Republic of the Philippines
OFFICE OF THE SECRETARY
Elliptical Road, Diliman
1100 Quezon City

MEMORANDUM CIRCULAR
No. 34
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Subject: Implementing Guidelines for the Development of Salt Industry Project

In the exigency of the service and to ensure the smooth implementation of the "Development of Salt Industry Project (DSIP)," this implementing guideline is hereby issued.

Salt has been a very important commodity for thousands of years, and has engraved its part in the economic history of the world. The country needs to increase salt production because salt is a food security issue. Not being able to produce its own local salt will hurt the country's competitiveness and ability to become a successful agro-industrial economy. It is clear that to increase local salt production means to increase the salt producing areas. Having the resources for identification, regulatory approval, construction and partnership, the government should lead the way in stimulating the salt industry by identifying, constructing and preparing the necessary salt-producing areas and make it ready for the private sector to operate them., which can invite the private sector investors to put their working capital, management, local manpower and technological resources to sustain local production, market and distribution.

The DSIP is aimed to produce excellent quality of salt through process enhancement, improvement of practices on salt production, and product compliance to food safety standards.

I. PROJECT OBJECTIVES

1. Provide continued support through the provision of appropriate technologies and various materials to enhance salt production and ensure the quality of the product.
2. Improve the salt production processes to comply with local and/or international food safety standards.
3. Stimulate local production of excellent quality and market-driven sea salt products in the Philippines.
4. Continuous capacitation of fisherfolk groups/associations on proper handling and food safety requirements.
5. Revitalize the salt industry as means of additional livelihood for marginalized fisherfolk and elevate the role of women in the fishing community by involving and emphasizing their contribution to the success of the project
6. Ensure sustainable livelihood and income of salt producers
7. Develop and/or improve salt production, processing, and packaging technologies through research and capacity building.

II. PROJECT IMPLEMENTATION

1. Project Site Identification

a. Production Intervention

Prior to the project implementation, profiling and assessment, and shortlisting of the existing salt production areas in Region I, VI, and IX shall be conducted in coordination with the Provincial Fishery Offices (PFOs) and Local Government Units (LGU).

b. Support to Research

The National Fisheries Research and Development Institute (NFRDI) in coordination with BFAR RFOs and LGUs will be identifying/selecting project sites in Region I, III, IV-A, IV-B, VI, VII, IX, and X. This will be carried out in order to produce a comprehensive profile of salt farmers, producers, traders, distributors, importers, and consumers in the Philippines.

In order to realize the program's goal of reviving the salt industry through technology development and research initiatives, the NFRDI will focus its activities on boosting and sustaining local salt production by providing necessary production, post harvest, and marketing-related interventions to the selected salt farmers/project beneficiaries. These initiatives include the development and standardization of processing methods, consumers' acceptability tests, and market research for locally produced sea salt products, as well as revisiting and amendment of existing policies governing the salt industry. Capability building activities, as well as provision of production materials, equipment and facilities, will also be provided to improve the handling, processing, storage and distribution of salt products in compliance with relevant food safety and product standards.

2. Identification of Project Beneficiaries

2.1. Beneficiary Selection Criteria. The project beneficiaries shall meet the following criteria, as applicable;

a. Existing salt farmers/producers, fisherfolk groups/individuals who are willing to collaborate and adopt/avail the latest technologies for the improvement/enhancement of salt production process.
b. Salt producers who ceased their operation but were encouraged to revive their operation and avail of the new technologies to increase salt production.
c. Salt farmers/producers and processors who will be capacitated and provided training on appropriate technologies for product formulation, packaging, and labeling and compliance to food safety requirements.
d. Must be registered under the Fisherfolk Registry system of the LGU or Registry System for Basic Sector in Agriculture (RSBSA).

2.2. Beneficiary Selection Process

The potential beneficiaries must be endorsed by the LGUs concerned in consultation with the FARMC. The BFAR Regional Offices and NFRDI shall make the final selection of qualified beneficiaries based on the above criteria. The final list of the beneficiaries shall be forwarded by the Regional Offices and NFRDI to BFAR Central Office through the Asst Director for Operations (ADO).

