



A Qualitative PESTEL Analysis of Ilocos Sur Environment Code Embodying Climate Action

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How to cite this paper: Pola, B.A.U. (2023) A Qualitative PESTEL Analysis of Ilocos Sur Environment Code Embodying Climate Action. *Open Access Library Journal*, 10: e10980.

<https://doi.org/10.4236/oalib.1110980>

Received: November 9, 2023

Accepted: December 24, 2023

Published: December 27, 2023

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Abstract

The paper dealt with the Environment Code of the Province of Ilocos Sur 16-07A, Articles III & VII, Forest Resources, and Coastal and Inland Water Resources respectively. The study sought to assess the Code to determine if the current ideals of mitigating the causes of climate change are precisely aligned to the attainment of the Intended Nationally Determined Contribution (INDC), and realization of Sustainable Development Goals 13 - Climate Action (SDG). The study used qualitative thematic and PESTEL analyses particularly the hybrid approach via structural and value types of coding. The analyses aimed to understand the existing life-world's events, relationships, and processes. The results of the classifications of the coded interview with the use of PESTEL analysis conglomerated into the following five (5) themes; 1) weak enforcement and governance, 2) insufficient budget, 3) designated job appointments of MENROs, 4) backlog environment services, and 5) high climate risk. The themes necessitate the occurrence of *triangular effect* that brings forth a *reflexive identity* for the amendment or development of the Code to a more responsive policy towards sustainable climate conditions.

Subject Areas

Environmental Sciences

Keywords

Climate Change, Implementation, Anthropogenic Cause, Environment Code of Ilocos Sur, INDC, SDG, Policy

1. Introduction

The Provincial Government of Ilocos Sur (PGIS) is located in the northern part of the Philippines, particularly situated in the Ilocos Region, Luzon, at the mouth

of the Mestizo River with an area of 2596 km² and has a population of 706,009 (2020 census). The province enacted the Environment Code 16-07A in 2016 which emanated from the Philippine Agenda 21. The Code pursues the attainment of the provisions of Republic Act 7942, the Act Instituting a New System of Mineral, Resources Exploration, Development, Utilization, and Conservation.

The environmental condition of the province between 2001 and 2022 is the release of 38.5 kt per year of greenhouse gas into the atmosphere as a result of tree cover loss with a total of 808 kt, and removed -360 ktCO₂e/year. PGIS has a total carbon store of 39.6 Mt, with most of the carbon stored in the soil at 20.9 Mt representing a net carbon flux of -322 ktCO₂e/year

(<https://www.globalforestwatch.org/blog/climate/>). The process of the study is to derive a situational understanding and implementation analysis of the Code, to develop a matrix of proposed policies as the basis for creating guidelines for restoring the forest and coastal conditions of the locality. The following are the questions; 1) what are the themes explicated from the gathered data and how are these interpreted in the condition of the Code? 2) What are the internal and external factors that affected the implementation and things that need to be included or amended in the PGIS Code? 3) What could be the preeminent risk involved if the Code remains unchanged specifically not aligned in the call to mitigate the carbon release/emission of the Province of Ilocos Sur?

The benefit of the study extends to the creation of an all-encompassing environment management plan for the INDC to be achieved particularly the reduction of 30 percent of the harmful greenhouse gases by 2040. The task of the nation with the involvement of local governments is to respond to the challenge of the attainment of a conducive and beneficial environment as a way to outflow and meager out the *Anthropocene* era of events. Further, the study endeavors to impart an edge in initiating vital research-based policies, particularly in deploying blue carbon in the development of mangrove forests and forest restoration intended to generate carbon absorption and sequestration credits to preserve and sustain the deteriorating forest, coastal, and inland water resources condition of the province.

2. Literature Review and Methodology

2.1. Literature Review and Research Model

The following literature provides reasons for conducting the study that establish the existing gap in previous research affirming the relevance of the topic. Climate Change Policies: according to Hall, Stephen, Foxon, *et al.* (2017) [1], consistent with the implementation of the 2015 Paris Climate Conference assess the quick retirement of coal from the global energy balance and its replacement with energy from unconventional and renewable sources. The full-scale implementation of the agreement will not keep global warming within 2°C, instead, the objective is a local counterpart in the attainment of the country's NDC. Brockway, Saunders, *et al.* (2017) [2], argue that the amount of capital required to transi-

tion energy systems to a low-carbon future and the huge role finance and investment play in facilitating transformative change. In short, by thinking of financial markets as adaptive, the range of policy responses to enable low-carbon investment can be much broader. Climate Change Impact: Karpudewan, Roth, *et al.* (2015) [3], point out that the ongoing destruction of the environment, the greenhouse effect, ozone layer depletion, deforestation, and air and water pollution can be best approached through a radical shift in human consciousness—a fundamental change in the way people relate to the environment. Instead of thinking of nature as a resource to be used for human needs. It argues that the true value of nature is intrinsic and independent of its utility. In addition, Hajjar, Sanchez, *et al.* (2017) [4], added that Reducing Emissions from Deforestation and Forest Degradation (REDD+) as a climate program is an emerging key component of climate action strategies in developing countries. Small and medium forest enterprises (SMFEs) contribute towards the achievement of REDD+ goals through conservation, sustainable use of forests, and enhancement of carbon stocks, while simultaneously improving local livelihoods and contributing to local economies.

