

**RESETTLEMENT OF THE
SALOMONS AND PEROS BANHOS ATOLLS
CHAGOS ISLANDS**

Proposal

Feasibility of Coconut Rehabilitation and Processing

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CHAGOS ISLANDS

1 Background

The Solomons and Peros atolls form the most northerly of six island groups in the Chagos Archipelago, which together constitute the British Indian Ocean Territory (BIOT). The islands are located in the Indian Ocean, 500 kilometres south of the Maldives and some 1,500 kilometres east of Mauritius. From the late 18th Century, along with Diego Garcia they were run as copra plantations.

In the 1960s an agreement between UK and USA reserved use of the islands for defence purposes with a military base on Diego Garcia. As a result BIOT was de-populated. The inhabitants, known as the "Ilois", were moved mostly to Mauritius and Seychelles to a lesser degree.

Following representations by the Ilois, consideration was given to the possibility of a limited return to the islands. A preliminary theoretical study undertaken for BIOT in June 2000 was the first phase of a feasibility study on re-establishing permanent settlements on the 1,200 ha on the main islands of Solomons and Peros Banhos atolls. It was based on a 4-day field visit to the islands and on desk research in the UK.

The theoretical study outlines general parameters and raises the main issues to be addressed in examining feasibility of resettlement. Based on assumptions, the study is not particularly encouraging as to prospects. A number of issues raised need to be further investigated before a formal full feasibility study can be undertaken. Given that coconuts are the predominant vegetation on the islands and in the past the main source of livelihood, one of the most important issues raised is about the commercial viability of coconut harvesting and processing. Contribution from coconut consumption processing and marketing is likely to be the critical factor in overall viability of resettlement.

The previous study, based on gradual rehabilitation, 21 people to clear followed by 72 people to maintain being paid \$5 a day, concluded that the rate of return would be 2.6% without taking into account management and infrastructure. Poor prospective returns, management and organisational problems and need for rehabilitation made copra production unlikely to be worth pursuing further.

It is possible to use rather different assumptions based on more specialist knowledge of the coconut industry and in particular, experience on islands with similar physical and population characteristics to give more detailed consideration to the viability of the coconut industry. Much depends on the possible structure of the industry, extent of rehabilitation required and farming systems. The choice would appear to lie between use of a management company (such as the Commonwealth Development Corporation) or a co-operative structure (like the ones common in the Pacific and in Kiribati in particular), which was not considered. Rehabilitation and farming systems (small-holder production which accounts for more than 80% of global production was dismissed as 'unlikely' in

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favour of adverse consideration of indentured labour, which no one uses today) need further consideration.

In the way of an illustration, Kiribati, consisting of 72,335 people with 26,000 ha coconuts on 33 coral atolls spread over 3.5 million square km and 2,450 kms from Australia, has a copra co-operative which manages the production, collection and export of copra. The country became independent in 1979 around the same time as its main source of revenue from phosphate deposits ran out. Reserves from phosphate earnings were deposited with a London finance house and yield a crucial annual income for the country. There is no national debt and growing substantial reserves, although there are aid projects. The copra co-operative includes a large part of the working population of the country. Copra and fishing are the two most important export earners. The two atolls in Chagos being considered for resettlement would be roughly equivalent to North and South Tarawa.

Another possible comparison is with the two islands of Rakahanga and Manihiki, the two most northernmost of the Cook Islands, which together make up around 2,000 ha and a population of around 1,000. Both are among the most isolated in the Pacific and copra processing is undertaken on Manihiki by the two Island Councils along with a joint venture with a Japanese firm for culture of the black pearl which may also be worth exploring for the Chagos Islands. The Cook Islands consist of 15 islands, 13 of which are populated with a national population of 21,000 and an annual coconut harvest reported as 5 million.

Many remote Pacific Islands have economies that are best described as affluent subsistence with cash income coming from copra and fishing. There are many who prefer to be their own masters, tend own smallholder plots, consume mainly what they grow and catch and enjoy a rich communal existence, rather than work for meagre wages in other countries where costs are such that they can by no means describe themselves as affluent.

Countries with roughly the same order of potential or actual coconut production as the Chagos Islands and producing copra include: Belize, Cook Islands, Liberia, Suriname and New Caledonia.

Examination of commercial viability was only intended as a theoretical exercise and would benefit from a practical viewpoint. Moreover, the possible resettlement of the islands, the terms under which it takes place, resources which would then be made available to facilitate the process, pattern of settlement that would be optimal and the basket of activities which taken together would finally determine the attractiveness of resettlement are all still very much open to consideration.

This proposal is to take the earlier theoretical study further by studying the state of plantings of coconuts in the two atolls covered, need for thinning and rehabilitation, commercial viability of processing coconuts and associated activities as well as costs of the above.

2 The Coconut Industry

Estimates on total global coconut production vary a great deal and it is nearly impossible to be accurate about it. Most experts would agree that current production is between 60 and 70 billion nuts per annum. Production has been growing gradually over the last 20 years, probably at around one percent per annum.

Coconuts are mainly grown on smallholder plots. More than 80% of the annual global production is so cultivated. Plantations are rare, with the exception of the Unilever plantations in Solomon Islands and state owned ones in Indonesia. The normal pattern is for holdings of less than 4 ha. That does not exclude many of around 1,000 ha or more but the normal is far less.

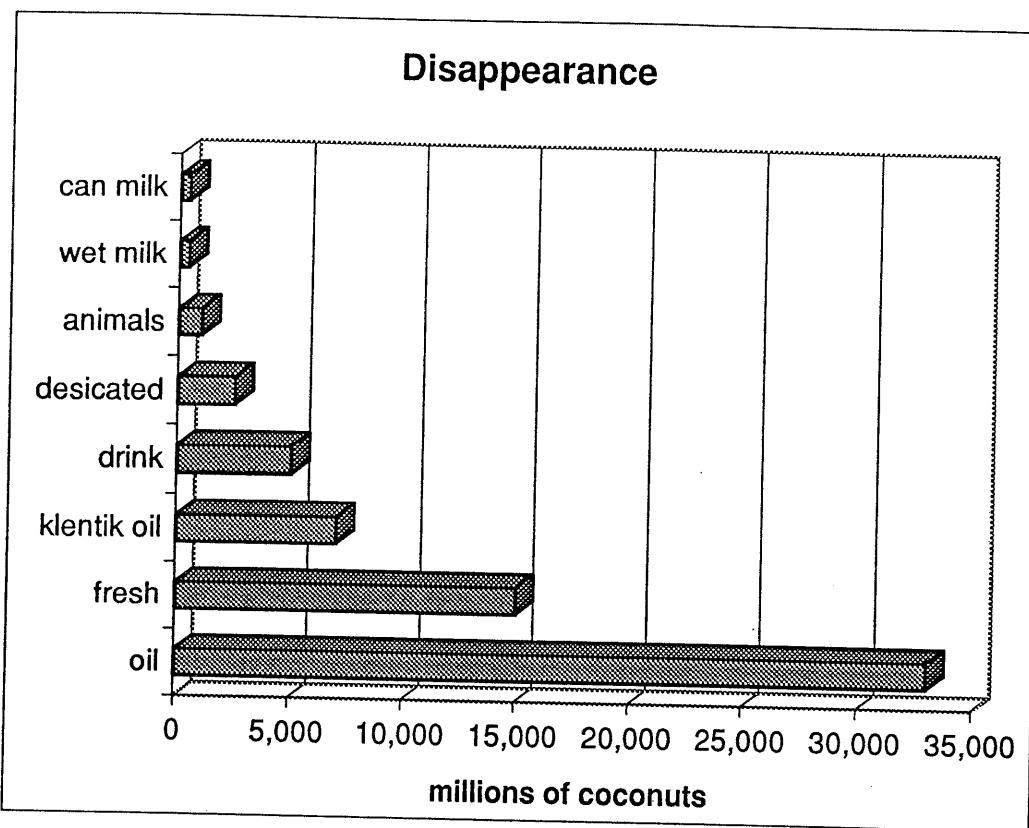
It is also very rare for farmers to live solely on income from selling coconuts although they also provide a ready source of food, shade for other crops, poultry and pig farming and even livestock. The palms require very little upkeep and yield for more than 60/70 years. Family labour is often used to tend the coconuts while men often find work elsewhere. This may be to produce copra for others or for themselves and/or coconut oil. But can be on other farms, fishing, tourism and small-scale crafts.

