

CLIMATE AND DISASTER RISK ASSESSMENT



PROVINCE OF LA UNION
MUNICIPALITY OF CABA

Climate and Disaster Risk Assessment of Caba

Annex to the Comprehensive Land Use Plan
Planning period 2025-2031
Generated 3 September 2026

SAMPLE DATA - NOT FOR SUBMISSION

Table of Contents

1. Introduction	3
1.1 Status of this assessment	3
2. The Municipality	3
2.1 Barangays	4
3. Methodology	5
3.1 Likelihood of occurrence	5
3.2 Exposure	6
3.3 Sensitivity and adaptive capacity	7
3.4 Vulnerability, severity and risk	7
4. Hazards	8
4.1 Flood	8
4.2 Rain-induced Landslide	10
4.3 Drought	11
4.4 Storm Surge	11
4.5 Sea Level Rise	11
4.6 Ground Shaking	11
4.7 Liquefaction	11
4.8 Earthquake-induced Landslide	13
4.9 Ground Rupture	13
4.10 Tsunami	13
5. Exposure Database	13
6. Risk Assessment	14
6.1 Critical point facilities	17
7. What Is Still Needed	18
8. Sources and Terms	19
8.1 Terms	20

This document contains seeded sample data (adaptive_capacity, cbms, costs, facilities, land_use). It is for testing o

1. Introduction

This Climate and Disaster Risk Assessment covers the 17 barangays of the Municipality of Caba, Province of La Union (PSGC 0103309000). It is prepared as an annex to the Comprehensive Land Use Plan in accordance with the Department of Human Settlements and Urban Development Supplemental Guidelines (DHSUD-2025.1), and follows the eight-table scoring sequence those guidelines set out.

Every figure in this document is traceable to a named source and a dated request. The source register in the final section lists each dataset, the agency that publishes it, the service endpoint it was retrieved from, and what it was used for. Nothing here is entered by hand except the datasets the local government supplied, and those are identified as such.

1.1 Status of this assessment

Table A. Completeness of this assessment at the time of generation

Measure	Value
Hazards applicable to this municipality	10
Hazards with computed exposure	3
Datasets still outstanding	12
Stage reached	Partial exposure
Risk assessment	Scored
Ready for submission	No

This is a working draft. It is not submittable until the LGU datasets are loaded, risk is scored, and the MPDO has signed off.

2. The Municipality

Table B. Profile of the municipality

Attribute	Value
Municipality	Caba
Classification	Municipality
Province	La Union
Region	Region I (Ilocos Region)
PSGC code	0103309000
Barangays	17
Has a coastline	Yes
Land area, GIS extent	4,700.8 ha

Attribute	Value
Boundary source	faeldon/philippines-json-maps PSGC 2023-12-31 (PSA/NAMRIA via faeldon, MIT)

2.1 Barangays

Table C. Barangays, land area and population

Barangay	Class	Area (ha)	Population	Households
Bautista	Urban	174.7	2,748	597
Gana	Urban	173.2	4,406	958
Juan Cartas	Urban	183.0	6,430	1,398
Las-ud	Urban	39.6	841	183
Liquicia	Rural	699.4	21,636	4,703
Poblacion Norte	Rural	62.2	1,059	230
Poblacion Sur	Rural	19.1	510	111
San Carlos	Rural	140.2	5,109	1,111
San Cornelio	Rural	457.0	10,305	2,240
San Fermin	Rural	1,098.8	35,436	7,703
San Gregorio	Rural	286.7	5,261	1,144
San Jose	Rural	695.5	19,511	4,242
Santiago Norte	Rural	15.9	602	131
Santiago Sur	Rural	139.2	3,320	722
Sobredillo	Rural	354.0	11,880	2,583
Urayong	Rural	120.0	2,359	513
Wenceslao	Rural	32.9	966	210

Source: Barangay outlines and areas from the national administrative boundary dataset; population and households as supplied by the local government.

Total population across the barangays with figures supplied is 132,379 in 28,779 households.

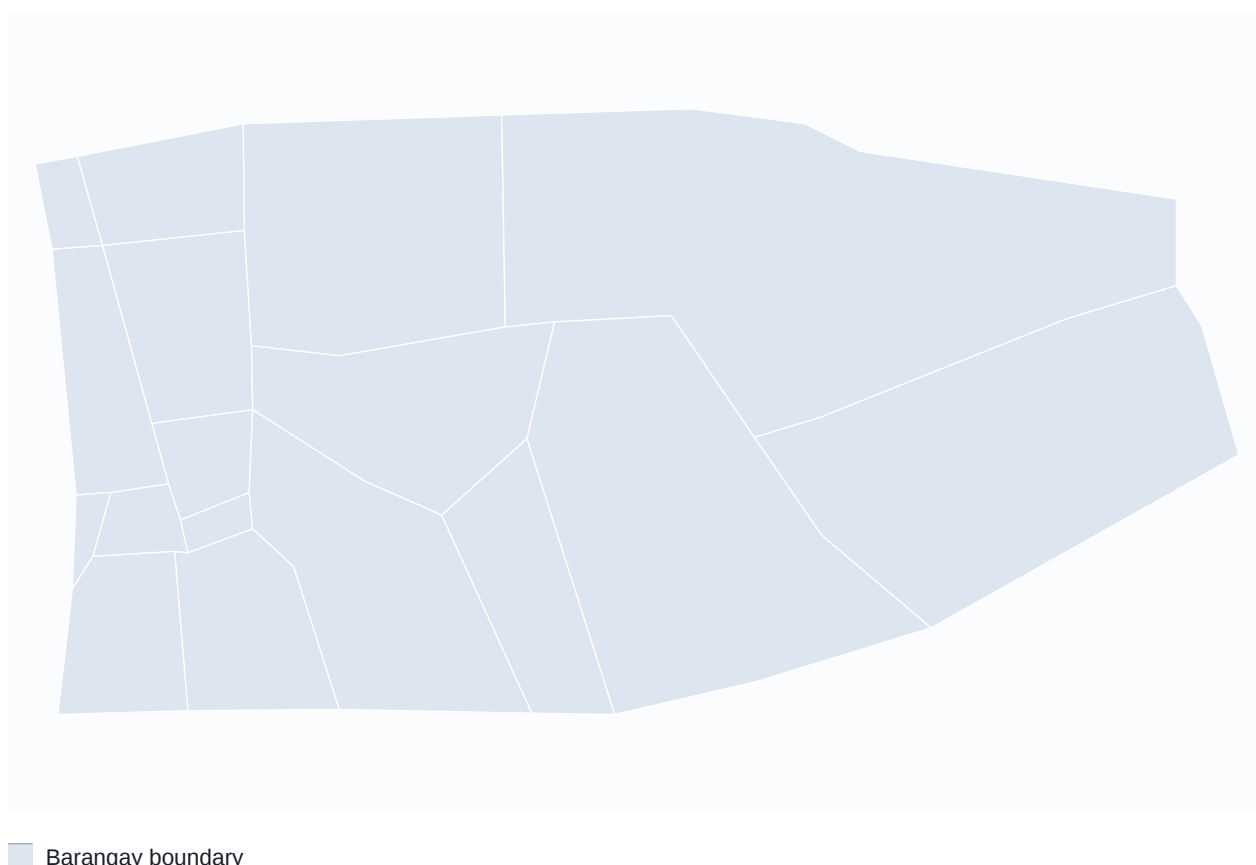


Figure 1. Barangay boundaries of the municipality.

