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IMPLEMENTATION AND IMPACT OF THE SALT IODIZATION LAW IN THE PHILIPPINES

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Abstract

The study re-examines the implementation of Republic Act No. 8172 or An Act for Salt Iodization Nationwide (ASIN) and its impact on salt producers or farmers. It presents the case of five salt-producing local government units (LGUs) in the Philippines. These LGUs are engaged in the production of "balara" (solar salt) which is not required to be iodized under the ASIN Law. Nevertheless, local officials and pertinent government agencies monitor the supply of commercial salt in their market to determine whether it is compliant with the required iodization content. The law needs to be strengthened not only to ensure strict compliance to salt iodization but to provide the necessary support to the local salt industry.

Keywords: Salt Industry, Salt Iodization, ASIN Law.

INTRODUCTION

In 1995, the Philippine Congress passed a new legislation known as Republic Act No. 8172 or an Act for Salt Iodization Nationwide (ASIN). This Act requires the addition of iodine to all salt intended for animal and human consumption to eliminate micronutrient malnutrition in the country. The insistent campaign of the Department of Health under the then Secretary Juan Flavier promoted the consumption of iodized salt to address iodine deficiency (IDD). However, with the implementation of the ASIN Law, it was observed that some local salt manufacturers were not able to adapt to this legal requirement and ended up closing their business.

The Philippines has 36,289 km of coastline yet only uses 2,500 hectares for salt farming. This is in stark contrast to Vietnam which has only 3,260 kms. of coastline and uses 14, 814 hectares for salt farming. Vietnam has salt farms five times larger than the Philippines. With this, the Philippines produces 100,000 MT of salt 100,000 MT of salt compared to Vietnam's 1.1 million MT (Chanco, 2022). Further, according to the International Trade Centre, 80 percent or $24.4 million worth of salt in the Philippines is imported as of 2016 (Moran, 2018).

Based on Global Alliance for Improved Nutrition (GAIN) estimation, there are 600,000 metric tons of annual total volume of salt in the Philippines in 2015, 80% or 480, 000 metric tons of which is imported from China and Australia. There are only 20% or 120,000 metric tons which are locally produced by salt-producing provinces in Luzon namely a Ilocos provinces, Pangasinan, Bulacan, and Occidental Mindoro; Visayas: Guimaras and Negros Occidental; and Mindanao: Zamboanga del Sur, and Misamis Occidental. From the total volume, 55% or 330,000 metric tons is used for human and animal consumption, which are generally distributed to "salt-dependent" regions like Cagayan Valley, CALABARZON, Bicol, Central Visayas, Eastern Visayas, CARAGA , Autonomous Region of Muslim Mindanao (ARMM), Cordillera Administrative Region (CAR), and National Capital Region (NCR) (National Nutrition

The Seybold Report
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Council 2018:9). Cognizant of this situation, there is a need to re-examine the implementation of the ASIN Law, its perceived impact to the salt manufacturers or producers as well as the issues and problems confronting its implementation. By doing so, the study aims to help policymakers and implementers to develop robust policies and strategies that will strengthen the now-ailing salt industry. This study is, however, limited to the Province of Pangasinan, specifically in the salt-producing municipalities of the Province namely Alaminos City, Dasol, Bolinao, and Anda. In the Philippines, the province is the highest level of local government and it is organized into component cities and municipalities. The provinces, independent or chartered cities, component cities, municipalities, and barangays are collectively known as local government units (LGUs).

Profile of Salt Production in Pangasinan

The Province of Pangasinan derived its name from the word "panag-asinan", which means "where salt is made", owing to the rich and fine salt beds which were the major source of livelihood of the province's coastal towns. In 1994, a first large survey of the salt industry was conducted by Solon et al. (1994) covering the provinces of Pangasinan, Bulacan, and Oriental Mindoro. At that time, Pangasinan supplied 74,765 metric tons (MT) or 40.59% of the total salt produced in the country while Bulacan and Occidental Mindoro contributed 71,419 MT (38.78%) and 38,002 MT (20.63%), respectively. A large amount of the salt produced in Pangasinan was brought to Bulacan (33.33%), to Bicol (29.17%) and other parts of Luzon. To date, however, Pangasinan ranks second to Occidental Mindoro when it comes to its contribution to local salt production during an El Nino year with the former producing 50,000 MT (40.65%) while the latter contributing 65,000 MT (52.85%). Bulacan, on the other hand, produces <8,000 MT (6.5%) of salt (Khonghun, 2020). Table 1 shows the profile of salt production in Pangasinan.

Table 1: Salt Production in Pangasinan (as of October 2022)

Municipality/ Barangay	Area (ha)	Operators/ Producers	Production Type	Production (MT)	Peak Season	Remarks
Bani (San Miguel, Banog Norte, Luac, Garrita, Aporao)	205.20	635	Barara	4617.00	December to May	Area used as fishpond during wet season, salt production during dry season.
Anda (Sablig, Cabungan, Macaleeng, Tondol)	70.00	80	Barara	3750.00	December to May	Area used as fishpond during wet season, salt production during dry season.
	6.70	34	Cooked	2141.50	December to May	Operation depends on the availability of production materials.
Dasol (Poblacion, Uli, Osmena, hermosa, Magsaysay, Malacapas, Macalang/Eguia, Malimpim, Petal,	562.46	166	Barara	24000.00	November to May	Area used as fishpond during wet season, salt production during dry season divided by into 10, 000 salt beds. Size of salt bed=1833 x 22m
	6 units	2	Cooked	322.56	January to	Operation depends on

The Seybold Report
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Tambobong, Bobonot, Gais Guipe)	flat sheets				December	the availability of production materials.
Infanta (Bayambang, Cato, Patima, Batang)	26.50	22	Barara	742.50	March to May	Area used as fishpond during wet season, salt production during dry season.
	132 units	25	Cooked	9622.80	January to December	Operation depends on the availability of production materials.
Alaminos City (Pangapisan, Mona, Pandan, Telbang)	76.00	26	Barara	5208.00	January to March	Area used as fishpond during wet season, salt production during dry season.
Bolinao (Victory & Pilar)	12.00	32	Barara	240.00	December to April	Seashore area utilized as salt bed in Victory and Pilar.
San Fabian (Tiblong)	0.04	1	Cooked	72.00	November to May	Operation depends on the availability of production materials.
Mangaldan (David)	0.50	10	Cooked	1440.00	January to December	Operation depends on the availability of production materials.