Coconut farming, copra production, oil extraction and exporting are very often undertaken on a co-operative basis. The latter may cover one or more of the above activities although on smaller islands vertical integration is usual. In the leading coconut producing countries, Philippines, Indonesia and India each activity forms a separate industry but even for them, copra production is usually a co-operative industry.

Pacific Island producers in Fiji, Kiribati, Papua New Guinea, Solomon Islands, Tonga, Vanuatu and Western Samoa have co-operatives that are vertically integrated covering interests of farmers and copra producers with oil extraction in the largest Islands. On nearly all of them, exporting is a regulated state or co-operative monopoly. Income from coconuts and products is of crucial importance to the economies of some of the above countries.

For many, exports of coconut products contribute crucial foreign exchange earnings. The crop is often too important in the economy, society and culture of island communities to be left to private investors using indentured labour. That is not commercially viable and no one practices it. There are large holdings of 1,000-4,000 ha in Papua New Guinea, Indonesia, Solomon Islands and Western Samoa but the normal pattern is smallholder production with co-operative management of the industry.

There are many in similar circumstances of size, production and remoteness as the Chagos Islands who have copra processing as the core cash activity along with fishing. The particular factors affecting the Chagos Islands have to be taken into account in recommending the best pattern for the situation and only then can the viability of resettlement be assessed.



Roughly half the total nuts produced in the world end up being used for drying into copra prior to extraction of coconut oil. A quarter is consumed fresh. The remainder as home made oil, drinking, desiccated, fed to animals and processed for milk. The main commercial product extracted, coconut oil and copra meal are long established commodities.

Coconut oil remains an important oil but its share of world trade in edible oils has declined to below 3% with the greater increase in production and trade of other edible oils. In absolute terms, coconut oil production has been and is increasing. The markets for coconut milk and oil are strong. Prices paid for coconut oil fluctuate with those of most other major edible oils but usually enjoy a premium over them.

Highest value use of coconuts is when they are sold and consumed fresh. Roughly 20 billion coconuts are eaten fresh or used in cooking. They are consumed at various stages of maturity as drinking, jelly or fresh mature nuts. In many island communities, coconuts, taro planted underneath with small vegetable plots and perhaps some poultry or pigs, together with fish form the staple diet and a very good one at that. In that combination, islanders are assured of self-sufficiency when it comes to survival. The highest prices paid for fresh nuts in coconut producing countries are probably in Guyana and Oman where prices can exceed \$1.50 per nut.

Klentik oil is a name taken from Indonesia to describe expression and use of an oil from fresh coconuts on a home or cottage industry basis. The process may not be as efficient as

industrial ones, but it provides a popular oil for local use. In island communities, aside from cooking oil, it is often also used for washing hair and production of soap. Some coir fibre is almost always produced from husks for local needs of twine and ropes. Similarly, shell charcoal is a useful fuel.

Most world trade today takes place in coconut oil rather than copra. Countries have developed their own oil extraction and this is made far easier today using processes such as extraction directly from fresh coconuts without going through the intermediate step of copra. One such approach suitable for small island use has been developed by CIRAD and a large number are now operating in field conditions. It is also possible to use the resulting oil as fuel. Although not usually an economic use of coconut oil, it is worth considering where very high freight costs increase the price of fuel with much higher prices than world market rates.

3 Research Specifications

The proposed study would cover examination of:

1. Coconut Agronomy
2. Associated Economic Activity
3. Processing
4. Management
5. Resettlement
6. Financial Analysis

3.1 Coconut Agronomy

There is very little published information about the varieties of palms growing on the Chagos Islands, their normal yield rates, optimal densities, copra content, oil content or flavour characteristics. The geographical isolation of the atolls and depopulation since the 1970s has led to relatively less being known of the palms growing there than most coconut producing areas. Presumably there is historical data from the former plantation company, which would help, but it is unlikely that there was any detailed study made on coconut agronomy.

The Theoretical Report already carried out reports neglect, ageing, high densities and thus low yields, low soil nutrition, unhealthy appearance and rat infestation. All these factors would be expected on small coral islands with neglected wild palm growth. The Report goes on to speculate that thinning palm populations will be required and some replanting. The former is to be expected, the latter needs investigation. While thinning is relatively inexpensive and simple to undertake, need for replanting requires careful consideration.

The proposed Mission will look at the varieties, age, health of palms, densities and yields to determine more precisely what needs to be done and how it could be organised and how much it would cost to rehabilitate the plantings on the main islands of the two atolls. The Mission Agronomist as Director of CIRAD has the resources and experience to be able to undertake this fundamental analysis.

The reported 1,200 ha of main islands in the two atolls have at present a large palm population, as high as 1,000 palms per ha in many areas if seedlings are included and low nut production. However, there was evidence of reasonable nut yields particularly in and around the old plantation building areas. It remains to be seen whether thinning will be enough or some replanting is required.

3.2 Associated Economic Activity

Most coconut farmers and particularly those on small islands undertake some economic activity in the shade of the coconut trees. There has to be a balance to ensure that whatever activity is undertaken does not lead to a more than acceptable reduction in yield rates. But taro pits are often dug with the sweet crop serving as a useful source of carbohydrates.

In addition, fruit trees can be interspersed with palms and vegetables can be grown under the coconut palms. Evidence was found by the earlier Mission of breadfruit, citrus, maize, mango and vegetables being tried. There have been trials in conditions comparable to the Chagos Islands on fruit and vegetable production and results could usefully be considered for the two atolls.

It is also common in similar circumstances to rear poultry and pigs. Chickens and pigs are common sight on small islands under coconuts. They are often fed on coconuts or copra meal but cover crops are also possible. In the way of an illustration, in Western Samoa 200 million coconuts are fed to pigs every year. There have been some more adventurous schemes such as a large turkey farm in Mindanao, Philippines with the turkeys fed on coconuts.

The Mission will take into consideration what additional economic activity is possible for coconut farmers.

3.3 Processing

Following thinning, 1,200 ha of traditional tall coconuts on atolls should in theory lead to the availability of over 5 million and maybe even nearer 10 million coconuts per annum. Average exports of around 700 tonnes of copra per annum during 1955-58 indicate that 3.5 million coconuts were being used for the purpose. With fresh consumption, accessibility and rat damage, total production was probably in excess of 5 million nuts per annum.

The old level of 700 tonnes suggests exports worth \$350,000 at today's prices but if the CIRAD 'immersion drying' process were used and oil and meal exported and more nuts processed, a much higher value is possible. It could also meet local needs for cooking oil and even a diesel fuel substitute.

Substantial thinning of coconut palms required will also lead to hundreds of thousands trees to be felled. A special saw would have to be used for the purpose and if felling was gradual which it will have to be, lessons learnt from coconut timber research work in New Zealand, Tonga and Philippines could lead to small scale production of wood products for export as well as providing local building material needs. The operation could be mobile and moved from island to island.

Processing 5 million coconuts for oil or copra also leads to the availability of 750 tonnes of shells that can be burnt to produce 250 tonnes of charcoal. Some of the latter would serve as fuel for cooking but some should be available for export.

The proposed Mission will examine the processing options, how they could be organised, employment, costs and revenues. Aside from facilities for habitation, transport and processing, there will be a need for technical assistance to help undertake thinning and replanting. Also to tackling rat infestation and any other pests or diseases.

3.4 Management

Consideration will have to be given to the forms of ownership or tenure that could be used to fit the optimal pattern devised. The possible patterns also depend upon legal factors and the preferences of the Illois. In particular, examples afforded by other small island communities will be examined and a model recommended. Comparable communities can be found in Kiribati, Cook Islands and Vanuatu. It may be a co-operative is the preferred arrangement and the latter could have its own management or use services of a company.

Management of 1,200 ha of harvesting for processing requires a number of functions to be undertaken such as thinning, replanting, reducing infestation, maximising yields, collection, transport, labour, materials, quality control, packaging, export and accounting. It also requires ownership of boats for collection, processing facilities, sheds, communications etc.