3. Methodology

The assessment follows the DHSUD scoring sequence. Each barangay is scored for exposure to each hazard, for sensitivity and adaptive capacity, and those combine into a vulnerability score. Exposure and vulnerability give the severity of consequence, and severity multiplied by the likelihood of the hazard gives the risk score, which falls into one of four land-use control categories. The tables reproduced below are the published DHSUD thresholds, not this system's own.

severity of consequence = (exposure + vulnerability) / 2. risk score = likelihood x severity of consequence. Adaptive capacity is inverted: A is the strongest and scores 1. The severity table published by DHSUD is reproduced exactly by the formula above at all sixteen cells, which the test suite asserts cell by cell.

3.1 Likelihood of occurrence

Table 1. Indicative likelihood of occurrence (temporal probability) scores

Score	Rating	Return period	Probability in 50 years	Description
4	Likely	1-25 years	87%-100%	This event has occurred several times in your lifetime; it is expected to occur again within a short span.
3	Possible	25-100 years	40%-86%	The event may have occurred once or twice in your lifetime; it is possible to occur within a generation.
2	Unlikely	10-30 years	22.1%-39%	The event is unlikely to be experienced within a lifetime, but records show it has occurred before.

Score	Rating	Return period	Probability in 50 years	Description
1	Rare	30-100 years	2%-22%	The event is possible but not expected to occur except under exceptional circumstances.

Source: DHSUD

3.2 Exposure

Table 2. Exposure scores by share of the unit affected

Score	Rating	Area or population affected	Nominal
4	Very high	>15% affected	Yes
3	High	11-15% affected	-
2	Moderate	6-10% affected	-
1	Low	0-5% affected	No

Source: DHSUD

Table 3. Exposure thresholds by exposure unit

Exposure unit	Parameter	Score	Threshold
Population	Affected population	4	>20%
Population	Affected population	3	10.01-20%
Population	Affected population	2	5.01-10%
Population	Affected population	1	<=5%
Critical Point Facilities	Affected facility	4	100% (yes)
Critical Point Facilities	Affected facility	1	0% (no)
Lifeline Utilities	Affected area	4	>40%
Lifeline Utilities	Affected area	3	20.01-40%
Lifeline Utilities	Affected area	2	10.01-20%
Lifeline Utilities	Affected area	1	<=10%
Urban Use Areas	Affected area	4	>40%
Urban Use Areas	Affected area	3	20.01-40%
Urban Use Areas	Affected area	2	10.01-20%
Urban Use Areas	Affected area	1	<=10%
Natural Resource-based Production	Affected area	4	>40%
Natural Resource-based Production	Affected area	3	20.01-40%
Natural Resource-based Production	Affected area	2	10.01-20%
Natural Resource-based Production	Affected area	1	<=10%

Source: DHSUD

3.3 Sensitivity and adaptive capacity

Table 4. Sensitivity scores

Score	Rating	Share of the unit that is sensitive
4	Very high	>15% sensitive
3	High	11-15% sensitive
2	Moderate	6-10% sensitive
1	Low	0-5% sensitive

Source: DHSUD

Table 5. Adaptive capacity scores

Code	Score	Rating	Descriptive criterion
A	1	Very high	Local government is implementing existing regulations on hazard mitigation and structural design and monitors compliance thereof
B	2	High	Local government is implementing existing regulations on hazard mitigation and structural design
C	3	Moderate	Local government has existing regulations on hazard mitigation and structural design
D	4	Low	Local government has no regulations on hazard mitigation and structural design

Source: DHSUD. Note the inversion: code A is the strongest capacity and scores 1, because the score feeds a vulnerability index in which a higher number is worse.

3.4 Vulnerability, severity and risk

Table 6. Vulnerability index converted to a vulnerability score

Index	Score	Rating
up to 0.50	0.25	Very low vulnerability
up to 1.00	0.50	Low vulnerability
up to 2.00	0.75	Moderate vulnerability
up to 4.00	1.00	High vulnerability

Source: DHSUD

Table 7. Severity of consequence, by exposure and vulnerability score

	Vulnerability 4	Vulnerability 3	Vulnerability 2	Vulnerability 1
Exposure 4	4.00	3.50	3.00	2.50
Exposure 3	3.50	3.00	2.50	2.00
Exposure 2	3.00	2.50	2.00	1.50
Exposure 1	2.50	2.00	1.50	1.00

Source: DHSUD

Table 8. Risk categories and the corresponding land-use control

Risk score	Category	Land-use control
12.00 - 16.00	Very High-Risk Areas	Prohibited
7.00 - 11.99	High Risk Areas	Discretionary
3.00 - 6.99	Moderate Risk Areas	Conditional
1.00 - 2.99	Low Risk Areas	Permitted

Source: DHSUD

4. Hazards

Every hazard applicable to this municipality appears below, whether or not its exposure could be computed. A hazard omitted because its data could not be retrieved would be indistinguishable from a hazard that does not occur here, and those are opposite conclusions.

Table D. Hazards assessed, their sources and their status

Hazard	Group	Publishing agency	Status	Coverage
Flood	hydrometeorological	DENR-MGB	Computed	16 of 17 barangays
Rain-induced Landslide	hydrometeorological	DENR-MGB	Computed	16 of 17 barangays
Drought	hydrometeorological	DAAGASA	Pending	-
Storm Surge	hydrometeorological	DAAGASA / Project NOAH	Pending	-
Sea Level Rise	hydrometeorological	DAAGASA	Pending	-
Ground Shaking	geological	PHIVOLCS	Manual	-
Liquefaction	geological	PHIVOLCS	Computed	13 of 17 barangays
Earthquake-induced Landslide	geological	PHIVOLCS	Manual	-
Ground Rupture	geological	PHIVOLCS	Pending	-
Tsunami	geological	PHIVOLCS	Manual	-

4.1 Flood

Susceptibility polygons published by DENR-MGB were clipped to each barangay and the share of the barangay in each susceptibility class measured. 16 of the 17 barangays carry at least one susceptibility class. The measurement used 35 features retrieved on 2026-09-02 from the FloodSusc field.

