed to employ them, the soon jobless farmers can be employed in WFF program in the countryside in the interim. The WFF can be in the form work that should improve the productivity of the farms such as construction and maintenance of FMR, erosion control in critical watersheds (e.g. roadside stabilization, vegetative and small civil works erosion control of waterways, or agroforestry development where appropriate), retrofitting irrigation canal to be resilient to climate change, constructing catch basins to hold surplus rice irrigation water for recycling, etc. The womenfolk can be employed in community level food or agricultural processing of seasonal surplus production and other value adding activities

Most OFWs who own land just lease or have their area tenanted by their relatives so the nucleus of land consolidation already exists. The farm owner who would lease their lands instead should be helped in seeking other jobs, perhaps by training them first in other skills. They can also be employed under WFF program or in agro-forestation of open forest land especially in watershed areas, Based on our analyses in other projects, the labor requirements for these options are shown in **Table 5**.

Table 4. Cost and Return Analyses and Options for Land Consolidation.

Crop	Type	No. of farms	Cropped Area		Yield, kg/ha	Prodn Cost, P/kg	FGP, P/kg	Return/ ha, P	Return/ farm, P	Return to labor/day	Imputed labor, MD	
			Ave/farm., ha	Total, ha							per ha	per farm
PER CROP												
Rice												
	Hybrid		1.63	0	4,764	11.85	17.25	25,750	41,972	5,700	32	53
	Inbred		1.63	0	3,469	11.98	16.74	16,524	26,935	3,064	38	62
	Irrigated	1,985,483	1.63	3,236,337	3,960	11.75	16.97	20,690	33,725	4,279	34	56
	Rainfed	926,229	1.63	1,509,754	2,691	12.59	16.22	9,761	15,911	1,720	41	67
Corn												
	Whte	914	0.67	612	1,269	8.01	13.14	6,515	4,365	590	29	19
	Yellow	346	1.05	363	4,231	10.27	11.82	6,575	6,903	3,105	13	13
	GMO											
	Hybrid	264	1.10	290	4,754	4.80	11.80	33,290	36,619	8,831	10	11
	Modern OPV	445	0.75	334	1,514	5.41	12.64	10,952	8,214	1,227	25	18
	Native OPV	551	0.64	353	1,278	5.57	11.12	7,088	4,536	673	31	20
Lowland vegetable			0.31						24,200	600		52
Peanut		54,036	0.50	27,018	3,402	18.22	37.31	64,951	32,475	1,590	55	27
Mongo		85,956	0.50	42,978	1,496	22.83	54.01	46,639	23,319	1,604	39	19
Onion	Bulb	27,725	0.4	11,090	15,072	8.52	17.04	128,405	51,362	730		70
	Shallots	11,882	0.4	4,753	8,379	14.07	23.37	77,893	31,157	443		70
Garlic		6,388	0.4	2,555	2,034	70.97	152.42	165,675	66,270	736		90
Camote		118,624	0.75	88,968	5,885	5.03	13.72	51,151	38,363	1,362		28
CROPPING COMBINATION PER YEAR												
A. Rainfed rice with lowland vegetable												
	One crop rice		1.63						15,911			67

Crop	Type	No. of farms	Cropped Area		Yield, kg/ha	Prodn Cost, P/kg	FGP, P/kg	Return/ ha, P	Return/ farm, P	Return to labor/day	Imputed labor, MD	
			Ave/farm., ha	Total, ha							per ha	per farm
	One crop, 3 types of veg.		0.93						72,600			156
		Total	2.56						88,511	396		223
By consolidating two farms		Tot. Harv.	5.12						177,021			447
B. Irrigated OPV rice with lowland vegetables												
	Two crops of rice		3.26						67,450			105
	One crop, 3 types of veg.		0.93						72,600			156
		Total	4.19						140,050	536		261
By consolidating two farms		Tot. Harv.	8.38						280,100	536		522
C. Irrigated hybrid rice with lowland vegetables												
	Two crops of rice		3.26						83,945			105
	One crop, 3 types of veg.		0.93						72,600			156
		Total	4.19						156,545	599		261
By consolidating two farms		Tot. Harv.	8.38						313,089	599		522
D. Rainfed rice with peanut												
	One crop rice		1.63						15,911			67
	One crop, peanut		1.50						97,426			82
		Total	3.13						113,337	756		150
By consolidating three farms		Tot. Harv.	9.39						340,010			450
E. Irrigated OPV rice with peanut												
	Two crops of rice		3.26						67,450			105
	One crop, peanut		1.50						97,426			82
		Total	4.76						164,876	879		188
By consolidating three farms		Tot. Harv.	14.28						494,628	879		562.94
F. Irrigated hybrid rice withpeanut												