2.3. Clustering and Consolidation of Beneficiaries

To optimize the interventions and assistance provided, clustering and consolidation of production, processing, and marketing activities of salt farmer-beneficiaries will be done.

Individual salt farmers in a community will be formed into a cooperative to avail of opportunities from CDA and other funding agencies. This strategy aims to escalate local salt production and, Government Financing Institutions (GFIs) facilitate easier and cost-effective business transactions, increase access to government support programs, and close linkage to suppliers, consumers, marketing services, and competitors. It will also improve production and manufacturing lines that cannot be undertaken by individual units, especially for small-scale subsistence producers.

3. Production Methods

A. Salt Production

Includes improvement of the salt production area (use of pond liners) and provision of materials/equipment such as the Cemented Cooking Structure, Modified Cooking Vat, water pumps, value-addition, and, production materials for the processing, packaging, and storage

Methods	Description	Process
1. Solar Method	Sun Drying Evaporation	Salt production through the capturing of salt water in a pan type structure where the sun evaporates most of the water.
1.1. Production in ponds (lined with bricks)	Salt water is channeled into settling ponds through tidal current or by using a water pump. After 3-4 days of evaporation, concentrated seawater will be transferred to another pond for further evaporation. Through high temperatures from the heat of the sun, salt crystals will be formed and ready to be harvested by the salt makers. The salt is harvested by scraping the salt crystals, and allowed to drip in woven baskets.	Ponds are prepared by putting up dikes and leveling of the pond by the use of shovel and rake in an area of 22ft x 18ft (most of the producers size of salt bed). This includes the removal of unwanted soil or dirt in the pond or *banigan.* Seawater will be filled to pond or *"paalatan"* with 10 inches seawater level to ponds by using water pump and flexible hose. Water from the *"paalatan"* slowly releases water vapor into the *"banigan" or* salt ponds. After 3-4 days that pond expose to high solar temperature, concentrated seawater will be transferred through water outlet to another evaporation pond for the crystallization period. Harvesting takes place when concentrated sea water measures 1 inch into the pond or *banigan*, and harvesting is done by collecting salt granules through food grade stainless shovel or food grade stainless steel rake every day depends on the weather. Collected salt is placed in rattan woven basket for transferring to the holding

		area using food grade stainless steel wheelbarrow.
1.2 Production in Pond using High Density Polyethylene (HDPE) Geomembrane (as pond liner)	HDPE geomembranes are synthetic membrane liners used to control fluid migration or retention of liquids in a man-made project, structure, or system. During the process of evaporation the geomembrane perfectly holds the salt water. After the release of water vapor, the white crystalline solid particles (salt) remain in the HDPE. This method can produce salt and harvest in one week (7 days).	Construction of evaporating basins on a leveled-flat even surface without large sand granules sandy beach (above the highest high tide), the rectangular HDPE plastic-platform that will be used is collapsible (can be uninstalled if the rainy season comes). The production process of solar sea salt will be carried out by collecting seawater/brine using water pump and flexible hose and filtered using Fine mesh (Food Grade Filter bag) into the HDPE platform. Daily monitoring of water salinity is done using a refractometer. For Region 6, three (3) sets of evaporating basins will be constructed using polyethylene (PE) plastic No. 3. The PE plastic is stapled to nylon strings which are attached-four (4) inches above ground-to the bamboo poles. The bamboo poles are staked to the ground forming a rectangular lay out. Twelve (12) evaporating ponds-measuring 5m x 4 ft x 4 inches – will be constructed for the 1st and 2nd stages of the drying process, respectively. Another 10 compartments with dimensions of 3 m x 4 ft x 3 inches will be constructed for the last stage. While in Region 1 only one (1) rectangular HDPE plastic-platform will be constructed as a salt bed for the whole cycle of production. It is expected that after 7-10 days of solar evaporation, the sea salt will be harvested. Harvesting of salt will be done if there are crystals of salts appearing. Collection of salt is done using food grade stainless steel rake or shovel. Collected sea salt will be put in a container "rattan" woven basket to drain liquid present in