Climate Change Mitigation: addressing the question of how forestry projects can benefit from existing and emerging carbon markets in the world, forestry projects were set up to generate carbon credits. It is surrounded by uncertainties about the permanence of carbon sequestration in trees, the potential replacement of deforestation due to projects (leakage), and how and what to measure as sequestered carbon have been espoused by Galik, De Carolis, *et al.* (2017) [5]. Involving the inclusion of mangroves and other tidal wetlands such as sea grasses and salt marshes, Sappal, Ranjan, *et al.* (2016) [6] said that coastal blue carbon is thought to provide climate change mitigation benefits given its ability to store carbon under adverse conditions. Mangroves are one of the most productive ecosystems and their carbon storage potential is much greater as compared to sea grasses and salt marshes. These fundamental thoughts concerning mitigation were supported by local studies, Pilar, Gamiao, Rosales, *et al.* (2016) [7] found out that in identifying and examining the existing waste management system in the locality, are either biodegradable or recyclable. In essence, treating such waste is to enhance bio-fertilizer and mushroom projects including the plan to construct a material recovery facility (MRF) designed to accommodate the volume of collected waste affirms the responsibility to help mitigate the cause of climate change.

Climate Change Impact: according to Northey & Mudd, *et al.* (2017) [8] there is a great change because of the lessening of minerals taken away by mining, it affects water resources, weather, and climate. Mining can have a devastating impact on the livelihood of people which has a direct consequence on climate conditions, hotter weather and the scarcity of water supply. People agree that mining provides jobs, but it does not provide long-term safety in terms of the environmental impact, especially on climate. Alam (2015) [9] admitted the local

impact of climate change on farming in the condition of whether the farmers can cope in terms of their produce affected by the scarce supply of water. A farmer cannot do otherwise without water. There is a need to implement projects concerning climate mitigation. The research by Wester & Mishra, *et al.* (2019) [10] speaks of climate change's impact regardless of gender. It is said that gender sensitivity is an effective approach to climate change. However, gender concerns are sparsely considered in programs and policies today and are both affected by the impact of climate change.

Research model: on the basis of building a research model about qualitative PESTEL analysis of Ilocos Sur Environment Code embodying climate action, a model is built according to **Figure 1**.

2.2. Methodology

Prior to initiating the formal study, the author conducts preliminary research by identifying the ten (10) interview participants through purposive sampling and studies on the relevant document *i.e.*, the Environment Code Articles III & VII, and the questionnaires.

The study uses qualitative strand with the aid of modified and semi-structured types. The interview was conducted with the pre-identified heads of the concerned government entities, civic organizations, and the religious sector. The inclusion criteria of interview participants are the following: 1) knowledge of the environment Code, 2) authority in implementing the Code, 3) direct supervision and involvement in the implementation of the Code, 4) active participation and support of the Code, and 5) civic mindedness towards the upliftment of the local resources. Outside of the mentioned criteria were excluded as part of the realm of interview data sourcing. **Figure 1** presents the PESTEL qualitative design the study observed and followed.