Source: Provincial Agriculture Office, Fisheries Development and Services Division

Solar drying is the most common method used in Pangasinan where sea salt, which is stored in ceramic salt beds, undergoes solar evaporation and is turned into brine. The solar or rock salt is locally known as “balara” and is used for industrial purposes. The Municipality of Dasol, the Salt Capital of Pangasinan, is known for its high-quality “balara”. Most salt farms in Dasol, Alaminos, and Bolinao use this method. Meanwhile, cooking of pure brine from the sea is also practiced by some of the local salt farmers interviewed. The brine is boiled in an open pan resulting in a finer salt product. Only a few salt farms in the LGU cases cook salt since the process is time-consuming and the supply of firewood is limited.

Pangasinan has a Type 1 climate with a long dry season from November to May every year. With this type of climate, the province is highly suitable for salt production. The salt harvesting season usually occurs during these dry months. Normally, the preparation of salt beds is done during the months of November and December while harvesting of salt is done from January to May. To maximize productivity, most of the salt farmers interviewed usually convert the salt beds into fish ponds during the rainy season.

Act for Salt Iodization Nationwide or ASIN Law

In 1995, the ASIN Law was formulated to contribute to the country’s effort of eliminating micronutrient malnutrition, particularly iodine deficiency disorders which is a public health concern in the country at that time. ASIN LAW provides for the mandatory iodization of all food-grade salt for human and animal consumption, whether locally produced or imported, including salt used in the production of processed food.

The Seybold Report
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According to the results of the 2013 NNS, only 32% of the iodized salt in the country is adequately iodized. In the same vein, it is shown that the proportion of households using adequately iodized salt is only 25.7%. Furthermore, there is no local distributor of iodine checker machines, hence it limits the supply of the equipment locally. After 2005, a sudden decline was observed and continued until 2013. It was observed then that the supply of rapid test kits to local government units also decreased. The decline may partly have been due to inadequate testing.

Lastly, the perception of iodized salt's importance is wanting, four out of 10 (40.1%) of survey respondents believe that iodized salts are cleaned or refined salt. On the other hand, three (3) out of 10 (30.3%) believe that iodized salt prevents people from having goiter, while 20.2% and 18.9% believe that iodized salt is good for the body, and salt added with iodine", respectively. (National Nutrition Council, 2018).

The National Nutrition Council-NCR believes that there is still a need to strengthen the implementation of ASIN LAW, despite the decreasing number of people suffering from IDD. In 2013, 79% of all Filipino households were said to be aware of iodized salt; however, only 41% said that they use it. Therefore, after 20 years since its enforcement, it is necessary for stakeholders to assess the program and point out the challenges faced by the ASIN LAW (Gavilan, 2015).

Conceptual Framework of the Study

This section discusses the conceptual framework of the study that was developed based on the works of Apland (2021) et.al, Gornitzka et. al (2005) ,and Sabatier and Mazmanian (1983) also cited in Cerna (2013:22-23).

Apland et. al (2021) used the following framework in evaluating the implementation of the Law of Child Protection (LCP) in Mongolia:

1. Relevance - law is able to meet the needs of several particularly vulnerable groups of children; sufficiency of detail;
2. Effectiveness- law contributed to positive changes in child protection approaches such as increased recognition and prioritization of child protection concerns;
3. Efficiency- allocation of increased resources to child protection work; adequacy of human resources responsible for addressing the needs of the population; and
4. Sustainability- sustainability of the benefits achieved under the law; government initiatives to strengthen the child protection system

Meanwhile, Gornitzka et al. (2005) synthesized the works of other scholars and presented a refined list of variables that are critical for the successful implementation of research, to wit: (1) policy standards and objectives; (2) policy resources; (3) inter-organizational communication, characteristics and enforcement activities of implementing agencies, (4) *e*conomic, social and political conditions*;* and (5) disposition of implementers. These factors shall be discussed in greater detail in the succeeding discussion.

The Seybold Report
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Gornitzka's and Apland's frameworks have points of convergence such that policy standards and objectives also refer to the relevance of the law whereas policy resources pertain to efficiency. The remaining three variables - inter-organizational communication; characteristics and enforcement activities of implementing agencies; *e*conomic, social, and political conditions*;* and disposition of implementers - are all contributing to the law's effectiveness and sustainability.

On the other hand, aside from looking into the implementation aspect, the present study goes further into assessing the impact of the ASIN Law on salt producers/manufacturers. It rests upon the assumption that the producers/manufacturers are the sector most affected by the law.

Finally, the issues and problems confronting the implementation of the law were also included in the study's framework because they raise concerns as to the future direction of the ASIN Law.