		harvested salt. After draining the salt it will be packed in a sack with inner lining plastic using a food grade dry food shovel.
1.3. Greenhouse Salt Tunnel	It is a greenhouse design using HDPE as base for pan seawater evaporation and enclosed with PE plastic material. GST construction contained three main parts, namely UV plastic, tunnel structure, and tunnel geo-membrane base. UV plastic used transparent plastic while tunnel geo-membrane base used black HDPE membrane plastic and geo-membrane.	The same three 3 steps method of salt making will be used in this module. Four Greenhouse Salt tunnels will be used for the evaporation process (Steps 1&2) and the 5th will be used for the crystallization process. This type of salt production is more climate resilient than the previous one and has a longer life span.
1.4. Household-type of Desalination Design	Separation of salt from seawater and produced potable water at the same time. It is also termed reverse osmosis.	This module aims to produce two (2) products: clean water and salt. Access to clean and drinkable water is one of the main problems of coastal communities especially for island barangays. This module will provide access to clean water for a family. In several desalination studies, it shows that one (1) square meter desalination equipment can produce 6-8 liters of clean water. In this module the area of (one) 1 desalination equipment is two (2) square meters. With 2 desalination equipment at the evaporation stage comes a total area of 4 square meters for production of clean water and salt, which is estimated to provide 24-32 liters of water daily and 6 kilos of Salt every 2 days or 90 kilos of salt monthly. Although, this type of salt-making method produces less salt than the traditional and previous two models. It is only this model that produce one of

		basic and necessary commodity our marginal fisherfolk needs, CLEAN WATER, which could also be a source of income in a community with no direct source for water and would greatly minimize the daily expenditure of our fisherfolks
B. Cooking	Produces salt by evaporating salt water in large open vats with heat source from cook stoves. The method produces very clean, fine-grained salt.	Fill seawater into 200 liter Food Grade Drum using 5 hp water pump and flexible hose, filtered using Fine mesh (Food Grade Filter bag). The impounded water will be solar evaporated within 5 days (Daily monitoring of water salinity is done by using a refractometer). When the brine is fully dense or saturated, the mixture is ready for cooking. The mixture will be transferred to the cooking structure (Rectangular Fire brick with stainless inner lining, feeder vessel located at top of the stove/Furnace, Corrosive free) for evaporation process with the aid of burned rice hull "ipa" for 8 hours with continuous stirring using food grade Stainless steel strainer. Formed crystal salt will be harvested using a food grade Stainless steel strainer and placed in a ratan woven basket to drain excess water (rattan woven basket is placed on the top of pallet to avoid direct contact from the floor). Fully dried salt will be subjected for iodization.

4. Packaging, Labeling and Nutritional Analysis

Individual beneficiaries will be provided materials for packaging and trained to comply/ follow the basic requirements on labeling of food products to improve the aesthetic appearance of the product and ease the handling process during distribution and transport to intended markets.

Samples of salt products from the beneficiaries will be submitted to DOST for its nutritional analysis and results will be printed out in the packaging material for product information.

5. Storage of Products

Improvement of the existing holding/storage facility for proper storage of salt products in a hygienic manner. Packed salt products are properly stacked and stored in a sanitary and enclosed room to ensure cleanliness and free from contaminants.

6. Marketing

Assistance to access the market through linkage with potential buyers (i.e. market matching) as well as access to external funding including grants, credits and investments will also be included.

7. Capacity Building

BFAR through the RFTFCD, and the NFRDI shall conduct trainings to the qualified beneficiaries regarding compliance requirements to food safety standards i.e. Good Manufacturing Practices (GMP) and Sanitation Standard Operating Procedures (SSOP), during the production and processing of salt, hands-on training on production methods on site and value adding.

Training related to improvement on product design, packaging, and labeling will also be conducted to help the cooperators create a unique and enticing product identity and increase access to a more diverse market.

Development of marketing skills and capabilities from the producer level up to product distribution will be worked out in collaboration with other government and public and private institutions. Business planning, record keeping, social preparations, and other relevant training will also be conducted.