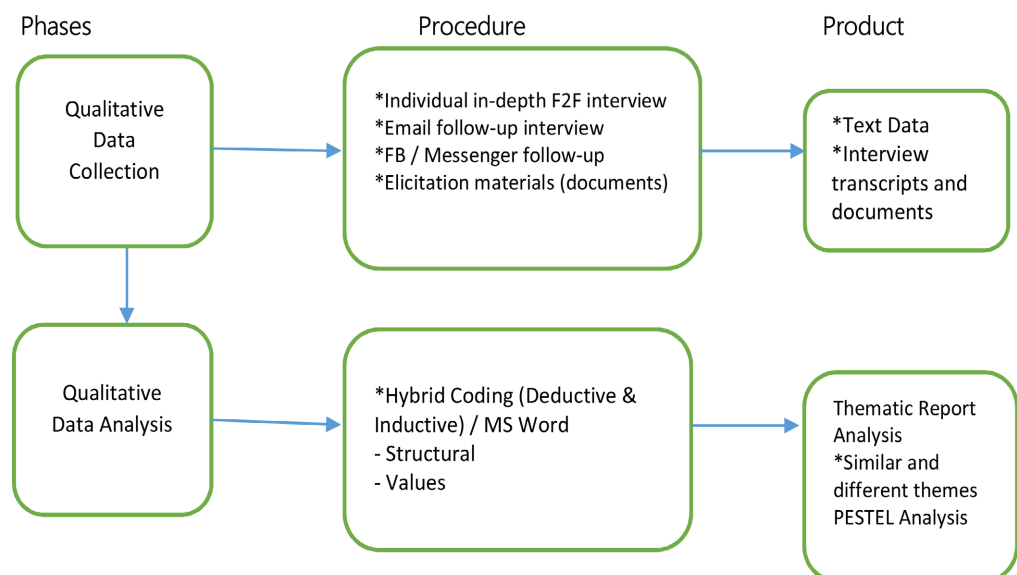


Figure 1. PESTEL qualitative design procedure.

In **Figure 2**, the thematic map shows the themes extracted from the coded interview transcript confirms the present impact of the existing condition of the Code and its implementation. The thematic report based on the model of Braun, Clarke *et al.* [11] is used to understand the varied experiences of a conscious and situated government head and civic leader, where their “worldview” is understood through a respondent’s involvement in the implementation of the Code. The six steps of the thematic report used are the following; 1) Data Familiarization, 2) Generating Initial Codes, 3) Identifying Potential Themes, 4) Reviewing the Potential Theme, 5) Name and Defining the Themes, and 6) Making the Report. These are contained in 1) Transcripts and Coded Matrix, 2) Thematic Map,

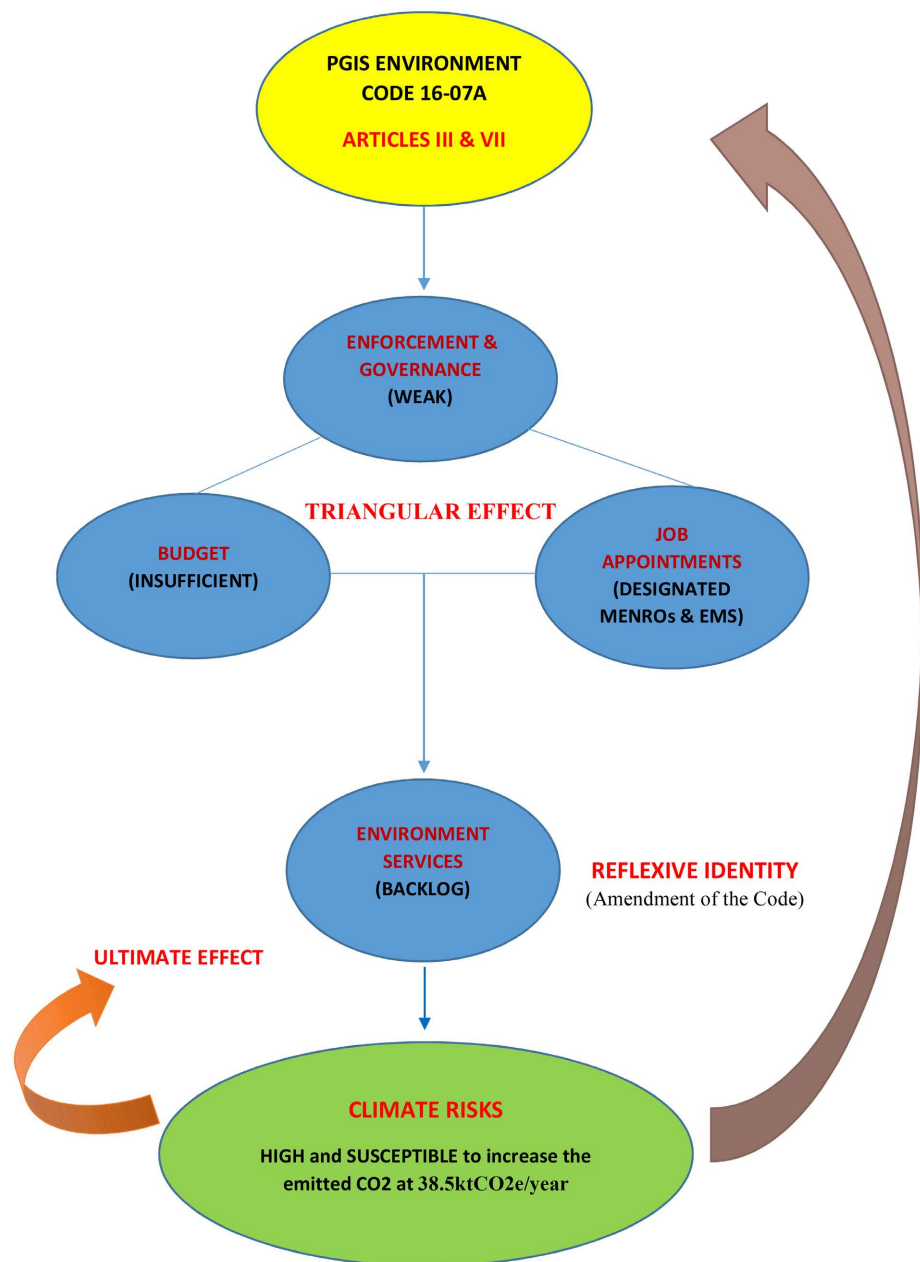


Figure 2. The thematic map.

