

ShelterCluster.org

Coordinating Humanitarian Shelter

## SECONDARY DATA REVIEW 2012 Flood Events, PERU

June 2012



Source: *Photographs of Flooding in Loreto*; Oficina Regional de la Defensa Nacional (INDECI), Loreto, PERU





Across the country these precipitation events caused flooding, flash floods, and landslides destroying infrastructure, shelters, and livelihoods and affecting over 800.000 individuals.

#### DASHBOARD 1; Key National Figures of the Flood Emergency

<b>Affected Population (Individuals)</b>	833.779
<b>Affected Departments / Declared State of Emergency Related to Consequences of Intense Precipitation Event[s]</b>	24 of 25 departments affected / 18 declared states of emergency – to date 6 remain under a state of emergency
<b>Estimated Number of Homes/Shelters Affected</b>	168.936
<b>Number of Affected Schools</b>	1.919
<b>Number of Affected Health Centres</b>	308
<b>KM of Roads Affected</b>	9.092
<b>Number of Bridges Affected</b>	573
<b>Estimated Impact of Consequences of Intense Precipitation on Crops (Hectares)</b>	18.196 affected / 28.403 Lost

Source: INDECI

## OBJECTIVE

This report aims to provide an overview of the information currently publically available on the flood events in Peru. Specifically, the information consolidated in this report seeks to inform humanitarian actors and stakeholders of priority areas based on the impact and aid priorities of affected populations in order to guide future assessments and provide a snapshot of the situation for operational purposes.

## METHODOLOGY

This report has been compiled on the basis of information made publically available by state and non-governmental institutions both on the ground and at a national and international level. The research conducted consolidates reports posted on the worldwide web as well as documentation disseminated by humanitarian actors and stakeholders currently active in Peru. In order to ensure that as far as possible the data presented matches the reality on the ground and is accepted by all actors, only data provided through the humanitarian network (*red humanitaria*) in Peru is presented in this report.

## PRIMARY INFORMATION COVERED BY THIS REPORT

- Background information to the intense precipitation events and impact;
- Review of available data on affected areas and cross-comparison between the most affected regions;
- Analysis of context and aid response within Loreto Department;
- Review of Housing and Shelter Profile in Peru;
- Conclusions and Next Steps.

## INFORMATION DEFICIT

Based on the review of secondary data made publically available a significant information deficit has been identified related to data at the Provincial / District level. Given that institutional capacities exist at both the national and regional levels coordinated by the Institute of Civil Defence and supported by the humanitarian network in country, it is assumed that data is available on the field. Nonetheless, based on the review undertaken the following key areas have been identified as key information needs to develop a more complete understanding of the dynamics and impact of the emergency resulting from the intense hydro-meteorological disturbances:

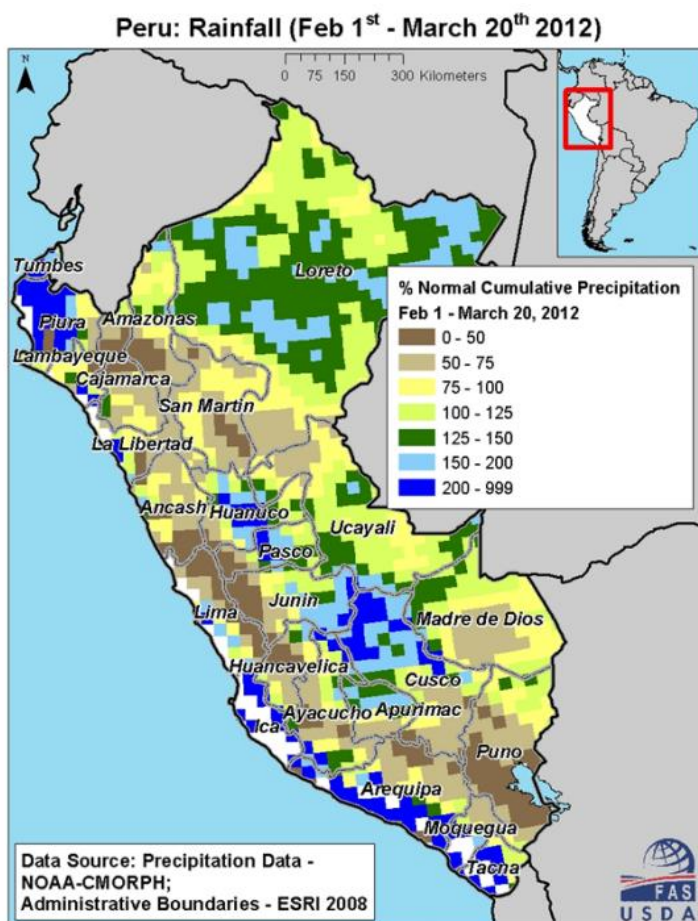
- Need for a clear understanding of the profile of displacement (i.e. socio-economic impact) that occurred (if any) and the dynamics of evacuation,
- Verification of data regarding affected communities and the impact of the flooding on shelters across socio-economic and spatial characteristics;
- Consolidation of best practices and standards developed in country to facilitate relevant and cost-effective rehabilitation and/or reconstruction of shelters and incorporation of DRR techniques;

- Review of coping mechanisms to support the ability of communities to manage the key stress factors during flood emergencies;
- Review the availability of materials available for recovery programmes;
- Understanding of non-shelter household priority needs in the recovery phase;
- Analysis & mapping of humanitarian assistance being implemented based on indicators that facilitate coordination efforts and identification of gaps (currently all humanitarian aid is reported in metric tons).

## NATIONAL CONTEXT

### OVERVIEW AND BACKGROUND INFORMATION

Peru experiences regular seasonal rainfall that peaks between the months of December through April and regularly causes flooding in the northeastern Amazonian region. A strong La Nina effect in 2011 that continued to influence global weather patterns into early 2012 however created significant hydro-meteorological disturbances that moved through the South American continent from the South Atlantic. These extreme precipitation events brought heavy rainfall that in turn caused flooding and mudslides across vast areas of both highland and lowland regions of Peru.