Either settlers, acting as a co-operative and/or a management company will have to perform these functions. A choice simplified somewhat by the fact that no independent profit maximising management company is likely to be willing to invest due to low likely returns. However, excellent management can be provided by development oriented entities such as CDC, CIRAD and others.

3.5 Resettlement

The Mission will, based on the coconut industry as the core activity, examine the numbers of settlers and the timing of resettlement that would be justified. The reported 1,200 ha could be divided into smallholdings and the Mission will look at the optimal distribution of resettlement among the land available.

A number of possibilities need to be explored with the main choice being between concentrating habitation to the two main islands or sparse population of a larger number of islands.

3.6 Financial Analysis

Although resettlement is unlikely to depend solely on the commercial viability of the coconut industry, cost/benefit analysis of the overall question will be strongly influenced by what needs to be done and is possible in relation to coconuts.

A model considered previously was that of an investor probably in the shape of a plantation company bringing indentured labour to the Chagos Islands, providing them with housing and water, getting the coconut plantings back in shape, processing and exporting copra and providing shipping to bring the necessities of life. Such a model would come nowhere close to being commercially viable. It would be a hugely expensive exercise, which only a rich country could undertake if it were willing to do so.

The Mission will instead focus on the coconut aspects of resettlement in the knowledge that there have to be other measures dealing with water, jetties and infrastructure and how all this will be financed. Even with coconuts, the Mission is mainly concerned with the contribution they can make to make resettlement viable. The proposal is concerned with whether the coconut industry is viable and not with the viability of resettlement, which will depend on a number of factors of which coconuts are one.

The Mission will cost the steps required to rehabilitate the coconut palms including thinning, any replanting, reducing infestation and other steps required to bring the palms up to optimal production. Such an operation will have to be staggered over a period of years and timetable will be suggested for doing so.

While mainly concerned with coconuts, the Mission will take into account economic activities that are normally part of a coconut farming system. As such, production of taro, fruits, vegetables, poultry and pigs will also be subjected to financial analysis as part of coconut farming.

Processing in the past has solely been concerned with copra and that is one of the main options to be examined and analysed but it is proposed to also include

consideration of immersion drying to yield oil and meal. This would represent value addition as well as making possible some small-scale production of soap as well as use of the oil. In particular, possible use of the oil to substitute diesel will be considered unless of course farmers will be avail diesel supplies from Diego Garcia.

Thinning and replanting will make available substantial quantities of coconut trees over a fairly long period of time. The ability to process the timber, not one of the easiest to cut and treat, would enable optimal use of the timber for local building needs but also for export.

The resulting financial data will be subjected to usual project analysis levels to see how viable the coconut industry could become and what issues and prerequisites would be needed to implement the project.

4 Mission Team

Economist/Mission Leader (CV attached)

Mr Vinay Chand has extensive experience in analysis and evaluation of coconut projects, in particular those in remote island conditions. He has also led two Missions for the EU to India in connection with coconut production and processing and has undertaken feasibility studies on coconut processing in Kiribati for the CFTC and EU, Cook Islands for CFTC, a sector study on Western Samoa and a loan Mission to Indonesia for the Asian Development Bank, a pre-feasibility study on Papua New Guinea and Vanuatu for the World Bank and Regional Development in the Caribbean for EDF.

Coconut Agronomist (CV attached)

Mr Francois Rognon is Director at IRHO, CIRAD in Montpellier and is generally acknowledged as one of the foremost experts on coconut production and processing. He supervises research and development, replanting and thinning in a large number of island communities. The previous Mission used articles by his predecessor at IRHO for their reference material.

5 Methodology

The Mission will spend one week on desk research and will need all available studies and reports including those of the plantation company prior to depopulation of the Chagos Islands. Detailed maps of the Chagos Islands will be obtained

It is then proposed for the two-man Mission to proceed to Chagos Islands for a four-week field trip. It is anticipated that at least 10 days of that allocation will be spent in transit to

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and from the Chagos Islands as well as between the islands. This can only be undertaken with the close co-operation of BIOT. It is proposed to visit both, the Salomon and Peros Banhos atolls, in particular Ile Boddam in the Salomons and Ile Pierre and Ile du Coin in Peros Banhos. It will also be necessary to visit some of the smaller islands and would be useful to have an aerial view and detailed photographs.

Samples will be collected during the field visit and sent to CIRAD for analysis. Some tests can and will be performed on the spot. The intention will be to collect and classify the local varieties, their chemical composition, content in the form of husks, shells, meat and water. The kernels will be further examined to determine taste and oil content.

It should be possible from visual inspection and a few simple field tests to gain an overview of plant nutrition, health, infestation and possibility of disease. Samples sent back for analysis will give more information. Yield rates also depend on density of population and although optimal densities differ by variety, it should be possible to decide how much thinning and rehabilitation is likely to be required, over what time period and how it could best be organised.

Detailed geographic information collected combined with visual inspection will allow consideration of the complexities of collecting coconuts from at least the 7 significant islands in the Eros Banhos and 5 in Salomon, together making up some 1,050 ha.

The Mission will also need to hold discussions with representatives of BIOT and the Illois and a week is allowed for the purpose. A lot of assumptions were made in the preliminary study of the need for an investment company or investors to actually finance copra processing and for the islanders to return as indentured labour. Smallholder ownership was described as most unlikely. Proposed Mission findings may be to the contrary. In any case the wishes and preferences of the Illois need to be taken into account.

The Draft Report will then be presented (3 copies) and following comments a final Report will be presented (10 copies).

6 Inputs Proposed

Weeks	Economist	Agronomist
Desk Research	1	1
Chagos Islands visit	4	4
BIOT/Ilois	1	1
Draft Reporting	2	1
<u>Final Report</u>	1	0
Total	9	7

Fees are costed at £300 per day, 7-day week while travelling and 5 days at base plus travel plus subsistence.

ATTACHMENT ONE
MISSION LEADER/ECONOMIST

NAME: **VINAY CHAND**

DATE OF BIRTH : 2nd May 1945 PROFESSION : Consultant Economist.

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London NW3 6DJ,
United Kingdom. Telephone : (44-20)-7794 5977
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EDUCATION:

London School of Economics and Political Science, London University	B.Sc.(Econ.)Honours	1966
	M.Sc.	1968

SUMMARY

1976+	Consultant Marketing Economist with extensive global experience of Market Research, Development and Promotion.
1994-99	Marketing, Strategy and Client Relationship for Swedish Group developing a high technology system for water purification.
1969-78	Senior Lecturer in Business Studies, specialising in Business Policy, Corporate Strategy and International Business Environment.
1968-69	Graduate Trainee H.M. Inspector of Taxes, Assessment Division.
1963-68	Student at London School of Economics & Political Science.

- **Managing Director**
Vinay Chand Associates

1978+ *Consultancy mainly on agricultural and agro-industrial projects*

Experience :

PROJECT:

Identification, Market, Procurement, Financing, Pre-feasibility, Feasibility, Monitoring and Evaluation and Mergers and Acquisitions.

**IMPLEMENTATION:
SECTORS:**

Preparation, Structuring, Finance and Technology. Water Purification, Kitchen Electricals, Hard Fibres, Horticulture, Coconuts, Agro-industry, Food Processing, Membranes, Upholstery and Semiconductor Industry.