and 4) Summary Table of Findings. The coding of the interview transcripts follows Saldana (2013) [12] procedure. While PESTEL analysis examines and identifies the external environment that influences the factors from political, economic, sociological, technological, environmental, and legal perspectives following the model introduced by Johnson, Scholes *et al.* [13] in the book titled “Exploring Strategy Text and Cases”.

3. Results and Findings

3.1. Enforcement and Governance

The niche of the essential contents of the data, established the status of the *enforcement and governance* that the Code is not effectively implemented due to reasons of administrative and supervision deficiencies. Enforcement and governance are assessed as weak. This is in parallel to the capacity of the local government to enforce rules and to deliver environmental services. If the system of implementation is *weak*, the rest of the implementation of the provisions of the Code follows. This can be asserted by the assessment that tree planting is done for compliance purposes only having a concrete implication of not enough understanding of the impact of the activity in deterring the occurrence of climate change. Much more to the assessment that there exist penal provisions in the Code and yet, in reality, there is a lack of enforcement.

Most of the findings, see the Summary Table of Findings **Figure 3**, are things that need to be adopted by the local legislative body to meet the need for sustainability and to be relevant in fighting climate change. The thematic record does show that the Code lacks provisions where outstanding governance begins, with the absence of sufficient legal grounds. Indeed, without good laws, there can be no quality and effective governance.

3.2. Budget

Budget is the second theme that emerged in the coded interview transcript. Public funds associated with the implementation of the Code particularly in the reforestation, greening program, and solid waste management (SWM) are appropriated and are passed by the local legislative officials and approved by the chief executive. The available funds cannot completely meet the need for the full implementation of the Code and it is precise to take note that the budget determines the extent and level of services provided to the community.

The Summary Table of Findings, **Figure 4**, provides the assessment confirming the lack of financial means of Local Government Units (LGUs) that includes funding for garbage collection and the purchase of seedlings. This exemplifies the commitment of the LGUs but due to the financial constraints, partial implementation of the Code happens. An additional offshoot of the problem is the deficiency of office equipment and the lack of manpower. This is likewise supplemented by the non-availability of computers for office use, and the reality of shared offices with other departments.

Themes	Frequency	Assessment, Meaning, and Findings based on Coded Interview	Evidence (Refer to Interview Transcript)
Enforcement and Governance		Assessment: Weak Enforcement and Governance	
		Meaning: Governance is about government's ability to make and enforce rules, and to deliver services. It is all about the performance of the government in carrying out the wishes of principals, and not about the goals that principals set. It is about execution, or what has traditionally fallen within the domain of public administration, as opposed to politics. <i>Fukuyama, Francis. Center for Global Development (www.cgdev.com)</i>	
	1	Existing Penal Provisions but Lack Enforcement	Q1-P4
	1	Expected to Handle Efficiently the Devolved Function of DENR	Q1-P6
	1	MENRO functions – implementation, monitoring and development	Q1-F1-P6
	1	Dependable Local Leaders	Q2-P1
	2	Participative Municipal Employees and Brgy. Officials	Q2-P1, Q2-P4
	1	Reliable and Dependable Support of the Citizenry	Q2-P1
	1	Minimal Support of Other Government Agencies	Q2-P3
	3	Active Peoples' Participation	Q2-F1-P3, Q2-F2-P2, Q2-F1-P1
	1	Need Action for the Development of Responsible People	Q2-P5
	2	No Clear Policy or IR in DENR Devolution	Q2-P6, Q3-P2
	1	The code should be in line with the programs of DENR	Q1-P7
	1	A Code that respects the creation of God	Q1-P7
	1	Only a Minimal Provisions of the Code is being implemented.	Q1-F1-P7
	1	Tree Planting for Compliance Purposes Only	Q1-F1-P7
	1	Integration into the Code the Utilization and Development of Non-timber Forest Products	Q1-P8
	1	Integration into the Code Climate Change Adaptations and Mitigation.	Q1-P8
	1	Inclusion into the Code of the Devolved functions promoting public awareness and education.	Q1-P8
	1	Inclusion into the Code protection of species and land use.	Q1-P9
	1	Arbor Day and Fiesta ti Kabanbantayan should be separate celebrations – Sec 18d.	Q1-P10
	1	The prescription of 10 meters (Sec 21) distance is not ideal.	Q1-P10
	1	Only DENR and PCA not PENRMO can issue permits for the use of power saws.	Q1-P10
	1	Article VII Sec 6, the erroneous claim of PGIS regarding jurisdiction of its coastal and inland waters.	Q1-P10
	1	Article VI Comprehensive Ecology and Solid Waste Management should be placed in one Article	Q1-P10
	1	Mandanas Ruling (increase in tax share to LGUs) will have a greater effect on the Code.	Q1-P8
	1	Reliable implementation of the Code due to Mandanas decision	Q2-F1-P8
	1	Strong political will	Q2-F3-P8
	1	Weak Systems and leadership affect implementation.	Q2-P9
	2	Incorporate REDD+ strategy in the Code, a discretion of DENR.	Q2-F1-P9, Q3-P7
1	Consideration of Climate proofing to minimize effects of climate change.	Q3-F1-P7	
1	The Need for Convergence of government agencies and stakeholders for climate interventions.	Q3-P8	
2	Circular economy is an eye opener and a realization tool for the achievement of NDC and SDG.	Q3-P8, Q3-F1-P8	
1	NG role is to craft policies encouraging the transition to renewable energy.	Q3-P9	
1	Philippine Environment policies must conform to UNFCCC for the workability of the NDC.	Q3-P10	
1	Inconsistency of Monitoring and Implementation	Q4-P1	
1	Integration into the Code Information and Educational Campaign.	Q3-P6	
1	The Environment Code does not take into consideration the commitment in the Paris Agreement including laws thereof.	Q4-P9	
1		Q4-P9	