**Figure 2 (left); Rainfall as a Percentage of Normal Cumulative Precipitation (February to March). Source: USDA**

Across the country over 146 emergency events in 15 departments across the country have been reported ranging from mudslides, flash floods and hailstorms in highland areas to severe rainfall, flooding and strong winds across the country.

Despite the fact that Peru has witnessed unprecedented growth of around 9% since 2008 based on the export of natural resources that account for over 60% of the country's export earnings, huge economic disparities still exist across the country leaving more than half of the population living below the poverty line. Departments without mineral resources or major internationally recognized tourist attractions remain reliant on traditional agricultural practices and have progressed at a much slower rate whilst at the same time being most vulnerable to natural hazards. The recent floods in fact particularly hit those Departments much lower on the human development index than the Peruvian average.<sup>2</sup>

#### DASHBOARD 2: Key Reference Indicators - PERU

Population	29.2 million
Growth Rate	1.029%
Infant Mortality	22.18 per 1000 live births
Maternal Mortality	98 per 100000 live births
Life Expectancy	74 years
Malnutrition Rate	
Per Capita GDP	\$8.389
Percentage of the Population, total, living below the National Poverty Line (2009)	34,8%
Percentage of the Population in Rural areas living below the National Poverty Line (2009)	60,3%
Percentage of the Population without Access to Basic Services (i.e. safe drinking water)	82%

<sup>2</sup> DG ECHO Humanitarian Implementation Plan (HIP) South America; Dated 07.05.2012 Version 1

Adult Illiteracy Rate	92.9%
Urban Housing Deficit	14% of households <sup>3</sup>
HDI Index	0,725 (80/187)

Source: World Bank

## IMPACT

As part of efforts to consolidate information across all the emergency sites, the National Institute for Civil Defence (INDECI-SINPAD) began compiling regional level data reviewing the impact of the events based on the following categories: Population / People, Housing and Public Buildings (schools and health centres), Transport Infrastructure, and Agriculture. This data summary currently constitutes the primary source of information that provides the reader an overview of the extent and scope of the impact across the country. Across each of the categories reviewed by INDECI the data in this report is further sub-categorised by the type of impact which, in the case of shelter, includes the sub-categories *collapsed*, *uninhabitable*, and *affected*.<sup>4</sup>

The primary data reported by INDECI as of 01<sup>st</sup> June 2012 is shown on page 7 below. In summary, based on a review of the quantitative data presented in the table, the following key information can be surmised (rows highlighted in blue indicate primary data specifically useful for shelter actors / in shelter planning):

	#1	#2	#3
Affected Individuals ( <i>Damnificadas &amp; Afectadas</i> )	Loreto	Puno	Piuria
Injuries to Individuals ( <i>Fallecidas, Heridas, Desparecidas</i> )	Lima	Puno	Cajamarca
Collapsed Shelters ( <i>Viviendas Colapsadas</i> )	Puno	Ayachuco	Arequipa
Uninhabitable Shelters ( <i>Viviendas Inhabitables</i> )	Puno	Piuria	Loreto
Affected Shelters ( <i>Viviendas Afectadas</i> )	Loreto	Puno	Piuria
Collapsed Schools	Piura	Apurimac	Puno
Uninhabitable Schools	Puno	Piura	Apurimac
Affected Schools	Loreto	Puno	Lambayeque
Collapsed Health Centres	Puno	Piura	Apurimac
Uninhabitable Health Centres	Loreto	Puno	Lambayeque
Affected Health Centres	Loreto	Puno	Piura
Cultivated Land Affected	San Martin	Cusco	Tumbes
Cultivated Land Lost	Loreto	Cusco	Tumbes

Figure 3 (above): Top 3 Most Affected Regions by Category; Source: INDECI-SINPAD

A number of locations have clearly been most heavily affected across very different geographical locations and with very different environmental conditions:

- Loreto (NE, Lowland, Rainforest);
- Puno (SE, Highland);
- Piura (NW, Highland & Coastal).

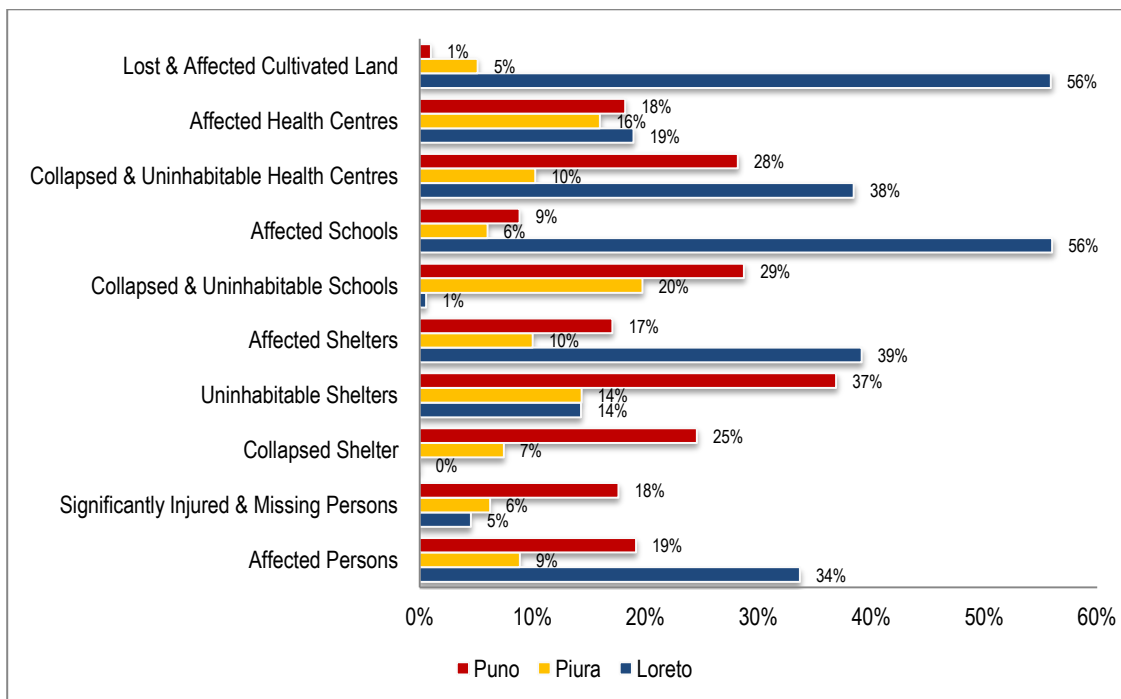
	Loreto		Puno		Piura	
Affected Persons	280.763	34%	159.824	19%	74.031	9%
Injured & Missing Persons	8	5%	31	18%	11	6%
Collapsed Shelters	1	0%	2359	25%	718	7%
Uninhabitable Shelters	1447	14%	3732	37%	1452	14%
Affected Shelters	58432	39%	25512	17%	14975	10%
Collapsed & Unsafe Schools	1	1%	48	29%	33	20%
Affected Schools	1542	56%	244	9%	166	6%
Collapsed & Unsafe Health Centres	15	38%	11	28%	4	10%
Affected Health Centres	51	19%	49	18%	43	16%
Cultivated Land Affected & Lost	26056,5	56%	470,5	1%	2404,9	5%