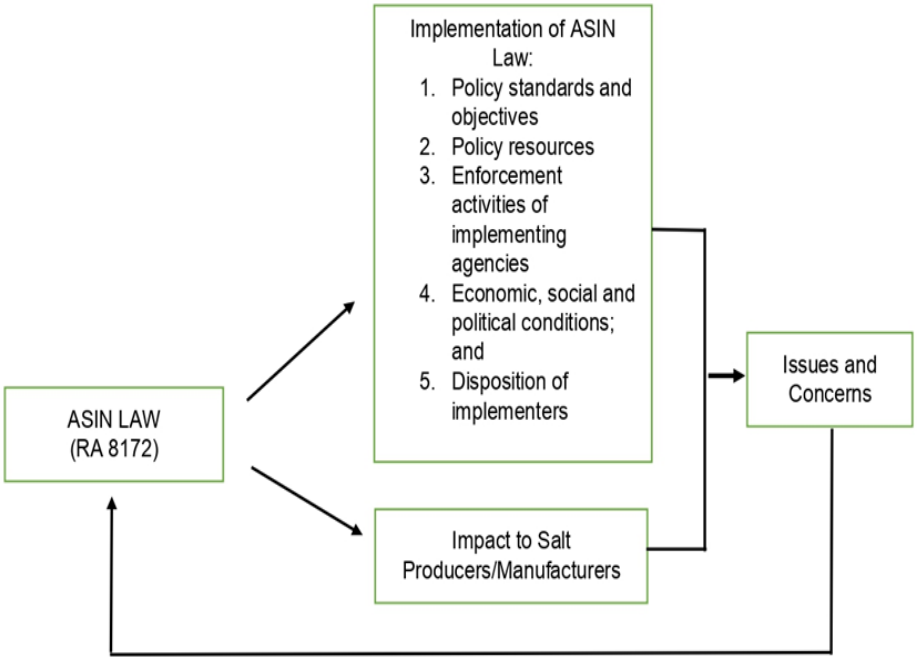

Figure 1: Conceptual Framework of the Study

RESEARCH METHODS

Unit of Analysis

The study's unit of analysis was the local government unit. It initially intended to cover all seven (7) salt-producing LGUs in the Province of Pangasinan which are: Alaminos City, Anda, Bani, Bolinao, Dasol, Infanta, and San Fabian. However, due to limited mobility and other restrictions brought about by the pandemic, the study was limited to only four LGUs, to wit: Alaminos City, Anda, Bolinao, and Dasol (see Figure 2).

The Seybold Report
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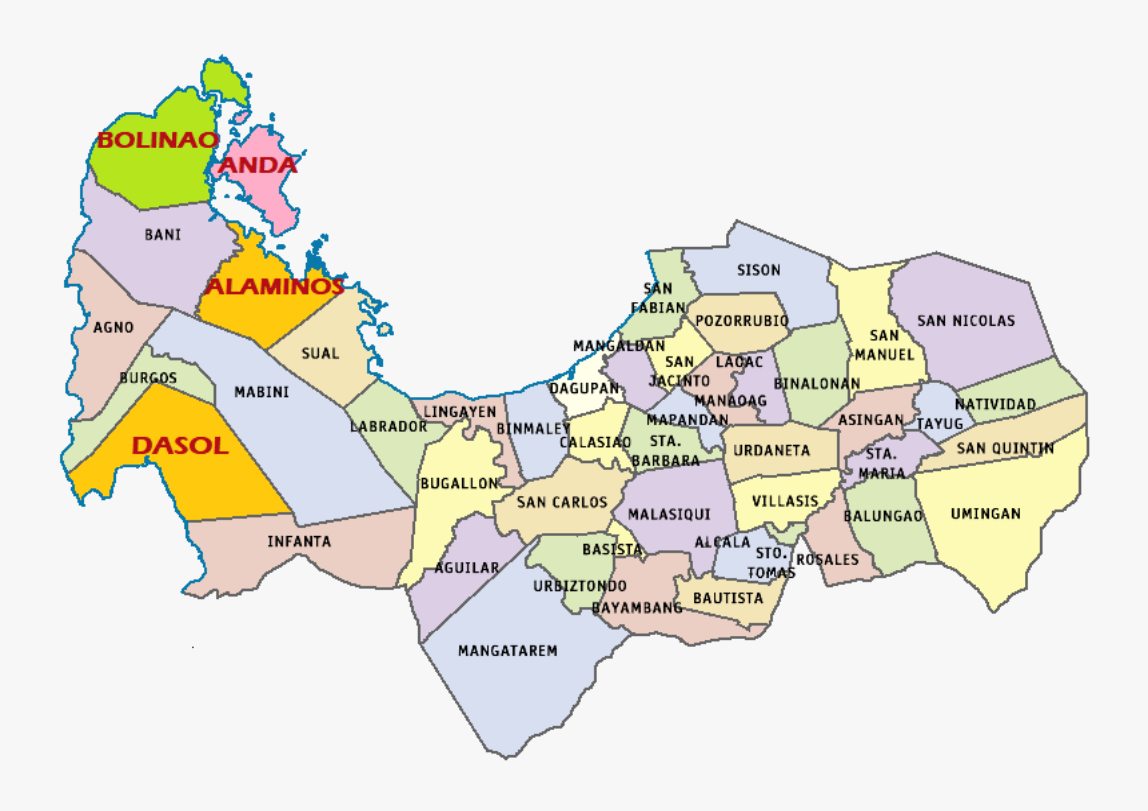

Figure 2: Map of Case Study LGUs

All four (4) LGU cases belong to the 1st legislative district of Pangasinan. Table 2 further shows a brief profile of the LGUs.

Table 2: Profile of LGU Cases

LGU	Land Area (sq.km.)	Number of Barangays	Population (2020 Census)	APGR (2015-2020)	Population Density (2020)
Alaminos City	164.26	39	99,397	2.18	605
Anda	74.55	18	41,548	1.07	557
Bolinao	197.22	30	83,979	0.48	426
Dasol	166.6	18	31,355	1,58	188

Source: Philippine Statistics Authority

Data Collection Process

The study utilized a descriptive method of research through qualitative strategies. The qualitative methodology involved a desk review of relevant policies and legislation such as the ASIN Law. Pertinent documents and related studies were also examined to provide a rich background on the status of salt production in the Province of Pangasinan and the implementation of the ASIN Law particularly in the LGUs of Dasol, Alaminos City, Bolinao and Anda. Interviews were also conducted with key informants, specifically local government

The Seybold Report
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officials and salt producers/farmers from the aforementioned LGUs to determine the status of implementation of the ASIN Law. Field observations were also conducted to supplement the data gathered.

