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IMPACT OF CLIMATE CHANGE ON VULNERABLE SEGMENTS OF THE POPULATION IN LAO PDR

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Introduction

In 2020, the Ministry of Natural Resources and Environment (MoNRE), in collaboration with UN-Habitat in the Lao People's Democratic Republic (PDR), conducted a national-level Climate Change Vulnerability Assessment (NCCVA) to bolster the country's resilience against the escalating effects of climate change. This initiative, aligned with MoNRE's strategic objectives and aimed at informing the 9th Social and Economic Development Plan of Lao PDR, builds upon the groundwork laid by UN-Habitat's previous vulnerability assessments. By integrating village-level census data with hazard information, the NCCVA seeks to discern how various demographic groups are disproportionately impacted by environmental hazards, enhancing the assessment's effectiveness in identifying adaptation opportunities at national, regional, and local levels. Preliminary findings underscore vulnerabilities and lay the foundation for informed planning, ultimately aiming to improve risk management strategies and promote sustainable development amidst climate challenges.

In 2015, the Lao census survey provided crucial insights into the demographic landscape, laying a foundation for evidence-based decision-making and inclusive development strategies tailored to the nation's diverse needs. This comprehensive understanding of population dynamics, including age distribution, gender ratios, and urban-rural dynamics, served as a pivotal tool for policy formulation and resource allocation. However, the escalating effects of climate change increasingly threaten these demographics, necessitating a deeper examination of vulnerability.

Methodology

This study employs an integrated approach to assess the vulnerability of different demographic groups in Lao PDR to climate change impacts. Utilizing village-level census data and multi-hazard exposure data from the Climate Vulnerability Analysis (Figure 2), the methodology systematically overlays demographic information with spatial hazard data. Through this comprehensive analysis conducted at the village, district, and provincial levels, the research identifies areas and populations most at risk, thereby informing targeted adaptation and mitigation strategies to enhance resilience and reduce vulnerability to climate change in Lao PDR.

