

PADANG HOUSE BY HOUSE

A HOUSING & VULNERABILITY ASSESSMENT



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July 2010



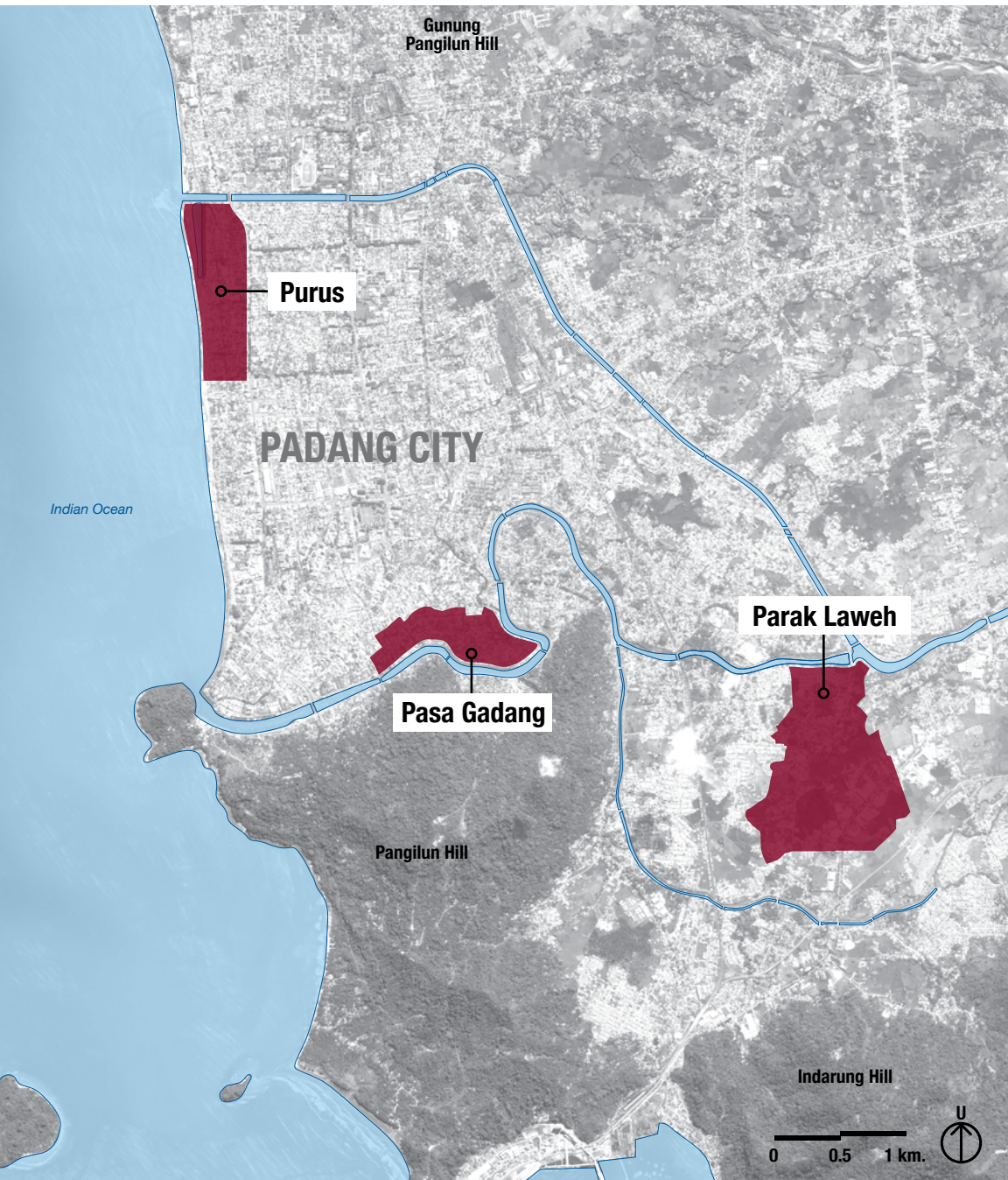


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THANK YOU

Neil Brighton, IASC Shelter Cluster; Pak Febrin Anas Ismail, Universitas Andalas; Elizabeth Hausler, Build Change; Dr. Hannes Taubenböck, Julius-Maximilians-Universität Würzburg; Dr. Torsten Schlurmann, Gottfried Wilhelm Leibniz Universität Hannover

GLOSSARY OF TERMS

BAPPEDA – *Badan Perencanaan Pembangunan Daerah* / Local Development Planning Body. The local government department responsible for planning and budgeting.

BPBD – *Badan Penanggulangan Bencana Daerah* / Local Board for Tackling Disaster. The local government department responsible for overcoming impact of disaster and reducing the risk of disaster.

BPRR – *Pelaksana Rehabilitasi dan Rekonstruksi* / Rehabilitation and Reconstruction Implementation Body. The government department responsible for rehabilitation and reconstruction after disaster.

CAP / RAK – *Community Action Plans / Rencana Aksi Komunitas*. Plans created by residents in collaboration with local government or NGO facilitators identifying specific short- and medium-term actions to address community-prioritized problems.

Dinas Pendidikan – Department of Education.

Dinas Sonaker – Department of Social and Man Power.

DINSOS – *Dinas Kesejahteraan Sosial dan Tenaga Kerja* / Department of Social Affairs. The government department responsible responsible for employment affairs such as providing skills training.