Legend on Evidence: Q= Question, F = Follow-Up Question, P = Participant

Figure 3. Enforcement and governance & codes.

Themes	Frequency	Assessment, Meaning and Findings based from Coded Interview	Evidence (Refer to Interview Transcript)
Budget	10 2 3 2 1 1 1 1 2 1 2 1 1 1	Assessment: Insufficient Budget	
		Meaning: Budget is the allocation of public funds appropriated for certain projects or program, scrutinized and passed by the local legislative officials and approved by the local chief executive. Budget determines the extent, degree, and level of services provided to the community.	
		Limited availability of funds	Q1-P1, Q1-F1-P1, Q2-F2-P2, Q2-P3, Q2-F1-P3, Q2-P1, Q2-P5, Q2-P6
		Without Hazard Pay or Medical Benefits and no budget for salaries	Q1-P6, Q2-P3
		Insufficient Funds Equals Unsuccessful Projects	Q2-P1, Q1-F1-P9, Q2-P10
		Funds are only Available when Needed	Q2-P1,
		No Enough Budget for Logistics, Transportation & Seedlings	Q2-P2, Q2-P2
		Minimal Funding for Garbage Collection	Q2-F1-P2
		Lack of Budget and Manpower	Q2-F1-P3
		No Fund Support from PGIS	Q2-P5
		Budget should be downloaded from NG to LGUs	Q2-P6, Q2-F2-P8
		No Additional Budget from the National Government	Q3-P5
		Budgetary Requirements should be specified	Q3-P6
		Office is being shared from other Departments due to Lack of Funds	Q1-P3, Q2-P1
		None Availability of PCs	Q2-P1
Limited seedlings due to limited budget.	Q2-P7		
Economic Capacities an External Factor Affecting Implementation.	Q2-P9		
Reforestation and Urban Greening and SWM (20% development fund). For the last three years, 3 Million for reforestation & urban greening and 1.5 Million for SWM.	Q2-P5		

Legend on Evidence: Q= Question, F = Follow-Up Question, P = Participant

Figure 4. Budget & codes.

3.3. Job Appointments

The third theme that appears in the thematic record is *job appointments* and it is seen that the work structure is not substantive due to *designated job appointments* only. This is further seen as caused by the absence of a legal basis for creating official positions. It can be seen further that the frequency in the recorded transcript which is “Municipal Environment and Natural Resources Office (MENRO) is just a designated officer including employees and are appointed job orders only” appears six (6) times, which means that majority of the interviewed participants have the same experience in terms of the job positions of MENROs. This has a great effect on their work performance.

The Summary Table of Findings, **Figure 5**, it appears that the second highest frequency is “no official organized department & no concrete environment workforce” which appeared in four (4) frequencies. This attests to the real condition of offices at the LGU level. It is then right to affirm that the actual work designations of MENROs affect the quality of performances due to the imbalance of effort exerted as compared to the salary being received, and their job designations as appointed.