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Clients

Institutions	Private
ITC (UNCTAD/WTO)	Pfizer Chemicals
FAO, UN	Wilkinson Sword Bank
World Bank	Metal Box
International Finance Corporation	BAT
Asian Development Bank	Avon Tyres
European Community	Paoli
CDI, EC	PT Berca
European Development Fund	PT Agro-Tourism
Commonwealth Secretariat	Etoile de Mer
US AID	Scarab AB
Swedfund	HVR AB
Sultanate of Oman	Xzero AB
Mexico	Cellsystems
India	Swedlanka
	Wienco Fibres
	Indover
	Cubatobacco
	Etco Commodities
	Alfa Laval
	Tetra Pak
	Windermere Corp.
	Khulia Investments
	Sangam
	Ultravatten AB
	Medea AB
	Radzero AB
	Steel-O-Chem
	Natural Fibres Net

Markets

Austria	Australia	Bangladesh	Barbados
Belgium	Canada	Cook Islands	Czechoslovakia
Denmark	Dominica	Egypt	Fiji
France	Gambia	Germany	Greece
Guyana	Hong Kong	Hungary	India
Indonesia	Italy	Jamaica	Japan
Kiribati	Korea	Liberia	Malaysia
Mexico	Netherlands	New Zealand	Oman
Papua New Guinea	Philippines	Poland	Norway
Saint Lucia	Saint Vincent	Samoa	Saudi Arabia
Singapore	Spain	Sri Lanka	Sweden
Switzerland	Thailand	Trinidad	Vanuatu
Venezuela	UK	USA	

Products

Activated carbon	Aquaculture	Biscuits	Cacao
Cakes	Canned foods	Car seats	Carpets
Charcoal	Citric acid	Coffee	Computers
Confectionery	Edible nuts	Edible oils	Essential oils
Fish	Food machinery	Freight	Frozen fish
Fruit & Vegetables	Geotextiles	Processed foods	Juices
Hard fibres	Ice cream	Inflatables	Jute products
Kettles	Life rafts	Luggage	Mattresses
Membranes	Microchips	Soft drinks	Oleoresins
Parachutes	Peat	Rubber	Sacks
Shoes	Spices	Tea	Tobacco
Tourism	Upholstery	Vehicles	Waste water
Water purifiers			

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Consultancy included:

Developing web site 'coconut.org' for information on all aspects of coconut production, processing and marketing and 'hardfibres.com' for market information and intelligence on coir, sisal, jute and abaca.

Business Plan for a web supported B2B trading and distribution company to sell natural fibres and products in Europe, USA and Japan. Global operations to include warehousing, database, market development and promotion.

Test and evaluation programme for water purification system on fab waste water with Intel Corporation for **Xzero AB** and collaboration with Applied Materials for treatment of waste CMP water.

- 2000 Evaluation of 20 years of International Trade Centre programmes on 1999 Jute Market Development and Generic Promotion undertaken by **International Trade Centre WTO/UNCTAD (ITC)** with recommendations as to future policy on jute as well as other similar activities.
- Marketing and Distribution study in USA for electrical kitchen appliances with special emphasis on TV sales, Mail Order, Internet Marketing as well as traditional channels for **HVR AB**.
- Relationship management with strategic partners including; potential major buyers, development partners, engineers, prospective financial and product development partners for **HVR and Xzero**.
- 1998 Review and presentation of results of programme by **ITC**, WTO/UNCTAD on behalf of Common Fund on Market Development and Promotion Prospects for Selected Coir Products.
- Liaison with clients and potential clients in USA and India for **HVR**, **Xzero** and **Medea**.
- Discussion with International Banks and Exchanges on finance for **HVR Water Purification**.
- 1997 Assessment of market for two wheel vehicle shock absorbers in India and manufacturers concerned. Part of a feasibility financed by the EU.
- Investigation of Regional incentives offered by Colombia Basin Ventures to attract investment in the Tri-city area of Washington State for **HVR**.
- Mission to India to discuss proposal on tackling arsenic contamination of water in West Bengal and local production of a POU product for **HVR**.
- Annual Water Quality Association Convention and National Sandia Laboratory for tests of equipment on their zero discharge programme for **HVR**.
- Various assignments connected to Business Development of water purification technology for the Semiconductor Industry, Point of Use & Point of Entry systems for **HVR and XZERO**.
- 1996 APCC Cocotech meeting in Malaysia to discuss coconut technology strategy and Coir Market findings in Thailand, Philippines and Indonesia for **ITC**.
- Marketing and Strategy for **HVR**: evaluation of production options, marketing strategy, financing, web stock trade and market analysis.
- Negotiations with Tamil Nadu Industrial Development Corporation, Industrial Development Bank of India and Joint Venture partners on \$10 million Integrated Coconut Processing Complex in Tamil Nadu, India by **MCC Scarab**.

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- Preparation of Prospectus for HVR to be presented to Investment Bankers and Brokers. Liaison with financial sources for impending Private Placement Issue.
- Selection of enterprises and users to participate in product sampling, testing and development for range of coir products from India and Sri Lanka for ITC.
- 1995 Business Plan and Company Profile for HVR, for point of use and point of entry water purifiers.
Project Profile on Aqueous Coconut Processing for private client in Ghana.
Market Confirmation Study covering France, Germany, Benelux and UK on Feasibility Study for Wienco Fibres Ltd. Ghana, financed by CDI, EC.
Industry Specialist for Mission by coir producers and relevant officials from the Philippines to India and Sri Lanka. Funded by US AID.
Market Development and Promotion for Exports from India and Sri Lanka of Rubberised Coir Vehicle and Furniture Upholstery, Geotextiles, Needlefelt Plant Liners and Coir Dust as mulch in Western Europe for ITC.
Provision of Technology to produce Coconut Food Products, Upholstery, Mattresses, Needlefelt and Activated Carbon to private client in India.
- 1994 Market Development & Promotion of Rubberised and Needlefelt Coir and Coir Moss from India and Sri Lanka of to USA, Japan, Korea, Saudi Arabia, Australia and New Zealand. Project funded by the Common Fund and executed by ITC.
UK Marketing and Distribution of Small Kitchen Electrical Appliances for HVR AB.
- 1993 Feasibility Study on Production of Coconut Food Industry Ingredient using wet processing of coconuts in Kiribati for European Community.
Feasibility Study on Small Scale Production of Food Products, Immersion Drying for Coconut Oil, Soap, Timber, Charcoal in Kiribati for Commonwealth Fund for Technical Co-operation (CFTC).
Updating Financial Analysis on Feasibility Study on Point of Use Water Purifier.
- 1992 Feasibility study on Production of Ice Cream Mix, Barbecue-Charcoal and Handicrafts for export to New Zealand and Australia by Cook Islands for CFTC.
Product and Market Development of Rubberised Coir for mattresses and upholstery to UK, Germany and Sweden for ITC.
Paper on Development Prospects for Coir and Products for APCC and ITC.
Mission Leader/Economist Mid Term Project Review of Kerafed (Edible Oil Processing) European Community grant funded project for Kerala, India incl. 3 Expeller, Solvent Extraction plant and improving copra productivity and trading.
- 1991 Mission Leader/Economist on European Community Mission to Kerala, Andhra Pradesh, Tamil Nadu and Karnataka on 'Coconut Farming Systems in South India' to formulate project on intensification of productivity.
Coconut Development Prospects in Papua New Guinea and Vanuatu for food products, upholstery and activated carbon. I FC/World Bank.
World market & distribution of spices, essential oils and oleoresins from India for group in India.

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- ITC Consultant to Export Development Project, Philippines, to assist enterprises export coir and products to USA, Japan and Korea.
- ITC Consultant to assist producers of rubberised coir furniture and vehicle upholstery from India, Philippines and Sri Lanka to export to Western Europe.
- Feasibility study on 'Home Water Purifiers' based on Membrane Distillation technology for **HVR**.
- 1990 Business Plan on rinse water production systems for Semiconductor Industries in USA, Western Europe, Japan and Korea for **Ultravatten**.
- Feasibility study on Tiger Prawn Farming in Philippines for **Etoile De Mer Philippines Inc.**
- Availability of hydrophobic microfiltration membranes of PFA, PVDF and PTFE from Europe, USA and Japan for **Ultravatten**.
- 1989 Competitiveness of abaca fibre with synthetic substitutes, **FAO**.
- World Market for Rinse Water for the Semiconductor Industry for **Ultravatten**.
- Market Development Prospects for Rubberised Coir in UK, Germany and Sweden in light of new safety regulations for ITC.
- Preliminary negotiations with Intel and IBM for testing new rinse water system for the Semiconductor Industry for **Ultravatten**.
- 1988 Feasibility study on Coconut Development and production of Ice Cream Mix, mattresses and charcoal in the Sallalah Region of **Sultanate of Oman**.
- Feasibility study on Production of Spices and Essential Oils in Central Java for **BAT Indonesia**.
- 1987 Pre-feasibility study on Agro-industrial development of Gunung Putri, West Java, Indonesia for **De Bank Indoover**.
- Aquacultural Developments SE Asia for **Cellsystems**, Cambridge, UK.
- Project identification study on a National Agricultural Centre in **Portugal**.
- 1986 Project identification study on a National Agricultural Centre in **Jamaica**.
- Pre-feasibility, since implemented, for Indonesian Consortium on Horticultural Development of the Lido Site, West Java, **Indonesia** as Agro-Tourism Project.
- Pre-feasibility study on Horticultural Development of Tapos Site in West Java, **Indonesia**.
- 1985 Project identification study on Agro-Tourism development of the Puncak Corridor, West Java, **Indonesia** for **PT Berca**.
- 1984 Member of 9 man **Asian Development Bank** Pre-appraisal Loan Mission to Indonesia for Horticultural Development.
- Member of 11 man **Asian Development Bank** Mission to Western Samoa to undertake an Agricultural Sector Review.
- Study on Regional Development of Coconut Industry in the CARICOM Region, for **European Development Fund**.

