

The tree of life — sustainable development from rural communities to the global economy

International Coconut Community

The coconut tree has been called the tree of life because of its versatility and capacity to provide food, shelter, medicine, cosmetics, and support the livelihoods of innumerable people around the world. As we seek to achieve the 17 SDGs, we should consider how the coconut tree may support sustainable development in a variety of ways because of its economic, social and environmental significance — the components of the coconut can be utilized to make more than 100 different food and non-food products.

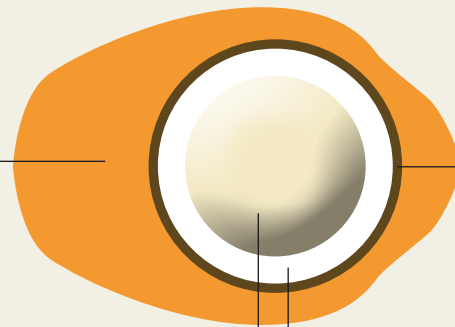
Economic and social impact of the coconut sector

The ability of the coconut sector to reduce hunger and poverty must be acknowledged. The sector has been improving the economic well-being of millions of people in those places that produce coconuts by promoting sustainable coconut cultivation. The coconut palm (*Cocos nucifera* L.) is cultivated on around 12.3 million ha in more than 90 countries. The 20 member countries of the international coconut community contributed over 92.7 per cent of this global production at 65.7 billion drupes per year. Taking into account only the significant domestic consumption in terms of value, the economic impact of coconuts was estimated, in 2022, to reach over US\$ 11.24 billion in exports, with consumers in over 110 importing countries, involving 30 million smallholder farmers and labourers, 100 million producers and workers in the industry. The coconut sector provides job opportunities and economic growth and 700 million people are engaged in the value chain, while 95 per cent of the global coconut palm population is owned by smallholder farmers.



Participants of the International 50th Cocotech Conference and Exhibition, Malaysia, 7–11 August 2022

The various uses of coconut



Coconut husk (mesocarp)

- Coco pith, coco fibre
- Biodegradable pots, geotextiles
- Complex furniture
- Floor mats, wall and door panels
- Rope, string, brushes
- Fishing nets
- Automotive dashboards
- Fuel, floor buffing, mosquito repellent

Coconut water

- Refreshing drink
- Nata de coco

Coconut inflorescence

- Sugar
- Wine
- Candy
- Syrup

Coconut leaves

- Book covers
- Brooms
- Baskets and mats
- Cooking skewers
- Kindling
- Roofing

Coconut shell (endocarp)

- Charcoal: activated carbon
- Charcoal briquettes for barbecues, shisha/hookah, alternative bioenergy
- Mosquito repellent

Coconut meat (kernel)

- Coconut oil: oleochemical
- Virgin coconut oil (VCO)
- Coconut milk
- White and edible copra
- Coconut flour
- Desiccated coconut (DC)
- Biscuits

Coconut trunk

- Durable furniture
- Houses
- Drums
- Containers
- Canoes

Coconut root

- Dyes
- Mouthwash

Image: International Coconut Community



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Participants and trainers of the International Course for Coconut Development Officers, ICC-Coconut Research Institute, Sri Lanka, June to August 2018 and June to July 2023

Realizing the economic impact of the sector, one of the International Coconut Community (ICC)'s main programmes is the Cocotech Conference and Exhibition, the largest international conference dedicated solely to coconut development. It discusses current technical development issues to find the best solution for all coconut stakeholders. So far, 50 conferences have been held by the community, with the 50th International Cocotech Conference and Exhibition running between August and November 2022, in collaboration with the Government of Malaysia.

Cocotech is a prime location for networking between coconut producers and buyers as well as a forum for researchers, processors, traders and policymakers to meet, exchange information and promote collective efforts for a sustainable and resilient coconut sector. With 39 speakers and 40 exhibitors from 7 countries and over 1,000 visitors from 52 countries, the direct economic impact contributes to local hotels, national airlines, transportation, restaurants, shopping centres and tourist spots. There is a long term impact of the shared technologies on innovative product development and improved production efficiency such that the participating businesses are achieving more profitable cooperation leading to market expansion.

The 50th Cocotech theme was Climate Change Adaptation and Mitigation Strategy for a Resilient and Sustainable Coconut Agroindustry. The vulnerability of agriculture, including the coconut sector, to the impact of climate change and the potential contribution of the sector in mitigating the impacts has prompted the ICC to promote the theme. The impacts of climate change, such as floods, longer droughts, landslides, increased pest populations and disease severity can lead to yield losses and therefore pose challenges for coconut farmers and other stakeholders, and could reduce crop yields by 1–2 per cent per decade over the next century. Therefore, effective adaptation and mitigation strategies are mandatory.

