



# MODERNIZATION OF THE COCONUT INDUSTRY

**Emil Q. Javier**

*Academician, National Academy of Science and Technology Philippines (NAST PHL);  
Chair, Coalition for Agriculture Modernization in the Philippines (CAMP)*

The value of coconut to the Philippine economy is captured by the following statistics: Coconut contributed PhP77.4 billion to the national economy in 2013, ranked fourth among crops after rice, banana and corn. It is planted on 3.56 million hectares, about one-fourth of the total land area devoted to agriculture. An estimated 3 million farmers are primarily engaged in coconut cultivation. We are the world's largest coconut producer and coconut oil exporter.

We are the global leader in coconut production. How do we keep that dominant position and at the same time generate greater value out of that comparative advantage? In other words, how do we modernize the Philippine coconut industry to make it more productive, globally competitive but environmentally sustainable and equitable, particularly to the small farmers who can be and are often short-changed in the rush toward agriculture modernization?

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### **About the Author:**

**Dr. Emil Q. Javier** is an Academician, former President of the National Academy of Science and Technology (Philippines) and the University of the Philippines System, and Director General of the National Science and Technology Authority, now Department of Science and Technology. He is the chair of the Coalition of Agriculture Modernization in the Philippines (CAMP). A plant breeder, farmer-entrepreneur, and internationally recognized agricultural scientist and research administrator, Dr. Javier led the extensive studies that resulted in the **Philippine Agriculture 2020 (PA 2020)**. This Bulletin on the coconut industry is part of PA 2020.

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## Ideals of modernization

Let me begin by clarifying what is meant by “modernizing” the coconut industry. Modernizing not only means adoption of new, science-based methods of farm production, processing and logistics to raise total productivity; not just to make the sector globally competitive, although that is a key desired outcome. Modernizing also has for its major purposes—environmental sustainability for now and the generations of Filipinos yet to come, and equity, particularly, for the primary producers (the coconut farmers) who can be and are often short-changed in the rush toward modernization.

### Why keep on growing coconuts? Why not switch to oil palm and rubber?

Coconut suffers in comparison with other industrial tree crops like oil palm and rubber because of its relatively lower income. Indeed, on a per hectare per year basis incomes from oil palm and rubber are much higher. However, the comparisons are not really fair because oil palm and rubber in our neighboring countries are grown in estates where the trees receive adequate fertilization and maintenance while practically all of our coconuts receive very little care if at all.

There are good reasons why coconut is and shall remain as the dominant industrial tree crop in the Philippine countryside.

First, coconut is typhoon-resilient and salt-tolerant. Coconut is uprooted and/or broken only by extremely strong winds. After the many typhoons that make land-fall, the coconut loses some fruits and flowers but will bounce back after a year or two. Besides, coconut is very adapted to saline conditions in coastal areas which kinds of lands we have plenty of because of our archipelagic geography.

Oil palm and rubber, on the other hand, are very susceptible to strong winds. And given the high cost of establishment, the loss could be catastrophic to growers. We can profitably grow oil palm and rubber in Mindanao and Palawan but not in most of the Visayas and Luzon.

Second, coconut has a diversity of uses over its 60–80 year lifespan which oil palm and rubber cannot match. If we add them up, the total benefit stream from coconut exceeds that from oil palm and rubber.

Coconut water can be bottled fresh and sold as a beverage; or microbiologically converted into nata de coco. The coconut shell can be carbonized into activated charcoal; the coconut husk into mats, upholstery, insulation, potting media and geonets. Coconut toddy collected from the spathe (inflorescence) is made into coconut wine and spirits, coconut sugar and vinegar. The coconut meat is processed into coconut oil, coconut flour, desiccated coconut and coconut milk. The fronds, leaves and midribs are used for shelter, as fuel wood and for handicraft making. And finally the trunks are made into coco-lumber and carved handicrafts.

The third major source of advantage of coconut is the opportunity to make full use of the sunlight filtering between the trees by planting intercrops, both annuals and perennials. Intensive multiple canopy farming will create more employment, more food which will bring food prices down for everyone, and provide cash to coconut farmers often far exceeding the revenue from coconut itself.