VCA

- 1983 Member of FAO Investment Centre/World Bank Mission to the Director General Estates, Indonesia, to assist in formulation of fourth five year plan.
- Consultant for ITC on UNDP Programme for Sri Lanka to devise Market Information and Intelligence system for Coconut Development Board.
- Market Development Prospects for coir products in USA and Japan for FAO.
- 1982 Identification in Philippines for a coconut food plant for Alfa Laval & Tetra Pak.
- Feasibility study on Development of the Philippine Coir Industry for FAO.
- Feasibility study on rubberised coir products in Sri Lanka. Since implemented.
- 1981 Papers on coconut processing and marketing at a seminar in PNG for IDU
- Market Prospects Tuna from Fiji funded by CFTC.
- 1980 Market Development and Promotion Prospects for Coir and Coir Products ITC.
- Market Development and Promotion Prospects for Sisal and Sisal Products ITC.
- 1979 Increased processing of apples for juice for Apple & Pear Marketing Board.
- Prospects Fruit & Vegetables from Kenya to Europe, Kulia Investments.
- Acquisition Study for Wilkinson Match on RFD, a UK company producing parachutes, rafts, inflatable vests & simulation systems.
- 1978 A study for Irish Fisheries Board on the Prospects for Salmon Farming.
- Pre Feasibility Study on Fresh Limes, Juice and Oil in Gambia for CFTC.
- 1976 to 1978 Consultant Marketing Economist while Senior Lecturer in Business Studies at the University of The South Bank, London, UK.
- 1977 Market Development of Non Traditional Jute Products from India for CFTC.
- 'Marketing, Distribution & Handling Citric Acid in W. Europe' for Pfizer.
- World Market for Cashew nuts and Products from Mozambique CFTC.
- Markets for Fresh and Processed Fruits and Vegetables in West and East Europe for EMENA Division of World Bank with LMA.
- 1976 Optimal Strategy for Procurement of Soya Beans, Oil and Meal for Angola.
- Acquisition Study for Metal Box on Machinery to Produce Confectionery.
- Marketing & Distribution of Sisal Baler & Binder Twine from Tanzania for CFTC.
- World Market for Soya Products and Buying Strategy for ETCO Commodities.
- 1975 World Market for Cigars and Tobacco Cubatobacco.

VCA

1969 to 1978 Lecturer, subsequently Senior Lecturer Business Studies at University of the South Bank, London. (International, Business Policy and Corporate Strategy).

From	1969
To	1978
Employer	Polytechnic of the South Bank, London, UK
Position held	Lecturer II/Senior Lecturer
Description	Lecturer Grade II 1969 and Senior Lecturer 1977 in Economics in the Department of Business studies at the Polytechnic of the South Bank, now known as the University of the South Bank. Lectured on professional, further education, under graduate and postgraduate courses on Economics, Business Policy, corporate strategy and Economics of International Business. Member of team that developed the CNA Submission for the BA Business Studies degree course. Special responsibility for corporate strategy, Economics of International Business and Business Policy. Lectured on these subjects on the degree course once it was running.

1968 to 1969 Graduate Trainee Inspector of Taxes for Islington in the Assessment Division of the Board Of Inland Revenue, UK.

From	1968
To	1969
Location	London, UK
Employer	Board of Inland Revenue
Position held	Graduate Trainee HM Inspector of Taxes
Description	Joined Assessments division of Board of Inland Revenue as a Graduate Trainee. Attended courses on Bookkeeping, taxation law and practice for one year. Worked at Islington District office in London. Undertook assessment of procedures adopted to assess artists and others in self employed work in the creative professions.

1963-68 London School of Economics and Political Science, London University.

B.Sc.(Econ.)Honours, specialising in International Relations.
M.Sc. International Institutions.

PUBLICATIONS

- 1978+ Large number of reports for restricted and some for public circulation. Circulation included to officers and officials at very senior levels, Boards of Directors, technical experts and industrywide basis. Some reports published as official United Nations documents.
- 1997 'Implications of Recent Market Developments in West Europe for Export of Coir Products' for the Asian Pacific Coconut Community.
- 1994 'Potential for High Value Exports of Coir Products' for Malayala Manorama,
- 1993 'What is A Coconut Worth' for Malayala Manorama, Kerala.
- 1992 'Potential for Increased Export Earnings From Coir Products' for Asian and Pacific Coconut Community.
- 1978 to 1981 Editor of 'Coconut Industries', formerly called the 'International Coir Development Newsletter' published from Stockholm, Sweden.
- 1987 to 1994 Editorial Board of 'Coconut Wireless' published from Seattle, WA, USA.

ATTACHMENT 2
AGRONOMIST

CURRICULUM VITAE

FIRM: Centre de Coopération Internationale en Recherche Agronomique pour le Développement CIRAD
CIRAD Tree Crops Department

NAME: ROGNON, François

OFFICE ADDRESS: BUROTROP
Agropolis International
Avenue Agropolis
34394 MONTPELLIER Cedex 5, FRANCE
Tel : 33 (0) 4 67 04 75 62 Fax : 33 (0)4 67 04 75 35
E.mail : rognon@burotrop.org

NATIONALITY: French Date of Birth: 21 September 1942

PROFESSION: Agronomist

POSITION IN FIRM: Director BUROTROP, (seconded from CIRAD)

SPECIALIZATION: Coconut and tree crops specialist

SENIORITY: 34 years

EDUCATION: Graduate agronomist from the Ecole Nationale Supérieure d'Agronomie, Montpellier, 1966.
M.Sc. Natural Sciences - Certificate in Biochemistry
Advanced diploma in Plant Physiology.

OTHER TRAINING: Fluent use of microcomputer word processing, spreadsheet and data processing software.

QUALIFICATIONS: Applied research and development of coconut and other tree crops. Feasibility studies; project evaluation and supervision; technical, scientific and economic studies.

EXPERIENCE:

Jan.1998 to date: Director of the Bureau for the Development of Research on Tropical Perennial Oil Crops, BUROTROP. Promotion and co-ordination of research for development activities on coconut and oil palm.

Feb.1993-Dec.1997: Head of the CIRAD-CP Coconut Programme in Montpellier.