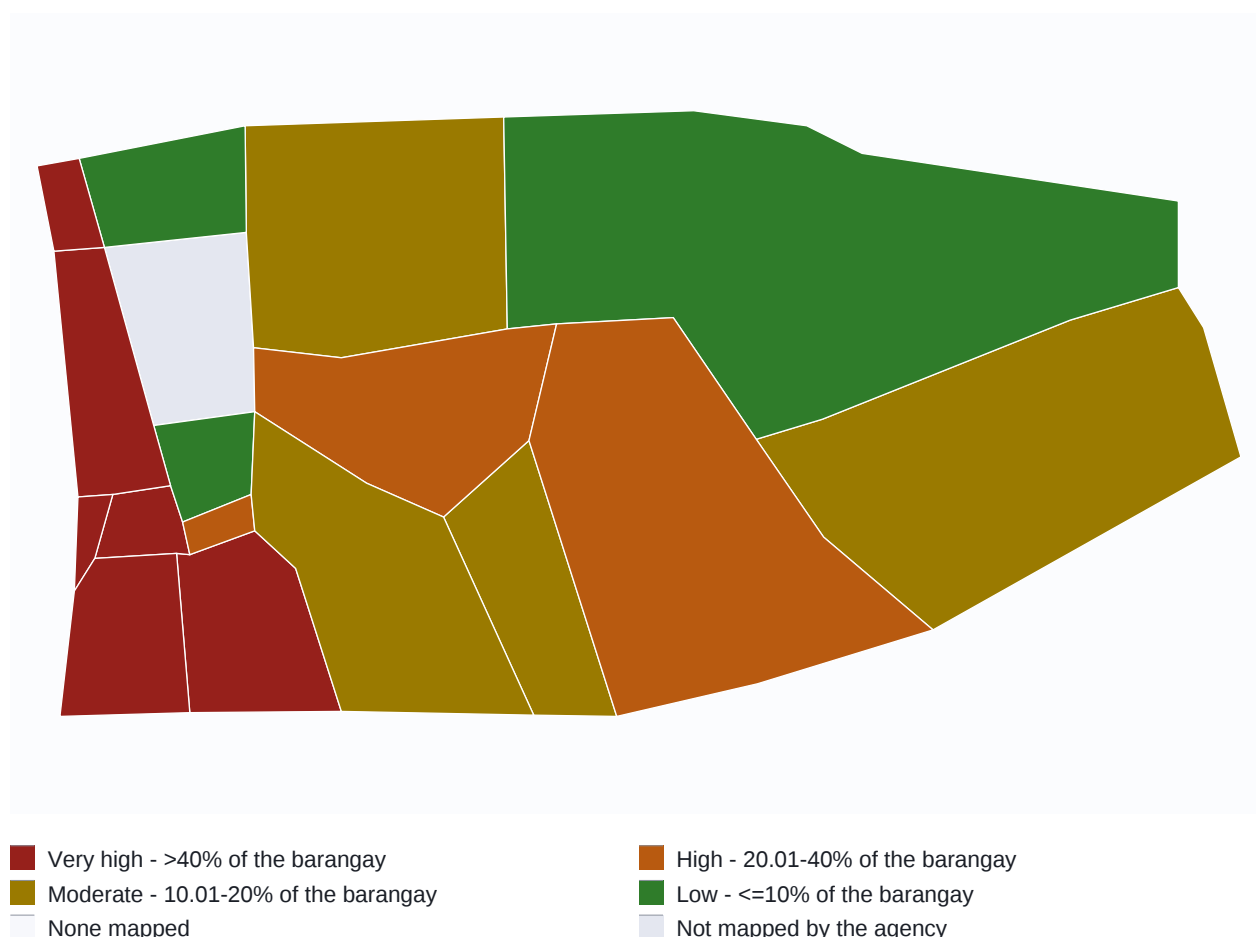


Figure 2. Flood susceptibility by barangay, banded to the DHSUD exposure scores.

Table 4.1. Flood: susceptible share by barangay

Barangay	Area (ha)	Susceptible share	Worst class	Exposure score
Gana	173.2	41.3%	VHF	4
Juan Cartas	183.0	11.5%	VHF	2
Las-ud	39.6	86.7%	VHF	4
Liquicia	699.4	16.3%	VHF	2
Poblacion Norte	62.2	0.1%	MF	1
Poblacion Sur	19.1	28.1%	VHF	3
San Carlos	140.2	53.7%	HF	4
San Cornelio	457.0	19.5%	VHF	2
San Fermin	1,098.8	4.7%	VHF	1
San Gregorio	286.7	31.1%	VHF	3
San Jose	695.5	24.1%	VHF	3
Santiago Norte	15.9	78.2%	VHF	4
Santiago Sur	139.2	90.3%	VHF	4
Sobredillo	354.0	15.2%	VHF	2

Barangay	Area (ha)	Susceptible share	Worst class	Exposure score
Urayong	120.0	9.9%	MF	1
Wenceslao	32.9	76.9%	HF	4

Source: DENR-Mines and Geosciences Bureau

4.2 Rain-induced Landslide

Susceptibility polygons published by DENR-MGB were clipped to each barangay and the share of the barangay in each susceptibility class measured. 16 of the 17 barangays carry at least one susceptibility class. The measurement used 45 features retrieved on 2026-09-02 from the LndslideSusc field.