Crop	Type	No. of farms	Cropped Area		Yield, kg/ha	Prodn Cost, P/kg	FGP, P/kg	Return/ ha, P	Return/ farm, P	Return to labor/day	Imputed labor, MD	
			Ave/farm., ha	Total, ha							per ha	per farm
	Two crops of rice		3.26						83,945			105
	One crop, peanut		1.50						97,426			82
		Total	4.76						181,371	967		188
By consolidating three farms		Tot. Harv.	14.28						544,112	967		563
G. Rainfed rice and Shallot												
	One crop rice		1.63						15,911			67
	One crop, shallot		1.2						93,472			211
		Total	2.83						109,383	392		279
By consolidating two farms		Tot. Harv.	5.66						218,765			557
H. Rainfed rice and garlic												
	One crop rice		1.63						15,911			105
	One crop, garlic		0.80						132,540			180
		Total	2.43						148,451	521		285
By consolidating two farms		Tot. Harv.	4.86						296,902			570
I. Hybrid corn and peanut												
	Two crops corn		3.3						73,239			23
	One crop, peanut		1						64,951			55
		Total	4.3						138,189	1,772		78
By consolidating two farms		Tot. Harv.	8.6						276,379			156
By consolidating four farms		Tot. Harv.	17.2						552,758			312

Table 5. Potential Deployment of Excess Farm Labor and Estimated Utilization in Work-for-Food Program and Agroforestry development.

Category		Particulars	Total Requirements, km/ha			Labor standard per unit	Total Labor Requirement		Potential Employment	
			Total Needs	Existing/good	Add'l Reqt		Number	Unit	Number	Unit
I.	Agricultural Productivity Enhancement									
	Farm-ti-Market Roads		71,000	34,477	36,523	1560 md/km	56,975,880	MD	63,307	personx3yrs
	Food terminal & storage					Civil works				
	Retrofitting of irrigation structures	Minor gates	170,000	34,000	136,000	50md/gate	6,800,000	MD	7,556	personx3yrs
		Secondary & tertiary canals	34,000	3,400	30,600	200 md/km	6,120,000	MD	6,800	personx3yrs
		Coconet slope protection			300,000	1MD/5sqm	60,000	MD	67	personx3yrs
	Critical watersheds, ha, 2014		2,716,500		Needs stabilization					
	Roadside stabilization of critical watershed	Roads, km	27,165	5,433	21,732	476 md//km	10,344,432	MD	11,494	personx3yrs
	Erosion control of waterways in critical watersheds	Waterways, km	1,955,880	977,940	977,940	631 md/km	617,080,140	MD	685,645	personx3yrs
	Mangrove reforestation		600,000	310,539	300,000	60 md/ha	18,000,000	MD	20,000	personx3yrs
	Steward of Magroves				300,000	5ha/HH		HH	60,000	HH
	Fish sanctuary	one. coastal municipality			400	6 person/ sanctuary			2,400	
	Fish ports and cold storage					Civil works				
II.	Climate Adaptation			Main reservoir						
	Mini-dams upstream of main reservoir		50/reservoir		18	2500/mini dam	2,250,000	MD	2,500	personx3yrs
	Catchment of overflow from irrigation		one/tertiary canal			Civil works				
	Agro-forestation of open forest lands				2,500,000					
	Luzon and Visayas				2,100,000	2 ha fruit/ tree/etc./HH			1,050,000	HH
	Mindanao and Palawan				400,000	5 ha ,Abaca-rubber/HH			80,000	HH
	Provision of drainage for rural roads			78,889	74,944	500 MD/km	37,472,222	MD	41,636	personx3yrs
III.	Development of Community Processing Facilities									
	Fruit Processing									
	Fish Processing									
IV.	Summary Requirements									
	Employment for three years								841,403	person
	Agro forestry Stewards								1,190,000	HH

From the estimated jobs that can be generated in the rural areas, the best applications are coconut intensification (9M), responsible land stewardship for agro forestry projects in open forest lands: (1.13M HH if 40 percent of open area is targeted and or 1.7M HH if 60 percent cover is targeted); responsible steward for mangrove reforestation (60,000 HH), since the employ the whole household and on long term basis. The other WFF program can generate only about one million jobs for three years. This means we have to accelerate the establishment of rural agro industries to add value to the additional production that would result and at the same time create more rewards for better quality jobs. This should not preclude training rural workers in various skills and competency needed to operate modern farms for export to other countries. Considering that we will displace about 350,000 HH in irrigated areas and about one million household in rainfed areas, we have a long way to go to employ most of the underutilized rural workers. It would be a major challenge for our policy makers, economist, or agricultural practitioners to craft a labor intensive but relatively high paying jobs for Filipinos. However, a labor relocation program to make Africa and Latin America become high performing in their agriculture, especially in rice, root crops and even in coconuts where they lag very much behind in productivity can be a potentially attractive undertaking worked out from international relations perspectives. The Philippines' Overseas Workers Bureau has plenty of experience to give to Agriculture, an asset that has not been tapped by our segmented sectoral nature of work.