<sup>3</sup> Source: Room for Development *Housing Markets in Latin America and the Caribbean*, Inter American Development Bank; 2012

<sup>4</sup> Definitions of the terms used to sub-categorise shelter were given as follows: **Collapsed**: Shelter that has been completely destroyed / demolished; **Uninhabitable**: Housing that has been damaged to the extent that it is currently uninhabitable (note, this includes both temporarily uninhabitable and permanently uninhabitable interpretations); **Affected**: homes that have been impacted by the events, but in which it is still possible to live.

Figure 4 (above): Scale of Impact across the Top 3 Most Affected Regions (percentages are calculated as proportion of national total); Source: INDECI-SINPAD

Figure 5 (below): Type of Impact Experienced in Loreto, Puno, and Piura as a % of the Total Reported Impact across Peru; Source: INDECI



Based on the data one can conclude that the scale and scope of the impact was largest / widest in Loreto given that it accounts for the majority of *affected* individuals/homes/institutions/land. However, in terms of degree of impact it seems that Puno has experienced the greatest damage given that it accounts for the majority of *collapsed / uninhabitable* homes/institutions. Perhaps most critical however is the reported data on crop damage and loss. In both Loreto and Puno the majority of poorer rural households rely on agriculture, though whereas Loreto accounts for over 56% of affected crops, Puno accounts for 1% of the national total. The lower impact on a key livelihood source in Puno may in the longer-term dampen the impact felt strongly in other sectors.

Destroyed Shelter							
Department	01/11/11	01/12/11	01/01/12	01/02/12	01/03/12	01/04/12	01/05/12
AREQUIPA	0	0	136	760	179	0	0
AYACUCHO	19	1	39	786	367	41	0
LORETO	0	0		1	0	0	0
PIURA	0	0	151	221	259	87	0
PUNO	0	12	447	1297	570	33	0

Inhabitable Damaged Shelter							
Department	01/11/11	01/12/11	01/01/12	01/02/12	01/03/12	01/04/12	01/05/12
AREQUIPA	0	160	2 513	4 766	2 648	233	0
AYACUCHO	30	10	106	2 152	1 038	45	44
LORETO	249	0	38 878	10 251	7 514	1 540	0
PIURA	0	0	911	3 975	8 456	1 630	0
PUNO	0	0	2 638	18 079	4 620	64	0

Non Inhabitable Damaged Shelter							
Department	01/11/11	01/12/11	01/01/12	01/02/12	01/03/12	01/04/12	01/05/12
AREQUIPA	0	0	0	8	0	0	0
AYACUCHO	0	0	0	0	0	0	0
LORETO	0	0	436	915	96	0	0
PIURA	0	0	164	598	466	224	0
PUNO	0	17	618	2 468	598	31	0

Figure 6 (above): Timelapse of Shelter Damage Data for Most Heavily Affected Regions; Source: INDECI

When examining these figures over time (November 2011 through May 2012 – see figure below), it is clear that the impact has been different in each of the most affected locations. Focusing on shelter for example, one can assume that the impact was felt more forcefully with a spike in January after which there was a widening geographical scope and decreasing intensity of impact. In Piura on the other hand the first impact occurred similarly in January with a likely more defined geographical scope (potentially isolated events across multiple locations) given the more moderate numbers involved though with increasing intensity. Finally, in Puno it is clear that the region witnessed a more

moderate impact at the start of the events, spiking in February 2012 where the majority of the damage to shelters occurs.

## COORDINATION MECHANISMS

On the 1<sup>st</sup> of June 2012, the Global Shelter Cluster chose to activate a cluster presence in Peru to respond to unprecedented flooding that has affected over 1.2 million people across South America in the first half of 2012. Peru alone accounts for more than 65% of the flood affected population or ca. 800.000 individuals, yet despite such large figures and the declaration of states of emergencies across 18 of 24 departments in the country the level of coverage, and therefore the subsequent availability of publically available data on the scope and impact of the emergency, has been limited.

The activation of the shelter cluster comes as part of the wider implementation of previously established national level coordination mechanisms represented by UN agencies, the International Red Cross/Red Crescent Movement, Non Governmental Organizations, bilateral and multilateral donors, and the National Civil Defence Institute (INDECI) representing the Government of Peru. Under the purview of the International Federation of the Red Cross (IFRC) and supported by the Peruvian Red Cross, the shelter cluster now seeks to set up a regional working group within one of the hardest hit departments in the country – Loreto – where the largest humanitarian operation has been ongoing, with the primary goal of assessing the extent of the damage to shelters in the region to facilitate the development of a shelter strategy and undertake advocacy activities on behalf of the shelter sector.