Coconuts are normally planted 8–10 meters apart. While waiting for the coconuts to bear fruits (4–6 years), annual food crops like rice, corn, vegetables, legumes and root crops can be planted to tide over the farmers during the juvenile period.

The kinds of annual intercrops to grow depend upon soil type, drainage, time of the year and of course access to markets.

Many perennials grow well under coconut like coffee, cacao, papaya, pineapple, black pepper, bananas, abaca, lanzones and other tropical fruits.

The fourth advantage of coconut is that like rice, it is intricately woven into our culture and traditions and can be consumed directly as human food. Coconut milk is a very important daily culinary ingredient in Southern Tagalog, Bicol, Visayas and

Mindanao as well as in the rest of Southeast and South Asia (India, Sri Lanka).

### How then do we modernize the Philippine coconut industry?

There are four major pathways, namely:

1. Raising the primary productivity of the coconut tree itself,
2. Intensive, sustainable multiple canopy coconut farming,
3. Maximum utilization of the coconut fruit and vegetative parts by conversion into various products, and
4. Downstream integration with oleochemicals production.

#### Raising the Primary Productivity of the Coconut Tree

In the long run, the key to the productivity, competitiveness, sustainability and equity of the coconut industry is raising the genetic potential of the coconut plant itself by mass replanting with hybrids. The national average yield of coconut is 43 nuts per tree year. The Philippine Coconut Authority (PCA) has bred several dwarf x tall hybrids with yields 3–4 times the national average.

We need millions of hybrid seeds each year to replace the estimated 44 million senile, unproductive trees. The PCA nurseries can produce hundreds of thousands hybrid seedlings every year which obviously are not enough.

In the meantime, particularly to meet the immediate replanting needs after super typhoon Yolanda, seedlings can be produced from selected palm groves of outstanding varieties like Baybay Tall, Laguna Tall and San Ramon.

The long-term solution is to give incentives to coconut farmers’ cooperatives and/or enterprising individual farmers strategically located in the major coconut regions in South Luzon, Visayas and Mindanao to specialize in hybrid seed production. PCA should provide the seed producers with the appropriate parent materials. These hybrid seed gardens should be closely supervised by PCA to

guarantee that only real hybrids are sold to farmers.

Coconut responds well to application of common table salt (sodium chloride), complete fertilizers and some trace elements. Marked increase in nut yields can be obtained in 2–3 years. With fertilization and better farm maintenance we should be able to increase productivity of existing coconut stands easily by 50 percent.

### Intensive Sustainable Multiple Canopy Coconut Farming

There are so many high value crops that can be profitably grown between the rows of coconut trees. In fact all these years, PCA pursued a program on coconut intercropping.

In addition, well-managed pastures under coconut can support large numbers of dairy cattle and carabaos, goats and sheep.

However, the expertise and manpower for coconut intercropping do not exclusively reside in PCA. An intensified, nation-wide coconut intercropping program requires the collaboration/cooperation from the Department of Agriculture (DA) and its many agencies (Bureau of Plant Industry, Bureau of Soils and Water Management, Fiber Industry Development Authority, Bureau of Animal Industry, National Dairy Authority, Philippine Carabao Center), as well as by the SUCs and the LGUs concerned.

Moreover, preoccupation with primary production limits the farmers’ ability to profit from coconut intercropping. To obtain better prices for their farm produce and leverage their position in the market place, the coconut farmers should cluster themselves into coops or producers groups and link themselves to food processors who will receive their products and/or establish connections to the modern trade supply chains.

### Maximum Utilization of Coconut and Plant Parts Into Various Products

Coconut fully deserves the sobriquet “tree of life” for the various uses of all its plant parts. Many of these uses are traditional but others are relatively new like virgin coconut oil, bottled young coconut

(buko) and mature coconut water and coconut sugar which products are gaining traction in the export market especially if they are labelled “organic.” The volumes and values are small to date but they have the potential to become major exports.