<p>1982-1984:</p> <p>Technician Adviser for Agroonomy and Breeding at the PPK Cocoonut Research Station in North Sumatra under French technical assistance. Helped in setting up a large experimental station at PTP VI, Jambi, (Government-owned estates) and in running extensive seed gardens; technical advice on fertilizer management for commercial estates.</p>
<p>1985-March 1987:</p> <p>Seconded to the Directorate General of Estates, Indonesian Ministry of Agriculture, as Technical Adviser under French technical assistance. Member of the feasibility study team for the SECDF. Inspection of the Nucleus Estate Smallholder NES V and NES VI projects for the World Bank (oil palm, rubber and cocoonut).</p>
<p>April 1987-1988:</p> <p>Seconded to the Directorate General of Estates, Indonesian Ministry of Agriculture, funded by the World Bank loan 2494 IND. (SCDP) in Indonesia, funded by the World Bank for SCDP. Project preparation and follow-up of the SECDF. Supervision and evaluation of the cocoonut component of the Trans IV transmigration project in East Kalimantan for the World Bank.</p>
<p>April 1988-1989:</p> <ul style="list-style-type: none"> ■ Preparation of the final evaluation report for SCDP. ■ Participation in the pre-feasibility study of the Asian Development Bank (ADB) Tree Crop Smallholders Development Project. ■ Revision of the ADB West Java Tea Rehabilitation project.
<p>Jan. 1979-Dec. 1989:</p> <p>Tree crop specialist with Smallholder Cocoonut Development Project (SCDP) in Indonesia, funded by the World Bank. Preparation of technical and economic data concerning the project and other consultancy operations such as:</p> <ul style="list-style-type: none"> ■ Participation in the feasibility studies of the Tree Crops Transmigration Second Stage Development Project (TSSDP) and for the World Bank, technical aspects, costs, environment impact. ■ Preparation of the final evaluation report for SCDP. ■ Participation in the pre-feasibility study of the Asian Development Bank (ADB) Tree Crop Smallholders Development Project. ■ Revision of the ADB West Java Tea Rehabilitation project.
<p>Nov. 1992-Jan. 1993:</p> <p>Head of the CIRAD-CP Cocoonut Programme in Paris.</p> <p>Director of the IRHO Cocoonut Division in Paris. Management and missions to cocoonut producing countries for research and development projects (see missions below). Especially, from 1996 to 2000, 10 missions to the Philippines for the supervision of the Small Cocoonut Farms Development Project (Ln. 3204-PH) on account of the World Bank, including the implementation of 1985, delegate of CIRAD in Indonesia.</p>
<p>Jan. 1990 to date:</p> <p>Co-ordination of a team of 25 researchers and development workers on cocoonut in France, Africa, Southeast Asia, and South Pacific. Co-ordination of a team of 25 researchers and development workers on cocoonut in France, Africa, Southeast Asia, and South Pacific.</p>

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- 1979-1981: Secondment to the Directorate General of Estates, Ministry of Agriculture, Jakarta, Indonesia, as Technical Adviser on coconut development funded by the World Bank. Participation in the preparation of the NES V, VI and VII projects including a mission to IBRD, Washington, for the NES V appraisal report writing. Participation in the Smallholder Coconut Development Project including a mission to IBRD, Washington with the Indonesian delegation for negotiation of the loan.
- 1970-1978: Head of the Coconut Breeding Service at the IRHO Port-Bouet Coconut Research Station (now called Marc Delorme Station) in Côte d'Ivoire.
- Experiments and breeding trials
 - Seedgardens management for producing hybrid seeds
 - Work on floral biology and pollen conservation
 - Participation in designing the coconut research programme
 - Adviser to the SODEPALM (State-owned plantation company); supervision of the seedbeds and nurseries for the national coconut development programme

Joined IRHO on 2nd March 1970

Before joining IRHO (Institut de Recherches pour les Huile et Oléagineux, now part of CIRAD)

- 1968-1969: National Service under the Ministry of Cooperation, with the Institut de Recherche des Fruits et Agrumes (IRFA) in Madagascar. Agronomy work on banana and cashew nut.
- 1967-1968: Employment at the Institut National de la Recherche Agronomique (INRA) in Versailles.

MISSIONS:

Carried out missions in Benin, Brazil, Dominican Republic, Fiji, India, Indonesia, French Guyana, Kenya, Malaysia, Mexico, Micronesia, Papua New Guinea, Philippines, Seychelles, Solomon Islands, Togo, Vanuatu, Vietnam.

MAIN ACTIVITIES

Assistant Head, then Head of the Breeding Service at the Marc Delorme Coconut Research Station, Port-Bouet, Ivory Coast for eight years. Was for seven years the Technical Adviser for coconut development to the Indonesian Government's Directorate General of Estates. Was the organiser and coordinator of CIRAD-CP coconut operations worldwide for eight years.

Applied research and development activities, mainly involving:

- genetic experiments and trials,
- management of coconut seed gardens for hybrid seednut production,

VCA

- management, co-ordination and supervision of researchers and developers working on coconut in France, Africa, Southeast Asia, Latin America and the South Pacific (up to 30 executive staff),
- strategic analysis of the coconut sector in liaison with professionals in the sector (producers and manufacturers) and funding agencies.
- technical advice on coconut research and development
- technical and economic studies.

MEMBERSHIPS:

Chevalier in the Ordre du Mérite Agricole

Chairman of the Programme Committee of BUROTROP (Bureau for the Development of Research on Tropical Perennial Oil Crops) from 1993 to 1997 and Treasurer from 1995 to 1997.

Member of the Scientific Committee of the review "Oléagineux, Corps gras, Lipides" (OCL), France.

Member of the Board of Editorial Consultants of the review CORD, APCC.

Member of the International Advisory Committee of the Journal of Plantation Crops, India.

PUBLICATIONS:

See list attached.

Presentation of technical papers at the COCOTECH meetings of the Asia and Pacific Coconut Community (APCC).

Mission and Research reports.

31 articles in the reviews OLEAGINEUX and OCL.

Participation (2 chapters on oil-palm and coconut) to a book on Leaf analysis and Mineral Nutrition published by Lavoisier.

Participation (coconut) to the book "Manuel des Corps Gras" published by Lavoisier.

LANGUAGES:

	READ	SPOKEN	WRITTEN
FRENCH	MOTHER TONGUE	MOTHER TONGUE	MOTHER TONGUE
ENGLISH	EXCELLENT	GOOD	GOOD
INDONESIAN	POOR	FAIR	

30 November, 2000



LISTE DES PUBLICATIONS

Identité :	ROGNON François
Département :	Département des cultures pérennes
Unité :	Cirad-cp/programme cocotier
Articles de périodiques :	<p>An analysis of genetic diversity in coconut (<i>Cocos nucifera</i>) populations from across geographic range using sequence-tagged microsatellites (SSRs) and AFLPs. Teulat B., Aldam C., Trehan R., Lebrun P., Barker J.H.A., Arnold G.M., Karp A., Baudouin Rognon F., 2000. <i>Theoretical and Applied Genetics</i>, n. vol. 100, n. 5, p. 764-771. (264032)</p> <p>Bureau for the development of research on tropical perennial oil crops (BUROTROP). Rognon F., 1999. <i>IPGRI Newsletter</i>, n. 1, p. 11-11. (391701)</p> <p>Coprah, huile, tourteau, oléochimie : analyse de la filière philippine du cocotier. Rouzière A., Rognon F., 1995. <i>OCL</i>, vol. 2, n. 3, p. 206-209. (387637)</p> <p>Compte-rendu du groupe de travail cocotier de l=ACIAR à Fiji, en novembre 1993, viroïdes molécules de type viroïde. Dollet M., Rognon F., 1994. <i>Oléagineux</i>, vol. 49, n. 4, p. 201-203. . Atelier de Travail sur le Cocot 1993/11, Taveuni, Fidji. . (387006)</p> <p>La production de semences hybrides de cocotier : cas des semences hybrides Nain x Grand. Les semences. Wuidart W., Rognon F., 1993. <i>Oléagineux</i>, vol. 48, n. 1, p. 41-49. (419241)</p> <p>La production de semences hybrides de cocotier : cas des semences hybrides Nain x Grand. Exploitation du champ semencier. Rognon F., Bourgoin R., 1992. <i>Oléagineux</i>, vol. 47, n. 7, p. 481-489. (408918)</p> <p>Le diagnostic foliaire du cocotier. De Taffin G., Rognon F., 1991. <i>Oléagineux</i>, vol. 46, n. 4, p. 169-173. (427861)</p> <p>Intensification et réhabilitation des plantations villageoises de cocotiers Grands. Rognon F., Boutin D., Bourgoing R., 1990. <i>Oléagineux</i>, vol. 45, n. 1, p. 13-21. (440906)</p> <p>La circonférence au collet chez le cocotier hybride PB-121 : une mesure pratique de croissance. Rognon F., Boutin D., 1988. <i>Oléagineux</i>, vol. 43, n. 4, p. 165-172. (438046)</p> <p>Cocotiers hybrides ou cocotiers Grands, un choix basé sur des résultats. De Nucé De Lamothe M., Rognon F., 1986. <i>Oléagineux</i>, vol. 41, n. 12, p. 549-555. (399777)</p> <p>Comportement de l=hybride de cocotier Nain Jaune X Grand Ouest Africain vis-à-vis du St Bleeding en Indonésie. Mise en évidence du rôle du chlore dans l=expression des symptômes. Renard J.L., Brahmana D.J., Rognon F., 1984. <i>Oléagineux</i>, vol. 39, n. 6, p. 311-319. (453791)</p> <p>La préparation des terres à palmiers à huile et cocotiers par voie chimique en Indoné</p>

VCA

Eradication de l=Imperata. I. Principes et organisation.