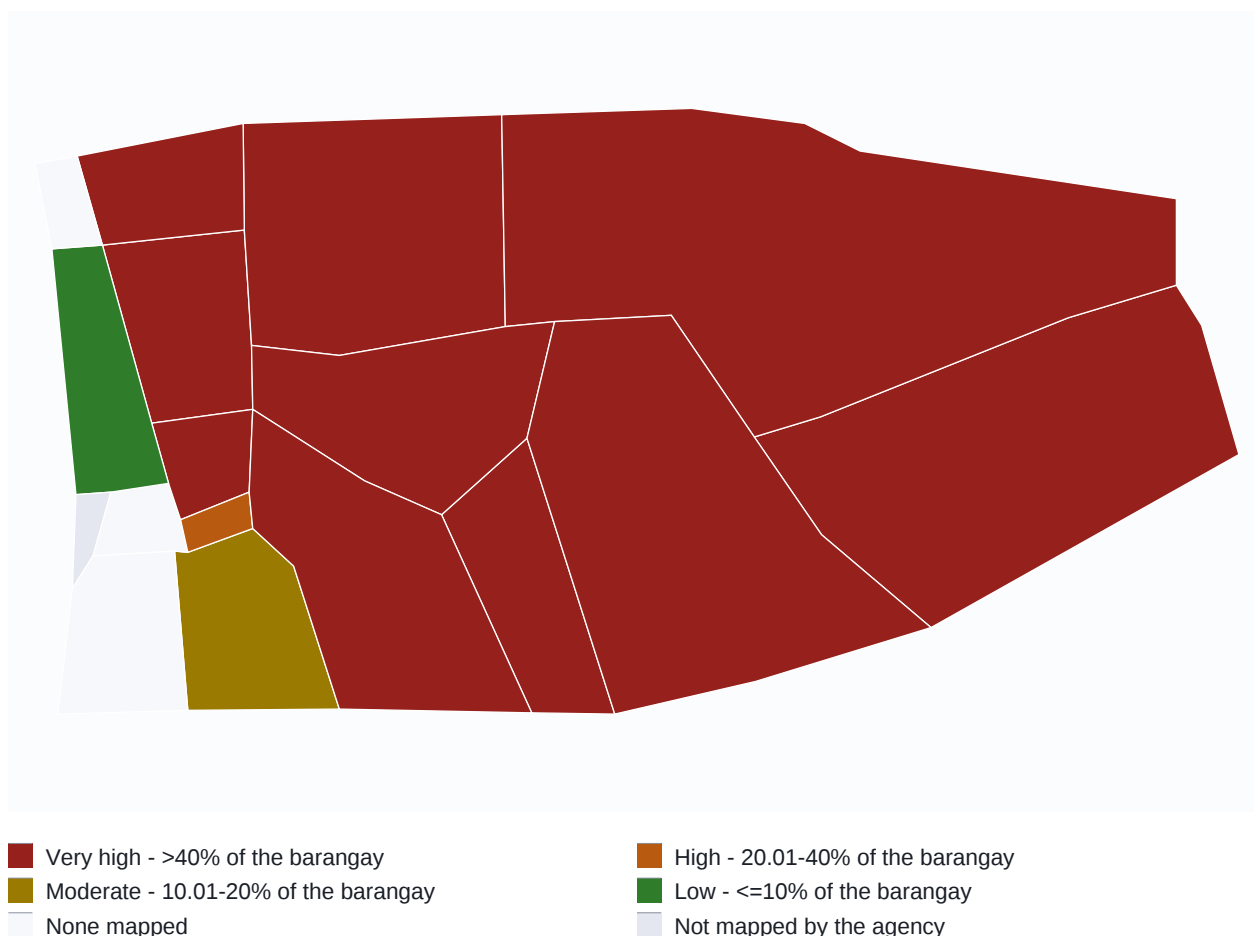


Figure 3. Rain-induced Landslide susceptibility by barangay, banded to the DHSUD exposure scores.

Table 4.2. Rain-induced Landslide: susceptible share by barangay

Barangay	Area (ha)	Susceptible share	Worst class	Exposure score
Bautista	174.7	98.4%	VHL	4
Gana	173.2	19.9%	HL	2
Juan Cartas	183.0	87.7%	VHL	4
Las-ud	39.6	0.0%	LL	1
Liquicia	699.4	76.3%	VHL	4

Barangay	Area (ha)	Susceptible share	Worst class	Exposure score
Poblacion Norte	62.2	79.1%	VHL	4
Poblacion Sur	19.1	32.3%	ML	3
San Carlos	140.2	2.3%	ML	1
San Cornelio	457.0	81.0%	VHL	4
San Fermin	1,098.8	92.2%	VHL	4
San Gregorio	286.7	64.8%	VHL	4
San Jose	695.5	75.3%	VHL	4
Santiago Sur	139.2	0.0%	LL	1
Sobredillo	354.0	81.4%	VHL	4
Urayong	120.0	85.6%	VHL	4
Wenceslao	32.9	0.0%	LL	1

Source: DENR-Mines and Geosciences Bureau

4.3 Drought

No automated source is wired up for this hazard yet.

4.4 Storm Surge

No automated source is wired up for this hazard yet.

4.5 Sea Level Rise

No automated source is wired up for this hazard yet.

4.6 Ground Shaking

The publishing agency will not serve this layer for computation, so susceptibility has to be entered per barangay by the planner.

4.7 Liquefaction

Susceptibility polygons published by PHIVOLCS were clipped to each barangay and the share of the barangay in each susceptibility class measured. 13 of the 17 barangays carry at least one susceptibility class. The measurement used 1 features retrieved on 2026-09-02 from the lccode field.