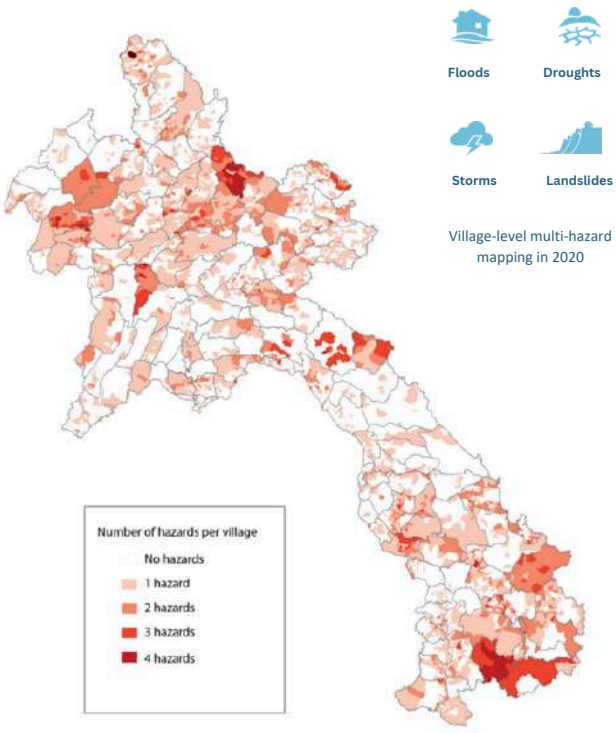


Figure 1: Data from Climate Change Vulnerability Assessment 2020

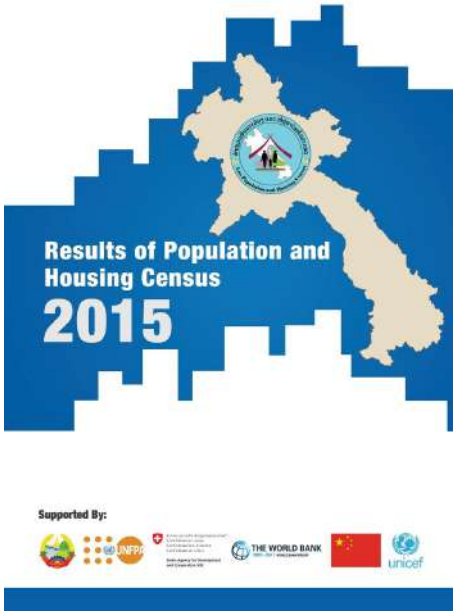


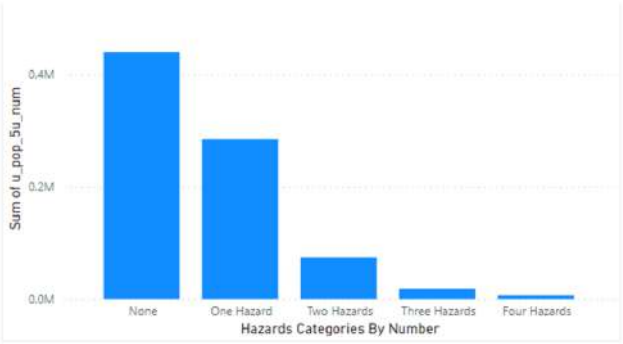
Figure 2: Data from Census 2015

By incorporating data from the "Impact of Climate Change on Vulnerable Segments of the Population" presentation and the "Multihazard Risk Assessment Report for Lao PDR," the study aims to discern how various demographics—including children, the elderly, economically active populations, female-headed households, migration and households with disabilities are disproportionately affected by environmental hazards.

Children

Aged 5 or younger

Children, particularly vulnerable due to their dependency and developmental stage, face significant risks. Approximately 34.5% of children in Lao PDR are impacted by at least one hazard, with a concerning 0.75% affected by four hazards (Figure 3).



Hazards Categories By Number	%GT Sum of u_pop_5u_num
None	53.43%
One Hazard	34.56%
Two Hazards	9.01%
Three Hazards	2.25%
Four Hazards	0.75%
Total	**100.00%**

Figure 3 hcategoires of hazards by population under 5 years

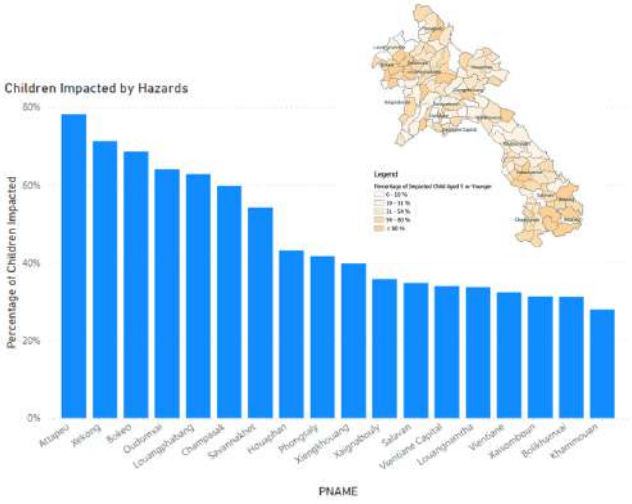


Figure 4 percentage of impacted children

In provinces like Attapue, Xekong, Bokeo, Oudomxay, and Louangprabang, over 60% of children experience the effects of at least one hazard. Furthermore, 26 districts report that 80% or more of children are affected by at least one hazard, shown in the map in Figure 4.

Floods affect at least 52% of children in Khammouan, Champasak, Vientiane Capital, Salavan, and Savannakhet. Drought impacts at least 72% of children in Louang Namtha, Oudomxay, Vientiane, and Phongsaly, while landslides impact at least 30% of children in Xaisomboun, Houaphan, and Xiengkhouanh.

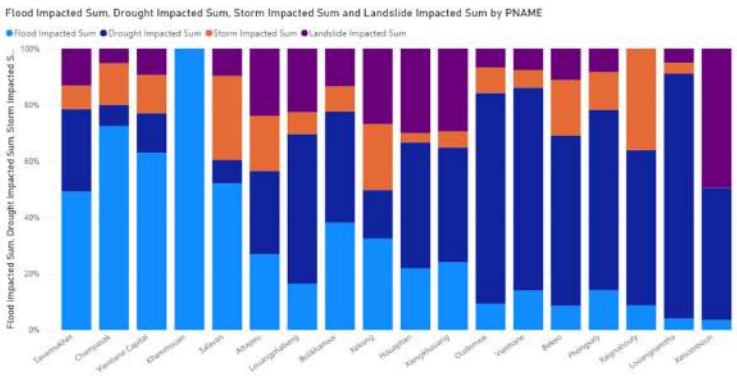
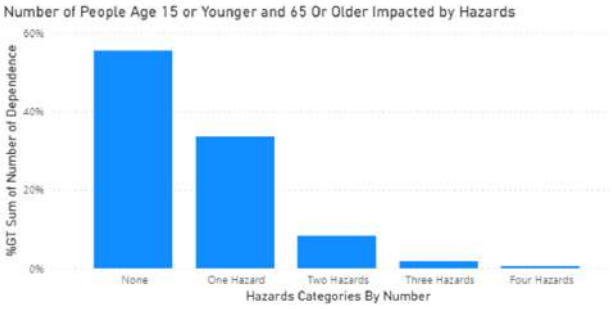