Rognon F., Amblard P., Boutin D., 1984. *Oléagineux*, vol. 39, n. 11, p. 519-527. (AG003556)

La préparation des terres à palmiers à huile et cocotiers par voie chimique en Indoné

Eradication de l=Imperata. II. Réalisation pratique des traitements.

Rognon F., Amblard P., Boutin D., 1984. *Oléagineux*, vol. 39, n. 12, p. 575-580. (453769)

La production de semences de cocotier.

Wuidart W., Rognon F., 1981. *Oléagineux*, vol. 36, n. 3, p. 131-137. (453638)

Production de l=hybride Port-Bouet 121.

Sangaré A., Rognon F., 1980. *Oléagineux*, vol. 35, n. 2, p. 79-83. (453593)

La fécondation artificielle du cocotier.

De Nucé de Lamothe M., Wuidart W., Rognon F., Sangaré A., 1980. *Oléagineux*, vol. 35, n. 4, p. 1 205. (453582)

Premier bilan de 12 années de recherches génétiques sur le cocotier en Côte-d=Ivoire.

De Nucé de Lamothe M., Wuidart W., Rognon F., 1980. *Oléagineux*, vol. 35, n. 3, p. 131-1 (453588)

Récolte et conditionnement du pollen pour la pollinisation des champs semenciers de cocotiers

Rognon F., De Nucé De Lamothe M., 1978. *Oléagineux*, vol. 33, n. 1, p. 17-23. (439660)

L=analyse des composantes de la noix du cocotier. Méthode de détermination du coprah.

Wuidart W., Rognon F., 1978. *Oléagineux*, vol. 33, n. 5, p. 225-233. (439640)

Les phases mâles et femelles de l=inflorescence de cocotier. Influence sur le mode reproduction.

Sangare A., Rognon F., De Nucé De Lamothe M., 1978. *Oléagineux*, vol. 33, n. 12, p. 609-6 (439615)

Les cocotiers nains à Port-Bouët. I. _ Nain Jaune Ghana, Nain Rouge Malais, Nain Vert Guin Equatoriale, Nain Rouge Cameroun.

De Nucé De Lamothe M., Rognon F., 1977. *Oléagineux*, vol. 32, n. 8-9, p. 367-375. (439679)

L=analyse des composantes de la noix du cocotier. Etude de l=échantillonnage.

Meunier J., Rognon F., De Nucé De Lamothe M., 1977. *Oléagineux*, vol. 32, n. 1, p. 9-14. (439714)

Biologie florale du cocotier. Durée et succession des phases mâles et femelles chez divers types cocotiers.

Rognon F., 1976. *Oléagineux*, vol. 31, n. 1, p. 13-18. (439770)

Xénie et aptitude à la combinaison chez le cocotier.

Rognon F., De Nucé De Lamothe M., 1976. *Oléagineux*, vol. 31, n. 12, p. 533-537. (439719)

Pollinisation assistée et contamination par des pollens indésirables.

De Nucé De Lamothe M., Rognon F., 1975. *Oléagineux*, vol. 30, n. 8-9, p. 359-364. (439788)

L=hybride Port-Bouet 121. Nouveaux résultats.

De Nucé De Lamothe M., Rognon F., 1975. *Oléagineux*, vol. 30, n. 11, p. 457-465. (439779)

La production de semences hybrides chez le cocotier. Exploitation des champs semenciers.

De Nucé De Lamothe M., Rognon F., 1973. *Oléagineux*, vol. 28, n. 6, p. 287-291. (440107)

Action du froid sur la conservation du pollen de cocotier.

Rognon F., De Nucé De Lamothe M., 1973. *Oléagineux*, vol. 28, n. 12, p. 565-566. (440144)

Production de matériel végétal cocotier. Sélection au stade gérmoir.

VCA

Rognon F., 1972. *Oléagineux*, vol. 27, n. 1, p. 21-23. (440000)

Production du matériel végétal cocotier. Sélection des hybrides en germoir.

Rognon F., 1972. *Oléagineux*, vol. 27, n. 4, p. 203-204. (440020)

La production de semences hybrides chez le cocotier par pollinisation assistée.

De Nucé De Lamothe M., Rognon F., 1972. *Oléagineux*, vol. 27, n. 11, p. 539-544. (440060)

La production de semences hybrides chez le cocotier par fécondation naturelle dirigée.

De Nucé De Lamothe M., Rognon F., 1972. *Oléagineux*, vol. 27, n. 10, p. 483-488. (440053)

Production du matériel végétal cocotier. Sélection en pépinière.

Rognon F., 1972. *Oléagineux*, vol. 27, n. 2, p. 87-88. (440006)

Ouvrages :

Elevage sous cocoteraies. Intégration et diversification. Exemple du Vanuatu.

Msellati L. (ed.), Bergès J.M., Delzescaux D., Planchenault D., Rognon F., Mossu G., 1993. Maisc Alfort, France, CIRAD-EMVT, 264 p. (318293)

Chapitres d=ouvrages :

Coconut research by CIRAD-CP.

Rognon F., 1996. In : Thampan P.K. (ed.), *Coconut for prosperity*. Cochin, Inde, Peekay Tree Cr Development Foundation, p. 157-163, 1 tablPeekay Books. (464722)

Genetic improvement and planting material production coconut.

Meunier J., Le Saint J.P., De Nucé De Lamothe M., Rognon F., Sangaré A., 1991. In : Green A (ed.), *Coconut production. Present status and priorities for research*. Washington, Etats-Unis, W Bank, n. 136, p. 14-26World Bank Technical Paper. (468407)

Communications de congrès:

Evaluation of Indonesia as a regional coconut genebank host country.

Rognon F., Batugal P., 1998. In : Ramanatha Rao V. (ed.), Batugal P. (ed.), IPGRI, COGEN *Proceedings of the COGENT regional coconut genebank planning workshop*. Rome, Italie, IPGRI 41-46. COGENT Regional Coconut Genebank Planning Workshop, 1996/02/26-28, Pekanbaru, Indonésie. (401229)

Evaluation of India as a regional coconut genebank host country.

Rognon F., Batugal P., Peries R.R.A., 1998. In : Ramanatha Rao V. (ed.), Batugal P. (ed.), IPG COGENT., *Proceedings of the COGENT regional coconut genebank planning workshop*. Rome, Ita IPGRI, p. 47-53. COGENT Regional Coconut Genebank Planning Workshop, 1996/02/26-28, Pekanbaru, Indonésie. (401230)

Genebank design and activities.

Rognon F.V., 1998. In : Ramanatha Rao V. (ed.), Batugal P. (ed.), IPGRI, COGENT., *Proceeding. the COGENT regional coconut genebank planning workshop*. Rome, Italie, IPGRI, p. 24- COGENT Regional Coconut Genebank Planning Workshop, 1996/02/26-28, Pekanbaru, Indoné (401227)

Technology gaps and challenges for research and technology transfer programmes for future.

Rognon F.V., 1996. In : Arancon R.N. Jr. (ed.), APCC., *Technology transfer and application relation to the coconut industry*. Jakarta, Indonésie, APCC, p. 29-40. COCOTECH Meeting. 1996/07/15-19, Kuala Lumpur, Malaisie. (464907)

VCA

Coconut research and competitiveness of the coconut industry.

Rognon F., 1995. In : Pangahas B.B., *Global competitiveness of the coconut industry*. Jakarta Indonésie, APCC, p. 39-48, 2 tabl. Cocotech Meeting. 32, 1995/07/17-21, Kochi, Inde. (464403)

CIRAD-CP=s coconut programme.