8. Construction/Renovation of Storage Facilities, Procurement of Equipment

Livelihood assistance through upgrading of production, post harvest and storage facilities will be provided to improve the handling, processing, storage and distribution of salt products in compliance with relevant food safety and product standards. It also aims to improve the processing and operational capabilities of salt farmers. These include improvement of salt production areas (pond with HDPE Geomembrane liner and with lined bricks) and warehouse as well as provision of materials/equipment such as cooking structure, ionizing machine, cooking vat, water pumps, farm rake, shovel, wheelbarrow, refractometer and other materials necessary for salt production, processing and storage. Each cooperator will be provided with packaging and labeling materials to improve the aesthetic appearance of the final product and to ease the handling process during the distribution and marketing of products to intended markets. Product packaging should also be in compliance with FDA Regulations (AO 2014-0030).

The NFRDI shall execute a MOA with cooperators prior to the distribution of inputs that specifies the detailed agreement for the minimum roles and responsibilities of both parties. Salient provisions of the MOA shall include (1) the cooperator shall keep and maintain all necessary records such as but not limited to production data, income and expenses which shall be submitted whenever required and subjected to monitoring and evaluation of the NFRDI during the entire duration of the project (2) impositions and conditions to strictly ensure that the awarded equipment and facilities will only be used for their intended purposes, (3) equipment and facilities may be recalled or transferred to other cooperators if non-operational, underutilized or unutilized, and (4) means or remedies in case the awarded facilities are used for purposes in violation of the MOA.

9. Turn Over of the Project to the Beneficiaries

The BFAR Regional Offices and NFRDI shall turn over the projects to the beneficiaries through the Local Government Units.

10. Monitoring and Evaluation

To assess the progress and performance of the program. A Program Management Office (PMO) will be created at BFAR Central Office to oversee the overall project implementation, monitoring, and evaluation. A Regional Monitoring team will also be created composed of BFAR and LGUs personnel to monitor the progress of the project.

All pertinent data such as schedule of operations, the volume of production, product price, production cost, gross and net income, problems/challenges encountered, etc, and other observations will be gathered and recorded in prescribed monitoring forms. The project staff will periodically conduct on-site validation and evaluation for further planning purposes. Assistance and monitoring of the recordkeeping system during the growing season will also be made to determine the inefficiencies and corrective measures to be undertaken. It will serve as the basis for planning improvements and crafting proper management decisions to make the enterprise more profitable

11. Reporting

A Monthly report shall be prepared and submitted by the BFAR Regional Offices and NFRDI to BFAR Central Office (Office of the Assistant Director for Operations) to track the progress of the project implementation. The BFAR Central Office (ADO) shall also submit a monthly report to DA Central Office through the Special Projects Coordination and Management Assistance Division (SPCMAD) under the Field Operations Service (FOS).

III. TRANSFER OF FUNDS

The Department of Agriculture shall transfer to BFAR Central Office and NFRDI the allocated funds for their offices through a Memorandum of Agreement (MOA), while an Advice for Sub-Allotment (ASA) will be issued to DA Regional Offices I, VI and IX for the implementation of the project as per approved Project Documents and Work and Financial Plan (WFP).

The DA RFOs I, VI and IX shall then enter into a MOA with their respective BFAR counterpart regional offices for the subsequent transfer of the project's fund for the implementation of each project's regional activities.

IV. PROJECT DURATION

The project will be implemented and expected to end by December 31, 2022.

This guideline shall take effect immediately and shall remain enforced during the entire project duration.

Issued this 14th day of September, 2022.