Figure 5 Proportion of hazards and impacts on children in different provinces

Dependents

Aged 15 or younger and 65 or older

In Laos, around 6 out of every 10,000 dependents are affected by four different hazards and approximately one out of every three dependents in the country is impacted by at least one hazard.



Hazards Categories By Number	%GT Sum of Number of Dependence
None	55.57%
One Hazard	33.58%
Two Hazards	8.34%
Three Hazards	1.91%
Four Hazards	0.60%
Total	**100.00%**

Figure 6 categoires of hazards by dependents

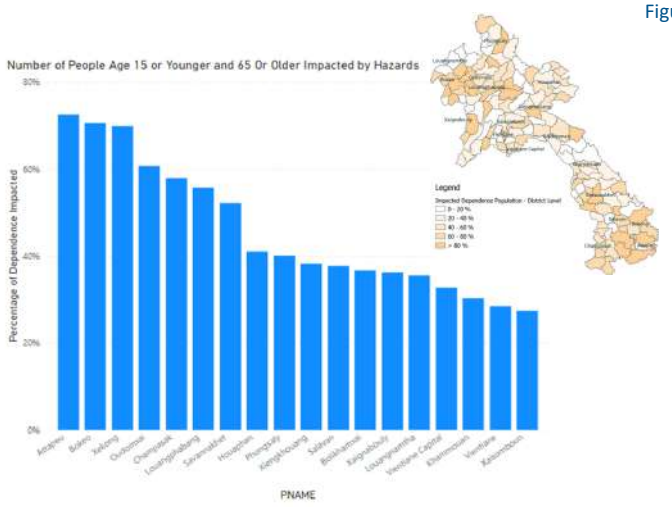


Figure 7 percentage of impacted dependents

Dependents in Attapue, Bokeo, Xekong, and Oudomxay provinces bear the brunt of the impact, with over 60% of them experiencing the effects of at least one hazard. Across Laos, there are 26 districts where 80% or more of dependents are affected by at least one hazard, while in 38 districts, up to 20% of dependents are impacted by hazards.

Khammouan and Champasak provinces are severely affected, with flood hazards impacting at least 75% of dependents, while Louangnamtha, Oudomxay, and Vientiane provinces face significant impact from drought, affecting nearly 70% of dependents. Additionally, Xaisomboun, Houaphan, Xekong, and Xiengkhouanh provinces are among the most affected, with landslides impacting nearly 25% of dependents in these areas.

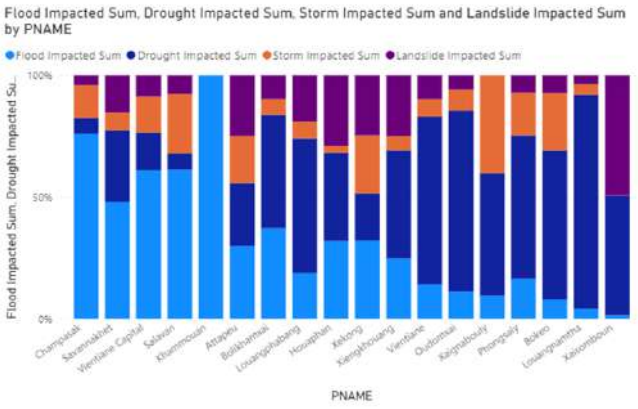
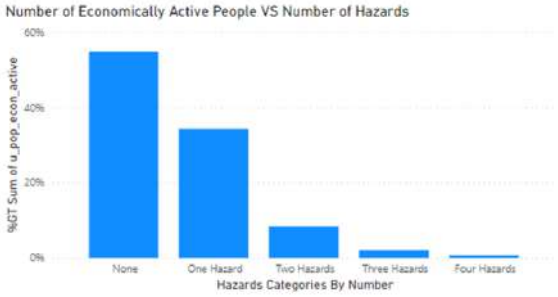


Figure 8 Proportion of hazards and impacts on dependents by provinces

Economically Active Population

This group's ability to contribute to the economy is crucial. The data shows that 34.25% of this population is impacted by at least one hazard, while nearly 1% is facing four hazards.



