Management and Public Investment in the Peruvian Army in the Face of Disasters caused by the El Niño Phenomenon in Northern Peru

Balcázar Zárate, Williams Roger[1], Salas Saavedra de Laura, Yulsi[2], Carlín-Marres, Luis Alberto[3]

Abstract

The Peruvian military has been instrumental in responding to the disasters caused by the El Niño phenomenon in northern Peru. The government's public investment in disaster preparedness and response has also been critical in ensuring that the military is well-equipped and trained to handle such emergencies. Effective management strategies have further enhanced the army's ability to respond promptly and effectively to disasters. The government's public investment in disaster preparedness and response has also been critical in ensuring that the military is well-equipped and trained to handle such emergencies. The population was made up of 100 workers from different social fields, such as meteorological engineers, construction workers and residents of the affected areas, having a sample of 40 participants in which it was chosen for the convenience of the author. After this process, the reliability of the instrument was carried out through a pilot test, the data obtained were analyzed using Cronbach's alpha statistical test, resulting in the value of 0.91 indicating that the instrument is on the scale of excellent reliability. Statistics were produced to help verify the research.

Keywords: *Disasters, Peruvian army, phenomenon, emergencies.*

1. Introduction

Overview of the El Niño phenomenon in northern Peru

The El Niño phenomenon is a weather pattern that occurs every few years when warm water from the western Pacific Ocean moves eastward toward the coast of South America (Etayo-Cadavid et al., 2019). This change in ocean temperatures can cause a variety of effects, including changes in rainfall patterns, ocean currents, and atmospheric pressure (Gonzalez, 2019). These changes can have significant impacts on the environment, the economy, and public health. In northern Peru, El Niño has historically been associated with severe flooding, landslides, and other natural disasters (Aguilar & Macazana, 2020). These events have caused significant damage to infrastructure, homes, and agricultural land, resulting in economic losses and displacement of communities.

The historic impact of El Niño on northern Peru has been significant, with some of the worst disasters occurring in the 1980s and 1990s (Aldana et al., 2020). In 1983, for

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[1] Universidad César Vallejo, Lima, Perú.
[2] Universidad César Vallejo, Lima, Perú.
[3] Universidad César Vallejo, Lima, Perú.

example, the region experienced a devastating El Niño event that led to widespread flooding, landslides, and mudflows. This disaster caused more than 300 deaths and left thousands homeless (Romio, 2021). More recently, in 2017, the region experienced another severe El Niño event that caused significant damage to infrastructure and farmland (Suzuki, 2023). The Peruvian government allocated more than S/3,500 million to reduce vulnerability and respond to natural disasters (Palter & Caraway, 2023). These disasters highlight the need for effective disaster management and investment in the region.

In response to the ongoing threat of El Niño and other extreme weather events, the Peruvian government has taken steps to improve disaster management and preparedness (Chadee et al., 2023). The National Weather and Hydrology Service has developed a variety of tools and resources to help communities and government agencies better understand and respond to the impacts of El Niño (Moro and Legale, 2023). These efforts include early warning systems, emergency response plans, and investments in infrastructure and disaster resilience. By investing in disaster management and preparedness, the Peruvian government can help mitigate the impacts of future El Niño events and protect the health and well-being of communities in northern Peru.

Understanding the El Niño phenomenon and its impact on Northern Peru

El Niño is a climatic phenomenon that occurs every few years in the tropical fringe of the Pacific Ocean (Ripoll-Zarraga, 2023). It is characterized by a warm water current that flows southward along the coasts of northern Peru, Ecuador, and southern Colombia (Quaglio et al., 2023). This phenomenon can lead to extreme weather events such as floods, droughts, and wildfires in various parts of the world (Alfaro-Ponce et al., 2023). The coastal El Niño, which affects northern Peru, occurs when surface water temperatures rise more than 0.4 degrees in a region known as El Niño (Cuevas & Bernhardt, 2023). The impact of El Niño in northern Peru has been significant, with devastating floods and landslides affecting the region in recent years (Amedanou, 2023). Therefore, it is crucial to understand the impact of the phenomenon and prepare for its possible occurrence.