Considering the huge potential of the coconut sector, there is a general lack of knowledge of the technology available to create value-added coconut products. Therefore, the ICC has been conducting technology transfer and capacity-building programmes in local and global partnerships. Several training sessions, webinars, workshops and courses, together with



Image: International Coconut Community

Participants of the International Symposium and Training on Tissue and Embryo Culture, involving experts from Australia, Belgium, Mexico, Philippines, Sri Lanka and Vietnam



Image: International Coconut Community

Dr. Jelfina C. Alouw, Executive Director, ICC, and Mrs. Ernestine Kong, Oshin Organics founder, at the Oshin Organics booth at Cocotech 2022

technical assistance, have been conducted in collaboration with international organizations and coconut research institutes, industries, and universities. For instance, there have been an International Training Course for Coconut Development Officers (Coconut Research Institute, Sri Lanka); International Symposium on Integrated Pest Management (Philippines Coconut Authority); International Symposium and Workshop on Tissue and Embryo Culture (Australian Centre for Agricultural Research, Department of Foreign Affairs and Trade of Australia and Central Plantation Crops Research Institute, India); several online webinars on value-added coconut products and marketing, held with thousands of participants during the COVID-19 pandemic (Non-Align Movement Center for South-South Technical Cooperation, International Trade Centre/European Union); and a Good Agricultural Practices Workshop (Coconut Development Board of India). The programmes have impacted coconut development in the member countries.

One of the success stories is Oshin Organics, a high-value-added cosmetics product made from virgin coconut oil (VCO) in Papua New Guinea, one of the ICC member countries. Previously, the country was able to produce only copra but now, through increased capacity, other marketable and profitable products such as VCO and cosmetics can be produced domestically, and were showcased at Cocotech 2022.

Founded in 2015 by Mrs. Ernestine Kong, the Oshin Organics ingredients are ethically and locally sourced in Papua New Guinea, providing employment and training opportunities for people in the rural community. Oshin was chosen as a play on the word 'ocean', symbolic of the tranquil islands of Papua New Guinea, where organic coconuts grow wild and the sun shines on crystal blue waters, and the benefits of coconuts have long been known and loved by the locals. The significance is in supporting rural communities and employees with

a safe and sustainable workplace and trade practices, aiming to share the benefits of coconut oil with the world, crafting natural products for the skin, hair, and health, such as coconut oil moisturizer, by engaging local people, especially women, using organically-grown ingredients and encouraging sustainable agricultural practices. All products are free from harmful preservatives and chemicals made of coconut, which is a rich source of antioxidants, vitamins and minerals, essential to healthy, radiant skin.

Previously, at the 49th International Cocotech Conference and Exhibition, ICC granted the opportunity to showcase products of Koperasi Wanita Srikandi (Srikandi Woman Cooperative), Indonesia, led by chairwoman, Mrs. Sri Susilo Wati. The cooperative produces coconut sugar for both export and local markets with a production capacity of 300 tons per month of granulated coconut sugar and 20,000 bottles of coconut sap-based syrup. To expand exports, Koperasi Wanita Srikandi holds certification such as USDA Organic, COR Canada, and BPOM.

To achieve welfare and independence through community empowerment, Koperasi Wanita Srikandi has 1,500 fostered farmers with one internal control system (ICS) for managing every 50 farmers in four districts: Purworejo, Magelang, Wonosobo, and Kebumen. To maintain the supply chain, Koperasi Wanita Srikandi conducts regular empowerment to coconut sugar farmers, ICS, as well as collectors. In Indonesia, the production of coconut sugar is a popular household activity in 26 provinces. In the Banyumas district alone there are about 28,773 palm sugar-making units employing about 58,500 workers. About 75 per cent of the total production goes to large cities for local consumption and also for export to Singapore, Malaysia, and the Middle East.

To support the community, ICC runs many publications from which to disseminate the latest information on coconut sector technology and market trends, together with analysis to support decision-making for policymakers and government officers and business strategy for producers. The publications also enable technology transfer to farmers to increase production and productivity. The publications are: *CORD* (a journal on coconut research and development), the biannual *Coco-Info* magazine, the monthly *Cocommunity Bulletin*, *Coconut Statistical Yearbook*, *Directory of Coconut Traders and Manufacturers*, *Quarterly Bulletin*, website, and social media posts.

Coconut for healthier living

Coconut sugar is very popular as a natural sweetener in some developed countries especially in Europe, US, Japan, and Australia because of its low glycemic index (GI) value, suggesting its nature as a healthier sugar — coconut sugar has a GI value of 35 while sugar from palm and sugarcane has values of 42 and 58–82, respectively.