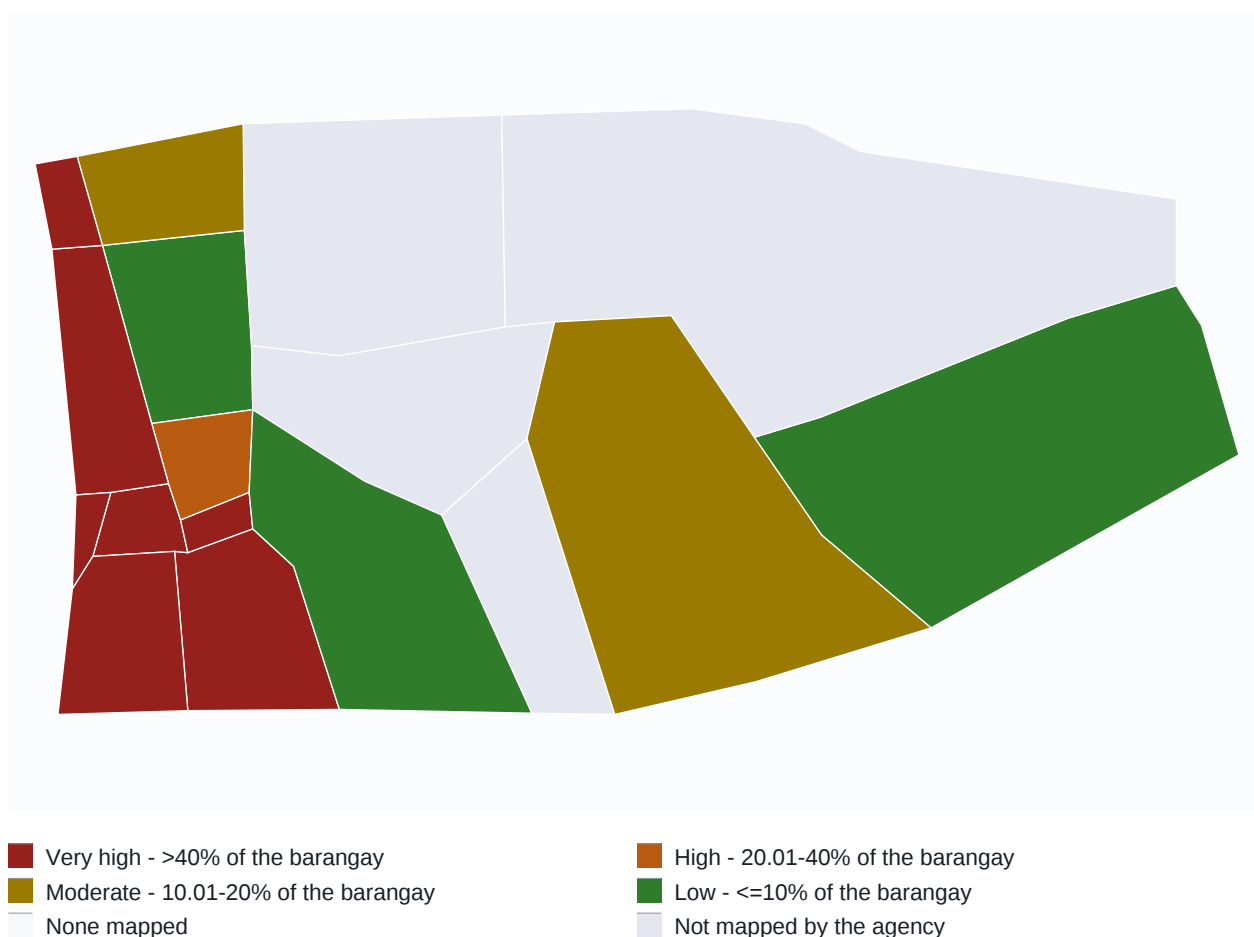


Figure 4. Liquefaction susceptibility by barangay, banded to the DHSUD exposure scores.

Table 4.7. Liquefaction: susceptible share by barangay

Barangay	Area (ha)	Susceptible share	Worst class	Exposure score
Bautista	174.7	9.1%	Generally Susceptible	1
Gana	173.2	74.1%	Generally Susceptible	4
Las-ud	39.6	100.0%	Generally Susceptible	4
Liquicia	699.4	8.5%	Generally Susceptible	1
Poblacion Norte	62.2	27.2%	Generally Susceptible	3
Poblacion Sur	19.1	63.9%	Generally Susceptible	4
San Carlos	140.2	96.4%	Generally Susceptible	4
San Jose	695.5	14.6%	Generally Susceptible	2
Santiago Norte	15.9	90.4%	Generally Susceptible	4
Santiago Sur	139.2	99.0%	Generally Susceptible	4
Sobredillo	354.0	0.0%	Generally Susceptible	1
Urayong	120.0	11.2%	Generally Susceptible	2
Wenceslao	32.9	99.8%	Generally Susceptible	4

Source: DOST-PHIVOLCS (as of July 2018)

4.8 Earthquake-induced Landslide

The publishing agency will not serve this layer for computation, so susceptibility has to be entered per barangay by the planner.

4.9 Ground Rupture

No automated source is wired up for this hazard yet.

4.10 Tsunami

The publishing agency will not serve this layer for computation, so susceptibility has to be entered per barangay by the planner.

5. Exposure Database

The exposure database is the barangay-by-hazard matrix the rest of the assessment is built on. A dash means the agency publishes no polygon covering that barangay for that hazard; it does not mean the barangay is not susceptible.

Table E. Susceptible share and exposure score, by barangay and hazard

Barangay	Flood	Rain-induced Landslide	Liquefaction
Bautista	-	98.4% (4)	9.1% (1)
Gana	41.3% (4)	19.9% (2)	74.1% (4)
Juan Cartas	11.5% (2)	87.7% (4)	-
Las-ud	86.7% (4)	0.0% (1)	100.0% (4)
Liquicia	16.3% (2)	76.3% (4)	8.5% (1)
Poblacion Norte	0.1% (1)	79.1% (4)	27.2% (3)
Poblacion Sur	28.1% (3)	32.3% (3)	63.9% (4)
San Carlos	53.7% (4)	2.3% (1)	96.4% (4)
San Cornelio	19.5% (2)	81.0% (4)	-
San Fermin	4.7% (1)	92.2% (4)	-
San Gregorio	31.1% (3)	64.8% (4)	-
San Jose	24.1% (3)	75.3% (4)	14.6% (2)
Santiago Norte	78.2% (4)	-	90.4% (4)
Santiago Sur	90.3% (4)	0.0% (1)	99.0% (4)
Sobredillo	15.2% (2)	81.4% (4)	0.0% (1)
Urayong	9.9% (1)	85.6% (4)	11.2% (2)
Wenceslao	76.8% (4)	0.0% (1)	99.8% (4)

Source: Computed from the agency hazard polygons clipped to the barangay outlines. The figure in brackets is the DHSUD exposure score that share earns.

6. Risk Assessment

Population and land-use exposure apply the barangay's susceptible AREA share to its population and its built-up area, because no source publishes where within a barangay people live. That is the standard simplification and the published CDRA makes it too, but it is an assumption rather than a measurement. Critical-facility exposure is the exception: those have coordinates, so it is a real point-in-polygon test.