3.4. Environment Services Backlog

The fourth theme that surfaces in the thematic record is the environment services

Themes	Frequency	Assessment, Meaning and Findings based on Coded Interview	Evidence (Refer to Interview Transcript)
Job Appointments		Assessment: Work Structure is Insubstantial due to Designated Appointments of MENROs and EMS only	
		Meaning: Absence of a legal basis i.e. RA or resolution either in the National Level, Provincial and Municipal levels creating the official positions of MENROs & EMS.	
	6	MENRO is just a Designated Officer and Employees are job orders	Q1-P1, Q1-P2, Q1-F2-P2, Q1-P5, Q2-P4, Q3-P5, Q1-P6
	3	Multi-Function Work and Overlapping Functions	Q1-P1, Q1-P2, Q1-F1-P3
	3	Designation of MENRO affects Quality Performance	Q1-P1, Q2-P10, Q4-P2
	1	Ideal Number of Workforce is 5 (MENRO, EMS, Forester, 2 AA)	Q1-F2-P1
	4	No Official Organized Department & No Concrete Environment Workforce	Q1-F2-P2, Q1-P2, Q1-P3, Q1-F1-P3
	1	No Permanent & Plantilla positioned MENRO	Q1-F1-P3
	1	Many Accomplishments despite Designated Position of MENRO	Q1-P6
	2	Permanent Position of MENRO under Mayor's Office	Q2-P3, Q2-P4
1	Limited Manpower and Hiring	Q2-P10	
1	Devolution of DENR will pave the way for MENROs' position	Q4-P4	

Legend on Evidence: Q= Question, F = Follow-Up Question, P = Participant

Figure 5. Job appointments & codes.

backlog. This is the result of the themes of *weak enforcement and governance*, *lack of budget*, and the *absence of an official workforce*. It appears that the following evidence; 1) The Need for the Purchase of Seedlings, Transport, Snacks, and Other Logistics, 2) The Need to Focus on Protection and Conservation, 3) The Need for Implementation of Fines, 4) The Need for Massive Tree Planting in Public and Private Idle Lands, and 5) The Need for Continuous Tree Planting Program, justify the assessment. Since the budget is not enough for seedlings, transport, and other logistics, such assessment as *environment services backlog* is tantamount to admitting the non-responsiveness to INDC and SDG 13 which is entirely insufficient support of the environmental project in terms of implementing the PGIS Code. Likewise, the need for massive tree planting in public and private idle lands does signify the overall status in terms of bringing into reality a substantial reforestation program of the province.

The above foregoing can be attested by the data in the Summary Table of Findings, **Figure 6**. It is clear that the attention is to capture an essential type of environmental service with the need for the stipulation of more advanced provisions of the Code minimizing or eradicating *environmental services backlogs*. The situation is if there is limited implementation, then, a *services backlog* occurs.

3.5. Climate Risk

The fifth *theme* that reflexively covers the significant details of the coded transcript is *climate risk*. The assessment is obvious as a flip-up in an unmanaged carbon release emission of Ilocos Sur at 38.5 ktCO₂e/year. The theme resembles the expected impact of the rest of the themes, namely; 1) *weak enforcement and*

Themes	Frequency	Assessment, Meaning and Findings based on Coded Interview	Evidence (Refer to Interview Transcript)
Environment Services		Assessment: Environment Services Backlog	
		Meaning: It is the offshoot of weak enforcement and governance, lack of budget, and the absence of an official and legitimate workforce (MENROs) in the municipal level.	
	2	Need for Purchase of Seedlings, Transport, Snacks, and Other Logistics	Q1-P1, Q1-P4
	2	Need to Focus in Protection and Conservation	Q3-P1, Q3-P6
	1	Need for Implementation of Fines	Q2-P1
	5	Need of Planting Pre-requisite to Secure Business Permit	Q3-P1, Q3-P2, Q3-P3 Q3-P4, Q3-P5
	3	Need of Planting Requirement for Transportation Licenses	Q3-P1, Q3-P2, Q3-P3
	3	Need of Planting Requirement for Marriage Licenses	Q3-P1, Q3-P2, Q3-P3 Q3-P5
	3	Need of Planting Requirement for Employment Clearance	Q3-P1, Q3-P2, Q3-P3
	4	Need of Planting Requirement for 4Ps Beneficiaries	Q3-P1, Q3-P2, Q3-P3, Q3-P4
	2	Need of Planting Requirement for Graduating Students	Q3-P1, Q3-P3
	2	Impose Planting as an additional Penalty for Environment Law Violators	Q3-P1, Q3-P5 Q3-P2
	1	Need for Massive Tree Planting in Public and Private Idle Lands	Q3-P4, Q1-F1-P7
	1	Continuous Tree Planting Program Focus on the well-being of people in caring for the Environment.	Q3-P6

Legend on Evidence: Q= Question, F = Follow-Up Question, P = Participant

Figure 6. Environment services backlog & codes.

governance, 2) insufficient budget, 3) no official appointments of MENROs, and 4) environment services backlog. This is shown in **Figure 2**, the Thematic Map. It is evident that *climate risks* occur due to the partial implementation of the Code and the lack of essential provisions provided in the recorded transcripts. Climate risks can be controlled if there is an amendment to the Code and the assurance of its full implementation coupled with sufficient budget. The direct inference of the above conditions is the acceptance that no action will mean greater environmental risk which spells out the passivity of the local people in doing concrete actions to fight the *anthropogenic* causes of climate change.