Preparedness and response are critical to addressing the impact of the El Niño phenomenon in northern Peru (Assab, 2023). Disaster prevention specialists have emphasized the need to be prepared for the potential impact of El Niño (Boubakri et al., 2023). The Peruvian Army has played a crucial role in disaster risk management, supporting competent authorities in disaster preparedness and response (Zhao & Li, 2023). In recent years, the Peruvian Army has responded to the impact of the El Niño phenomenon, providing relief and assistance to affected communities (Holzer, 2023). The importance of preparedness and response cannot be underestimated, as they can help reduce the impact of the phenomenon on individuals and communities.

The impact of the El Niño phenomenon in northern Peru highlights the need for preparedness and response to natural disasters (Lee et al., 2023). The Peruvian Army has played an important role in responding to the impact of the phenomenon, providing relief and assistance to affected communities. Understanding the impact of the phenomenon and preparing for its possible occurrence is crucial to reducing its impact on individuals and communities. By working together and being prepared, communities and authorities can help mitigate the impact of natural disasters such as El Niño.

Public management in response to El Niño

In recent years, Peru has faced numerous disasters caused by the El Niño phenomenon, resulting in significant loss of life and damage to infrastructure and property (Ma et al., 2023). In response to these disasters, the government has implemented several strategies to improve disaster risk management and public investment in infrastructure (Arias & Jimber, 2023). However, the lack of capacity to execute government resources has been identified as a structural problem, highlighting the need for effective public management strategies (Kumar & Totla, 2023). The importance of such strategies in disaster response cannot be

underestimated, as they can help mitigate the impact of disasters and facilitate a more efficient and effective response.

Implementing public management strategies is crucial in disaster response, as it can help ensure that resources are allocated effectively and efficiently (Saheb & Saheb, 2023). This includes strategies related to financial management, such as budgeting and resource allocation, as well as institutional and policy-related strategies (Herrera & Proff, 2023). Effective governance can also help facilitate coordination and communication among different stakeholders involved in disaster response, including government agencies, non-governmental organizations, and community groups.

The importance of effective governance in disaster response is particularly evident in the case of the El Niño phenomenon in Peru (Gunny & Pollard, 2023). This weather event has the potential to cause significant damage and loss of life, so it is essential that institutional structures and legislation for disaster risk management focus on prevention and response (Hopland et al., 2023). By implementing effective public management strategies, Peru can better prepare for and respond to disasters caused by the El Niño phenomenon, ultimately reducing the impact on communities and infrastructure (Almajali et al., 2023; Etayo-Cadavid et al., 2019).

The Peruvian Army's Role in Disaster Response

The Peruvian Army has extensive experience in disaster response, having been involved in various emergencies and natural disasters in the past (Wu et al., 2023). The coastal phenomenon of El Niño that occurred in 2017, which affected different regions of the country, including the northern and southern coastal areas, was no exception (Ennis, 2023). The Army's involvement in disaster response includes various branches, such as military engineering and health, among others (Gillett & Tennent, 2023). The Peruvian Army's experience and expertise in disaster response have made it a crucial player in mitigating the impact of natural disasters on civilian populations.

The Peruvian Army is well prepared and trained to respond to disasters caused by the El Niño phenomenon (Pan et al., 2023). The Army has developed strategies and protocols to respond to emergencies, including mobilizing troops and resources to affected areas. These strategies are regularly updated to ensure that the Army's response remains effective and efficient. In addition, the Army conducts regular training exercises to ensure that its personnel are equipped with the skills and knowledge necessary to respond to disasters effectively.

The Peruvian Army collaborates with other agencies and organizations in the response to disasters caused by the El Niño phenomenon (Kuikel et al., 2023). These collaborative efforts involve sharing resources and expertise to ensure that the response is coordinated and effective. The Army works closely with government agencies, such as Peru's National Meteorology and Hydrology Service (SENAMHI), to monitor weather patterns and prepare for potential disasters (Leite et al., 2023). In addition, the Army collaborates with non-governmental organizations and other international agencies to provide aid and support to affected communities (Almajali et al., 2023). These collaborative efforts are crucial to ensuring that the Army's response is comprehensive and effective in mitigating the impact of disasters caused by the El Niño phenomenon (Wu et al., 2023).

