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Risks, Disasters and Reconstruction

Risk Management and Climate
Change Adaptation Program for
Practical Action
(*Soluciones Prácticas*
in Latin America)



PRACTICAL ACTION

Technology challenging poverty





The **disasters** between **February and March 2017** in northern Peru can be understood if we consider the **previous processes** that generated the risks, the emergency and the prospects of reconstruction.

RISK-GENERATING PROCESSES

Pedro Ferradas - Manager of the Risk Management and Climate Change Adaptation Program for **Practical Action**

Far from responding exclusively to natural phenomena, disasters have previous causes, which, if disregarded, can occur in vulnerable conditions during the reconstruction stage. We note the following:

- The official entities built their **models based on the El Niño phenomena of 1983 and 1998** that originated in the Western Pacific Ocean and with different characteristics than the El Niño phenomena of 1891, 1925 and 2017 that originated in our Eastern Pacific coasts. This explains the absence of previous forecasts and the uncertainty on the phenomenon evolution.
- **Poor management of basins and micro-basins** has resulted in increased flood threats. In 1998, the Piura River flows were much higher than this year, but did not become floods. This implies the need for a more comprehensive analysis of the causes of floods. River flows increase not only because of the rains, but also because of the physical situation of the different parts of the basins, inadequate cleaning of riverbeds, use of water for storage or irrigation purposes, soil erosion due to poor productive or extractive management, the interaction of mudslides and landslides, etc. The floods occur not only because of increased flow, but also because of the weakening of the riverside defenses and the informal constructions invading the channels. Finally, flooding can happen or worsen with heavy rainfall,
- poor maintenance of irrigation canals, or deficiency or absence of drainage systems.
- Population exposure due to **deficits in social and productive infrastructure**, insofar as they are located in areas of non-mitigable risk or because they may be affected by the mismanagement of basins, in particular by flows diversion or the collapse of weakened or poorly maintained river defenses.
- The impossibility of the poorest populations to access **decent housing** through market mechanisms and the existence of **informal appropriation mechanisms** such as land invasions and self-construction enabling such access in marginal lands, are the ones most exposed to floods and mudslides.
- **Speculation of urban land has grown exponentially** and includes land in streams and ravines. This speculation grows with the insufficient delimitation of the municipal jurisdictions that also allows the existence of delegated municipalities within the territory of other municipalities. Likewise, the corruption and transformation of "indigenous communities" in land speculators is increasing. Similarly, illegal developers



Los Polvorines neighbors in Piura work as a team to protect their homes from flooding

and the corruption of some officials and authorities worsen this problem.

- Despite **progress in the creation of the National Disaster Risk Management System** and the creation of national policies, the implementation of risk management policies is still weak in terms of policy execution. However, it should be noted that, to date, there are several zoning and microzoning studies (see recently completed Resilience Cities Program) and programs promoting public investment in Disaster Risk Management (DRM).
- The next item is the paradoxical and recurring practice of central governments of avoiding and **ignoring both the procedures established by the National DRM System and the applicable legislation**

in relation to emergency response, particularly the subsidiarity principle of the role of specialized agencies such as the National Civil Defense Institute (INDECI). In the first case, the replacement of local government leaders, and in the second case in the new role of the Armed Forces (FF.AA) in leading emergency situations, which differ from current legislation. Hence, new legislative proposals have been prepared.

- A severe management problem is the **lack of adequate mechanisms for the coordination of the various instances of Government, civil society and the population**. National DRM policies have not taken into account the reality and capacity differences in regional and local governments or citizen participation mechanisms.

The most critical constraints in DRM policies in the country include the following:

- The need for historical and social research on the different types of El Niño phenomena (FEN) and their effects.
- The weakness of risk analyzes in basins and micro-basins, and the need for comprehensive strategies and measures for risk reduction in these basins.
- The lack of effective mechanisms against land speculators, officials and companies providing basic services to risk areas.
- The lack of effective mechanisms to prevent the occupation of areas with mudslides and floods; and insufficient budgetary allocations, in addition to the lack of decentralized entities that are competent in the delimitation of channels and risk prevention.
- The lack of housing policies to address the challenges of informality and self-construction, particularly through the granting of property titles for safe land and training or guidance for self-building families.
- Deficiencies in the public investments associated with the lack of mechanisms that control expenditure quality, especially regarding the vulnerability of such investments as evidenced by bridges and collapsed roads or in the construction of walls without being fully aware of the risks.
- The limited insurance coverage promoted and financed by the State in the north of the country.