As a way of data triangulation, interviews were also conducted with some key officials from relevant government agencies in the province such as the Provincial Agriculture Office (PAO) - Sta. Barbara, PAO Fishery Field Extension Office - Dagupan City, Provincial Planning and Development Office (PPDO), and DOH Provincial Office in Lingayen. Table 3 shows the number of interviewees per LGU case.

Table 3: Number of Interviewees per LGU Case

Interviewees	Interviewees		Total Number
A- LGUs	LGU officials/employees	Salt farmers	
Alaminos City	6	3	9
Anda	4	2	6
Bolinao	5	2	7
Dasol	4	3	7
B- Heads of Government Agencies	Heads		
Provincial Agriculture Office (PAO) Sta. Barbara	2		
PAO Fishery Field Extension Office Dagupan City	1		
Provincial Planning and Development Office (PPDO)	1		
DOH Provincial Office Lingayen	1		
Total			34

The interview guide had questions on the profile of salt production, implementation, and monitoring activities of the LGU relative to the ASIN Law, including whether a local ordinance or policy has been formulated to support the implementation of the law. Questions pertaining to the issues and problems that the implementers have encountered were also included. Meanwhile, the interview guide for salt producers/manufacturers covered the perceived impact of the ASIN Law and how the LGU monitors their compliance with salt iodization.

Secondary data was requested from the interviewees such as local ordinances or resolutions, profile of salt production, projects or activities relative to the implementation of ASIN Law, list of salt farmers, among others.

Analytical Framework

Following the work of Gornitzka, et al (2005), also cited in Cerna (2013), the study looks into the implementation of the ASIN Law along the following areas: policy standards and objectives; policy resources; enforcement activities of implementing agencies; *e*conomic, social, and political conditions*;* and disposition of implementers.

Policy standards and objectives refer to the nature of policy and the specific factors contributing to the realization or non-realization of policy objectives. *Policy resources* refer to the funds needed for implementation. Additionally, *enforcement activities of implementing*

The Seybold Report
ISSN 1533-9211
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agencies pertain to the technical advice and assistance provided including formal structural features of organizations. *Economic, social and political conditions* refer to the variety of conditions affecting the relationship between objectives and results. Lastly, the *disposition of implementers* is concerned with the motivation and attitudes of those responsible for implementing the reform.

Meanwhile, the impact of the ASIN Law was assessed based on the perception of the LGU officials and salt producers/farmers from the selected LGUs. To guarantee confidentiality for the LGU cases, the names of LGUs were coded as A, B, C, and D.

RESULTS AND DISCUSSION

I. Implementation of the ASIN Law

1. Policy Standards and Objectives

In its most basic definition, policy is commonly referred to as a guide for action. Clearly, the ASIN Law is positively stated: "to promote salt iodization nationwide and for related purposes". The law is in itself a regulatory policy that specifically provides a set of objectives and actions of the government in the area of health. It is an expression of national aims to treat a specific problem- iodine deficiency among Filipinos. In particular, the law aims to "contribute to the elimination of micronutrient malnutrition in the country, particularly iodine deficiency disorders, through the cost-effective preventive measure of salt iodization".

It is legally coercive as it requires : (1) all producers/manufacturers of food-grade salt to iodize the salt that they produce, manufacture, import, trade or distribute; (2) Department of Health (DOH) to undertake the salt iodization program and for its Bureau of Food and Drugs (BFAD), to set and enforce standards for food-grade iodized salt and to monitor compliance thereof by the food-grade salt manufacturers; (3) local government units (LGUs), through their health officers and nutritionists/dietitians, or in their absence through their sanitary inspectors, to check and monitor the quality of food-grade salt being sold in their market in order to ascertain that such salt is properly iodized; and (4) Department of Trade and Industry (DTI) to regulate and monitor trading of iodized salt.

Moreover, the law contains other specific set of government activities such as: (1) it directs the Department of Science and Technology (DOST), in collaboration with the Technology and Livelihood Resource Center (TLRC), to initiate, promote, and cause the transfer of technology for salt iodization; (2) it authorizes the National Nutrition Council (NNC), the policy-making and coordinating body on nutrition, to serve as the advisory board on salt iodization; (3) it provides mechanisms and incentives for the local salt industry in the production, marketing and distribution of iodized salt; and (4) it ensures the sustainability of the salt iodization program.

With its recognizable objectives or purpose, it is evident that the law applies to the entire salt industry be they salt producers/manufacturers, importers, traders, or distributors. To support the salt iodization, the law further mandates the Department of Environment and Natural

The Seybold Report
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Resources, Cooperative Development Authority, DTI, and DOST to provide the necessary assistance and support to local salt producers or manufacturers.

Among the salt-producing municipalities in Pangasinan, only LGU A has adopted and enabled the ASIN LAW by virtue of an Ordinance No. 2002-08 and a Resolution No. 2003-12 authorizing the Mayor to enter into a memorandum of agreement with the Bureau of Food and Drugs relative to the effective implementation of the ASIN LAW.

2. Policy Resources

The Bureau of Fisheries and Aquatic Resources (BFAR), has a P10 million grant for training, equipment, and other facilities to boost salt production in the Ilocos region (Sotelo, 2021). Based on an interview conducted with the BFAR, they explained that the agency, in cooperation with the Pangasinan Provincial Agriculture Office, provided salt-making materials to the salt producers. Dasol, Infanta, Bolinao, and San Fabian were among the municipalities in Pangasinan that served as beneficiaries of this project.