The Peruvian Army's Strategies for Disaster Response in Northern Peru

One of the key strategies employed by the Peruvian Army in response to the disasters caused by the El Niño phenomenon in northern Peru is coordination and communication with local communities (Ennis, 2023). The Army recognizes the importance of working closely with affected communities to understand their needs and priorities, as well as to ensure that relief efforts are effective and efficient. This involves establishing open lines of communication, conducting needs assessments, and collaborating with local leaders and organizations to identify the most pressing issues and develop appropriate responses

(Gillett & Tennent, 2023). By prioritizing community engagement, the Army can ensure that its efforts are well-targeted and responsive to the needs of those most affected by the disaster.

Another critical aspect of the Peruvian Army's disaster response strategies in northern Peru is evacuation and emergency response plans (Pan et al., 2023). These plans are designed to ensure that the Army can respond quickly and effectively to disasters, including floods, landslides, and other related events. This involves establishing clear protocols for emergency response, including mobilizing resources and personnel, coordinating with other agencies and organizations, and providing timely and accurate information to the public. The Army is also working to establish evacuation plans that can help ensure the safety of those in the affected areas, including identifying safe routes and places to shelter.

Investment in the Peruvian Army for Disaster Response

The Peruvian Army plays a vital role in relief efforts in the face of natural disasters such as the El Niño phenomenon affecting northern Peru (Kuikel et al., 2023). Due to its extensive resources, infrastructure, and trained personnel, the military is equipped to respond to emergencies quickly and efficiently (Leite et al., 2023). The military's disaster relief efforts involve providing aid and support to affected communities, including search and rescue operations, medical assistance, and the distribution of food, water, and other essential supplies (Kolomiyets & Fedorov, 2023). In times of crisis, the military's involvement is crucial to mitigate the effects of natural disasters and save lives.

The Peruvian Army's disaster response strategies in northern Peru also include post-disaster rehabilitation and reconstruction efforts (Pu et al., 2022). This involves working to repair and rebuild damaged infrastructure, including roads, bridges, and buildings, as well as providing support to affected communities to help them recover and rebuild. The Army works closely with other agencies and organizations to coordinate these efforts, including providing assistance for housing, food, and other basic needs. By focusing on rehabilitation and reconstruction, the Army can help ensure that affected communities can recover from the disaster and rebuild their lives in a sustainable and resilient manner.

The Peruvian Army's investment in infrastructure and resources is essential for effective disaster relief efforts (Chebukhanova & Zimakov, 2022). The national government and regional authorities should prioritize the allocation of funds to the military's disaster preparedness and response capabilities to ensure they have the necessary equipment, supplies, and training to respond to emergencies effectively. Investment in the military's infrastructure may also include the construction of emergency shelters, hospitals, and other facilities that can be used during disaster relief efforts (Zheng et al., 2022). By investing in the military's resources and infrastructure, the government can improve its ability to respond to disasters and better protect its citizens.

Collaborative efforts between law enforcement and the Peruvian military are critical in disaster relief efforts (Khallaf et al., 2022). The government should work closely with the military to develop comprehensive disaster management plans that take into account the military's capabilities and resources. This collaboration may include joint training exercises, the sharing of resources and information, and the development of communication protocols. By working together, government and the military can ensure that disaster relief efforts are efficient, effective and timely (Buranaaudsawakul et al., 2022). This collaboration can also help build trust and strengthen relationships between the government and its citizens.

The El Niño phenomenon has had a significant impact on northern Peru, causing numerous disasters that have required effective disaster response strategies. The introduction of public management has played a crucial role in the response to these disasters, and the government implemented several strategies to mitigate the effects of El Niño. Investment in the Peruvian military has also been vital in disaster relief efforts, with the military playing a critical role in providing aid and support to affected communities. Collaborative efforts

between government and the military have been instrumental in ensuring an effective response to El Niño disasters. Overall, the introduction of governance and investment in the Peruvian Army have been crucial in mitigating the effects of El Niño and ensuring the safety and well-being of affected communities. The Peruvian Army plays a vital role in disaster response, with its expertise, preparedness, and collaborative efforts with other agencies and organizations. The Army's strategies for disaster response in northern Peru include coordination and communication with local communities, evacuation and emergency response plans, and post-disaster rehabilitation and reconstruction efforts. With these strategies in place, the Peruvian Army is well-equipped to respond to disasters caused by the El Niño phenomenon and minimize their impact on affected communities.