THE EMERGENCY

Over one hundred victims and losses are estimated, worth US \$ 3.1 billion or 1.6% of the GDP, mainly due to damages to roads (40%) and housing (36%). Damage to agriculture could be insufficiently estimated, but they would account for 8% (Macroconsult). As of 12 April, INDECI reported 39,209 homes destroyed and 221,761 affected. In addition, 1 181 530 people were affected and 171 322 were affected when they lost their homes.¹

These figures do not discriminate the differentiated effects between those who have higher incomes and those who do not, between those who can rebuild or repair their home in a few weeks and those who will take months or years, and probably will not have access to credit due to their precarious and unstable income.

The participation of the Armed Forces, previously equipped with the acquisitions made before FEN's announcement the previous year, helped with the rescue and immediate aid, but not with a more comprehensive humanitarian response considering the situation of the most vulnerable people and the prolonged emergency conditions.

The shortage of humanitarian aid became more evident in temporary shelters, in the shortage of water and food supplies, in the eviction of schoolchildren and the deterioration of environmental conditions, which increased diseases such as dengue, the Zika virus or diarrhea in general.

There are very few affectations taken into account e.g. the suffering of hundreds of thousands of people living in the open or who, to flee the floods, had to suffer deprivation of shelter, water, food and medical care for several days; the psychological impact of two months

of constant emergencies and affectations; the lack of protection mechanisms for the disabled, the elderly or children; the interruption of productive and commercial activities due to road blockage, shortages and the loss of life means, in addition to the growing number of people affected by dengue (to date, more than 14 thousand cases and 18 deaths (probable and confirmed) only in Piura).

The damage to some key premises is also shocking. The Emergency Operations Center (COE) in Piura, one of the most modern in the country, built a few years ago with the support from the United States Southern Command, was not operational during the emergency because it was flooded due to its drainage and sewage system flaws. The Regional Government had to handle the emergency in under improvised and poorly equipped conditions. Similar cases of affectation were reported in their health facilities and educational centers.



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Cuatro de Mayo neighbors in Castilla, Piura, organize to face the emergency

¹ Those people considered to be affected have suffered various losses except the total loss of the dwelling; the latter are considered victims.

Central government leadership had a very positive effect on its image. However, the government discourse did not promote the organization of affected families and communities. Solidarity among the general population emerged through the support of the media, but aid distribution was not based on an adequate damage and need assessment. The contingency plans of the municipalities and regional governments, if they existed, were only applied to the first floods, but had no resources to respond to subsequent floods.

The population's organized response tried to avoid flooding or to divert it with the support of municipalities, churches and NGOs. Noteworthy is the work of the community kitchens, community brigades teams organized in some settlements to support the evacuation and then the distribution of aid according to their previous assessments.

Declaring national emergency only for the Piura region has resulted in limited international aid for other regions of the country. Assistance has been increasing in Piura since May, given the involvement of various UN and EU agencies, and the support of NGOs, which have focused their efforts on promoting best practices in the programs planned by the Government for the affected populations.

Despite all this, there is a risk that the Government will officially end the emergency status without having provided sufficient humanitarian aid to the population in need of temporary housing. An additional concern is the effect that the humanitarian response may have on the population's resilience, since many of the current interventions only last a few months and therefore have little emphasis on strengthening community organization.



The rainwater drained into this house, dragging along the mud from the adjoining streets, Cuatro de Mayo neighborhood, Castilla

CURRENT RECONSTRUCTION AND CHANGES

Reconstruction expectations, which would last three years, are in the stock market. Company shares are on the rise given the announcement that public investment would exceed 400 million dollars in a relatively short time. The rapidity of the reconstruction, which is justified by the urgency, can affect reconstruction quality, especially in view of the need to design and implement comprehensive strategies to reduce the risks considering the following recommendations:

- **Build consensus and contribute nationally and regionally.** Summon the Congress, the civil society and the Judiciary Branch to supervise and sanction; involve the contribution of municipal and institutional networks, professional guilds, universities, labor and business unions, NGOs, and the media.
- **Resort to the institutional experience and knowledge of social scientists and engineers specializing in risk management and CEPLAN for better planning.**
- **Faster progress in road rehabilitation and reconstruction,** and in the social and productive infrastructure. However, account shall be taken of the causes of their involvement and the potential to improve protection designs and measures.
- **Combine the integrated risk management in basins and micro-basins with the**

protection or relocation of infrastructure or buildings. Relocation should be an extreme measure, once options to reduce basin risks and vulnerability in settlements are exhausted.

- **Articulate ancestral and cutting-edge technologies to monitor vulnerable land.** The treatment of the streams and ravines must combine ancestral knowledge and techniques for the stabilization of slopes (terraces, terraces, reforestation), the construction of regulatory dams, the channeling and the most recent technologies to dissipate energy and retain large rocks; an adequate cleaning system for basins and drainage over time (which implies land management-related mechanisms).