Hazards Categories By Number	Economically Active People Impacted
None	54.75%
One Hazard	34.25%
Two Hazards	8.39%
Three Hazards	1.98%
Four Hazards	0.64%
Total	**100.00%**

Figure 9 categoires of hazards by economicallu active population

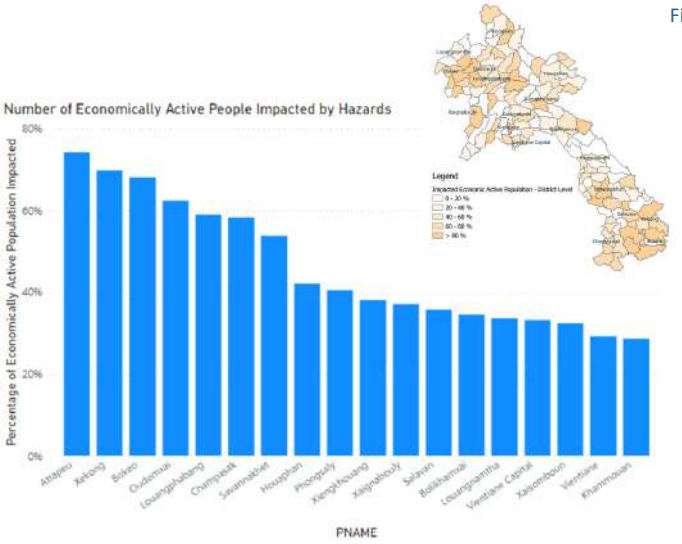


Figure 10 percentage of impacted on economically active population

High impact rates in Attapue, Bokeo, Xekong, and Oudomxay indicate over 60% of the economically active population are affected by at least one hazard. Additionally, 24 out of 145 districts have at least 80% of their economically active population impacted. Only 35 districts nationwide have less than 20% of their economically active population affected by hazards.

Over 75% of economically active people in Khammouan and Champasak are affected by floods; over 70% by droughts in Luang Namtha, Oudomxay, and Vientiane; and landslides significantly impact Xaisomboun, where nearly 55 % of affected economically active population are impacted by landslides.

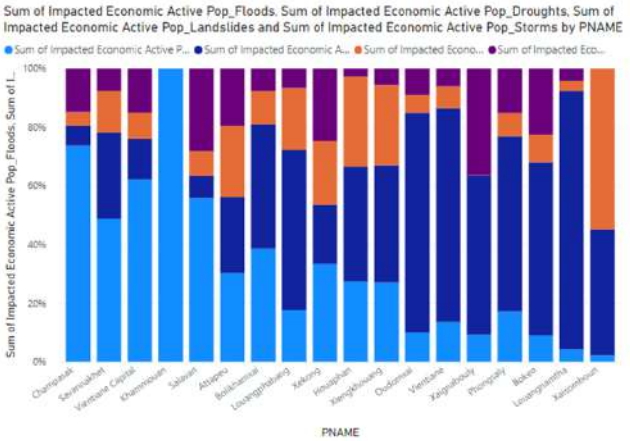
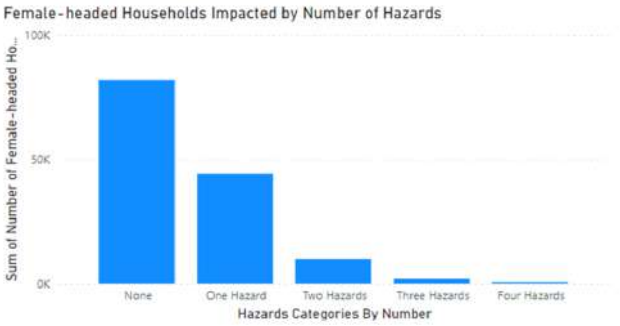


Figure 11 proportion of hazards and impacts on economically active population by provinces

Female-headed Households

Female-headed households, often more economically vulnerable, show that 31.9% are impacted by at least one hazard. Around 44 out of every 10,000 female-headed Households in Laos are impacted by four hazards.