The primary response at the national level has been coordinated by INDECI that has provided periodic updates and reports on the state of the crisis. Countrywide 833.779 people, 168.936 shelters, 1.919 schools, 308 health centres, 9.092km of road, 573 bridges, and 46.599ha of cultivated land have been affected to various degrees. The table below dated 01<sup>st</sup> June released by INDECI provides an overview of the impact across all provinces (*see page 7*).

The activation of the existing thematically divided coordination mechanisms at regional levels of highly impacted departments should facilitate the improvement of data collection at district and provincial levels that are currently under-reported.

DEPARTAMENTO	VIDA Y SALUD (PERSONAS)					VIVIENDAS Y LOCALES PUBLICOS									TRANSPORTES				AGRICULTURA - TERRENO AGRICOLA Y DE COBERTURA				
	DAMNIFICADAS	AFECTADAS	FALLECIDAS	HERIDAS	DESAPARECIDAS	VIVIENDAS COLAPSADAS	VIVIENDAS INHABITABLES	VIVIENDAS AFECTADAS	I.EE. COLAPSADAS	I.EE. INHABITABLES	I.EE. AFECTADAS	EE.SS. COLAPSADOS	EE.SS. INHABITABLES	EE.SS. AFECTADOS	CARRETERAS DESTRUIDAS (Km)	CARRETERAS AFECTADAS (Km)	PUENTES DESTRUIDOS	PUENTES AFECTADOS	AREA DE CULTIVO AFECTADO (Has)	AREA DE CULTIVO PERDIDO (Has)	COBERTURA NATURAL AFECTADO (Has)	COBERTURA NATURAL DESTRUIDO (Has)	
AMAZONAS	990	2,027		1		32	174	240	1		1				9.93	17.75	7	4	97.50	6.20	205.00	85.00	
ANCASH	813	2,392	3	3	3	139	4	401							2.00	19.90	4	1	11.00	4.00			
APURIMAC	1,472	8,698				263	70	1,742	8	14	80	1		9	32.05	168.13	39	37	15.00				
AREQUIPA	5,272	45,730	3	1	1	1,075	8	10,320			68			2	178.76	1,142.63	16	22.2	1,873.00	321.50			
AYACUCHO	6,647	16,082	3			1,253		3,425	4		114	1		13	59.36	1,016.77	10	35					
CAJAMARCA	258	5,677	4	9		58	4	29	1	2	1		1		25.56	30.89	2	1	200.00		142.00	10.00	
CUSCO	3,413	5,474	2		1	246	481	860		5	7			2	72.21	737.43	17	38	3,895.08	997.84	2,685.72	211.91	
HUANCAVELICA	5,167	43,635		1		591	356	2,318	7	13	67			18	337.59	247.64	29	44	35.00	23.00	22.00	3.50	
HUÁNUCO	667	4,062	1	4		122	42	591			3			1	3.24	24.46	2	3					
ICA	7	12,479					2	2,468	4														
JUNIN	1,019	6,555	4	7	1	119	101	527	2		3				4.34	8.55	1.1	3	149.50	6.00	0.75	2.00	
LA LIBERTAD	487	2,455	1			49	49	484	1		8					3.05			2.00				
LAMBAYEQUE	6,576	17,019		3		834	663	3,487	6	5	167		3	19	30.00	96.52	2	2	1,225.75	204.00			
LIMA	5,412	12,816	4	46		753	171	1,950	1	4	40	1	2	11	1,100.26	126.29	40	16	76.50	85.00	0.50		
LORETO	209,226	71,537	8			1	1,447	58,432		1	1,542		15	51		3.15			21.50	26,035.00			
MADRE DE DIOS	238	26				20	39	12		2	1						2						
MOQUEGUA	1,948	23,609	2	3		549	342	6,571		1	98			14	100.45	1,119.31	6	46	226.00	131.90	35.00	5.00	
PASCO	340	81	1	7		69		15															8.00
PIURA	10,227	63,804	4	5	2	718	1,452	14,975	11	22	166	2	2	43	351.71	1,205.03	5	14	2,316.40	88.50	756.50		
PUNO	26,561	133,263	15	16		2,359	3,732	25,512	8	40	244	5	6	49	241.81	342.77	60	31	470.50		1,280.00		
SAN MARTIN	405	34,617	3	1		40	48	6,879	2		17				0.03	15.14	2	4	5,000.00		180.00	550.00	
TACNA	4,613	11,074				273	355	4,185		2	90			22	29.85	168.74	1	21					
TUMBES	55	5,079	1	1	1	18	1	1,714			11			5		0.10		1	2,581.00	500.40			
UCAYALI	3,260	10,339				20	570	2,087			24				18.50		5						
Total general	295,073	538,530	59	108	9	9,601	10,111	149,224	56	111	2,752	10	29	269	2,579	6,513	245	328	18,196	28,403	5,307	875	

Actualizado: 01.06.2012

Fuente: SINPAD

Figure 7: Affected Population and Impact on Infrastructure of Rainfall per Province – Peru; Source: INDECI

## SHELTER PROFILE; PERU

Various programmes and government led efforts have been undertaken in Peru to improve shelter conditions across urban and rural areas of the country. Specifically in Peru's Amazonian region an IADB programme was started in late 2010 to boost home improvement loans for low-income families. The loans aim to improve conditions in Loreto Province where only 57% of homes have access to electricity, almost half use external water sources such as rivers or wells, and more than 35% have dirt floors. Despite such efforts however, the vast majority of rural Loreto has received little or no external support and continues to practice traditional timber-based shelter construction techniques.



In URBAN settings one of the most common construction types in Peru is the Adobe / Earthen house. Most commonly found in sub-urban and urban areas, these shelters typically do not share walls with adjacent buildings and are composed of two rooms with one main door and window for the purpose of a single family house. The traditional construction practice involves walls made of adobe blocks laid in mud mortar. The roof structure is made of wood consisting of timber beams with roofing materials differing between timber planks with mud overlay and clay tiles to steel sheets depending on regional and economic conditions. Housing units may include a bathroom/toilet.