In an interview with a local government official in LGU A, he attested that some of the salt farmers in their locality have received equipment from the government. His response is particularly illustrative, *"Ngayon lang napansin ng gobyerno ang paggawa ng asin". (It is only now that salt production is receiving government attention).*

One salt farmer from LGU B also confirmed that he received a water pump and weighing scale from the municipality. The DA also provided supplies and equipment such as jetmatic, sewing salt bags, and *"tiklis"* or woven baskets. On the contrary, a farmer from LGU C said during the interview that he did not receive any assistance from the LGU or other government agencies.

In 2020, the DOST and its attached agencies provided assistance to salt manufacturers and producers. Recently, DOST-ITDI launched in Pangasinan the I-Salt Project which pilots an iodized salt processing model and design. The salt-processing technology involves three machines namely the salt washer, spin dryer, and salt iodizer. This project aims to revive the vibrant industry of salt-making in the Philippines as well as comply with the standards of ASIN Law. When it comes to LGU monitoring activities, interviewees from the LGUs B and C expressed concern about the absence of supply of iodine checker and kit from the DOH thereby affecting monitoring of salt iodization.

3. Enforcement Activities of Implementing Agencies

The DOH is primarily tasked to monitor compliance of food-grade salt manufacturers with salt iodization. In the case of LGU C, the salt *(balara)* that they are producing are bought by other municipalities. These are not iodized so what is being strictly monitored by the Health Office are those being sold in the market and other business establishments. The sellers comply with this because they know that their salt product will be confiscated if it is not iodized.

In an interview with an employee from the Provincial Health Office (PHO), she explained that they regularly monitor business establishments to check if they sell adequately iodized salt. Checkpoints spearheaded by the monitoring team were also set up to ensure compliance with the salt iodization law. She further narrated that the recently concluded "Buntis Congress" also

The Seybold Report
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served as an advocacy campaign for the utilization of iodized salt. The program included the procurement and distribution of iodized salt, fortified rice, egg, and others to pregnant women.

However, the monitoring of the required iodine content of salt products was put to a halt during the pandemic as the local government prioritized the administration of the CoVID-19 vaccine to their constituents. A DOH official in LGU A explained: *"Walang monitoring noong pandemic kasi siyempre inuna namin ang bakuna sa CoVID-19." (No monitoring was done during the pandemic since the CoVID-19 vaccine was prioritized.)*

The FDA, one of the attached agencies under the DOH, is mandated under RA 8172 to bear the specific responsibility to issue the License to Operate (LTO) to salt manufacturers. Due to the absence of regional or field offices and the consequent lack of manpower, FDA once delegated the authority to LGUs only to be returned to it a few years ago.

As part of the regulatory activities of the LGU, the salt farmers are required to secure a sanitary permit after undergoing laboratory tests (i.e. chest X-ray, blood test).

In all four LGU cases, the Barangay Asin Task Force is either existing yet non-operational or entirely absent. A barangay official from LGU D said that it is the municipality that monitors salt iodization at least once a year and not the barangay.

4. **Economic, Social and Political Conditions**

In an interview with a salt farmer from LGU C, he explained that salt farming is a profitable business. He owns 340 salt beds and these are converted to fishponds during the rainy season. He further said that they do not iodize the salt since the buyers from Bulacan prefer *balara.* This situation holds true to other LGU cases since the buyers use balara in making the fish paste, fish sauce, and dried fish. They also add salt to ice to keep it frozen long enough to freeze the ice cream. Since the *balara* is used for industrial purposes, it becomes exempt from mandatory salt iodization.

In a press release dated May 20, 2018, Former Senator De Lima called for the review of ASIN Law implementation by filing a Senate resolution seeking to strengthen mechanisms that would enhance the local salt production to preserve means of livelihood for local farmers while promoting iodine sufficiency among the citizenry. She also emphasized the necessity to focus on the importance of an aligned inter-agency approach in guaranteeing the efficient end-to-end, sustainable implementation of the ASIN law (Senate of the Philippines, 2018).

In recent years, there have been efforts from various stakeholders to revive the salt industry and ensure salt self-sufficiency. Former Pangasinan Representative Ramon Guico III, now the Governor of Pangasinan, along with seven other lawmakers from North Luzon, have filed House Resolution No. 1032 calling on the DA and the DOST to use the National Convergence Initiative (NCI) platform to extend much-needed assistance to the salt-makers to enhance their productivity and regain lost glory in salt self-sufficiency.

The resolution further seeks the inclusion of the salt producers in the list of the country's fisherfolk sector to ensure that government assistance is provided to them (Luci-Atienza 2020).

The Seybold Report
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Moreover, the Regional Development Council (RDC-1) passed Resolution No. 51, S. 2022 titled, "Adopting Salt as a Strategic Commodity of Region 1". This resolution recommends to the DA-BFAR Region 1 the "inclusion of salt as a priority commodity of the agency and to designate DA-BFAR Region 1 as the commodity champion in advocating the promotion, support and development of salt in Region 1, and where feasible, in the external market."

The aforementioned resolution serves as a significant step towards the revival of the salt industry in the region that will boost salt production and generate additional employment not only for local fisherfolks but also for those involved in relevant enterprises.

5. Disposition of Implementers

It is said that the effective implementation of a policy is also contingent upon the leaders and implementing agencies who are supposed to have significant managerial and political skills and commitment to the goal (Mazmanian and Sabatier 1983). A Mayor from LGU D said during the interview that the ASIN Law is very conflicting. Sea salt already has a natural iodine content although it does not match the required iodine of 30-50 ppm under the ASIN Law.

Meanwhile, one barangay in LGU A celebrates the annual *Asin Festival* in their locality. This festival also serves as a gentle reminder for them to iodize their salt products. The Punong Barangay emphasized during the interview that all salt products being sold in the town are iodized.