2. Material and method

Data on the long-term viability of investment projects by the Peruvian Army in the face of the El Niño phenomenon have been extracted from the statistical models of the study. The findings have evaluated the efficiency of investment project efforts and have found critical factors that contribute to the prevention of natural disasters and have evaluated the productivity of capital expenditures by Peru's government. The suggestions presented can serve as a guide for future investment and disaster prevention efforts. The importance of a quantitative model for disaster response cannot be underestimated. By having a standardized approach to disaster response, the military can ensure that resources are allocated efficiently and that aid is quickly delivered to those who need it most (Gods, 2023). The quantitative model developed by the Peruvian Army includes several components, such as:

−   Pre-positioning of supplies and equipment in strategic locations.

−   Clear protocols for communication and coordination between different agencies and organizations involved in disaster response.

−   A system for assessing damage caused by natural disasters and prioritizing aid accordingly
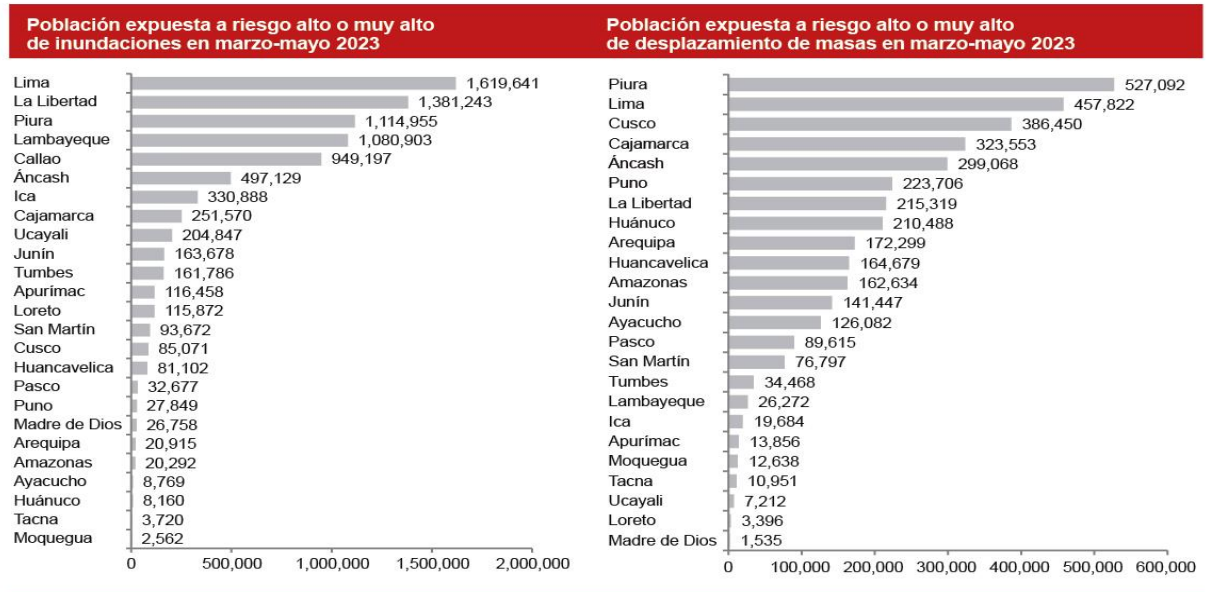
With these components, the military can respond quickly and effectively to natural disasters caused by El Niño, reducing the damage done to people and infrastructure (Peña et al., 2022) . The quantitative model for disaster response has proven effective in responding to natural disasters caused by El Niño (Gods, 2023). The model has also been shown to contribute to national development by minimizing the negative impacts of natural disasters and facilitating faster recovery (Mazzeo, 2023). Overall, the military's approach to disaster response serves as an excellent example of how a quantitative model can be used to improve disaster response efforts and protect vulnerable populations.