**Figure 8 (top left): Adobe Housing Typical for Urban Settings. Source: World Housing Encyclopedia**



**Figure 9 (centre left): Elevated Shelters Typical for Rural / Peri-Urban Settings. Source: World Housing Encyclopedia**

In RURAL and sub-urban settings shelters are largely constructed utilizing timber for the main structure and woven palm/thatch for the roof. Limited specific information on construction and material typology exists specific to shelters in the Loreto Department – however indications are that shelters are highly adapted to the local environment, with houses constructed on stilts or built on rafts designed to rise and fall with water levels (see Figures 12 & 13 left).

**Figure 10 (bottom left): Floating Shelters Typical for Rural / Peri-Urban Settings in Loreto. Source: World Housing Encyclopedia**



## FOCUS ON LORETO REGION

Despite the fact that multiple locations could be considered as areas of priority for a shelter assessment, the focus of the humanitarian coordination actors at the national level has been on the region of Loreto. In large part this is due to the significantly larger scale of the numbers<sup>5</sup> being reported from an area which represents one of the poorest regions in the country. While Loreto does not match with Puno in terms of number of shelters collapsed, at the national level the concern is that Loreto has over 60.000 affected shelters in combination with over 220.000 individuals categorized as *damnificadas* or who lost everything, which is significantly more than in Puno. Moreover, authorities in Puno are said to have responded in a more rapid manner in comparison to those in Loreto where the information flow within the region and thus subsequent response was much slower. This greater capacity at the regional level in Puno is considered to have mitigated the impact of the events, one that was not available to the populations in Loreto living under the impact of floods for a period of multiple months without recourse to aid and support given a much lower regional capacity to collect, funnel and consolidate information from the field.

## OVERVIEW OF LORETO REGION

Amongst the most affected regions has been the Northeastern Department of Loreto accounting for almost one third of all affected persons and shelters. Loreto, which represents 3% of the country's population based primarily in 4 urban centres including Iquitos (pop. 370.962), Nauta (pop. 16.230), Requena (pop. 22.055), and Yurimaguas pop. 49.087) accounts for around 2,5% of Peru's annual GDP and is rated amongst the most vulnerable areas of the country, having an HDI index of 0,56 which would rank it about 50 places lower than the national HDI (comparable to India/Cape Verde00)

Loreto Department is divided into seven provinces that are in turn made up of 51 districts – see the administrative map attached as Annex B. Despite being one of the geographically largest Departments in Peru, with a population of 891.732 persons<sup>6</sup> Loreto represents only ca. 3% of the country's total population. The vast majority of Loreto's population lives in urban centres with the four largest cities of Iquitos, Nauta, Requena, and Yurimaguas accounting for 51% of the population alone. Geographically Loreto forms part of the Amazonian Hydrographical System that feeds the Ucayali, Amazonas and Marañon rivers and is primarily covered by rainforest. As a result, much of its economy relies on key crops such as rice, cassava, and fruit, as well as the rubber, timber and cattle industries. As much as 70% of the population is thought to be living under the poverty line.

Whilst all provinces within Loreto have been affected to some extent, 35 of its 51 districts remain as of 12 June 2012 under a state of emergency. Although flood levels have been slowly started to recede towards the end of May, it is estimated that up to 75% of the affected population in the Department may currently be homeless.<sup>7</sup> Field reports indicate that families have found shelter either within their communities through emergency means or at central evacuation / emergency centers centered on Loreto capital – Iquitos. An estimated 15.000 families have been reported as having sought shelter in such shelters.

Coordination for the emergency has been tasked to UNICEF at the field level in Loreto and thematic clusters have been approved by the National Humanitarian Network (*Red Nacional Humanitaria*). At present the following clusters have been active in the region since mid-May:

Thematic Groups	State Responsible	Int'l Coordinator
Education	Regional Bureau for Education	UNICEF
Health	Regional Bureau for Health	WHO/PAHO
WaSH	Office of Environmental Health	WHO/PAHO
Shelter & Camp	Regional Bureau of Technical Secretariat for civil Defence	IOM
Protection	Regional Bureau for Social Development	UNICEF

Figure 11: Coordination Bodies for Thematic Groups within Loreto, Peru; Source: UNOCHA

<sup>5</sup> Especially in terms of (a) affected persons; (b) affected shelters; and (c) affected cultivated land – which represents the most important livelihood source for the majority of rural communities in Loreto.

<sup>6</sup> Source ; 2007 Peru Census Data

<sup>7</sup> Source: REDLAC Weekly Note on Emergencies, Latin America and the Caribbean, Volume 258, Year 5; dt. 21.05.2012

Organisations wanting to work in Loreto are requested to contact the Regional Emergency Operations Centre from which contacts with regional authorities and departments are facilitated. Coordination facilities are set up in the regional government building. INDECI has maintained basic records of humanitarian assistance facilitated and/or reported in Loreto District. To date over 357T of aid have been distributed- a breakdown is shown in the graph below.

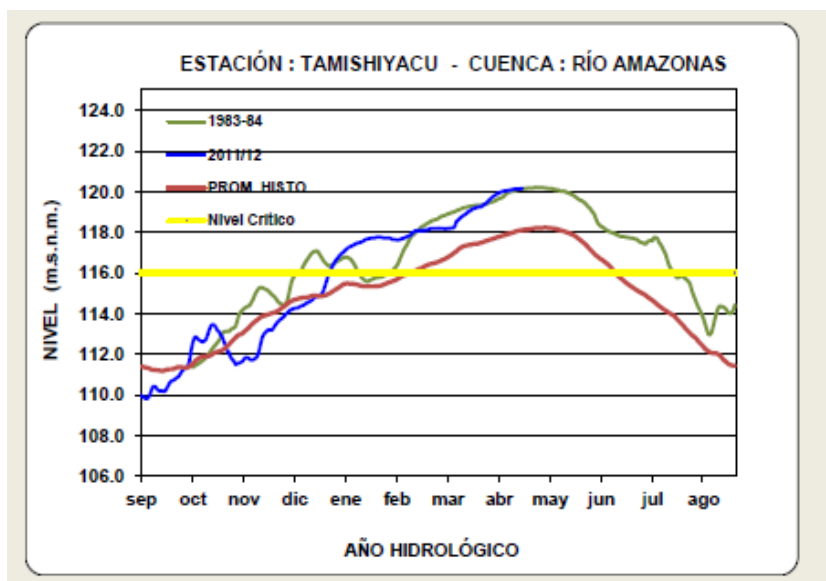


Figure 12 (above): River level height measured in meters above sea level (masl) compared to the earlier record established in the early 1980s. Source: SENAMHI