The challenge is how we can maximize the exploitation of this stream of benefits, in the process creating more jobs in the countryside and producing quality products at the least cost. The individual values of the coconut components are not very high. A large part of the cost of production of these coconut by-products is the cost of assembly of the nuts from long distances into a central processing facility.

The solution is the establishment of village level processing depots built around plants for the wet processing of coconut into virgin coconut oil and coconut flour. The cost of assembling the coconuts can then be spread among the various by-products.

The many products and by-products require processing of some kind. The processing needed is often simple and straightforward and had been the subject of innovative efforts of Filipino scientists and inventors in the past but they can benefit from further process improvements and packaging.

A case in point is the village-level wet processing of coconut to produce virgin coconut oil and coconut flour. After so much promotion by government we still see very few of them. A number of inventors are offering competing models. PCA should work closely with these equipment suppliers to pilot test and demonstrate which are most efficient and cost effective.

Similarly with production of virgin coconut oil, coconut sugar and bottling of buko and mature coconut water. We should look into each of these products to optimize the processes and foster local fabrication of equipment to make these small and medium scale industries more efficient and competitive.

Another important coconut by-product which merits a good second look is copra meal which accounts for as much as 5 percent of annual coconut exports (\$50 million). Copra meal is rich in energy

and protein. However its usefulness as animal feed is limited by its inferior amino acid composition (low in sulfur-containing amino acids like most vegetable proteins), high fiber and presence of some anti-nutrition factors.

Some form of chemical, enzymatic and/or microbial beneficiation should make copra a more valuable animal feed to support our burgeoning poultry and livestock industries.

### **Downstream Integration with Oleochemicals Production**

The fourth leg in the modernization of the coconut industry is the downstream vertical integration with basic oleochemicals and their chemical derivatives and final applications. Our domestic oleochemicals industry is up against stiff competition from behemoth conglomerates in Indonesia and Malaysia whose raw material is palm oil and whose operations are seamlessly integrated with huge oil palm estates.

Meeting the palm oil manufacturing giants head on in their own turf and terms will be futile. We should objectively look into our limitations and search for niches where we enjoy some comparative advantage. Wishing for vertical integration with large coconut plantations is out of the question because of agrarian reform. Relief from very high electricity costs is not forthcoming anytime soon. We should realistically build our industry instead around the unique properties of coconut oil especially the medium chain triglycerides which are in high demand for cosmetic and health and nutrition preparations.

Coconut oil (CNO) competes head on with palm kernel oil (PKO). The first challenge is improving reliability of supplies of CNO and bringing the price of CNO down to be competitive with PKO. There are at least three ways to do this: 1) increase primary production of coconut through fertilization and better agronomy (immediate) and replanting with hybrids (long term), 2) conserve CNO by substitution of coconut cooking oil with palm oil, and 3) granting of incentives and strong government support to the domestic oleochemical processors of coconut oil.

We should devote more underutilized tracts of land in Mindanao and Palawan to oil palm. The large tracts of land many of which are covered by ancestral domains claims and community-based forest management agreements can be the main targets. However, the palm oil we produce should be earmarked for domestic cooking oil consumption and thereby reserve our more expensive but more valuable CNO for downstream value-adding.

The Biofuels Act of 2006 mandated the part substitution of diesel oil for transport with coconut methyl ester (CME). The requirement for CME will continue to expand as our economy grows and as a higher CME blend is implemented.

We shall be saddled with excess crude glycerin which is the main by-product of CNO conversion to CME. We should therefore find better ways and means of adding value to glycerin.

There is a whole family of specialty oleochemicals that can be derived from CNO which have valuable applications for various industries such as personal and health care, plastics, fuels and lubricants, agriculture, food ingredients and industrial uses.

We cannot afford and we do not have the manpower to pursue all these exciting possibilities. We therefore must concentrate on specific oleochemicals and industry applications where we believe we have an excellent chance of carving a niche.

For example, we appear to have some comparative advantage in personal and health care applications. Perhaps we should exploit that to the hilt.