The Peruvian military's quantitative model for responding to natural disasters caused by El Niño is a decisive tool to mitigate the impact of this phenomenon. Components of the model, such as pre-positioning supplies and equipment, coordinating with local authorities, and conducting regular simulations, have proven effective in responding to disasters. The importance of having a quantitative model cannot be underestimated, as it allows for a more organized and efficient response to disasters. With the increasing frequency and intensity of natural disasters, it is imperative that other countries also develop and implement similar models to ensure the safety and well-being of their citizens.
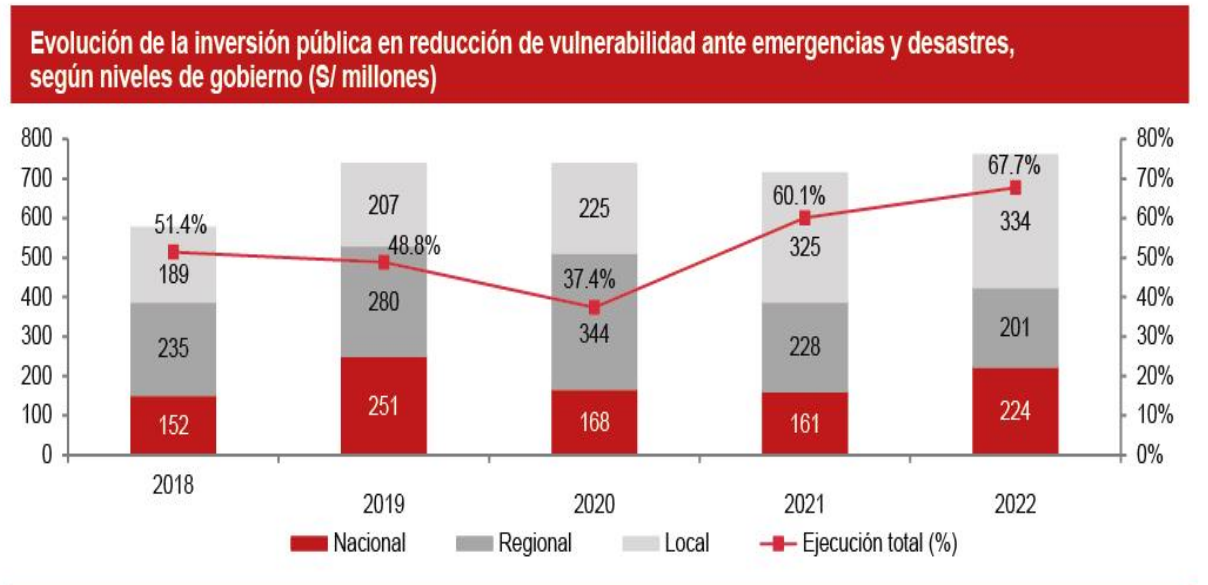
3. Results

El Niño is a climate phenomenon occurring in the Pacific Ocean, characterized by warming surface waters in the eastern tropical Pacific, causing changes in atmospheric pressure, wind patterns, and precipitation around the world ("The El Niño Phenomenon and Its

Impact on Peru's Economy," 2023). This phenomenon has a significant impact in Peru, where it is known as "El Niño Costero" due to its effects on the country's coastal regions. Warming ocean waters can lead to heavy rainfall, flooding, landslides, and other natural disasters, causing significant damage to infrastructure, agriculture, and the economy as a whole (Diaz et al., 1998).

Población expuesta a riesgo alto o muy alto de inundaciones en marzo-mayo 2023

Región	Población
Lima	1,619,641
La Libertad	1,381,243
Piura	1,114,955
Lambayeque	1,080,903
Callao	949,197
Áncash	497,129
Ica	330,888
Cajamarca	251,570
Ucayali	204,847
Junín	163,678
Tumbes	161,786
Apurímac	116,458
Loreto	115,872
San Martín	93,672
Cusco	85,071
Huancavelica	81,102
Pasco	32,677
Puno	27,849
Madre de Dios	26,758
Arequipa	20,915
Amazonas	20,292
Ayacucho	8,769
Huánuco	8,160
Tacna	3,720
Moquegua	2,562

Población expuesta a riesgo alto o muy alto de desplazamiento de masas en marzo-mayo 2023

Región	Población
Piura	527,092
Lima	457,822
Cusco	386,450
Cajamarca	323,553
Áncash	299,068
Puno	223,706
La Libertad	215,319
Huánuco	210,488
Arequipa	172,299
Huancavelica	164,679
Amazonas	162,634
Junín	141,447
Ayacucho	126,082
Pasco	89,615
San Martín	76,797
Tumbes	34,468
Lambayeque	26,272
Ica	19,684
Apurímac	13,856
Moquegua	12,638
Tacna	10,951
Ucayali	7,212
Loreto	3,396
Madre de Dios	1,535

Fuente: Cenepred. Elaboración: ComexPerú.