Hazards Categories By Number	%GT Sum of Number of Female-headed Households
None	58.96%
One Hazard	31.90%
Two Hazards	7.20%
Three Hazards	1.50%
Four Hazards	0.44%
Total	**100.00%**

Figure 12 categoires of hazards by female-headed Households

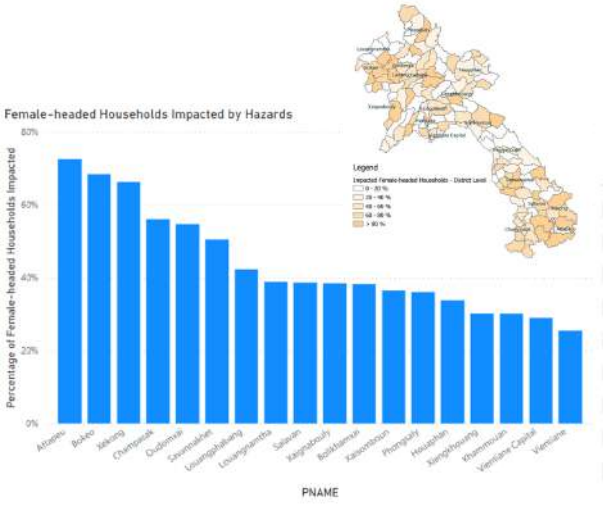


Figure 13 percentage of impacted on female-headed Households

In three provinces—Attapue, Bokeo, and Xekong—over 60% of female-headed households are heavily impacted. Across the country, 26 districts witness a significant impact on female-headed households, with at least 80% affected by one hazard, while in 42 districts, hazards affect up to 20% of female-headed households.

Flooding affects 78% of female-headed households in Khammouan and Champasak, while droughts affect nearly 70% in Louang Namtha, Oudomxay, and Phongsaly. Xaisomboun is the most affected province by landslides where 54% of female-headed households are impacted by this type of hazard.

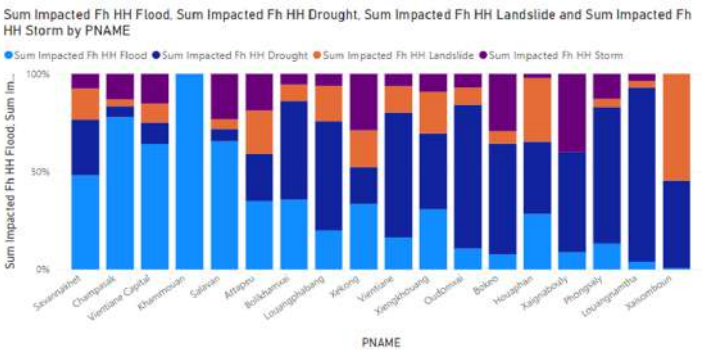
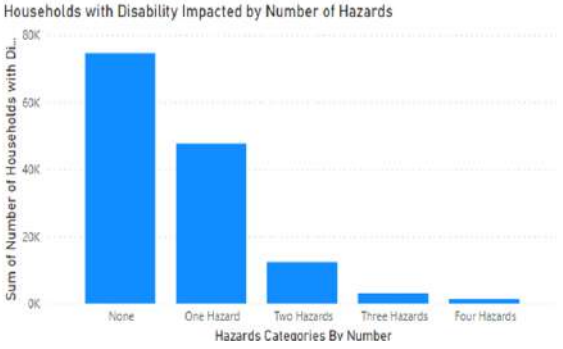


Figure 11 proportion of hazards and impacts on female-headed Households by provinces

Households with Disability

Households with disabilities constitute a vulnerable group within society, with 33.5% or approximately one out of every three such households in Laos being affected by at least one hazard. Additionally, around 0.92% or nine out of every 1,000 households with disabilities in Laos face impact from four different hazards.



Hazards Categories By Number	%GT Sum of Number of Households with Disable person(s)
None	53.72%
One Hazard	34.35%
Two Hazards	8.85%
Three Hazards	2.16%
Four Hazards	0.92%
Total	**100.00%**

