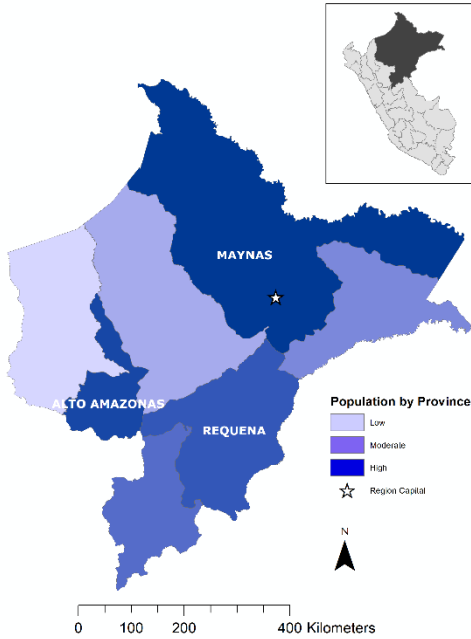




Peru: Regional Profiles

National Disaster Preparedness Baseline Assessment

Region: Loreto



Region Capital: Iquitos
 Region Area: 379,827 km²

Loreto is one of twenty-five regions in Peru. Located in the northeast interior of Peru, and bordering Ecuador, Columbia and Brazil, Loreto spans a lowland Amazonian forest, and is the largest region in Peru. Other services (e.g., tourism), commerce and mining are predominate economic activities. Iquitos is the region capital. As of 2015, its population was estimated at 1,039,372; with the highest percentage of its population residing in the provinces of Alto Amazonas, Maynas and Requena. Relative to the rest of Peru, the population of Loreto has lower than average life expectancy (71.7 years) and access to improved water (55.8%). Additionally, while Loreto has lower than average illiteracy (5.3%), poverty remains higher (37.4%) than the national average.



Multi-Hazard Risk (MHR) ¹

Score = 0.432, Rank = 20 of 25

Of the twenty-five regions of Peru, Loreto ranks 20th in multi-hazard risk (MHR = 0.432). Table 1 outlines the individual components that contribute to risk. As shown in the bar chart of Figure 1, Loreto’s low multi-hazard risk is a function of its very low multi-hazard exposure (MHE = 0.120), very high vulnerability (V = 0.567), and low coping capacity (CC = 0.390). The ternary graph at right shows that Loreto’s exposure is significantly lower than the national average, though its vulnerability and lack of coping capacity are higher.

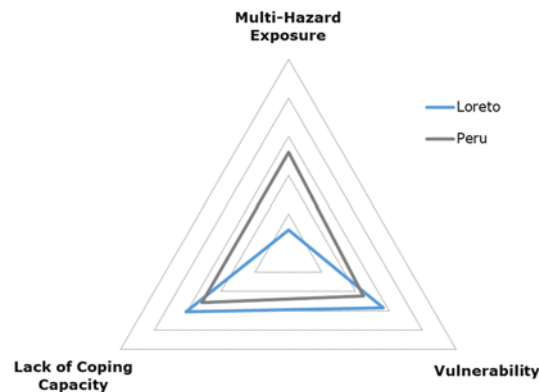


Figure 1. Components of the Multi-Hazard Risk Score compared to the national average.

¹ **Multi-Hazard Risk (MHR)**: An index that measures the likelihood of losses or disruptions to a region’s normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability and coping capacity. **MHR** = (MHE + V + (1-CC))/3. Values range from 0-1.

Components of Multi-Hazard Risk (MHR) ²

Table 1. Scores and ranks for each component of the Multi-Hazard Risk Score.

Multi-Hazard Exposure (MHE)		Vulnerability (V)		Coping Capacity (CC)	
Very Low		Very High		Low	
Score	Rank (of 25)	Score	Rank (of 25)	Score	Rank (of 25)
0.120	25	0.567	3	0.390	20

Multi-Hazard Exposure (MHE) ³

Score = 0.120, Rank = 25 of 25

Loreto has very low multi-hazard exposure relative to other regions of Peru (MHE = 0.120). This score is a function of both Raw and Relative MHE, as shown in Figure 2. The Raw MHE Score is an index reflecting the absolute value of population exposed to multiple hazards. This score can aid in understanding the overall scale of hazard exposure. The Relative MHE Score is an index reflecting the proportion of the region’s base population exposed. This score can assist in the determination of how important hazards are, and can help prioritize disaster management activities across regions. Estimates of exposure by hazard type are summarized in Table 2.

Table 2. Estimated ambient population⁴ exposed to each hazard type.