The global demand for coconut sugar as an alternative to refined cane sugar is increasing daily with a burgeoning health awareness in the food market. Coconut sugar can provide a healthy viable option that increases demand in the domestic and international markets so the potential of neera (coconut sap sugar) production could be maximized.

Besides providing healthy organic products and healthy food, it is clearly shown that coconut has contributed to

securing rural community livelihoods and culture by empowering local farmers' organizations, especially women who are involved in the upstream to downstream process, from harvesting, processing, and marketing of the healthy coconut value-added products, from rural areas to the global market. Consequently, this fosters farmers' families and all of those involved in the value chain's welfare.

Increasing health awareness also raised demand for Virgin Coconut Oil during the COVID-19 pandemic. Scientific research conducted by Dr. Fabian M. Dayrit, Chairman of the ICC Scientific Advisory Committee on Health, University of the Philippines, Philippines General Hospital, has found coconut oil to be useful as an adjuvant in therapies for COVID-19 patients with mild symptoms. After six months of experiment, compounds from coconut oil and virgin coconut oil significantly decreased coronavirus count by 60–90 per cent at a low viral load. He also found that coconut oil lowers total triglycerides and HbA1C levels, as an indicator of blood glucose level, while at the same time maintaining the ratio of low- and high-density lipoprotein at healthy levels.

Environmental impact of coconut

A coconut farm's capability of sequestering significant amounts of carbon dioxide from the atmosphere and transforming it into biomass affirm the positive environmental impact of coconut. These natural carbon sinks in polyculture farming systems not only facilitate carbon offsetting but also foster a nurturing relationship with the surrounding environment, safeguarding biodiversity and giving hope to the next generation. Coconut trees also require fewer pesticides, effectively reducing chemical pollution. They also release oxygen, contributing to a cleaner atmosphere and helping in the fight against climate change.

Currently, ICC-Coconut Genetic Resources Networks (ICC-Cogent), the International Treaty on Plant Genetic Resources for Food and Agriculture, and countries hosting the five International Coconut Genebanks (ICG) and 19 National Coconut Genebanks (NCG) conserve a comprehensive coconut diversity of more than 1,000 unique accessions. Those coconut germplasms are invaluable for improving coconut traits and are beneficial for industrial uses.

The longevity of a coconut palm tree is impressive, living up to 100 years and continuously producing coconuts during its lifespan. The fruit, the tree, and the by-products, all contribute to a cyclical eco-friendly system, from improving soil health to providing material for sustainable manufacturing.

Coconut cultivation already stands as a sustainable agricultural practice, given the plant's high water-use efficiency, the minimal requirement for pesticides, and excellent carbon sequestration capabilities. An additional practice that the coconut industry can adopt to further enhance its sustainability is traditional rainwater harvesting. When the coconut industry integrates this method into its operations, it results in a more sustainable system. It significantly reduces the industry's dependency on conventional water sources, particularly beneficial in areas prone to water scarcity or during dry seasons.

Coconut by-products, including husks, leaves, and shells, are transformed into organic materials and green energy sources, emphasizing the industry's waste recycling

capabilities. The shells are used to produce activated carbon, helping to purify water and air. Furthermore, coconut oil is emerging as a potential component for Sustainable Aviation Fuel (SAF). With the aviation industry's increasing focus on reducing carbon emissions, SAF made from coconut oil offers a promising solution. It burns cleaner than traditional jet fuel, reducing the carbon footprint of air travel. The coconut industry provides a multifaceted approach towards environmental sustainability, water conservation, waste management and green fuel production.

Another eco-friendly by-product is coconut charcoal. It can be processed as briquettes, reducing the need for wood-based charcoal, therefore decreasing the cutting and destruction of forests. Before coconut charcoal became available on the global market, people across the world relied on the use of wood charcoal for barbecues and shishas, with numerous trees felled to satisfy demand. As a result, woods were devastated, further threatening the global environment. With coconut charcoal briquettes now on the global market, thousands of tons of briquette exports have prevented the extinction of countless hectares of forest.

From rural communities to the global economy

Given the insignificant increase in global coconut production and the need to meet huge opportunities offered by the coconut sector, national and global strategic partnerships are imperative. Such a substantive and fruitful collaboration should be sustained with the active participation of governments, coconut industries, coconut farmer associations and local and international institutions, for the benefit of all farmers' families and humankind.

As we witness the industry's continuous efforts to address environmental and social challenges, we can confidently look toward a future where the coconut sector continues to thrive. This future promises healthier lives, empowered communities, robust economies and a better world.

Let us continue to harness the potential of the coconut tree in our quest for sustainable development. By doing so, we are embracing the essence of the tree of life, uniting rural communities and the global economy in a shared vision of sustainable prosperity. The coconut tree isn't just a plant — it's a symbol of resilience and a key to a sustainable future.



The domestic organic coconut sugar production process

Image: International Coconut Community