### FLOOD EVENTS

Given its location within the huge catchment area for the Amazon River basin, Loreto regularly experiences seasonal flooding across its territories. Communities in high risk areas (see Annex F of critical areas in Loreto) as a result are no strangers to flood events and are likely to have developed coping mechanisms to handle the consequences of regular floods. What makes the flood events of 2012 particular is the fact that water levels rose to historical highs not seen since 1983-84. Vast areas of Loreto were flooded by waters which at their peak reached a height of 118,97 masl on the 20<sup>th</sup> April 2012.

The extreme nature of the floods and the surpassing of all previous recorded levels meant that communities both experienced and inexperienced in handling floods were affected. In the case of the former, coping mechanisms were overcome by the sheer scale of the events thus exposing families often in isolated and highly vulnerable areas, whereas in the case of the latter coping mechanisms were often limited given their generally more secure conditions.

Most significantly perhaps, it was the duration of the flooding that further eroded communities' and households' capacities to manage the consequences of the flooding. Floodwaters began rising since February and continued to increase across most almost all the rivers in Loreto until the end of April and in some cases the beginning of May. Families as such have been under the influence of floodwaters for often multiple months, affecting livelihoods and education calendars and likely having significant impacts on the health and security of individual family members.

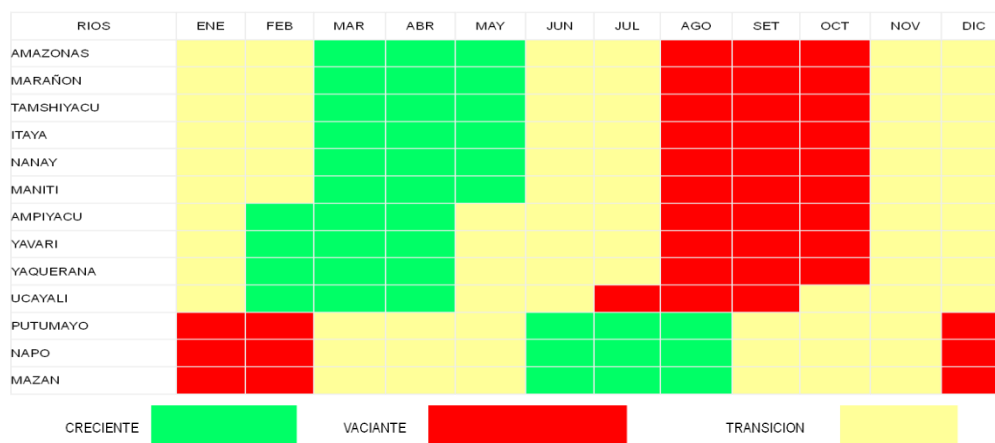


Figure 13 (above): River Transitions for Principal Rivers in Loreto. Source: Regional Office of INDECI

## POPULATION DISPLACEMENT

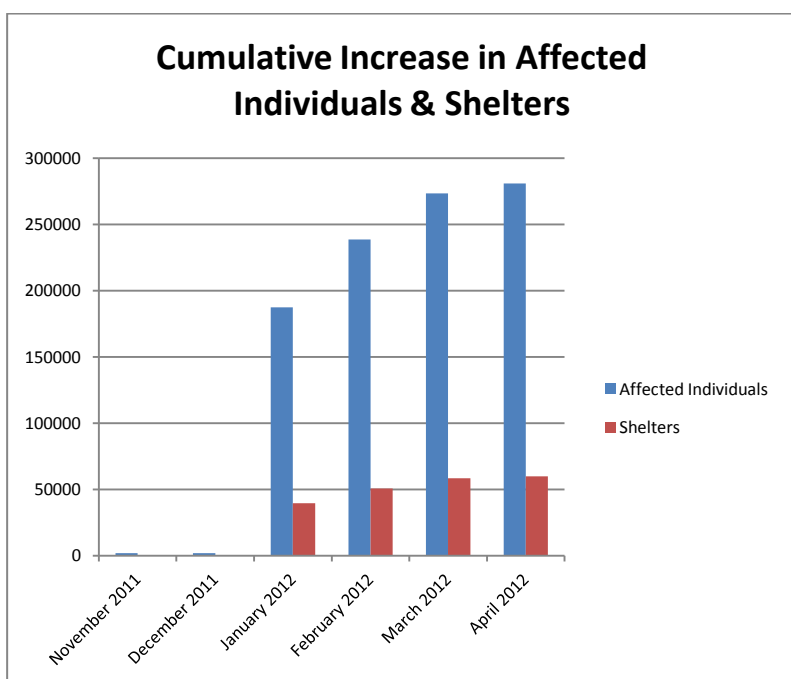
According to a rapid-situation report prepared by a Save the Children mission in mid April, across three districts visited by their team (Indiana, Belen, Fernando Lorres – Maynas Province) up to 41% of the population was affected. The team reported seeing a significant number of households continuing to live within their shelters either on an upper floor, within the 'attic' part of their roof, or by having created a second improvised floor within their shelters above the waterline. Based on a triangulation of information on "homeless and affected, versus the population in shelters" their report estimates that in the three districts visited about 70% of the stricken or affected population are not residing in emergency / evacuation shelters, despite these being the only places where external aid efforts are being implemented. According to their report this is crucial since any further increases or prolonged duration of flooding may incentivize families who have lost everything to move towards evacuation centres where the possibility of support is more likely.