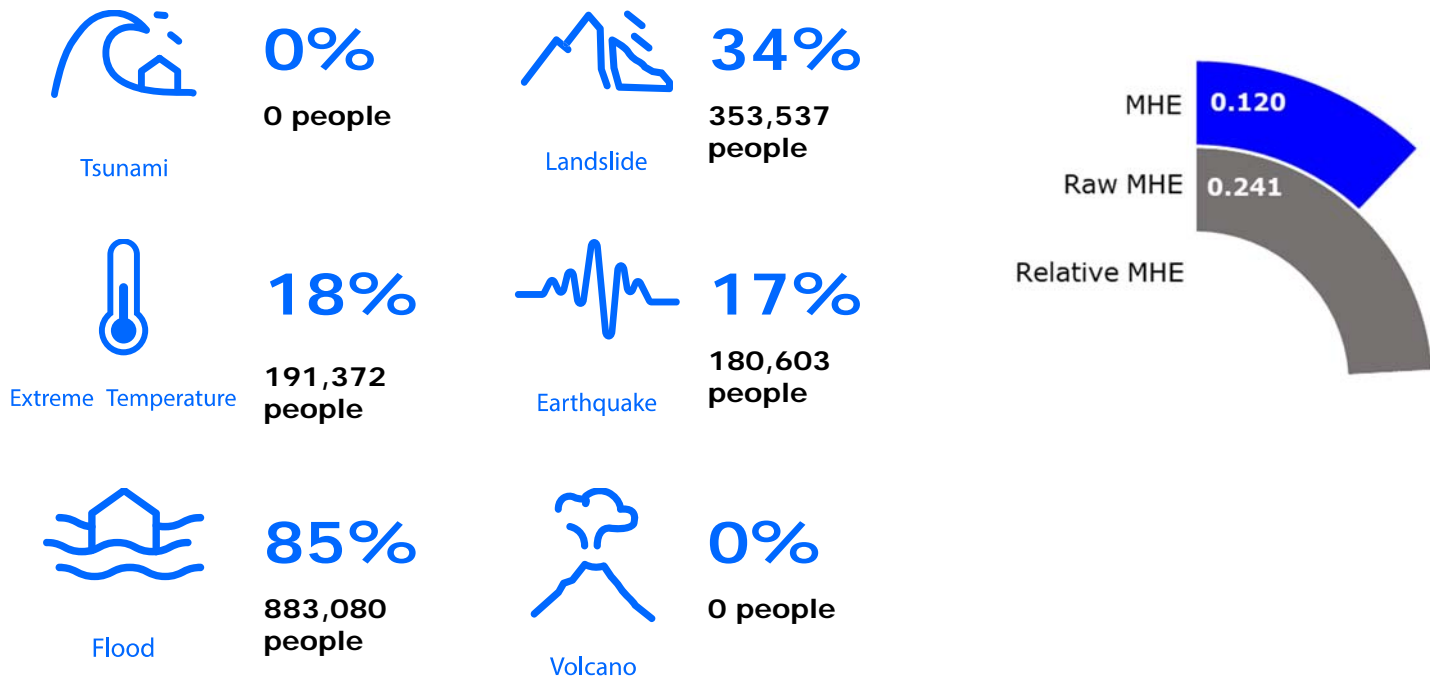


Figure 2. Average, raw and relative Multi-Hazard Exposure Scores.

² $MHR = (MHE + V + (1-CC))/3$.

³ **Multi Hazard Exposure (MHE)**: An index based on the estimated average exposure of the population to six hazard types: tsunamis, landslides, extreme temperature, earthquakes (MMI VII and above), floods and volcanos. Average exposure considers both raw average exposure and relative average exposure as a proportion of total population. Values range from 0-1.

⁴ **Ambient Population**: 24-hour average estimate of the population; typically differs from census population.

Vulnerability (V) ⁵

Score = 0.567, Rank = 3 of 25

Loreto has very high vulnerability relative to other Peruvian regions (V = 0.567). The bar chart on the right displays the composition of its overall Vulnerability Score. As shown, vulnerability in Loreto is driven primarily by clean water access, recent disaster impacts, and population pressures. The table below summarizes the individual indicators within each socio-economic theme.

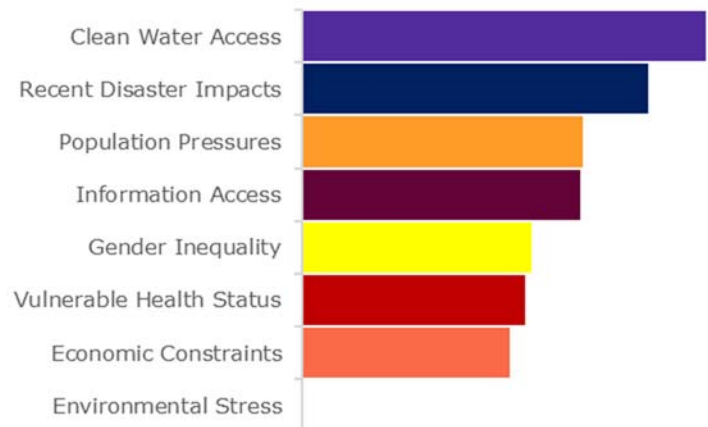








Figure 3. Components of the Vulnerability Score by relative contribution.