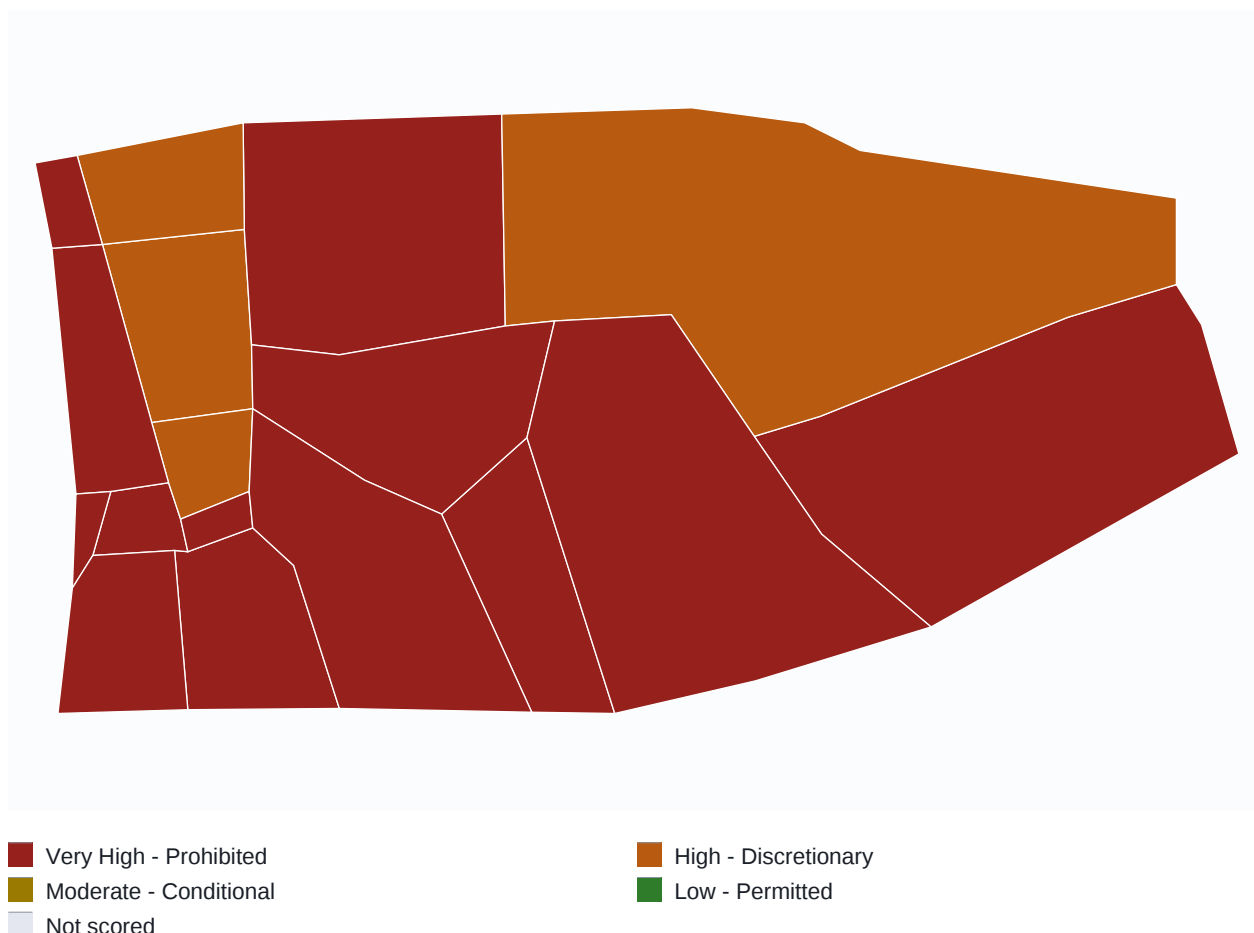


Figure R. Highest risk category reached in each barangay, across all hazards and exposure units.

Table F. Risk scores by barangay, hazard and exposure unit

Barangay	Hazard	Unit	E	S	AC	V	L	Sev	Risk	Category
Gana	Flood	Population	4	4	3	0.75	4	3.50	14.00	Very High
Gana	Flood	Urban Use Areas	4	2	3	0.50	4	3.00	12.00	Very High
Juan Cartas	Flood	Population	3	4	3	0.75	4	3.00	12.00	Very High
Juan Cartas	Flood	Urban Use Areas	2	2	3	0.50	4	2.00	8.00	High
Las-ud	Flood	Population	4	4	3	0.75	4	3.50	14.00	Very High
Las-ud	Flood	Urban Use Areas	4	2	3	0.50	4	3.00	12.00	Very High
Liquicia	Flood	Population	3	4	3	0.75	4	3.00	12.00	Very High
Liquicia	Flood	Urban Use Areas	2	3	3	0.50	4	2.00	8.00	High
Poblacion Norte	Flood	Population	1	4	3	0.75	4	2.00	8.00	High
Poblacion Norte	Flood	Urban Use Areas	1	3	3	0.50	4	1.50	6.00	Moderate

Barangay	Hazard	Unit	E	S	AC	V	L	Sev	Risk	Category
Poblacion Sur	Flood	Population	4	4	3	0.75	4	3.50	14.00	Very High
Poblacion Sur	Flood	Urban Use Areas	3	4	3	0.75	4	3.00	12.00	Very High
San Carlos	Flood	Population	4	4	3	0.75	4	3.50	14.00	Very High
San Carlos	Flood	Urban Use Areas	4	3	3	0.50	4	3.00	12.00	Very High
San Cornelio	Flood	Population	3	4	3	0.75	4	3.00	12.00	Very High
San Cornelio	Flood	Urban Use Areas	2	3	3	0.50	4	2.00	8.00	High
San Fermin	Flood	Population	1	4	3	0.75	4	2.00	8.00	High
San Fermin	Flood	Urban Use Areas	1	3	3	0.50	4	1.50	6.00	Moderate
San Gregorio	Flood	Population	4	4	3	0.75	4	3.50	14.00	Very High
San Gregorio	Flood	Urban Use Areas	3	4	3	0.75	4	3.00	12.00	Very High
San Jose	Flood	Population	4	4	3	0.75	4	3.50	14.00	Very High
San Jose	Flood	Urban Use Areas	3	2	3	0.50	4	2.50	10.00	High
Santiago Norte	Flood	Population	4	4	3	0.75	4	3.50	14.00	Very High
Santiago Norte	Flood	Urban Use Areas	4	2	3	0.50	4	3.00	12.00	Very High
Santiago Sur	Flood	Population	4	4	3	0.75	4	3.50	14.00	Very High
Santiago Sur	Flood	Urban Use Areas	4	3	3	0.50	4	3.00	12.00	Very High
Sobredillo	Flood	Population	3	4	3	0.75	4	3.00	12.00	Very High
Sobredillo	Flood	Urban Use Areas	2	2	3	0.50	4	2.00	8.00	High
Urayong	Flood	Population	2	4	3	0.75	4	2.50	10.00	High
Urayong	Flood	Urban Use Areas	1	2	3	0.50	4	1.50	6.00	Moderate
Wenceslao	Flood	Population	4	4	3	0.75	4	3.50	14.00	Very High
Wenceslao	Flood	Urban Use Areas	4	3	3	0.50	4	3.00	12.00	Very High
Bautista	Liquefaction	Population	2	4	3	0.75	3	2.50	7.50	High
Bautista	Liquefaction	Urban Use Areas	1	1	3	0.25	3	1.00	3.00	Moderate
Gana	Liquefaction	Population	4	4	3	0.75	3	3.50	10.50	High
Gana	Liquefaction	Urban Use Areas	4	2	3	0.50	3	3.00	9.00	High
Las-ud	Liquefaction	Population	4	4	3	0.75	3	3.50	10.50	High
Las-ud	Liquefaction	Urban Use Areas	4	2	3	0.50	3	3.00	9.00	High
Liquicia	Liquefaction	Population	2	4	3	0.75	3	2.50	7.50	High
Liquicia	Liquefaction	Urban Use Areas	1	3	3	0.50	3	1.50	4.50	Moderate
Poblacion Norte	Liquefaction	Population	4	4	3	0.75	3	3.50	10.50	High
Poblacion Norte	Liquefaction	Urban Use Areas	3	3	3	0.50	3	2.50	7.50	High
Poblacion Sur	Liquefaction	Population	4	4	3	0.75	3	3.50	10.50	High
Poblacion Sur	Liquefaction	Urban Use Areas	4	4	3	0.75	3	3.50	10.50	High
San Carlos	Liquefaction	Population	4	4	3	0.75	3	3.50	10.50	High
San Carlos	Liquefaction	Urban Use Areas	4	3	3	0.50	3	3.00	9.00	High
San Jose	Liquefaction	Population	3	4	3	0.75	3	3.00	9.00	High
San Jose	Liquefaction	Urban Use Areas	2	2	3	0.50	3	2.00	6.00	Moderate
Santiago Norte	Liquefaction	Population	4	4	3	0.75	3	3.50	10.50	High