In **Figure 7**, the Summary Table of Findings attests to the credibility of the theme. To mention one of the findings is the adoption of a circular economy & REDD+ to achieve ecological balance and eliminate CO₂. But it takes strong political will to implement. It is realistic that the adaptation of these strategists takes strong determination. It is indeed sensible to uphold that risks occur when we do not really care at all.

4. Discussions

As clarified in the results and findings, the themes outrightly signify that PGIS must come up with *effective* and *efficient* measures to resolve the negative elements in the implementation of the Code, and the way to step up is the dependence on *political will* and appropriate *legal* modalities. The findings on circular economy and REDD+ which are under the sphere of *weak enforcement and governance* are eye-openers for the fulfillment of INDC and SDG 13 - Climate

Themes	Frequency	Assessment, Meaning, and Findings based on Coded Interview	Evidence (Refer to Interview Transcript)
Climate Risks		Assessment: Unmanaged Carbon Release Emission of Ilocos Sur at 38.5ktCO ₂ e/year	
		Meaning: The expected impact of the status of implementation of the environment code with the current assessment of weak enforcement, governance, insufficient budget, no official appointment of MENROs & environment services backlog.	
	1	Negative Attention in the Increase of Carbon Storage.	Q4-P1
	1	Partial Implementation of the Code means non-formulation of future environmental programs & policies.	Q4-P2
	1	Uncontrolled Climate Change Impact due to no full-time Monitoring.	Q4-P2
	1	None Action means Greater Risk in the Lives of Local Residents.	Q4-P3
	1	Clear effects of Climate Change on Agricultural Productivity.	Q4-P5
	2	Non-amendment of the Code, Efficiency is Sacrificed and Worsens Climate Condition.	Q4-P6, Q4-P9
	2	Climate Change is anthropologically caused and continues to worsen.	Q4-P7, Q4-P6
	1	Respecting nature is respecting the self and respecting God.	Q4-P7
	3	Circular economy & REDD+ achieve ecological balance and eliminate CO ₂ and takes strong political willpower to implement.	Q4-F1-P7, Q4-F1-P8, Q4-P7
	1	Code is a bridge to make an idea applied in a practical way of healing ourselves with the world.	Q4-F2-P7
	1	Risks occur when we do not care at all.	Q4-F2-P7
1	Risk lies in land use planning and undesirable land conversion.	Q4-P8	
1	Static PGIS Environment code renders low productivity, poverty, and unsustainable local resources.	Q4-P10	

Legend on Evidence: Q= Question, F = Follow-Up Question, P = Participant

Figure 7. Climate risks & codes.

Action. Circular economy transforms the elements of a *take-make-waste* system into managing resources based on the three principles of; 1) eliminate waste and pollution, 2) circulate products and materials, and 3) regenerate nature. The system is a solution that tackles global challenges paving the way from a linear economy to a circular economy. Likewise, the REDD+ tackles the reduction of emitted carbon by preventing deforestation and forest degradation. This is the challenge for the province to implement that will affirm their commitment to fulfill their respective obligation to care for nature.

In the *economics* aspect, carried out by the themes of *insufficient budget* and *designated job appointments*, it is found that budget is really a big issue and the strongest factor that affected the implementation of the Code. Lack of budget affects the number and the quality of environmental projects including the appointments of MENROs which is not permanent and no official item. Some of the assessments that appeared are; 1) Without Hazard Pay or Medical Benefits and no budget for salaries, 2) Funds are only available when needed, 3) Not enough Budget for Logistics, Transportation, and Seedling Production, 4) No Fund Support from PGIS, 5) No Additional Budget from the National Government, 6) Limited Seedlings due to Limited Budget, 7) Office of MENRO is being shared from other Departments due to Lack of Funds, etc. The aforementioned data coherently show the inability of LGUs to collectively implement the provisions of the Code and thereby had very low economic output.