Figure 15 categoires of hazards by households with disability

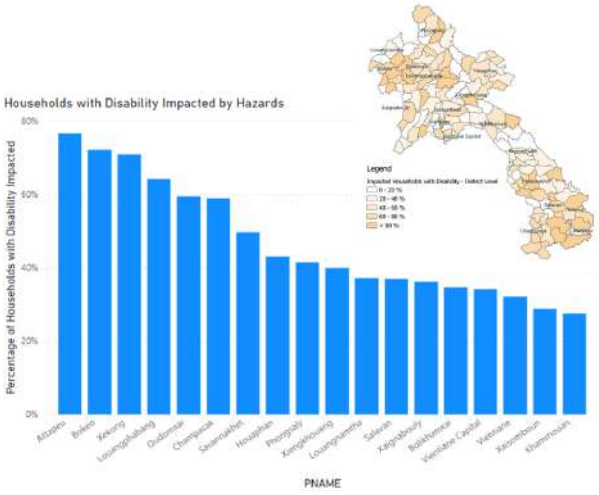


Figure 16 percentage of impacted on households with disability

In provinces like Attapue, Xekong, Bokeo, Oudomxay, and Louangprabang, over 60% of children experience the effects of at least one hazard. Furthermore, 26 districts report that more than 80% of children are affected by at least one hazard.

Over 75% of economically active people in Khammouan and Champasak are affected by floods; over 70% by droughts in Luang Namtha, Oudomxay, and Vientiane; and landslides significantly impact Xaisomboun, where over 50 % of affected households with disability are impacted by landslides.

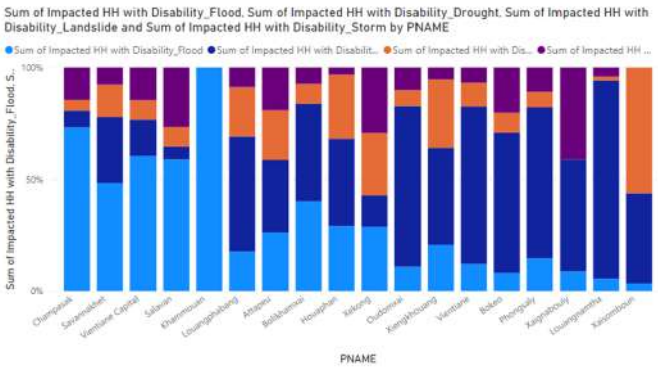


Figure 17 proportion of hazards and impacts on households with disability by provinces

Net Migration

Within last 12 months

Overall, Oudomxay and Louangprabang had the highest net-out migration, while Vientiane had the highest net-in, followed by Savannakhet. The climate vulnerability assessment found that 3,635 villages faced hazards, with 1,806 of them (about 50%) experiencing negative net migration.

The Nale (Luangnamtha), Phonxay (Luangprabang), Samphanh (Phongsaly) and La districts (Oudomxai) had the highest percentage of net-out migration among villages experiencing at least one hazard.

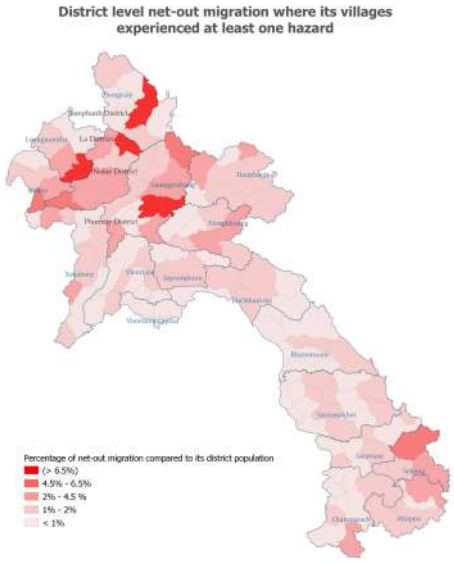


Figure 18 net-out migration by at least one hazards

District	Province	Number of villages experienced at least one Hazard	% Net-Out Migration compared to its Dist. population
Nalae	Louangnamtha	50	8.3
Phonxay	Louangphabang	39	7.9
Samphanh	Phongsaly	48	7.9
La	Oudomxai	27	6.5

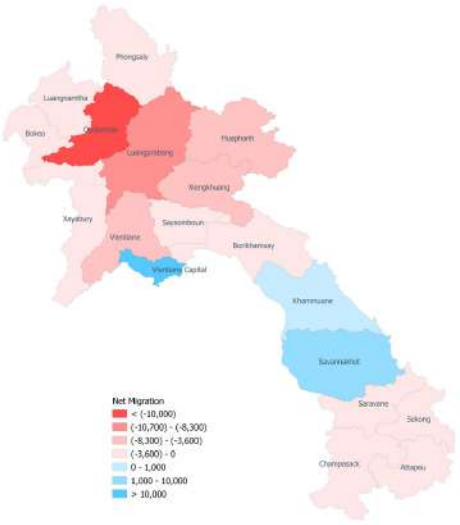


Figure 17 net migration

The Phonxay (Luangprabang) and Kaleum districts (Sekong) had the highest percentage of net-out migration among villages experiencing floods.