In the case of LGU B, the LGU officials have been encouraging the salt farmers to create their own organization but nobody from their group wants to head the proposed entity. A salt farmer remarked: *"Noong pandemic, walang pumasok na supplier kaya ngayon ang gustong mangyari ng barangay ay tulungan ang mga salt farmers na ibenta ang kanilang asin." (During the pandemic, there was no salt supplier so the barangay is eyeing to help the salt farmers market their product."*

As well, consumer awareness and knowledge is important as it will contribute to a positive change in perception and behavior towards use of iodized salt. The demand of consumers for iodized salt largely depends on the extent of their knowledge of what iodized salt is (National Nutrition Council 2018). According to the Rural Sanitary Inspector from LGU B, the people prefer local salt that is not iodized. When asked why, she immediately replied: *"Mas nakasanayan kasi ng mga tao 'yung timpla ng asin na hindi iodized. Kulang ang mga tao sa awareness kaya kailangang magkaroon ng educational campaign at magkaroon ng study kung alin ang mas magandang gamitin sa bagoong kung balara o refined salt" (The people are used to the taste of local salt that is not iodized. The people lack awareness; hence, there is a need to conduct an educational campaign and conduct a study that will determine whether solar salt or refined salt is better for making fish paste).*

The Mayor of LGU D shared the same observation, *"Walang iodized salt sa bagoong kasi ayaw ng mga producers ng bagoong madaling masira pati kapag ginagamit sa daing. Ang iodized salt para lang sa household consumption." (There is no iodized salt in fish paste and dried fish because the producers/makers do not like it because their product gets spoiled easily. Iodized*

The Seybold Report
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salt is only used for household consumption.)

Most of the interviewees from the LGU cases believe that there must be strict implementation of the ASIN Law to address iodine deficiency. However, adequate support must be provided by the national government agencies in order to fully achieve the intentions of the law.

Impact of the ASIN Law to Salt Manufacturers/Producers

Decline of Salt Production

Based on interviews with local officials in the four LGUs, there was a steady decline of salt farming since the enactment of the ASIN law. They argued that they do not have the resources to comply with the mandatory iodization of their salt products. Also, with the strict monitoring done during the early years of its implementation, some salt farmers were forced to stop salt production and convert their salt farms into fishponds.

Most salt farms in LGU C have already closed. Presently, only four barangays are actively engaged in salt production.

Table 4: List of Salt Producers/Manufacturers in LGU C

Salt Producers	Area (Has.)	Production Area (M2)	Estimated Production (Sacks/Mo)	Estimated Month of Operation	Remarks
1	0.9211	1,842	1,800		Solar Salt
2	2.1455	4,291	2,800	6 months	Solar Salt
3	1.1942	2,388			Solar Salt
4	2.5	7,500	3,000	5-6 months	Solar Salt
5	6.21	12,420	2,000	5-6 months	Solar Salt
6	10.8164	18,794	5,500	6 months	Solar Salt
7	1	2,000	1,500	5-6 months	Solar Salt
8	1.5	3,000	1,500	5-6 months	Solar Salt
9	0.5	1,000			Solar Salt
10	1.4502	2,900	2,000	6 months	Solar Salt
11	1	2,000			Solar Salt
12	2.34	4,680	1,200	5-6 months	Solar Salt
13	1	2,000	1,200	5-6 months	Solar Salt
14	0.225	450			Solar Salt
15	0.5	1,000			Solar Salt
16	0.015	30			Solar Salt
17	0.4089	817			Solar Salt
18	25.9368	15,873			Solar Salt
19	2.5	5,000			Solar Salt
20	4.5	13,500			Solar Salt
21	2	6,000			Solar Salt
22	4.9783	15,000			Solar Salt

Source: Agriculture Office, LGU C

The Seybold Report
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On the other hand, the results of interviews also showed other reasons for the dying salt industry. The Punong Barangay of LGU A recalled that back in the 1980s, the practice of salt farmers was to "cook" salt using firewood from the nearby forest. This method of salt production eventually stopped due to forest degradation and landslides. However, no data was provided by the LGU regarding the actual number of salt farmers within their jurisdiction.

Also, LGU B saw a decline in salt production with some of its salt farms being converted permanently to fishponds. Presently, only four barangays are actively engaged in salt production. Three of these barangays produce salt by "cooking" while the remaining barangay has solar salt farms. They, however, do not add iodine content to salt since they are used in making "bagoong" (fish paste).

Table 5: List of LGU B Salt Producers

Salt Producer/ Owner	Location/Address	Classification
1	Barangay A	Solar Salt/ Large producer
2	Barangay A	Solar Salt/ Large producer
3	Barangay B	Solar Salt/ Large producer
4	Barangay B	Solar Salt/ Large producer
5	Barangay B	Solar Salt/ Large producer
6	Barangay B	Solar Salt/ Large producer

Cooking Salt:

Salt makers lease land or salt beds from the land owners. The salt producers are only from January to May or when it rains they stop making salt.			
Salt Producer/ Owner	**Name of Establishment**	**Location/ Address**	**Classification**
1	Barangay C	1 HAS.	Have 6 tenants or salt makers
2	Barangay C	1 HAS.	Have 7 tenants or salt makers
3	Barangay C	1 HAS.	Have 7 tenants or salt makers
4	Barangay D	1 HAS.	Have 4 tenants or salt makers
5	Barangay B	2 HAS.	Have 2 tenants or salt makers
6	Barangay B	1000sqm	Have 1 tenants or salt makers
7	Barangay B	1.5 HAS.	Have 5 tenants or salt makers
8	Barangay B	1 HAS.	Have 2 tenants or salt makers
9	Barangay B	1 HAS.	Owner makes salt
*Salt beds or land areas are rough estimates only…			