In the *environmental* aspect, the issue exists in the flaws permeated by the themes. The challenge is how to eliminate these environmental factors. *Climate risk* is a product of the interplay of themes that resemble a *triangular effect* categorically jeopardizing the issue of the environmental problem of climate change. The case at hand pre-defines the *climate risk* situation and the level of risk is continuously elevating to a susceptible degree as evidenced by the amount of emitted carbon in the atmosphere. The themes thus symbolize the *political, social, and legal* aspects that essentially figure out a *domino effect* that carries a *reflexive identity* calling out for the amendment of the Code. If the local government remains passive in meeting these emerging situations, PGIS will remain inactive in the realization of INDC, specifically in the reduction of harmful greenhouse gases by 30 percent by the year 2040. It is thus inevitable to understand and come up with relevant and timely policies to cater to climate strategies. Indeed, there is a need to improve and develop the Environment Code 16-07A in line with the current strategist to mitigate the causes of climate change precisely aligned to the attainment of the INDC and realization of SDG 13 - Climate Action. If PGIS remains passive, then, it is difficult for the nation to achieve its INDC.

Climate risk is labeled as the ultimate and expected impact of both the status of lack of relevant provisions and the implementation of the environment Code with the current assessment of *weak enforcement and governance*, insufficient budget, no official appointment of MENROs, and environment services backlog. The theme as a product of PESTEL analysis holds authentic grounds to post the weaknesses of the Code. Some of the specific assessments are; 1) Negative Attention to the Increase of Carbon Release, 2) Uncontrolled Climate Change Impact due to no Full-time Monitoring, 3) No Embrace of the Circular Economy taking Strong Political Will Power to Implement, 4) Clear Effects of Climate Change in Agricultural Production, 5) Non-amendment of the Code, Efficiency is Sacrificed and Worsens Climate Condition, 6) Risk Depends on Land Use Planning and Undesirable Land Conversion, 7) Static PGIS Environment Code renders Low Productivity, Poverty and Unsustainable Local Resources. These findings undoubtedly affirm the realities taking place in the province.

5. Conclusion and Management Implications

As presented in the discussions and in the results and findings of the study, it is clear that there is indeed a need to improve and develop the Environment Code 16-07A in line with the current strategist to mitigate the causes of climate change precisely aligned to the attainment of the INDC and realization of SDG 13 - Climate Action. The study succeeded in providing evidence in the qualitative PESTEL analysis and was further presented in the discussions.

The themes precisely point out to include vital concerns specified in the following Philippine laws; 1) RA 9729 The Climate Change Act of 2009, 2) RA 8749 Philippine Clean Air Act of 1999, 3) RA 9275 The Clean Water Act 2004, 4) RA

9003 The Ecological Solid Waste Management Act 2000, and 5) RA 6969 The Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990". The medium by which change may be introduced in the system is to infuse these vital policies into the Code that will give way to the weaknesses of the PGIS to be resolved. It is likewise confirmed that an effective implementation process is equally eminent in the attainment of a sustainable environment. It is for these reasons that a doable program for the local resources to mitigate the causes of climate change is achieved in the aspect where the province can embody a positive climate action beneficial to the local citizens and to humanity.

The immediate management implications to PGIS are inherently implied in the weaknesses of the Code, which are seen in the lack of necessary provisions that call for immediate action and the improvement of the implementation process. This is to fill in and stipulate the needed requirements for PGIS to take part in the fulfillment of the INDC and SDG 13 - Climate Action. The review of the weaknesses of implementation connotes a stronger and more stable foothold like sufficient funding and sincerity in fulfilling the specific provisions. Correspondingly, the respective concerns for the province to review for policy inclusions are the following; 1) Development of a Comprehensive Ecology and Solid Waste Management Applying Circular Economy, 2) Study on the Availability of Sufficient Funds for Environmental Projects, 3) Study on the Reasonable Salaries for MENROs, 4) Study on the Allotment of Support from PGIS to LGUs, 5) Study on the Increase of Budget in Seedling Production, 6) Study on Sufficiency of Budget for Waste Collection, 7) Study on the Permanent Offices for MENROs, 8) Study on the Organizational Structure of MENROs, 9) Policy Inclusion on Climate Change Protection of Farmers Agricultural Productivity, and 10) Policy Inclusion on Land Use Planning and Land Use Conversion.

Lastly, the primordial recommendation is to research and examine the remaining Articles of the Code to gain a holistic understanding of the needed inclusions prior to appropriate actions by PGIS legislative officials. This will provide an all-inclusive scrutiny of the areas of weaknesses, strengths, opportunities, and threats of the Code, and unleashes the best approach to fighting climate change.

Acknowledgments

The author would like to thank Dr. Aldrin S. Jaramilla of UNP for spontaneously accepting the author's request to be the dissertation adviser and provided valuable contributions to the study. Gratitude also goes to the interview participants and the government officials of the Provincial Government of Ilocos Sur especially to Governor Jerry Singson for their outstanding support. Esteemed gratitude also to the financial support extended by LCHPI CEO/President Ma. Elvira Pola Tabladillo, Patrocinia U. Pola, and Rosemarie Madarang because of their generosity, this work was made possible.

Conflicts of Interest

The author declares no conflicts of interest.

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