Barangay	Hazard	Unit	E	S	AC	V	L	Sev	Risk	Category
Santiago Norte	Liquefaction	Urban Use Areas	4	2	3	0.50	3	3.00	9.00	High
Santiago Sur	Liquefaction	Population	4	4	3	0.75	3	3.50	10.50	High
Santiago Sur	Liquefaction	Urban Use Areas	4	3	3	0.50	3	3.00	9.00	High
Sobredillo	Liquefaction	Population	1	4	3	0.75	3	2.00	6.00	Moderate
Sobredillo	Liquefaction	Urban Use Areas	1	2	3	0.50	3	1.50	4.50	Moderate
Urayong	Liquefaction	Population	3	4	3	0.75	3	3.00	9.00	High
Urayong	Liquefaction	Urban Use Areas	2	2	3	0.50	3	2.00	6.00	Moderate
Wenceslao	Liquefaction	Population	4	4	3	0.75	3	3.50	10.50	High
Wenceslao	Liquefaction	Urban Use Areas	4	3	3	0.50	3	3.00	9.00	High
Bautista	Rain-induced Landslide	Population	4	4	3	0.75	3	3.50	10.50	High
Bautista	Rain-induced Landslide	Urban Use Areas	4	1	3	0.25	3	2.50	7.50	High
Gana	Rain-induced Landslide	Population	3	4	3	0.75	3	3.00	9.00	High
Gana	Rain-induced Landslide	Urban Use Areas	2	2	3	0.50	3	2.00	6.00	Moderate
Juan Cartas	Rain-induced Landslide	Population	4	4	3	0.75	3	3.50	10.50	High
Juan Cartas	Rain-induced Landslide	Urban Use Areas	4	2	3	0.50	3	3.00	9.00	High
Las-ud	Rain-induced Landslide	Population	1	4	3	0.75	3	2.00	6.00	Moderate
Las-ud	Rain-induced Landslide	Urban Use Areas	1	2	3	0.50	3	1.50	4.50	Moderate
Liquicia	Rain-induced Landslide	Population	4	4	3	0.75	3	3.50	10.50	High
Liquicia	Rain-induced Landslide	Urban Use Areas	4	3	3	0.50	3	3.00	9.00	High
Poblacion Norte	Rain-induced Landslide	Population	4	4	3	0.75	3	3.50	10.50	High
Poblacion Norte	Rain-induced Landslide	Urban Use Areas	4	3	3	0.50	3	3.00	9.00	High
Poblacion Sur	Rain-induced Landslide	Population	4	4	3	0.75	3	3.50	10.50	High
Poblacion Sur	Rain-induced Landslide	Urban Use Areas	3	4	3	0.75	3	3.00	9.00	High
San Carlos	Rain-induced Landslide	Population	1	4	3	0.75	3	2.00	6.00	Moderate
San Carlos	Rain-induced Landslide	Urban Use Areas	1	3	3	0.50	3	1.50	4.50	Moderate
San Cornelio	Rain-induced Landslide	Population	4	4	3	0.75	3	3.50	10.50	High
San Cornelio	Rain-induced Landslide	Urban Use Areas	4	3	3	0.50	3	3.00	9.00	High
San Fermin	Rain-induced Landslide	Population	4	4	3	0.75	3	3.50	10.50	High

Barangay	Hazard	Unit	E	S	AC	V	L	Sev	Risk	Category
San Fermin	Rain-induced Landslide	Urban Use Areas	4	3	3	0.50	3	3.00	9.00	High
San Gregorio	Rain-induced Landslide	Population	4	4	3	0.75	3	3.50	10.50	High
San Gregorio	Rain-induced Landslide	Urban Use Areas	4	4	3	0.75	3	3.50	10.50	High
San Jose	Rain-induced Landslide	Population	4	4	3	0.75	3	3.50	10.50	High
San Jose	Rain-induced Landslide	Urban Use Areas	4	2	3	0.50	3	3.00	9.00	High
Santiago Sur	Rain-induced Landslide	Population	1	4	3	0.75	3	2.00	6.00	Moderate
Santiago Sur	Rain-induced Landslide	Urban Use Areas	1	3	3	0.50	3	1.50	4.50	Moderate
Sobredillo	Rain-induced Landslide	Population	4	4	3	0.75	3	3.50	10.50	High
Sobredillo	Rain-induced Landslide	Urban Use Areas	4	2	3	0.50	3	3.00	9.00	High
Urayong	Rain-induced Landslide	Population	4	4	3	0.75	3	3.50	10.50	High
Urayong	Rain-induced Landslide	Urban Use Areas	4	2	3	0.50	3	3.00	9.00	High
Wenceslao	Rain-induced Landslide	Population	1	4	3	0.75	3	2.00	6.00	Moderate
Wenceslao	Rain-induced Landslide	Urban Use Areas	1	3	3	0.50	3	1.50	4.50	Moderate

Source: E exposure, S sensitivity, AC adaptive capacity, V vulnerability, L likelihood, Sev severity of consequence. Computed by this system from the agency hazard data and the datasets the local government supplied.