- **Consider that the so-called resettlements are going to be fairly complicated** because –with some exceptions– floods have not resulted in the fall of all dwellings across the settlements. In addition, previously inhabited non-mitigable areas must be used for other purposes in order to prevent them from being invaded again.
- **Provide mechanisms to prevent the invasion of riverbeds or to move away newly formed settlements from there,** which is more feasible and less expensive. Companies providing services to populations located in non-mitigable risk areas could be penalized.
- **Promote the policy of incentive for reconstruction according to the combination**

of credits and donations, since it is adequate but insufficient. We require a reconstruction policy including urban and rural populations that cannot be subject to credit. The Government can transfer resources to institutions experienced in reconstruction with the participation of the beneficiary families, both for community premises and dwellings, walls and accesses affected. Income-generating programs must be supplemented with community work.

- **Include –in the reconstruction– the design of strategies that stop and penalize illegal urbanization.** Local governments should be able to allocate part of the secure urban expansion land to new human settlements.
- **Reproduce sustainability by strengthening local and regional capacity and governance,** through effective citizen planning and monitoring mechanisms that make the desired reconstruction change a reality.
- **Strengthen the institutional roles of entities competent in reconstruction.** The need to promote physical and social scientific research on FEN and technologies and the best appropriate measures for risk reduction and disaster response must be considered. This should be done by gathering the efforts of universities and research centers, but it is also necessary to improve budgetary allocations to decentralize the state institutions involved in it and the coordination mechanisms among them.
- **Include the protection and improvement of reconstruction social programs.** There is a need to rebuild regional health systems that



Public investment for the reconstruction would exceed 400 million dollars.

are not limited only to infrastructure and that are capable of addressing current and future threats efficiently through adequate resources.

- **Modify the existing DRM legislation.** There are a number of initiatives to change the legislation arising from the critical 2007 seismic disaster assessments in the Ica region. Back then, emergency management was questioned as well as the non-existent or weak policies of risk prevention and reduction. Today there are initiatives that could lead to progress reversal, especially if the need to involve all development actors in the DRG, in particular the organized population, subnational governments, and civil society is overlooked.

EMERGENCY TESTIMONIALS



“ Villa Batanes was badly affected by the floods from the Las Damas ravine and the Charanal River. This affected many areas, such as crops and particularly the flooding of the Lara sector and Cuatro Esquinas. This means we now have more or less 200 affected people (...) In the health sector, staff is working round the clock. We are staying at the health center 24 hours a day, according to technical standards because Piura is declared in emergency and on red alert and one of the main establishments on red alert is Villa Batanes. So, the staff must work all day and night from Monday to Sunday, even holidays”.

Fabiola Rojas, I-2 Health Center Manager, Villa Batanes, Piura

“ I feel proud, and the NGO **Practical Action** must feel prouder since they trained us as volunteer brigade members... We are financing ourselves to help our stricken brothers and sisters. If other volunteer brigade members want to join, they can do it, we are waiting for them. If someone wants to be a brigade member, they can come to train with us, and make our volunteer civil defense platform bigger.”

Martin Chiroque, Civil Defense Platform in Los Polvorines

“ **Practical Action** training has helped us a lot. We learned what a rain meter was. We warned each other to look at the rain meter through WhatsApp messages. At work, my nickname is “rain meter”!”

Eva Luz Dávalos, Resident of the Carosio Ravine

“

We have been isolated since January, but with weak rainfall. Then, in February, it started to rain more, and from then on we have been facing emergencies as the two rivers, Yapatara and Charanal, left us totally isolated. Then, in March, we suffered the worst of nature’s strikes, like the El Niño phenomenon in 1998, but this one is harder. It hit us so hard here in Villa Batanes that we gathered to take action and clear the drains. 100 people helped clear the drains for four days”.

Segundo Duque, Deputy Mayor and Member of the Community Platform for Risk Management and Civil Defense, Villa Batanes, Piura



“ With the support of our neighbors, heavy machinery worth S / 120 an hour was hired to make trenches to clear to the drains. All the neighbors agreed and helped to make it happen; the municipality came later. The first support we received from the district municipality was a cistern, motor pumps and also with gasoline. That is how they helped us, but a while later”.

Leyter Meneses, Member of the Community Platform for Risk Management and Civil Defense, Armando Villanueva en Acción, Piura

“ We have been working with *Practical Action* for over a year. They have trained us on Risk Management issues, so that we can respond in the best way in case of a mudslide, as it always happens here ... They have given us great support. I also made a presentation where I shared what I had learned. For instance, I know that the elders and the children are our priority because they cannot evacuate by themselves. We must take them to a safe and high area, which we have already identified”.