Across the region over 95 collective centers housing 11.751 people (ca 2.556 families) have been identified in schools, churches, and community centers as of 15 May 2012. This number is reported to have decreased from 119 which indicates that some returns may have taken place as flood waters recede. DIRESA Loreto has sought to maintain an overview of the population residing in community centers as part of its own efforts to monitor the health conditions therein. Nonetheless no data has been published since their report dated 15<sup>th</sup> April in which 119 centers were identified supporting a population of ca. 16.500 people. Interestingly of those 119 centers, 106 were located in and around the city of Iquitos with 13 in the peripheries.

Based on the data available it is clear that major displacement has not occurred, with most sources reporting that issues related to the isolated nature of rural communities, lack of adequate transportation, and the fear of losing one's possessions contributing to the decisions of families not to leave their communities / homes.

Given the use of schools as emergency centers, there has been a significant disruption of classes that would have had to start at the beginning of May. Pressure to reopen schools will likely add to the need to support the speedy return to homes for those displaced wherever the situation is feasible. This will contribute towards the already observed trend of a decreasing number of community shelters.

## IMPACT ON SHELTER



It is estimated that upwards of 54.354 homes have been affected by the flooding. In terms of shelter impact, information from INDECI indicates that less than 1% of affected homes have been destroyed or rendered uninhabitable by the floods. Nonetheless, given that flood levels are still in the process of receding the assumption is that this number may raise as communities return to their homes and communication linkages are reestablished.

**Figure 14 (left): Cumulative Increase in Affected Individuals and Shelters – Loreto Region. Source: INDECI**

Based on available data the floods began to severely affect shelters starting in January 2012 increasing only marginally in subsequent months.

## AID RESPONSE

Reporting on the aid response is consolidated through the regional emergency coordination body within the Loreto Regional Government (COER). Despite providing up-to-date information sub-categorised by aid type, the fact that all consolidated data is provided in metric tonnes provided an extremely limited basis for analysing the aid response. Nonetheless, as of

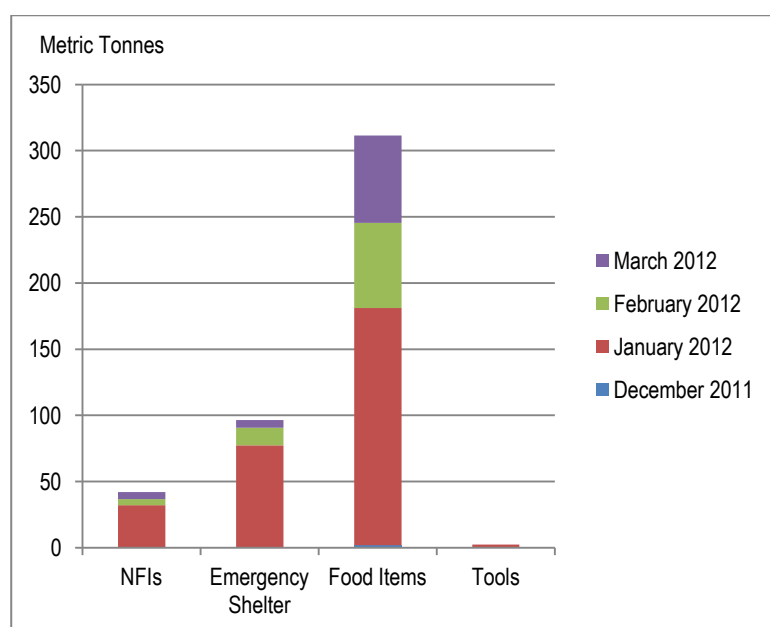
June 2012, detailed response presentations were being prepared by the INDECI regional office – a summary of which is provided below.

### DISTRIBUCION OF HUMANITARIAN AID BY PROVINCE

Article	MAYNAS KG	REQUENA KG	LORETO KG	UCAYALI KG	M.R. CASTILLA KG	DATEM KG	TOTAL KG
<b>Beds</b>	34,694.00	6,526.50	-----	-----	1,767.00	855.00	43,842.50
<b>Bucket 131 Lts</b>	6,900.30	787.05	99.00	247.50	475.20	217.80	8,726,85
<b>Bucket15 Lts</b>	17.00	68.00	10.00	25.00	46.50	30.00	196.50
<b>Mosquito Net</b>	4,972.50	3,487.55	1,275.00	127.50	1,001.13	892.50	11,756,18
<b>Hygiene Kits</b>	-----	-----	-----	-----	-----	709.20	709.20
<b>Blanket</b>	840.00	1,000.00	2,592.00	-----	4,708.00	294.00	9,434.00
<b>Pot</b>	-----	15.00	30.00	-----	-----	-----	45.00
<b>Skimmer</b>	-----	10.00	20.00	-----	-----	-----	30.00
<b>Knife</b>	-----	15.00	30.00	-----	-----	-----	45.00
<b>Cooking Pot N° 50</b>	45.00	10.00	-----	-----	-----	-----	55.00
<b>Mattresses</b>	3,281.40	2,525.40	-----	-----	842.40	624.60	7,283.80
<b>Sabanas</b>	1,736.70	1,376.34	85.68	63.00	149.94	450.24	3,861.90
<b>Tents</b>	69,552.00	4,788.00	-----	-----	6,972.00	2,184.00	83,496.00
<b>CGI Sheets</b>	20,217.00	8,745.00	-----	-----	-----	1,500.00	30,462.00
<b>Binding Wire / Coil</b>	8,918.00	416.00	-----	-----	208.00	624.00	9,968.00
<b>TOTAL</b>	151,203.90	29,769.84	4,41.68	463.00	16,170.17	8,381.34	<b>220,119.93</b>

Figure 15 (above): Consolidated Report of Humanitarian Aid Distributions in Loreto Region. Source: INDECI Presentation dt. 02.07.12