Source: Agriculture Office, LGU B

One salt farmer in LGU B explained that: *"Yung mga kahoy na ginagamit namin ay iba-iba ang pinagkukuhanan, yung iba galing sa ibang barangay. Kelangang piliin ang kahoy na gagamitin para mapanatili ang init. Kapag walang nabiling kahoy, tigil talaga. Kasi tinatanong kami ng DENR kung saan namin kinukuha ang kahoy." [We get the wood that we use from varying sources; some are coming from other barangays. We have to choose the kind of wood that we are going to use to maintain heat. If there is no wood to buy, we stop (cooking salt). The DENR asks us where we get the wood].*

The Seybold Report
ISSN 1533-9211
DOI: 10.5281/zenodo.10616868

Meanwhile, the Municipal Agriculturist of LGU B said that the LGU has an ongoing initiative for alternatives since other than limited supply of wood, the use of firewood in cooking salt is time-consuming. Another LGU employee remarked that in the future, a bunker with a series of perforated pipes may be designed to create and contain heat that is more environment-friendly considering the negative effects of cutting trees on our environment.

Aside from the iodization requirement, the salt farmers complain about the low farmgate price of salt. The following remarks from the LGU D, illustrate this problem:

> *"There is difficulty in maintaining a good price for our salt product. Although the salt farmers have the same source of water to produce salt, their output in terms of salt quality is different. The salt is assessed whether they are Class A, B, or C. It is the buyer that dictates the price and it is difficult to oppose big companies."*

In the same vein, one of the salt farmers interviewed in LGU D revealed that one of the challenges of salt farming is the cheap pricing of rock salt by the buyers. These buyers usually come from Lingayen town and from the provinces of Bulacan and Pampanga.

As compared to the other LGU cases, LGU D has more salt farms; thus, being tagged as the "Salt Capital of Pangasinan". Table 6 shows that eight out of 18 barangays are engaged in salt farming.

Table 6: Master list of Salt Farmers in the Municipality of Dasol

Salt Operator/Owner	Location	Area (Ha.)	No. Of Saltbeds
1	**Barangay**		
2	A	1.0	76
3	A	14.7	336
4	A	3.75*	209
5	A	0.57	24
6	A		110
7	A	2.0	32
8	A	2.0	48
9	A	2.8	79
10	A		140
11	A	3.17	64
12	A		80
13	A	0.47	19
14	A	6.1	77
15	A	5.7	181
16	A	92.0	1186
17	B		85
18	B	1.0	50
19	B	4.8	105
20	B	9.0	233
21	B	4.7	78248
22	B	5.5	147
23	B	7.728	407
23	B	15.3	410

The Seybold Report
ISSN 1533-9211
DOI: 10.5281/zenodo.10616868

24	B	2.6	36
25	B	0.5	21
26	B	5.6	140
27	B	15.3	48
28	B		300
29	C	5.75	205
30	C	4.865*	144
31	C	4.74*	88
32	C	4.368	77
33	C	5.3048*	27
34	C		10
35	C	3.2	80
36	C	5.74	145
37	D	2.5	65
38	D	3.7	276
39	D		55
40	D	4.22	82
41	D	3.0	50
42	D	1.977	100
43	D	1.7807	60
44	E	1.48	35
45	E		124
46	E	1.0	183
47	E	11.0	234
48	E	3.0	60
49	E	3.0	84
50	E	3.0	20
51	E	3.0	28
52	E	3.0	44
53	E	0.96	40
54	E	1.2	79
55	E	7.0	60
56	E	3.5	151
57	E	4.1	149
58	F	1.8	66
59	F	1.5	28
60	F	2.044*	60
61	F	2.6	13
62	F	0.4	70
63	F	22.0	500
64	F	11.0	50
65	F	6.0	135
66	F	4.9	74
67	F	0.2500	60
68	F	3.1666*	60
69	G	4.9*	60
70	H	1.6	101
71	H	2.21	64
72	H	1.36	66

The Seybold Report
ISSN 1533-9211
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73	H	2.5	44
74	H	3.89	98
75	H	2.194*	31
76	H	9.0	305

Source: Agriculture Office, LGU D

Attitude of the Younger Generation

With the decline of salt production over the past two decades, the interest of the succeeding generation also dwindled. However, the Punong Barangay from LGU A shared his observation that over the years, the interest in salt production of the succeeding generation has declined, thus: *"Kapag nagretire ang ama, susunod sana ang anak kaso ayaw ng mga anak kasi mag-aabroad sila o ayaw nila ang mag-asin. Yung may-ari ng salt farm ang kumikita, nakalimutan nila ang obligasyon nila sa tao." (When the father retires, his children are expected to continue the business; however, the children decline since they have plans of going abroad or they dislike salt farming. It is the owner of the salt farm who earns profit, they forget their obligation to the people).*

Issues and Challenges

Based on the literature gathered and interviews conducted, the following issues and concerns relative to the ASIN Law are worth noting:

1. The salt iodization policy is based on a sound theory relating to changes in target group behavior; that is, the elimination of iodine deficiency disorders among Filipinos, especially women and children. Although the raison d'etre for the enactment of the ASIN Law is clearly to eliminate iodine deficiency through salt iodization, the 2023 NNS survey revealed that while school-aged children have achieved optimum iodine status, the pregnant and lactating women and elderly remain to be iodine deficient.
2. There is no regular monitoring of the enforcement of the ASIN LAW at the local government level. Dr. Medina of DOH-NCR Disease Prevention and Control, one of the challenges is the monitoring of the supply and distribution of adequately iodized salt. She also explained that there is no established monitoring team at the many entry points of salt delivery. In addition, she identified that there is no monitoring from the regional level due to a lack of manpower (Gavilan 2015).

   Some local officials from the four LGU cases who were interviewed claimed that monitoring was done to check the quality of food-grade salt being sold in their market and to assess that such salt is properly iodized. One respondent from LGU B said that the "RHU assures that salts are safe for consumption because it is inspected by the Sanitary Office." Corroborating this statement, another respondent from the same municipality mentioned that they have created a "Bantay Tulay Task Force" that checks the entry points of the municipality to monitor the transportation of their products like salt. However, monitoring ceased during the pandemic due to limited mobility and government prioritization of CoVID-19 vaccination.

