

**APPENDIX III****REPORT OF THE CONSULTING SERVICE PROJECT DEVELOPED IN AFRICA**

Title of the consulting service to be provided in Africa  
**IMPROVEMENT OF NUTRITIONAL PROFILE OF COCONUT, GROUNDNUT, PALM KERNEL  
 AND SHEANUT OILS**

Country **GHANA**

**Scope \*\*\*National**

Regional

Local

Sector or industry in which the consulting service will be provided **AGRICULTURE SECTOR,  
 INDUSTRY AND TRADE**

- Infrastructure.
- Zoning regulation.
- Tourism.
- Engineering and professional services (engineering, architecture, renewable energies and water treatment, waste treatment).
- Information and Communication Technologies (ICTs).
- Agricultural sector, industry and trade.
- Health and training.
- Marine-maritime sector.
- Transportation and logistics.
- Any other sector or industry of priority for the partners of the project in which the Canary Islands may have a highly specialised Know-How and that may generate opportunities for the companies of the Canary Islands.

**Introduction of the Body/Institution**

CSIR-FRI is mandated to conduct applied market-oriented research into problems of food processing and preservation, food safety, storage, marketing, distribution, utilization as well as national food and nutritional security in support of the food industry. It is also mandated to advise government on food policy. Our vision is to be recognized as the leading Science & Technology Institute in the transformation of Ghana's food processing industry.



**Our mission is to provide Science & Technology support to the growth of the food and agriculture sectors of the national economy in line with corporate prioritization and national growth**

**Identification of the consulting service required in the sector or industry mentioned above, as well as the framework of the development policies related to such project**

1. Improved Technology for fortification of foods especially coconut, groundnut, palm kernel and sheanut oils with beta-carotene from local foods like carrots, pumpkin, papaya etc.
2. Expertise on efficient extraction methods for beta-carotene, shelf stability of the fortified oils and encapsulation of beta-carotene extracted from carrots, pumpkin, papaya etc.
3. The use of appropriate packaging materials for the storage of the fortified oils to prevent degradation of the beta-carotene.
4. Analysis of nutritional and Physicochemical properties of the non-fortified and fortified oils. The frameworks falls in the SDG goal number 2 and 3.

**Specific contents of the study or technical assistance to be conducted**

1. Efficient extraction methods
2. Improved technology for efficient fortification
3. Analysis on Physicochemical, nutritional and shelf-life stability of fortified oils.
4. Encapsulation of extracted beta carotene
5. Improved packaging materials for storage of fortified oils to reduce degradation of beta carotene



Reference to the availability of funding for the subsequent implementation of the actions contained in the feasibility study

The facilities available in CSIR-FRI for the extracting of beta-carotene, fortification of oils and analysis are not state of the art and are obsolete. There is drudgery in the extraction and fortification process which makes upscaling difficult. The feasibility studies was self funded by a staff of CSIR-FRI who used it for the master of philosophy studies in Food Science and Technology. We have some infrastructure in terms of laboratories and consumables but equipment are old and not efficient.

Potential opportunities for the companies of the Canary Islands that may result in the subsequent performance of activities considered in the project for which the consulting service is provided

1. Companies from Canary Islands can research into extraction of beta carotene and other nutritional compounds from natural sources rather than synthetic sources can help improve nutrition and health.
2. Marketing opportunities exist for the production and sale of the oils mentioned because they have polyunsaturated fatty acids.
3. The companies can benefit from the fortification technology developed when it is optimized and upscaled.
4. Companies can look at marketing opportunities in sales of encapsulated beta-carotene for mass fortification to improve nutrition and health globally.
5. Companies can establish state-of-the-art analytical laboratories for food technology and research in Africa.
6. This service can consolidate the development of the business sector and the economy of the Canary Island.
7. Consultancy service will promote economic cooperation initiative and improve economic relation between Canary Island and Africa (Ghana).



Strategies for the development of the sector/industry and the businesses of the country, the region or the municipality submitting the application

1. Core activities are focused on generating technologies to support agroprocessing industries for improved process and product quality.
2. Improvement of both countries economy by improving livelihood and empowering women and vulnerable in their daily activities.
3. Accredited laboratories support agro-industries, agribusiness environment and Small Medium Enterprises

Specify in detail to which extent the service requested is novel

Vitamin A deficiency is a problem in Africa and other parts of the world. In Ghana, the specified oils are not fortified compared to imported oils. Some local food commodities in Ghana are rich in vitamin A. Fortification of the oils will be done with beta carotene extracted from carrots, pumpkin, pawpaw etc, which is natural and will help reduce vitamin A deficiency as well as improve health of individuals.

Identify the Sustainable Development Goals (SDGs) that the proposal is aligned with

The proposal is aligned with Goal 2 (Zero hunger) and Goal 3 (Good health and well-being)