Figure 16 (below): Time Caption of Humanitarian Aid Distributions in Loreto Region. Source: INDECI Presentation dt. 02.06.12



## AGGRAVATING FACTORS

- The major flooding across Peru has affected thousands of hectares of cropland. It is estimated that water has destroyed at least 40% of the banana crop, where plantations have reported receiving about 30 years worth of rain in a 2 day period. Many of the larger trees have toppled over in the plantations and several fields cannot be harvested on time which will ultimately affect yields. This situation is likely to be repeated across the region affecting particularly those districts heavily dependent on cash crops and subsistence farming. INDECI data already indicates that over 26.000 hectares of crops have been destroyed across the Loreto Department.
- Poor sanitary conditions in flooded areas as well as emergency shelters combined with a lack of potable water sources has led health experts which visited the region in early May to define the health context as critical. Particularly ad-hoc refuges are faced with increased risks given the lack of water and sanitation infrastructure particularly further lacking waste management systems.
- Loreto Department is prone to numerous communicable diseases particularly vector-borne diseases such as Dengue and Malaria. With the lack of suitable sanitation infrastructure as well as sufficient potable water sources combined with factors typically associated with emergency / transitional private and community shelters it is expected that a rise in water borne diseases as well as acute respiratory illnesses will occur.

## INFORMATION DEFICIT

Access to information on the development of the emergency and its impact on urban and rural communities is sporadic and limited to the Loreto Department where the INDECI reports provide regular overviews of the impact on population, shelters, and primary infrastructure and crops.

## GENERAL

- Access to potable water in villages / areas of return;
- Review of capacity and limitations of emergency evacuation centres utilized by the population;
- Analysis of coping mechanisms utilized by affected communities and impact on safeguarding priority concerns,
- Analysis of the economic impact of the floods on the household and the ability to manage stresses placed on the family unit by the floods and their consequences;
- Review of priority needs of households in the early recovery phase as floodwaters recede.

## SHELTER SPECIFIC

- Damage to shelters, by category and across geographical areas. Particular differentiation required between urban and rural settings and based on proximity to rivers where faster flowing water may have caused more damage compared to areas where a gradual rising of water levels was experienced,
- Shelter rehabilitation needs both in the short term to ensure that homes are cleaned and repaired or temporary/transitional shelters put in place where homes are destroyed or significantly damaged, and in the medium term to mitigate the risks faced by families at times of increased flooding given the regular occurrence of flooding;
- Development of a quick reference shelter profile to support emergency shelter support efforts either through household specific support mechanisms or through community centers.

## RECOMMENDATIONS / NEXT STEPS

The sheer size and scale of the flooding and the geography of the area with transportation limited to waterways beyond the major towns or cities will pose significant logistical challenges to any assessment team seeking to take a representative sample of communities in order to make relevant assumptions and recommendations. As such, it is recommended that the assessment be split between a focus on urban/sub-urban and rural areas given the prevalence of emergency centres in urban areas and the different nature of the shelters and resource availability to facilitate a recovery process in the urban context. The assessment in rural areas should use the rivers as natural spokes from the city of Iquitos to progressively expand the area of coverage.

The possibility to mainstream disaster risk mitigation and disaster preparedness measures in programmatic planning should ensure that a review of secondary information is undertaken at the field level to determine best practices to disseminate in the recovery process (DRR focus) and specific training opportunities to improve community coping, preparedness, and management mechanisms. A key component will be to develop damage assessment maps that can facilitate an analysis of particularly vulnerable areas and the factors contributing to the higher risk.

The assessment and technical review of DRR mechanisms will need to focus its objective to enable humanitarian actors in Loreto and the shelter cluster to clearly define the post-emergency and early recovery needs within the areas covered by the assessment in order to develop relevant and impact oriented response programmes in coordination with regional actors. Moreover, based on the information collected as part of the assessment should enable actors as well as the cluster to determine fundraising needs and advocate for international support.

### REACH

REACH was born in 2010 as a joint initiative of two INGOs (IMPACT and ACTED) and one UN program (UNOSAT). Based in Geneva, REACH operates through global advocacy and country-level deployments.

REACH's **purpose** is to promote and facilitate the development of information products that enhance the humanitarian community's decision making and planning capacity.

REACH's **overall objective** is to enhance the effectiveness of planning and coordination by aid actors in countries that are in crisis or at-risk of crisis.

Since 2011 REACH has formalized a partnership with the Global Shelter Cluster (GSC) to support the strengthening of its coordination and planning capacity, with financial support from the European Commission Humanitarian Aid Office. Dedicated REACH teams (including assessment, database and mapping experts) are available to be rapidly deployed to the field in the aftermath of future emergencies in order to facilitate interagency assessments and mapping activities on behalf of the shelter cluster. Resulting information products are used to enable better planning and coordination by the cluster, and are widely disseminated.

## ANNEXES

**Annex A** – Population Projection (2012) Loreto Department

**Annex B** – Loreto Department Administrative Reference Map

**Annex C** – Loreto Department Reference Map – Urban Centres, Roads, Rivers

**Annex D** – Loreto Department Reference Map Administrative Capital and Surrounding Areas

**Annex E** – Extent of Flooding Map / *Mapa de Inundaciones del Departamento Loreto*

**Annex F** – Map of Critical Areas in Loreto District / *Mapa de Zonas Criticas, Loreto*

### Acronyms:

**INDECI** : National Institute of Civil Defence

**DIRESA**: Department of Health at the Regional Level

**UN**: United Nations

**GDP**: Gross Domestic Product

**HDI** : Human Development Index

**IFRC** : International Federation of the Red Cross / Red Crescent

**REDLAC** : Humanitarian Information Network for Latin America and the Caribbean

**CERF** : Central Emergency Response Fund

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### Organisations that Contributed to the Completion of this Report:



### Humanitarian Aid and Civil Protection

This document has been produced with the financial assistance of the European Commission. The views expressed herein should not be taken, in any way, to reflect the official opinion of the European Commission.