If the oleochemical industry has not done so yet, we should have a clear roadmap of which specific products/applications we shall focus our resources on.

We do have some highly trained organic chemists and chemical engineers in the SUCs and DOST agencies who can be mobilized to provide back-up support to private-sector lead R&D program.

Finally, the oleochemical sector fully deserves some kind of fiscal/tax incentives even if only for a fixed time period to offset the heavy odds they are facing. The added justification is the oleochemical industry’s backward linkage to coconut agriculture which has profound impact not only on total economic productivity but also to inclusive growth. The poorest among the poor are the coconut farmers. Diversification of the uses of coconut oil to higher value products will redound to their benefit.

### **Epilogue**

The foregoing provide directions on how to modernize the coconut industry to make it productive, competitive, sustainable and equitable. But where will the money come from?

The most obvious source is the estimated PhP70 billion coconut levy fund now held in trust with the national government waiting for definitive instructions from the Supreme Court as to the Fund’s final disposition.

We join the clamor of the coconut farmers that the coconut levy fund be made immediately available for the exclusive benefit of coconut farmers and the advancement of the coconut industry as a whole.

However, we propose the following conditions:

1. Keep the coconut levy fund in perpetuity by spending only the interest therefrom.
2. Safeguard the integrity of the coconut levy fund by entrusting the fund to a government-owned and controlled corporation (GOCC) chaired by the NEDA Director General.
3. The Board of Directors, whose members are, under the law, appointed by the President of the Republic, must be drawn from nominees by bonafide coconut farmers associations, industry groups, business professional bodies and scientific/academic institutions (like the Justices of the Supreme Court

appointed by the President from among the nominees submitted by the Judicial and Bar Council).

- Members nominated by coconut farmers associations representing the major coconut growing areas in Southern Tagalog, Bicol, Visayas and Mindanao, as endorsed by the Secretary of Agriculture.
- Members nominated by coconut industry groups, as endorsed by the Secretary of Trade and Industry.
- Members who are business professionals (management, banking, finance) nominated by the Management Association of the Philippines, Bankers Association of the Philippines and Financial Executives Institute of the Philippines.
- Scientists nominated by the National Academy of Science and Technology (NAST).

4. That the Directorship in the coconut industry GOCC be considered as an appointment of honor and voluntary service, very much like the UP Board of Regents. The Directors shall receive only a nominal monthly honorarium equivalent to that received by members of the Governing Councils of the S&T councils of the Department of Science and Technology as approved by the Commission on Audit, plus reimbursement of actual medical expenses, not to exceed a specific amount.

### Conclusion

The coconut will remain as a very distinctive feature of the Philippine landscape well into the future. Coconuts will grace the coasts where they are most adapted to saline conditions and on hillsides where they provide essential ecological services, as the next best substitute for the vegetative cover of the original tropical rain forest which they replaced.

Compared with other industrial tree crops like oil palm and rubber, the coconut has the unique advantage of being more resilient to typhoons which

unfortunately regularly visit the archipelago. Oil palm and rubber can be safely grown only in Mindanao and Palawan but not in the Visayas and Luzon.

The Philippine coconut industry can be made more productive, sustainable, competitive and equitable along four major complementary pathways, namely: 1) raising the primary productivity of the coconut tree itself, 2) intensive, sustainable multiple canopy coconut farming, 3) maximum utilization of the coconut fruit and vegetative parts by conversion in various products, and 4) integration with oleochemicals production.

The requisite natural resources, technologies, manpower and institutions, public and private are available. The coconut levy should be spent precisely for these purposes. All that is needed is the collective political will to redress the decades of neglect of the coconut sector and move the industry forward.

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**The National Academy of Science and Technology,  
Philippines (NAST PHL)**

*Level 3 Science Heritage Building  
DOST Complex, General Santos Avenue  
Bicutan, Taguig City 1631 Metro Manila, Philippines  
Email: [secretariat@nast.ph](mailto:secretariat@nast.ph) URL: <http://www.nast.ph>*