Historically, El Niño has had a significant impact on Peru, with some of the most severe events occurring in 1982-1983 and 1997-1998 (Hurtado & Doria, 2020). These events led to widespread flooding, landslides and other natural disasters, resulting in significant damage and loss of life. In response to these events, the Peruvian government has implemented several measures to mitigate the impact of El Niño, including early warning systems, disaster preparedness plans, and infrastructure improvements. These efforts have helped reduce the impact of El Niño on the country, but there is still much work to be done to ensure the safety and well-being of the population.

Evolución de la inversión pública en reducción de vulnerabilidad ante emergencias y desastres, según niveles de gobierno (S/ millones)

	2018	2019	2020	2021	2022
Local	189	207	225	325	334
Regional	235	280	344	228	201
Nacional	152	251	168	161	224
Ejecución total (%)	51.4%	48.8%	37.4%	60.1%	67.7%

Fuente: MEF. Elaboración: ComexPerú.

The Peruvian military takes a proactive approach to addressing the problem of child soldiers by implementing prevention and education efforts (Salirrosas et al., 2022). By educating vulnerable communities about the dangers of child recruitment and the importance of protecting children's rights, the military aims to prevent children from being forced into armed conflict. In addition, the military works with local organizations and government agencies to identify and address the root causes of child recruitment, such as poverty, lack of education, and social instability. These prevention and education efforts are crucial to ensuring that children are protected from the harms of armed conflict and have the opportunity to grow up in a safe and nurturing environment.

In addition to prevention and education, the Peruvian military also implements rehabilitation and reintegration programs for former child soldiers (Villanueva, 2023). These programs aim to help children recover from the physical and psychological trauma of armed conflict and reintegrate into their communities. The military works with local organizations and government agencies to provide children with access to education, health care, and vocational training. These programs also prioritize the specific needs and experiences of girl soldiers, who often face unique challenges in the aftermath of armed conflict. By providing comprehensive rehabilitation and reintegration support, the military helps former child soldiers rebuild their lives and move forward with hope and resilience.

Peruvian Military Recognizes Addressing Child Soldiers Requires a Collaborative, Coordinated Effort (Noreña-Chávez et al., 2022). As such, the military works closely with international organizations and other countries to share best practices and coordinate efforts to protect children's rights. For example, the United Nations in Peru has been implementing emergency projects and actions in the most affected regions of the country, including supporting child protection and reintegration programs (Garcia, 2022). By collaborating with other actors in the global community, the Peruvian military can leverage resources and expertise to better protect children from the harms of armed conflict (León, 2022).

The Peruvian military has taken a proactive approach to addressing the phenomenon of child soldiers. Through prevention and education efforts, rehabilitation and reintegration programmes, and collaboration with international organizations and other countries, they have made significant progress in protecting children from recruitment into armed groups. However, there is still a lot of work to be done to completely eradicate this problem. It is important that the Peruvian military continue its efforts and that other countries follow suit in protecting the rights and well-being of children affected by armed conflict.

ACCIONES FRENTE AL FENÓMENO EL NIÑO

Gobierno prioriza trabajos de descolmatación y limpieza en ríos y quebradas.