Table 3. Indicators of vulnerability grouped by theme.

	Environmental Stress	<0.1 % of total regional area with irrigation-fed agriculture	0 % of total regional area with severe erosion				
	Vulnerable Health Status	24.3 Infant mortality rate per 1k births	89.6 Maternal deaths per 100k births	71.7 Average life expectancy (years) at birth	27.7 % of children under 5 years of age that are malnourished	3.2 % of population with 1 or more disability	
	Clean Water Vulnerability	55.8 % households with access to improved water	35.9 % households with access to flush toilets				
	Information Access Vulnerability	5.3 % of population 15yrs and older that are illiterate	8.7 Average years of schooling	83.0 % primary school enrollment	7.0 % households with internet	65.6 % households with television	59.8 % households with radio
	Economic Constraints	0.62 Ratio of dependents to working age population (15-64 years)	45.38 Ratio of average monthly household expenses to income	37.4 % of population monetarily impoverished			
	Gender Inequality	0.48 Proportion of female representatives in local government	0.74 Ratio of female to male secondary enrollment	0.75 Ratio of female to male labor participation			

⁵ **Vulnerability (V)**: An index that measures the socioeconomic conditions associated with susceptibility to disruptions in a region's normal functions. Values range from 0-1.



Population Pressures

1.1
% Average annual population change (2010-2015)



Recent Disaster Impacts

654.2 Average annual hazard-related deaths per 10k persons (2010-2014)

17.8 Average annual number of homes destroyed by recent hazards per 10k persons (2010-2014)

Coping Capacity (CC) ⁶

Score = 0.390, Rank = 20 of 25

Loreto has a low coping capacity relative to other regions (CC = 0.390). The bar chart on the right displays the composition of its overall Coping Capacity Score. As shown, coping capacity in Loreto is hindered primarily by its infrastructure (especially transportation and healthcare) and economic capacity. The table below summarizes the individual indicators within each socio-economic theme.

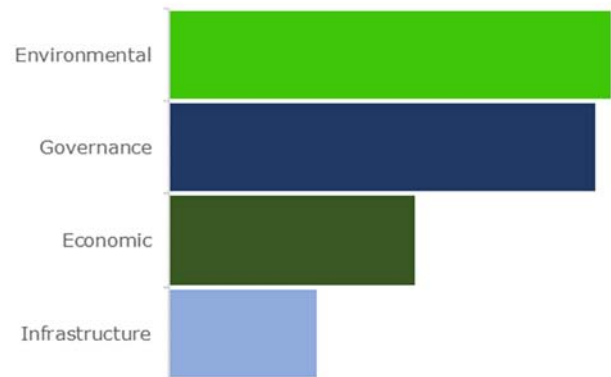


Figure 4. Components of the Coping Capacity Score by relative contribution.

Table 4. Indicators of coping capacity grouped by theme.



Economic Capacity

\$1,038 Average monthly income (\$)

\$10,571 Gross domestic product per capita



Governance

1.16 Registered cases of sexual violence per 10k persons

2.18 Registered cases of missing persons per 10k persons

0.009 Average annual number of social conflicts per 10k persons (active and resolved)

5,979 # of voters per 10k persons (2014 election)



Environmental Capacity

18.0 % protected or reforested land

⁶ **Coping Capacity (CC)**: An index that measures the systems, means and abilities of a region to absorb and respond to events that could potentially disrupt normal function. Values range from 0-1.



Infrastructure Capacity

	Healthcare Capacity	10.7 # of hospital beds per 10k persons	10.1 # of nurses per 10k persons	8.5 # of physicians per 10k persons
	Communications Capacity	20.2 % households with fixed phone line	64.1 % households with mobile phone	
	Transportation Capacity	0.2 Port/airport density per 10,000 sq km	70.9 Road/rail density per 10,000 sq km	

Resilience (R) ⁷

Score = 0.412, Rank = 21 of 25

Resilience is a function of both vulnerability and coping capacity. Loreto’s resilience is significantly lower than the national average, and its very low Resilience Score (R = 0.412) is due to its very high vulnerability and low coping capacity. The region’s baseline indicators suggest a focus for resilience-building efforts. In Loreto, the thematic areas with the weakest indicator scores and rankings are summarized in the table below. Readers can additionally consult Appendix 1 for a comprehensive assessment of its need for specific program types relative to other regions.

Table 5. The top 3 thematic areas with the weakest relative scores.



Clean Water Vulnerability



Recent Disaster Impacts



Transportation Capacity

⁷ **Resilience (R)**: An index that offers a hazard-independent measure of current socio-economic conditions affecting the short-term ability to absorb, respond to, and recover from disruptions to a region’s normal function. Values range from 0-1.