6.1 Critical point facilities

Facility exposure is a point-in-polygon test against the hazard polygons, not a share applied to an area, so it is a measurement rather than an assumption.

Table G. Critical point facilities and their risk

Facility	Barangay	Hazard	Susceptibility	Risk	Category
Municipal Hall	Bautista	Flood	-	-	-
Police Station	Bautista	Flood	-	-	-
Municipal Health Centre	Bautista	Flood	-	-	-
Central Elementary School	Bautista	Flood	-	-	-
Fire Station	Bautista	Flood	-	-	-
Public Market	Gana	Flood	MF	-	-
Covered Court Evacuation Centre	Gana	Flood	MF	-	-
District High School	Juan Cartas	Flood	-	-	-
Barangay Health Station	Las-ud	Flood	MF	-	-

Facility	Barangay	Hazard	Susceptibility	Risk	Category
Water Pumping Station	Liquicia	Flood	HF	-	-
Municipal Hall	Bautista	Liquefaction	-	-	-
Police Station	Bautista	Liquefaction	-	-	-
Municipal Health Centre	Bautista	Liquefaction	-	-	-
Central Elementary School	Bautista	Liquefaction	-	-	-
Fire Station	Bautista	Liquefaction	-	-	-
Covered Court Evacuation Centre	Gana	Liquefaction	Generally Susceptible	-	-
Public Market	Gana	Liquefaction	Generally Susceptible	-	-
District High School	Juan Cartas	Liquefaction	-	-	-
Barangay Health Station	Las-ud	Liquefaction	Generally Susceptible	-	-
Water Pumping Station	Liquicia	Liquefaction	-	-	-
Municipal Hall	Bautista	Rain-induced Landslide	VHL	-	-
Police Station	Bautista	Rain-induced Landslide	VHL	-	-
Municipal Health Centre	Bautista	Rain-induced Landslide	VHL	-	-
Central Elementary School	Bautista	Rain-induced Landslide	VHL	-	-
Fire Station	Bautista	Rain-induced Landslide	VHL	-	-
Public Market	Gana	Rain-induced Landslide	LL	-	-
Covered Court Evacuation Centre	Gana	Rain-induced Landslide	LL	-	-
District High School	Juan Cartas	Rain-induced Landslide	HL	-	-
Barangay Health Station	Las-ud	Rain-induced Landslide	-	-	-
Water Pumping Station	Liquicia	Rain-induced Landslide	-	-	-

Source: Point-in-polygon test against the agency hazard polygons.

7. What Is Still Needed

This section is deliberately prominent. An incomplete assessment that reads as complete is the failure with the worst consequences, because it gets submitted. Each row names the dataset that is missing, why it is missing, and which part of the assessment it blocks.

Table I. Outstanding datasets

Area	What is needed	Why it is missing	What it blocks
Drought	A hazard source	No automated source is wired up for this hazard yet.	Everything for this hazard
Storm Surge	A hazard source	No automated source is wired up for this hazard yet.	Everything for this hazard
Sea Level Rise	A hazard source	No automated source is wired up for this hazard yet.	Everything for this hazard
Ground Shaking	Per-barangay susceptibility class, entered by the planner	The publishing agency will not serve this layer for computation, so susceptibility has to be entered per barangay by the planner.	Exposure, and therefore risk, for this hazard
Earthquake-induced Landslide	Per-barangay susceptibility class, entered by the planner	The publishing agency will not serve this layer for computation, so susceptibility has to be entered per barangay by the planner.	Exposure, and therefore risk, for this hazard
Ground Rupture	A hazard source	No automated source is wired up for this hazard yet.	Everything for this hazard
Tsunami	Per-barangay susceptibility class, entered by the planner	The publishing agency will not serve this layer for computation, so susceptibility has to be entered per barangay by the planner.	Exposure, and therefore risk, for this hazard
Land use by barangay	Area by land-use category per barangay	Awaiting the LGU data upload.	Urban-use and natural-resource exposure units
Sensitivity (CBMS)	Informal settlers, light-material dwellings, dependants	Awaiting the LGU data upload.	The sensitivity half of vulnerability
Adaptive capacity	The DHSUD questionnaire, per hazard	Awaiting the LGU data upload.	The adaptive-capacity half of vulnerability
Critical facilities	Facility list with coordinates	Awaiting the LGU data upload.	Critical-facility exposure
Replacement costs	Unit cost per land-use category	Awaiting the LGU data upload.	Damage estimates

8. Sources and Terms

Every figure in this assessment traces to one of the datasets below. The endpoint column records the service the data was retrieved from, so any figure can be checked against the publishing agency directly.

Table J. Source register

Dataset	Agency	Vintage or attribution	Retrieved	Used for
Administrative boundaries	faeldon/philippines-json	PSAPs 2023-12-31 (PSA/NAMRIA via faeldon, MIT)	-	Municipal outline, barangay polygons, all area computations
Earthquake-induced Landslide	PHIVOLCS	DOST-PHIVOLCS	2026-09-02 23:50	Susceptibility class share per barangay
Tsunami Hazard	PHIVOLCS	DOST-PHIVOLCS	2026-09-02 23:50	Susceptibility class share per barangay
Liquefaction Susceptibility	PHIVOLCS	DOST-PHIVOLCS (as of July 2018)	2026-09-02 23:50	Susceptibility class share per barangay
Rain-induced Landslide Susceptibility	DENR-MGB	DENR-Mines and Geosciences Bureau	2026-09-02 23:50	Susceptibility class share per barangay
Ground Shaking (Deterministic)	PHIVOLCS	DOST-PHIVOLCS	2026-09-02 23:50	Susceptibility class share per barangay
Flood Susceptibility	DENR-MGB	DENR-Mines and Geosciences Bureau	2026-09-02 23:50	Susceptibility class share per barangay

8.1 Terms

Table K. Terms used in this assessment

Term	Meaning
Exposure	The share of a barangay's people, area or facilities that falls inside a hazard-susceptible polygon, scored 1 to 4.
Sensitivity	The share of the exposed unit that is more easily harmed - informal settlers, light-material dwellings, dependants - scored 1 to 4.
Adaptive capacity	The local government's regulatory and institutional capacity to reduce harm, coded A to D and scored 1 to 4, inverted so that A scores 1.
Vulnerability	Sensitivity and adaptive capacity combined through the DHSUD vulnerability index, scored 0.25 to 1.00.
Severity of consequence	Exposure and vulnerability combined: $(\text{exposure} + \text{vulnerability}) / 2$.
Likelihood	The temporal probability of the hazard, from its return period, scored 1 to 4.
Risk score	Likelihood multiplied by severity of consequence, from 1 to 16.