The Seybold Report
ISSN 1533-9211
DOI: 10.5281/zenodo.10616868

3. There is insufficient support from the government and other agencies. Cognizant of this problem, Senator De Lima filed a senate resolution filed in 2018 that would require all producers and manufacturers of food-grade salt to iodize the salt they produce, manufacture, import, trade, or distribute; and provide mechanisms and incentives for the local salt industry in the production, marketing and distribution of iodized salt to strengthen the implementation of the ASIN Law. She also underscored the need to stress the importance of an aligned inter-agency approach in guaranteeing the efficient end-to-end, sustainable implementation of the ASIN law and noted, "from the provision of technical and financial assistance to local salt farmers, upgrading technologies to boost production and wean from importation, monitoring the compliance of salt producers to standards prescribed by the law, addressing the health issue of micronutrient deficiency, to finally ensuring consumer safety" (Senate of the Philippines 2018).
4. The inadequate supply of raw materials both in salt production and in monitoring salt iodization was observed. According to an official from the Pangasinan Provincial Agriculture Office, one of the problems encountered by the salt farmers is the lack of supply of raw materials such as rice hulls and wood for salt production. This has been attested by the key informants from LGUs B and D since sometimes, the salt producers have trouble purchasing rice hulls and wood for use in cooking salt.

   Additionally, A DOH official from LGU C cited during the interview that the lack of supply of salt testing kits necessary for monitoring iodization also hinders the implementation of ASIN Law at the local level.
5. Unassured market, uncoordinated activities and efforts of farmers, unstable salt price, and unpredictable weather conditions are some of the problems affecting salt production. Based on the results of the study conducted by Delos Santos (2016) entitled, "An Analysis of the Production and Marketing of Salt in Dasol, Pangasinan", she found out that the industry was plagued by these problems. Nonetheless, it was assessed that there is a potential for further growth since the industry is still considered to be in a developing stage.
6. There are only a few salt producers who are registered with the FDA and are legitimately operating. However, all four LGUs stressed that they require these establishments to apply for business permits as part of the regulatory activities of the LGU. In LGU B, the concerned government offices, together with the FDA, have recently conducted an awareness campaign to explain the importance of acquiring sanitary permits. Although some salt farmers are hesitant, the FDA explained that the permit is for the protection of consumers from food poisoning, among others.
7. After almost three decades since its enactment, many stakeholders call for strengthening the implementation of the law. This is supported by the National Nutrition Council-National Capital Region in 2018 where they believe that there is still a need to strengthen the implementation of ASIN Law.

The Seybold Report
ISSN 1533-9211
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CONCLUSIONS

In terms of policy standards and objectives, the law aims to promote salt iodization nationwide by ensuring compliance of all manufacturers/producers of food-grade salt to iodize the salt that they produce, manufacture, import, trade, or distribute. It utilized a whole-of-government approach assigning specific responsibilities to key agencies such as DOH, DA, BFAR, FDA, DTI, DOST, NNC, CDA, DENR as well as LGUs.

Meanwhile, the resources needed for the implementation of the law seem to be inadequate. Apparently, the salt producers/manufacturers were not able to adapt to the requirements of mandatory salt iodization. The current initiatives and enforcement activities of the implementing agencies need to be robust and sustainable. Prioritization should be given in terms of funding allocation.

Further, the socio-political and economic landscape needs to be supportive of the salt industry. The recent initiative of the RDC 1 in passing a resolution adopting salt as a strategic commodity is laudable although much still needs to be done.

Also, the motivation and attitude of the implementers are critical to the effective implementation of the ASIN Law. Most of those interviewed local officials believe that the law should be strengthened not only to ensure strict compliance with salt iodization but to provide the necessary support to the local salt industry.

Based on interviews, the salt manufacturers or producers believe that the ASIN law is one of the reasons why salt production in their area declined. They pointed out, however, that they are currently producing solar salt or *balara* which is not required to be iodized under the ASIN Law since these are used for industrial purposes. It has been observed that the buyers of their salt products prefer *balara* in making *bagoong, patis, daing*, etc.

Lastly, the implementation of ASIN Law has been affected by numerous issues and concerns ranging from the perceived lack of government support and funding allocation, inadequate supply of raw materials and iodine testing kits, unassured market coupled with unstable salt prices, and unpredictable weather conditions.

Future Prospects

Based on the foregoing discussion, the following recommendations are hereby advanced:

1. There is a need to revitalize the Barangay Asin Task Force since it is the closest to the salt production sites. The Task Force could readily use the iodine level checker to measure the adequacy of iodine content.
2. Aside from letting the public know of the ASIN Law, it is also highly important to raise awareness of the importance of using iodized salt and the health risks that come with iodine deficiency.
3. Strict monitoring of iodization of salt production sites should be implemented since iodine levels in salt have remained at levels below the required content. There must be the adequacy

The Seybold Report
ISSN 1533-9211
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of resources to ensure the iodization of salt products since some LGUs do not have an iodine checker machine.

4. The salt farmers and processors need to establish linkage with a regular buyer or employ forward integration for them to be assured of regular demand for their salt. Cooperatives may be established to help salt farmers have more access to new technologies in salt production and processing as well as new markets.
5. Training and seminars on new technologies and marketing strategies for salt products should be conducted by the government to boost salt production.
6. There is a need to revisit the ASIN Law to strengthen the salt industry and provide the necessary support to salt producers/manufacturers.
7. Future research covering other salt-producing municipalities (Infanta, Bani, Mangaldan, and San Fabian) may be conducted to assess the implementation and impact of ASIN Law in their locality.

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