Part 5 – Strategies and Justifications

The strategies should be a complement of systemic interventions like quadrangle of strengths: a) use knowledge, science and technology for wise and efficient use of resources to produce competitively and sustainably safe, nutritious, convenient products; b) empowerment of the successful private sector as big brother (or partner) to the smaller producers; c) strengthen support institutions from central level to the LGUs to enable them to implement programs in sustainable ways; and d) positive mindset to foster integrative thinking and programs rather than the sectoral, disciplinary and diffused perspective. Let us just briefly discuss here the major strategies and programs, and their implications. The other details would be covered in the main report. A complementary general strategy is intensification or consolidation which is better discussed in appropriate sub-sector or commodity.

First, is the wise and efficient use of knowledge, science, technology and resources for competitive and sustainable agricultural and fisheries enterprises, in short "*Good Agricultural Practices" or GAP.* The consolidation, efficiency-oriented and appropriate technology (AT) mechanization should be a whole package. Appropriate Technology from planting of the high yielding varieties (HYVs), mechanization, integrated pest management (IPM), and AT mechanization from harvesting, threshing, drying and storage with accompanying bulk handling. Rice varieties should be stored separately, and milled and packaged separately for better recovery. Mechanized palletized handling and bulk transport will save on the cost. For corn, it should also involve mechanized harvesting, shelling, drying and storage in bulk. Similarly, transport to feed mills of larger piggeries should be under bulk handling. The manual harvesting, threshing, drying and bagged transport of these commodities are inefficient, causes a lot of losses and deterioration of quality and results to expensive transport and handling costs.

The second is empowering private sector *BIG BROTHERS* to support and partner with small producers to have equivalent effective support that government or state-owned enterprises of Indonesia, Vietnam, Malaysia and Thailand provide for their small enterprises. The other essential higher level competencies next to production to succeed as an agribusiness enterprise, are upstream of the value chain up to the ultimate consumers, have to be provided by the institutional infrastructure or the BIG BROTHER. The BIG BROTHER support is a game changer among the ASEAN countries, and without an effective equivalent, our farmers have no chance of competing with other ASEAN small producers. The institutional infrastructure can be government as in Indonesia, Vietnam, Malaysia and Thailand, preferably private in the Philippines, but the enterprises should be efficient and globally competitive. In Indonesia they have the State Enterprises (e.g. PTPs), in Vietnam they have State Owned Enterprises (SOEs) for priority crops. The private enterprise can be for-profit like the poultry integrators or some of the new more successful social enterprises. Smaller but efficient social enterprises with good business model can be encouraged and supported to help groups of small farmers grow into successful and profitable business enterprises. Limcoma, Soro-soro cooperatives, Caluta, ANI, etc. are some models that can be emulated. The state enterprises in Indonesia or Vietnam are large and very profitable, so they are given additional mandate to support small farmers to be also productive and profitable. Failure to help the farmers is considered economic sabotage liable for extreme penalties. In the Philippines, we cannot afford another National Agribusiness Corporation (NABCOR) or Technology and Livelihood Resource Center (TLRC) which are vulnerable to political pressures 0f ill intent to support small producers.

The third is the revitalization of our institutions after three presidential terms of no hiring policy the professionalization of the bureaucracy by strengthening of all support institutions. These start with having a well-prepared agricultural master plan or long term strategic plan, followed by general strengthening: of policy formulation and implementation, reliable and up-to-date statistics, strengthening the agricultural bureaucracy and local government units in

agricultural communities in program implementation, reorienting agricultural education and training, research and technology development and adaptation, extension services, financial services, etc. The details will be elaborated in the main report but strengthening of the agricultural bureaucracy must be highlighted here.

The fourth is a cultural reformation to foster integrative thinking and programs rather than the sectoral, disciplinary and diffused perspective reminding us of a long history of divide and rule that promotes regionalism, favouritism, set in our archipelagic geography. Even the thoughts of federalism has been held captive as a potential disintegrative political and regional thought and has not been approached from a strictly management perspective that fosters diversity in unity and the long dreamed peace in the south. Integrative thinking can take us to a level of development far beyond the spurts of work here and there that favors a few. Only our first two Presidents had carried us to this integrative thinking and since then we had a series of "regionally-oriented administrations" that also had the same culture of their bureaucracies.