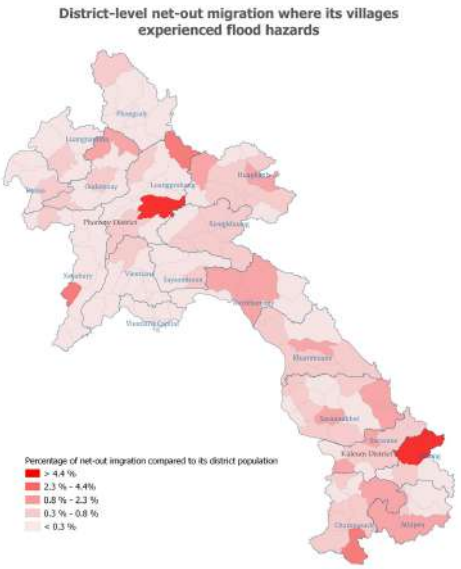


Figure 19 net-out migration by floods

District	Province	Number of villages experienced flood	% Net-Out Migration compared to its Dist. population
Phonxay	Louangphabang	18	4.6
Kaleum	Sekong	34	4.4

Net Migration

Within last 12 months

The Samphanh District (Phongsaly) and Nalae District (Luang Namtha) had the highest percentage of net out-migration among villages experiencing droughts.

District	Province	Number of villages experienced drought	% Net-Out Migration compared to its Dist. population
Samphanh	Phongsaly	50	8.3
Nalae	Louangnamtha	48	7.9

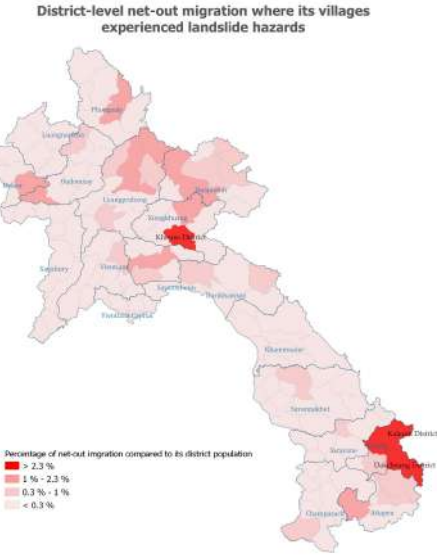


Figure 21 net-out migration by landslides

The Phonhong (Vientiane Province), Kaluem (Sekong) and Viengthong districts (Borikhamxay) had the highest percentage of net-out migration among villages experiencing storms.

District	Province	Number of villages experienced storms	% Net-Out Migration compared to its Dist. population
Phonthong	Luangprabang	24	4.80%
Kaleum	Sekong	8	1.40%
Viengthong	Borikhamxay	8	1.30%

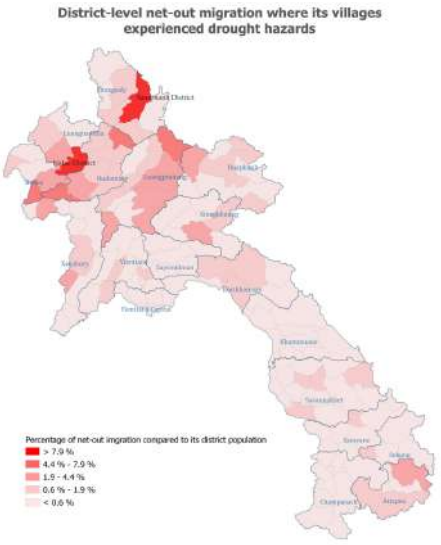


Figure 20 net-out migration by droughts

The Kaluem and Dukcheung districts (Sekong) and Khoun district (Xiengkhouang) had the highest percentage of net-out migration among villages experiencing landslides.