TUMBES
- 59 intervenciones
- Más de S/ 67.3 millones
- Limpieza y descolmatación
- Reducción de riesgos en los sectores de la "Y" Palmar, Malval, Corrales, Tumbes y Puente Franco

PIURA
- 95 intervenciones
- Más de S/ 182.9 millones
- Limpieza y descolmatación
- Salida al mar del río Piura para facilitar su desfogue

LAMBAYEQUE
- 96 intervenciones
- Más de S/ 192.8 millones
- Limpieza y descolmatación
- En el río La Leche se atenderán zonas críticas en el distrito de Íllimo y sector del Bosque Pomac; del río Chancay y en el distrito de Reque

LA LIBERTAD
- 94 intervenciones
- Más de S/ 105.1 millones
- Limpieza y descolmatación
- Se intervendrá el sector Sausal del río Chicama

ÁNCASH
- 94 intervenciones
- Más de S/ 79.2 millones
- Limpieza y descolmatación
- Atención a puntos críticos del río Lacramarca, en el distrito de Chimbote, en los sectores de Tangay, Santa Clemencia y la Curva

LIMA
- 86 intervenciones
- Más de S/ 101.1 millones
- Limpieza y descolmatación
- Se priorizará la atención de quebradas de Chosica y puntos críticos de sectores del río Rímac entre Ate y Chaclacayo

ICA
- 84 intervenciones
- Más de S/ 69.8 millones
- Limpieza y descolmatación
- Se atenderá la quebrada Cansas en el sector Chanchajalla del distrito de La Tinguiña

Ejecutados por el Ministerio de Desarrollo Agrario y Riego; y la Autoridad para Reconstrucción con Cambios.

Fuente: PCM

The Use of Scientific Methodology in Managing the Impact of El Niño on the Peruvian Army

The Peruvian Army has implemented a scientific methodology in managing the impact of El Niño, a recurrent weather phenomenon that causes significant damage to the country's infrastructure and economy (Solis et al., 2022). Scientific methodology involves a systematic, evidence-based approach to decision-making, using data and analysis to inform strategies and actions. This approach has been applied in various aspects of disaster management, including risk assessment, early warning systems and emergency response planning (Ugarte & Loaiza, 2023). By incorporating scientific methodology into its disaster management practices, the Peruvian Army has been able to increase its preparedness and response capabilities, ultimately reducing the impact of El Niño on the country. The use of scientific methodology in managing the impact of El Niño has resulted in numerous benefits and positive results for the Peruvian Army. By conducting comprehensive risk assessments and using early warning systems, the Army has been able to anticipate the impact of the phenomenon and take proactive steps to mitigate its effects (García et al., 2021). This has included implementing emergency response plans and deploying resources and personnel to affected areas. As a result, the Army has been able to minimize loss of life and damage to infrastructure, as well as maintain continuity of operations during and after the disaster.

Through the experience of managing the impact of El Niño, the Peruvian Army has gained valuable lessons and knowledge that can inform future disaster management practices. A key lesson is the importance of collaboration and coordination among diverse stakeholders, including government agencies, non-governmental organizations, and community groups (Medina, 2021). In addition, the Army has recognized the need for ongoing monitoring and evaluation of its disaster management practices to identify areas for improvement and adaptation. Going forward, the Army has recommended the continued use of scientific methodology in disaster management, as well as the incorporation of new technologies and innovations to improve its capabilities and effectiveness. The El Niño phenomenon has had a significant impact on Peru, causing disasters that have affected the country's economy and population. However, the implementation of scientific methodology in disaster management and public investment has proven to be effective in mitigating the impact of these disasters. The Peruvian military's use of scientific methodology to manage the impact of El Niño is an excellent example of how effective management and public investment can lead to positive outcomes. Using scientific methodology, the Peruvian military was able to minimize the impact of El Niño on the country and its people. It is recommended that other countries facing similar disasters adopt a scientific methodology in their management and public investment strategies to ensure effective disaster management and long-term sustainability.

4. Discussion

The El Niño phenomenon is a natural weather pattern that occurs every few years, resulting in warmer-than-average ocean temperatures in the Pacific Ocean (Morón & Limas, 2023). This warming can have significant impacts on weather patterns around the world, including Peru, where El Niño has been associated with natural disasters such as torrential rains, landslides, and flooding (Carhuanayocc et al., 2022). These disasters can have significant negative impacts on public health, including the spread of diseases such as cholera and bubonic plague (León, 2022). Understanding the El Niño phenomenon and its potential impacts is crucial for disaster preparedness and response efforts in Peru.