Other institutional strengthening ideas which **Madecor** endorses include:

a. Strengthening the bureaucracy and restoration of professionalism. The DA Secretary should be social-oriented with empathy to farmers supported by experience engineers to implement programs. Only one Undersecretary for political affairs, the rest should be professionals capacitated in civil service and who rose from the ranks. Technical Specialists should concentrate in evaluating options from which policy makers and implementors could make a choice appropriate to unique local conditions and avoid ‘one solutions fits all problems’;

b. Restoration of the executive roles of the agricultural bureaus for more effective regulations and enforcement in their respective sub-sectors or commodities;

c. With the restoration of the executive roles of the Bureaus, The DA Secretariat may be reorganized alone the value chain of agribusiness with each Undersecretary responsible for policy formulation and monitoring of key enterprises alone the value chain. Apart from the USec for Political Affairs or Legislative Liaison and USec for international Relations, the other USecs can be for Production Support Services, PPP for Agribusiness (including ‘Big Brother’), Agribusiness Financial Services, Agricultural Human Resources Development, Product and Market Development, etc.;

d. The RFUs may be reorganized into LGU Agricultural Resources Support Services, which may include extension services and the establishment, operations or maintenance of agricultural infrastructure such as FMR, communal or small scale irrigation system, post-harvest facilities, community food processing facilities, fish ports, etc.;

e. Revitalization of agricultural education by revitalizing agricultural education programs to be able to produce graduates with broader preparation in Agribusiness, Agricultural Technology or Entrepreneurship, and who can be promotable and employable anywhere in the world. Also, we should train more effective program implementors, and mainstream in the agricultural curricula the ‘New Normal Climate (NNC)’;

f. With the devolution of agricultural services to LGUs, capacitate and harness provincial-based State Colleges of Agriculture or Fisheries to provide technical assistance/services to LGUs and local farmers/fisherfolks;

g. Invest in the development of agro-industrial zones with similar perks and infrastructure as the industrial export processing zones;

h. We should have agro mechanization industrial zone for manufacture or assembly of farm machineries or equipment appropriate for our crops and farming system; and for maintenance of facilities of agricultural mechanization service providers;

i. Restoration of the role of the National Food Authority (NFA) only to price stabilization and for maintaining strategic stockpile for use in price stabilization and for emergency use during calamities. Stock piles should be periodically replaced with fresh stock (Note: other roles allow legal but dishonest means of making quick bucks);

j. Audit all major irrigation systems, and those found deficient should be given priority for rehabilitation or rectification; and

k. Development or strengthening Filipino ethics that is more Asian in character where common good for family, community and country have higher priority than individual self-interest.

Sub-sector or Commodity Specific Strategies In this section we highlight some key strategies we arrived at in consultation with various Filipino stakeholders. Not all the ideas or strategies could be fathomed by all stakeholders but most of the important decision makers, though cynical at the start eventually saw the light and became strong advocate.

a**. Livestock and poultry should be looked at together with corn as a sub-sector**. The discussion on corn is covered earlier in the strategy for land consolidation, modernization and mechanization. For practical purposes; let as differentiate commercial poultry and piggery from the backyard farms but both on them are important. For the commercial sector, let them be part of the global value chain. They can import breeders and feed raw materials, produce pigs and chicken here, and export the prime cuts preferred by more affluent customers abroad. To be competitive, the commercial farm should be treated as investors in the export processing zones, with the allowable perks and incentives. The backyard sector should be allowed to move on with the help of the input suppliers, and the regulatory support from competent government authorities. As and industry however, the both the commercial and backyard sector need the government to established world class post-harvest facilities (e.g. Triple A abattoir out the urban areas; constant temperature cold storage, modern processing plants, refrigerated transport, and modern hygienic meat outlets. They also need inventory financing.

b. The **Fisheries and Aquaculture sub-sector** should continue the innovation and good programs it has started, but strengthen its IEC campaign to popularize the best practices they have established such as breeding of tropical high value species; fish pen/cage aquaculture/mariculture; fish sanctuaries, ‘bantay-dagat’, etc. They have to enforce the regulations especially among the LGU investors on proper stocking, proper feeding; weather forecasting, fish landing, proper and hygienic handling, processing, transport; and protection of municipal fisheries from commercial operators.