District	Province	Number of villages experienced landslides	% Net-Out Migration compared to its Dist. population
Kaleum	Sekong	31	3.7
Dakcheung	Sekong	14	2.6
Khoun	Xiengkhouang	22	2.3

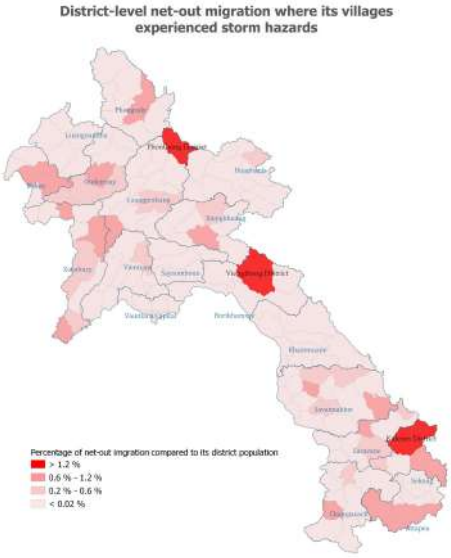


Figure 22 net-out migration by storms

Recommendations

The following are proposed to enhance resilience and reduce vulnerability to climate change impacts among various demographic groups in Lao PDR:

Targeted Adaptation Programs

Develop and implement targeted adaptation programs that address the specific needs of vulnerable groups such as children, the elderly, female-headed households, and households with disabilities. These programs should include access to healthcare, education, and social services tailored to these demographics, with a particular focus on vulnerable provinces and districts.

Strengthening Community-Based Resilience

Promote community-based resilience initiatives that engage local populations in disaster preparedness and response planning. Empower communities with the resources and training needed to effectively respond to climate-related hazards.

Enhancing Data Collection and Monitoring

Improve data collection and monitoring systems to ensure up-to-date and accurate information on demographic vulnerabilities and hazard exposure. This will support ongoing assessment and refinement of adaptation strategies.

Infrastructure Improvements

Invest in resilient infrastructure projects, particularly in areas identified as high-risk. This includes constructing flood defences, improving water management systems, and ensuring that buildings and roads can withstand extreme weather events.

Inclusive Policy Development

Ensure that climate adaptation policies and plans are inclusive, taking into account the voices and needs of all demographic groups. Engage with community representatives, including women, elderly, and disabled individuals, in policy formulation and decision-making processes.

Capacity Building and Education

Provide education and training programs to raise awareness about climate change impacts and resilience strategies. Focus on capacity building for local authorities, community leaders, and vulnerable populations to enhance their ability to adapt to changing environmental conditions.

Strengthening Social Safety Nets

Expand social safety nets and financial assistance programs to support vulnerable households during and after climate-related events. This can help mitigate the economic impact of disasters and aid in faster recovery.

Integrating Climate Risk into Development Planning

Integrate climate risk assessments into national, regional, and local development planning processes. Ensure that development projects consider potential climate impacts and incorporate resilience measures.

Promoting Sustainable Livelihoods

Support the development of sustainable livelihoods that are less vulnerable to climate impacts. This includes promoting climate-resilient agricultural practices, diversifying income sources, and supporting small-scale enterprises.

Collaborative Efforts and Partnerships

Foster collaboration between government agencies, non-governmental organisations, international partners, and local communities. Strengthen partnerships to leverage resources, share knowledge, and coordinate efforts in building climate resilience.

Conclusion

This issue paper provides a nuanced understanding of the disproportionate impacts of climate change on various demographic groups within Lao PDR. By integrating village-level census data with multi-hazard exposure information, the paper highlights the specific vulnerabilities of children, the elderly, economically active populations, female-headed households, and households with disabilities. The findings underscore the necessity for targeted adaptation and mitigation strategies to address the unique needs of these groups.

To enhance resilience and reduce vulnerability to climate change impacts, several key recommendations emerge from this paper. These include developing targeted adaptation programs, strengthening community-based resilience initiatives, improving data collection and monitoring systems, investing in resilient infrastructure, and ensuring inclusive policy development. Additionally, capacity building, enhancing social safety nets, integrating climate risk into development planning, promoting sustainable livelihoods, and fostering collaborative efforts are crucial steps towards a more resilient future.

This comprehensive analysis not only deepens knowledge of climate-related risks at the village, district, and provincial levels but also serves as a critical tool for policymakers. By informing evidence-based decision-making, the study contributes to the development of resilient and sustainable communities capable of withstanding the challenges posed by climate change in Lao PDR. Implementing these recommendations will ensure that all demographic groups, particularly the most vulnerable, are better protected and equipped to adapt to the evolving climate landscape.

Prepared by United Nations Human Settlements Programme Lao PDR

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