Rognon F., 1994. In : Pangahas B.B. (ed.), *Coconut industry into the 21st century*. Jakarta, Indoné APCC, p. 121-129. Cocotech Meeting. 31, 1994/07/18-22, Chiang Mai, Thaïlande. (464003)

Coconut breeding at IRHO and its application in seed production.

Bourdeix R., Sangaré A., Le Saint J.P., Meunier J., Gascon J.P., Rognon F., De Nucé De Lamothe 1993. In : Nair M.K. (ed.), Khan H.H. (ed.), Gopalamundaram P. (ed.), Bhaskara Rao E.V.V. (ed) *Advances in coconut research and development*. New Delhi, Inde, Oxford and IBH Publishing, p. 94. International Symposium on Coconut Research and Development, 1991/11/26-29, Kasarag Inde. (466092)

**ATTACHMENT THREE
KIRIBATI**

● Summary

The majority of the population depends on subsistence fishing and agriculture. Kiribati's exports are mainly copra, fish and other primary produce. Main imports are food, manufactured goods, vehicles, fuel and machinery.

The cash economy is largely limited to South Tarawa where the Government is by far the largest employer. The private sector of the economy is small and there are few manufacturing activities. The country is heavily reliant on overseas aid for government administration, education and the development of infrastructure and income earning opportunities.



Outer island life is essentially affluent-subsistence with cash income from copra, some outside remittances and other primary sector activities. Fishing, the gathering of other seafoods, the cultivation of babai (taro) and tree crops are the main food gathering activities.

**TEBURORO TITO
PRESIDENT, KIRIBATI**

Introduction:

In this presentation, I shall attempt to briefly summarise the key elements of our overall economic situation, then identify the major issues we face, before going to set out the key elements of our development strategy and our priorities. Before closing, I shall briefly consider scope for future co-operation between our countries, not because I see this as a problem area (which is definitely not), but as the basis for further discussion.

By way of introduction, I would note that while Kiribati has a large exclusive economic zone of over 3 million square kilometres, our land area consists of only 810 square kilometres, spread out in a series of atolls, over many thousand of kilometres of ocean. Our largest island, (and the one with the most potential from a development aspect) Kiritimati, which lies to east of one country, and has closer links with Hawaii than with the other parts of our country.

Although Kiritimati accounts for about 48 per cent of our land area, only some 3,200 people live there (at last census of 1995) - roughly 4 per cent of our total population of 78,000. The vast majority of our people (some 92%) are in the Gilbert Islands, to the west; with over one third of the population located in the capital, South Tarawa.

VCA

The geographic distribution of our people, on small atolls spread over large distances of ocean has had an important influence on our policies and our priorities. We have tried to ensure that people in all inhabited islands have the opportunity to earn incomes, to have access to primary schooling, and to medical facilities and to some of the more basic commodities in today's world-such as rice, flour, sugar, kerosene (and so on).

The high priority that has been given to looking after the people in our islands has been, and continues to be expensive. Making sure that people have reasonable access to health care, for instance, has resulted in our levels of health related expenditures now being more than triple that of most of our Pacific island neighbours, as a proportion of our Gross Domestic Product (GDP). Our overall level of Government expenditure is, however high by any comparison, and this is something we shall have to do something about - I shall return to this later.

Because we want to make sure people in the islands have access to certain commodities and services, Government has become involved in a wide range of business activities, such as domestic shipping and airline services, fuel distribution, wholesaling and retailing, and copra and seaweed purchase, transportation, and export. This has led to the development of a very large public enterprise which (similarly with most public enterprise sectors elsewhere) has generally performed poorly in terms of both return on capital and quality of service - a problem which has been vigorously tackled by appointing good managers and boards, and at the same time privatising those functions which the private entrepreneurs can effectively handle.

Other contributions by Government to maintaining and improving lifestyles in the islands include freight subsidy to the islands, which generally covers the cost from Tarawa to the islands; and copra and seaweed producer price subsidies.

In spite of these efforts to maintain and improve lifestyles on the islands, population drift to the urban area similar to what happens in all other countries, gives rise to various problems associated with population over-crowding beyond the capability of government to deal with at this state. Those who have visited South Tarawa will appreciate the problems this poses in terms of population pressure, adequacy of water supplies, sanitation, and land availability. Given that the population in South Tarawa increased by nearly one third between the census of 199985 and 1995, we are fortunate that we do not have large scale of social problems which are being experienced elsewhere.

I now wish to turn briefly to our economic position at present, before I go on to outline the main thrust of our development policies and strategies.

Key Features of the Kiribati Economy

In describing the key features of the Kiribati economy, I shall note the features and then make a few comments on it as I go along. I shall start with something I have already referred to, namely:

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First, a high level of government expenditure relative to the economy.

As I have just noted, government expenditure is very large in relation to overall economic activity, averaging 66 per cent of factor GDP between 1980 and 1993 (before increasing to over 90 per cent of factor GDP in 1995). This compares with average levels of 25 to 30 per cent for most developing countries, with lower figures for the high growth Asian Tiger countries. This is only possible because of the high level of overseas earning and which are channelled into the economy through government.

Fiscal policy has generally been cautious, with significant budgetary surpluses being achieved in order to build up the Revenue Equalisation Reserve Fund (RERF). More expansionary policies have followed since 1994, however, with recurrent expenditure rising by 68 per cent between 1993 and 1995. This has required significant drawdowns from both the RERF and accumulated reserves.

Second - a large public enterprise sector.

The public enterprise sector is very large, accounting for an average of 32 per cent of GDP between 1980 and 1995. It operates in virtually all areas of the economy, including those, which would normally be the domain of the private sector in non-socialist economies. These include wholesaling and retailing, shipping and domestic airline operation, fishing, manufacturing, hotel operation, insurance and banking.

Third - limited competition.

Monopoly status exists in key sectors of the economy, as a result of both statutory measures as well as market conditions. Statutory monopolies exist in telecommunications, and power generation and distribution, while de-facto monopolies exist in commercial banking, oil distribution, gas supply, domestic aviation, housing rental, insurance, and postal services.

Fourth - a small formal private sector.

The formal private sector (defined as established businesses and companies) is very small, accounting for only 9 per cent of total paid employment in 1995. In terms of value added, the total private sector accounted for just under 35 per cent of monetary GDP (at factor cost) in 1995, with significant contributions in agriculture, trade, transport, housing (owner occupiers), and private non-profit sector.

Fifth - a low level of cash employment.

In 1995 paid employment accounted for 19.5 per cent of the 15-55 age group, compared to over 75 per cent in village work. 77 per cent of paid employment was in the public sector, with central government accounting for 39 per cent, public enterprises 26 per cent, and island councils 12 per cent. Churches and co-operatives accounted for the 6 per cent each, and Embassies and regional institutions accounted for 1 per cent each.

Sixth - a concentration of population and high dependence on cash income in South Tarawa.

The proportion of population on South Tarawa continues to increase, albeit at a slower rate than in previous years. The 1995 census recorded 36.5 percent of the population densities (averaging 1800 sq. km), limit the scope for subsistence activity. Dependence on cash income is high, with an average household expenditures of approximately \$137 a week (in May 1996). Although most of the cash employment is in South Tarawa (61% of total in 1995), employment growth has been stagnant, with a slight decrease in total employment, from 4,076 to 4,041, between 1985 and 1995.

In North Tarawa and the outer islands, village work (which includes copra cutting, fishing, handicrafts, seaweed production, and other agriculture) predominates, with cash requirements being mainly for rice, sugar, flour, tobacco, and tea. Kerosene is used for lighting, while the bicycle is an important mean of transport. Average household expenditures were below \$20 a week in May 1996. Population densities vary from 161 per square kilometre in the Gilbert Group (excluding South Tarawa), to less than 13 per cent square kilometre in the inhabited islands of the Phoenix and Line Groups.

Seventh - a robust balance of payments, in spite of large trade deficits.

The balance of payments is characterised by imports being well in excess of exports, with imports being equivalent to 77 per cent of GDP in 1995, while exports were equivalent to 16 per cent. The deficit is financed by factor income flows, fishing license revenues, and official transfers from overseas, such that the overall balance of payments (excluding monetary movements) is generally positive, allowing a continued build up of foreign reserves.

At the end of 1995, external reserves were equivalent to 8.7 years of imports.