c. The **sugar cane sub-sector** may need to overhaul it century-old regulations of mill-planter crop sharing, and may evolve a new business model that allow us to compete with Thailand in the light of CARP coverage of sugarcane areas. This could mean separating the planters from the mill owners. The planters should just supply the mill with the cane paid based on quality or potential yield of sugar that can be extracted. As a commercial crop, subdividing lands into smaller parcels is very inefficient coupled with old laws may exacerbate poll-vaulting. Reintroducing the blocking system is like return to the set up pre-CARP. If we cannot modernize the sugar industry, we may start looking for exportable crops that we can plant instead.

d. **Vegetable bowls near urban centers**. The strategy will involve the establishment of a network of production centers or vegetable bowls, each with production area of about 1.000 hectares that would produce high quality temperate type vegetables for the high-end market of fast-food chain, supermarkets, and convenience stores supplying salad and 'chopsuey' vegetables to growing urban consumers. Each bowl should be integrated with the participation of key players along the value chain. Anyway, all those involved in the trade seem to belong to some form of extended families. Ideally, this should be a development project to be sponsored by partnership between national and local governments with participation of several commercial and semi-commercial vegetable growers in order to establish an alternative supply of temperate type vegetable and at lower cost than those from the Cordilleras. The alternative potential investor firm would likely be a branded vegetable or produce supplier to the institutional market and would tie-up with other input suppliers in order to enter into supply and marketing with the numerous producers of specific vegetable crops in the target project sites. The aim is to produce high quality temperate type vegetables in new production areas with different peak season to ensure constant supply at relatively stable prices. The production system should be integrated and use the best varieties for the locality and appropriate for the season. The integration would insure adequate and timely supply of quality inputs and guaranteed market for the produce thus, minimizing risks and uncertainties among participants in the system. The successful model of producing off-season tomatoes and other high-value vegetables in Northern Mindanao can be replicated to provide year round supply of salad and *chopsuey* vegetables to fast food chains and urban consumers.

e. **Tree crops research and development institutes with gene bank, scion groove and accredited nurseries**. Most countries with significant export of tree crops have specialized institutes for breeding and technology development for the major commodities. We need similar institution and capability for our long term and strategic interest. For bananas, with climate change we need to develop dwarf and low water consuming trees as well as cultivars that produce uniform size hands from base to the top to increase exportable fruits. We also need to develop exportable mangoes that can withstand the rigor of hot-water treatment and long transport. And with climate change we need varieties that have thicker skin and resistant to fungal diseases. Also, as part of the agricultural development we would be developing a million hectares of tree and fruit crops as inter crop to coconut. We need to select and develop varieties that thrive best under shade and would have the desired characteristics for an increasingly discriminating export market. We also need to develop appropriate technology for large scale tree crop production. All these needs call for the establishment, by legislative action, of a Fruit and Tree Crops Development Institute (FTCDI) that would provide long term research and development for a significant tree and fruit crop industry. For efficiency and long term sustainability, FTCDI should be multi-species and be under DA. It can operate like PCC with national base near a leading SUC and should have satellite centers based in regional SUCs representing major agro climatic conditions in regions with significant export crops. FTCDI should have a genetic advisory board to guide on long term breeding and technology development program. FTCDI should initially be endowed with **one billion pesos** fund to be held in trust and only the earnings will be used for operations, and a budgetary outlay for facilities and research laboratory and orchard development. Funds for subsequent operations should come from service fees from inspection and certification of products for export. Since most of the beneficiaries are coconut farmers who would be participating in the intercropping as part of the poverty alleviation program, the initial trust fund may come from the accumulated **coconut levy fund**.

f. **Stable or semi-moist food products development for school feeding and disaster relief**. After analysing resource availability and their utilization, it is obvious that valuable raw materials are wasted during seasonal surplus. We have shown that that we can have export industry from surplus mango and *saba*. We can do the same for other seasonal

surplus crop that we can initial use for school feeding program for relief purposes, but this can lead to another major agro industry.

In sum, we advocate crop intensification in coconut areas including the development of at least one million hectares of cacao, and high return early maturing coconut products such as palm hearts, coco-sugar, bottled coco-water, etc.; crop consolidation in rice and corn area for food security as well as appropriate technological modernization and mechanization; and relocation and employment of displaced farmers/workers to eliminate rural poverty; and investment in infrastructure and appropriate financial services to farmers/fishermen including a progressive crop insurance system; and compete in AEC.

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Note:

Any correction of facts or disagreement with interpretations, please address to the Madecor Group at madecor@mozcom.com. We welcome other smart ideas that can help our agriculture, people and country.