Peru has experienced several major disasters caused by El Niño in recent years. In 2017, heavy rains and flooding caused by El Niño caused at least 75 deaths and affected more than 700,000 people (Garcia, 2022). In 2019, coastal El Niño caused flooding that affected more than 400,000 people (Noreña-Chávez et al., 2022). These disasters highlight the

importance of investing in disaster preparedness and response efforts in Peru. By improving infrastructure, communication systems, and emergency response plans, the country can better mitigate the impacts of future disasters and protect public health.

Investing in disaster preparedness and response efforts in Peru is crucial to protect public health and minimize the negative impacts of El Niño-related disasters. This investment can take many forms, including: - Building and maintaining effective communication systems to rapidly disseminate information and warnings to the public. - Develop and implement effective emergency response plans that prioritize public health and safety. - Improve infrastructure, including roads, bridges, and buildings, to better withstand extreme weather events. - Conduct regular disaster preparedness training for first responders and the public. By investing in these efforts, Peru can better prepare for and respond to disasters caused by El Niño, ultimately protecting public health and minimizing the negative impacts of these events.

The El Niño phenomenon has had a significant impact on Peru, causing disasters such as floods, landslides, and droughts. These disasters have led to loss of life, damage to infrastructure, and economic losses. It is crucial that Peru invests in disaster preparedness and response to mitigate the effects of future disasters caused by El Niño. By doing so, the country can minimize the impact of these disasters and protect its citizens and economy. It is imperative that Peru continue to prioritize disaster preparedness and response to ensure the safety and well-being of its people.

5. Conclusions

One of the major flaws in the Peruvian military's response to the El Niño disaster in northern Peru was the lack of coordination and communication (Villanueva, 2023). The military, along with other government agencies, struggled to work together effectively, leading to confusion and delays in response efforts. The lack of a clear chain of command and communication failures between different agencies further exacerbated the situation. This lack of coordination and communication made it difficult to provide timely and effective assistance to those affected by the disaster.

Another major problem in the Peruvian military's response to the disaster was a lack of training and resources (Mazzeo, 2023). The army was unprepared to cope with the scale of the disaster, and many soldiers lacked the necessary training and equipment to provide effective assistance. This lack of resources was particularly evident in the most remote areas, where access to basic necessities such as clean water and medical supplies was limited. The military's inability to provide adequate support to those in need further compounded the impact of the disaster.

Inadequate planning and preparation also played a role in the Peruvian military's ineffective response to the El Niño disaster (Salirrosas et al., 2022). Despite the known risks associated with the El Niño phenomenon, the government and military did not adequately prepare for the potential impact of the disaster. This lack of preparedness was evident in the slow response times and inadequate support provided to those affected by the disaster. The United Nations Regional Disaster Risk Assessment Report in Latin America and the Caribbean highlights the importance of disaster risk reduction and preparedness, emphasizing the need for proactive planning and investment in disaster response (Romio, 2021).

In conclusion, management failures in the Peruvian military's response to the El Niño disaster in northern Peru were multifaceted, with problems ranging from lack of coordination and communication to insufficient training and resources and inadequate planning and preparation. Addressing these failures will require a comprehensive approach that involves investing in disaster risk reduction and preparedness, improving coordination

and communication between different agencies, and providing the training and resources needed to respond effectively to future disasters.

Dissemination of information on evacuation plans, emergency contacts, and safety measures helped prepare communities for the disaster and mitigate its impact. This investment in education and community outreach can also help build resilience in communities, enabling them to better cope with future disasters. In conclusion, public investment in disaster response and management is essential for effective disaster preparedness and response. Investment in infrastructure and equipment, disaster preparedness programs, and education and community outreach can help minimize the impact of disasters and build resilience in communities. The El Niño phenomenon in northern Peru serves as a reminder of the importance of such investments to protect lives and livelihoods.

The El Niño phenomenon in northern Peru highlighted major management failures in the Peruvian military's response. Lack of coordination, communication, training, and resources, as well as inadequate planning and preparation, hampered the army's ability to respond effectively to the disaster. Public investment in disaster response is crucial and should prioritize infrastructure, equipment, disaster preparedness programs, and community education and outreach. To improve public management and investment, it is recommended to strengthen coordination and communication, invest in training and resources, and prioritize disaster preparedness and community outreach programs. By implementing these recommendations, the Peruvian military and government can better respond to future disasters caused by El Niño or other natural phenomena.

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