Recommending Approval:

NESTOR D. DOMENDEN, CESO IV
Executive Director III
Officer-in-Charge, Bureau of Fisheries and Aquatic Resources

Dir. LILIAN C. GARCIA, CESO V
Executive Director
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Concurred:

ENGR. ARNEL V. DE MESA, CESO III
Assistant Secretary for Operations

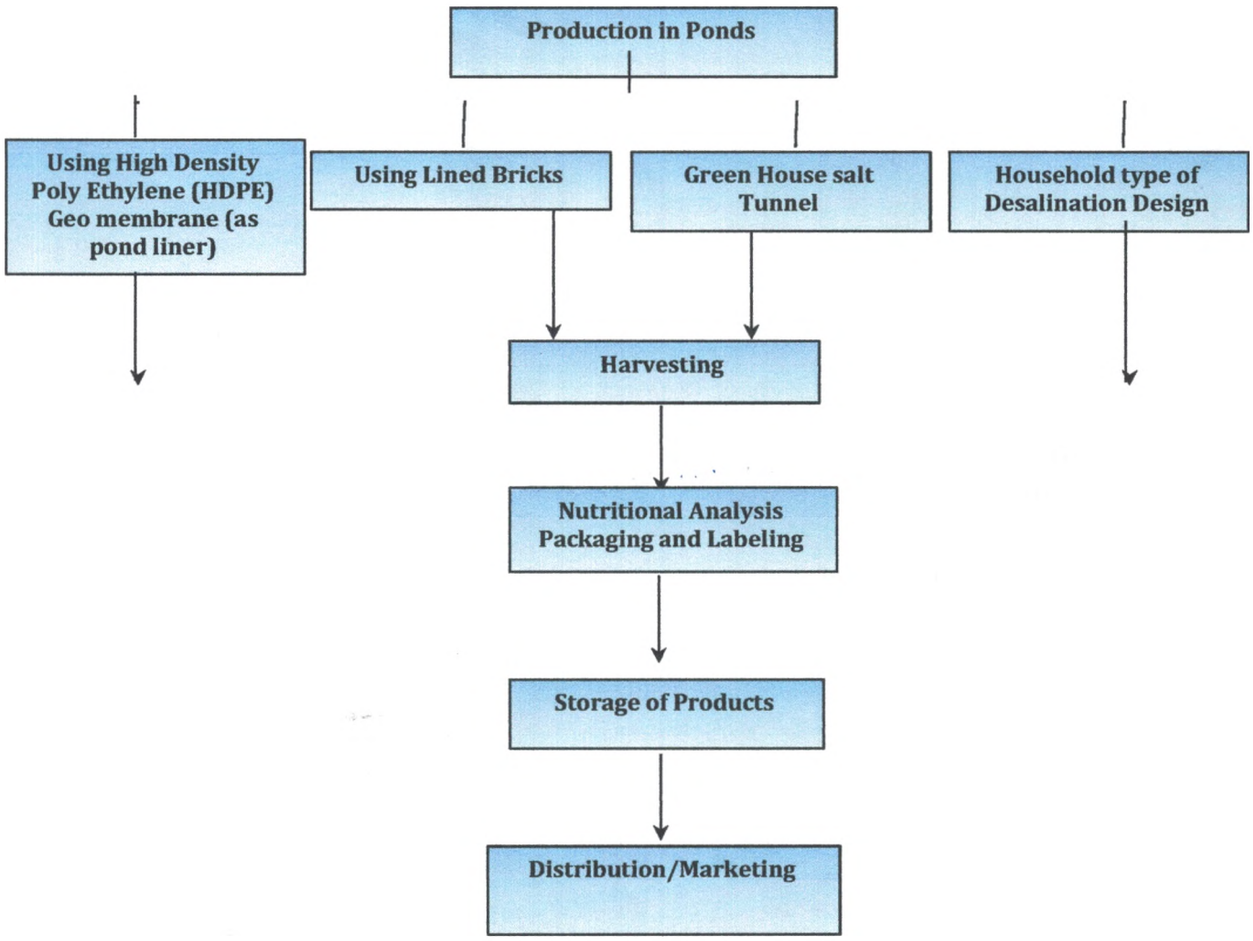
Approved:

DOMINGO F. PANGANIBAN
Senior Undersecretary for Agriculture

DA-CO-FOS-MOA20220913-00011

Annex I:

SOLAR/SUN DRYING EVAPORATION



Annex II:

COOKING THROUGH EVAPORATION