Nicanor Dueñas, Maria Parado de Bellido Community, Chosica, Lima

“ We will have to build almost 30,000 homes across the north. We may also have to provide support through other (construction) mechanisms. We have seen civil society ready and prepared. For instance, in Trujillo, we were told that risk and high risk areas have already been identified, and I was positively surprised by that. In Piura, we have found organized civil society where it will be very easy to exchange opinions. I found an excellent technical level at engineers and architects guilds, and they were all very open to these reconstruction ideas”.

Fernando Zavala, President of Peru's Ministers Council

“

In 1998 I was pregnant with my eldest daughter, who is now 19. I was in charge of my parents and, with El Niño, we had to sleep over at the farmers' market, exactly where we are now because the houses were flooded. Now, again, she had her child in the exact same conditions; so, it is as if the story repeated itself”.

Giovanni Berru, victim, Piura



“

We have already made a general assessment. We have 112 houses that have fallen and collapsed, and 72 unfit houses have already begun to fall apart. We have told people not to go back to those houses because they can collapse any time due to the wet walls. We still have 458 habitable houses and make our volunteer civil defense platform bigger”.

Enedino Castillo, Lieutenant Governor and Member of the Community Platform for Risk Management and Civil Defense, Villa Batanes, Piura

PRACTICAL ACTION'S WORK

Disaster prevention, risk management and adaptation to climate change are essential in *Practical Action's* work and intervention. Through its projects, it promotes changes in the population, and here are some achievements.

PRACTICAL ACTION WORKS ON TECHNOLOGY

An early warning system that reaches people

In Lima and Piura, thanks to a comprehensive and participatory early warning system (SAT), at-risk communities now know when a flood or a mudslide will occur. With SAT, they can monitor the amount of rain through automatic sensors or home rain meters, and receive alerts on their cell phones, megaphones and sirens. In addition, communities have built their own risk analysis maps and contingency plans. So when they get the alert, they know exactly what to do to protect their lives and property.

PRACTICAL ACTION WORKS ON RESILIENCE

Caring communities

Los Polvorines is a community in Piura in the north of Peru. They live in a high risk area. In the last three years, villagers have organized and created a platform for disaster risk management, reduced their risks and know what to do in case of extreme rains. This year, in 2017, the rains have not been too bad on them, but were disastrous to their neighbors. Faced with this, 16 Los Polvorines leaders took the initiative to help other communities with community breakfasts, clothing and first aid for wounds.

National drill with community participation

The 2016 national earthquake drill was conducted in the Carabayllo district *Practical Action's* intervention area. This was considered one of the most exemplary ones in the last years. Its success lies in two factors: the active participation of the population and the commitment of the local authority. The



SAT monitoring equipment, Chosica, Lima

well-coordinated work of the local government, first response institutions, state entities and civil society, as well as the population's preparation and empowerment make it possible for disaster risk reduction (DRR) actions to succeed.

Small is beautiful

The Maria Parado de Bellido community, in Lima, Peru, is “between the rocks and a hard place”: on the one hand, it could face floods from river overflowing and runoff floods from the surrounding hills. However, the settlers never gave up. Years ago, they built a contention wall and last year, with Practical Action's support and advice, they built four drains that evacuate flood water. Despite their small scale, these drains built by the population already proved their effectiveness: this year, no Maria Parado de Bellido house was flooded.



Brigade members assess damages and analyze needs in Salitral de Los Pinos, Piura

Community leaders for Risk Prevention and Reduction

Rosa Marroquín lives on the slopes of Carabayllo and actively participates in the “Carabayllo Reduciendo Riesgo” (Risk Reduction) project. Before this, she did not know that I lived in a risk area because of earthquakes and landslides, nor did she know about the inadequate construction and bad materials used in houses, walls and staircases. That is why she, like other leaders, decided to become a voluntary development promoter and DRG, in order to be an informed spokeswoman and play an active role to solve the problems of the eight communities in her area. Nowadays, thanks to funds managed along with other leaders, she has been leading the execution of an afforestation project to avoid the illegal occupation of new lands, thus improving air quality and avoiding new risk conditions.

Safe families, safe neighborhoods

“I warn to take care of my home and family “: this is how the “Safe Housing” awareness campaign started, promoted by El Progreso leaders and promoters in the Carabayllo district. The goal is to raise awareness among families about the importance of safe housing and provide information on how to improve them through different games, allowing everyone’s participation regardless of their age. Leaders were trained to run this campaign, so it is the neighbors themselves who give the recommendations for safer homes.

PRACTICAL ACTION WORKS ON ADVOCACY

GRD and climate change adaptation networks were created over 12 years ago and are made up of civil society institutions. After an advocacy process, the participation organized community leaders has been boosted as they promote strong commitment to their territory and to the implementation of government policies to help reduce their risks. Community leaders affected by the recent floods in the north of the country, along with GRD networks, are promoting reflection processes to think about how community rehabilitation and reconstruction processes should be.

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