DKK – *Dinas Kesehatan Kota* / Department of City Public Health.

DKP – *Dinas Kebersihan dan Pertamanan* / Department of Cleanliness and Parks Maintenance.

DTRTB – *Dinas Tata Ruang dan Tata Tangunan* / Department of Space and Building Arrangement. The local government department responsible for issuing building permits.

FGD – *Diskusi Kelompok Terfokus* / Focus Group Discussions. Facilitated group interviews.

GIS – *Sistem Informasi Geografis* / Geographic Information Systems. Mapping technology used for this assessment.

Gotong Royong – Community-led mutual assistance activities.

IASC – Inter Agency Standing Committee. International NGO that is the primary mechanism for inter-agency coordination of humanitarian assistance.

Kelurahan – Neighborhood.

Ketua RT – The head of an RT, the smallest municipal administrative unit in Indonesian cities.

KOGAMI – *Komunitas Siaga Tsunami* / Tsunami Alert Community. A Padang-based NGO that promotes local awareness of and preparedness for tsunami disaster.

Lurah – The top official or representative of a *kelurahan*.

Minang Kabau – The predominant ethnic group in West Sumatra.

Musrenbang – Musyawarah Perencanaan Pembangunan / Discussion of Development Planning. Participatory planning mechanism for residents to allocate local budgets for capital projects.

NGO – Non-Governmental Organization.

OCHA – UN Office for Coordination of Humanitarian Affairs.

PDAM – *Perusahaan Daerah Air Minum*. The public or semi-public water utility supplying piped water to areas of the city.

PLN – *Perusahaan Listrik Negara / National Electricity Corporation*.

PLN WSB – National electricity corporation which operates in West Sumatra.

PMI – *Palang Merah Indonesia / Indonesian Red Cross*.

PU – *Dinas Perkerjaan Umum / Department of Public Works*. The local government department responsible for infrastructure and services.

RT – *Rukun Tetangga* (pronounced “air-teh”) The smallest administrative unit in Indonesian cities.

Rumah Toko – Two-story, colonial-era commercial buildings found in the Pasa Gadang neighborhood in Padang City.

RW – *Rukun Warga* (pronounced “air-way”). Administrative unit that consists of several RTs.

Semen Padang – Padang Cement. The largest cement factory in Padang City.

Shelter Cluster – Group of humanitarian agencies and NGOs managing emergency response following Sumatra earthquake.

Tanah Adat – Traditional land for shared cultivation.

UN / PBB – United Nations / *Perserikatan bangsa Bangsa*.

Wakil Walikota (Wawali) – Vice Mayor.

Walikota – Mayor.

WVI – World Vision International. International NGO.

WSB – *Wilayah Sumatera Barat / West Sumatera Territory*.



The Deputy Mayor shared his vision for rebuilding with participants at the 3 May 2010 workshop.

MESSAGE FROM THE DEPUTY MAYOR OF PADANG CITY

On 30 September 2009, Padang City was hit by a devastating earthquake measuring 7.6 on the Richter scale. The earthquake caused 383 deaths within the city and destroyed most of the city's infrastructure. At that moment, all economic activity completely shut down in the city center. But with the help of God Almighty and the whole population, the city didn't stay quiet.

The local government is thankful to Mercy Corps in cooperation with Bung Hatta University for their program of urban assessments in three neighborhoods in Padang City. We hope the result of the urban assessment and participatory workshop will improve people's welfare in Padang City.

After the earthquake, the people in Padang City are concerned about another natural disaster, which could happen any time. To achieve the improvement of public welfare, Padang City must rise to a bright future with a high disaster readiness, a dynamic economy, and prosperous residents. Padang City is ready to rise up and become a city that can provide prosperity to its citizens.

Wakil Walikota H. Mahyeldi Ansharullah, SP



Mercy Corps Indonesia Country Director Sean Granville-Ross offered ideas about how local government can work with NGOs at the 3 May 2010 workshop.

MESSAGE FROM MERCY CORPS INDONESIA COUNTRY DIRECTOR

Greetings from Mercy Corps Indonesia.

This Housing and Vulnerability Assessment of three *kelurahan* – Purus, Pasa Gadang, and Parak Laweh – is an excellent example of how an international NGO can collaborate with city government and local communities to facilitate a process of gathering information in a participatory manner. In addition, this assessment uses tools that enable the key actors to take the information gathered and to present it in a visual, easy-to-understand manner using maps and tables that will provide the basis for more effective and efficient community and government planning and budgeting processes.

This process has been designed to provide support to the government of Padang City and the communities of Purus, Pasa Gadang, and Parak Laweh following the earthquake of 30 September 2009.

Overall the project had three goals:

1. Provide a tool for local government to seek support for rebuilding;
2. Shape dialogue about rebuilding; and
3. Increase citizen participation in the rebuilding process.

In addition, this process will hopefully provide communities and government with the tools and information that will complement existing government budgeting and planning processes.

The assessment and report are not designed to provide recommendations. Rather, our objective is to work with government and local communities to provide a methodology and tools that will generate a fresh and information-based analysis of the issues and



Lurahs, local government staff, and NGOs worked together at the workshop to develop innovative ideas for rebuilding.

needs of the communities that can then be used to inform decision making.

Our collective challenge is to ensure a broad spectrum of participation from government and communities, and a commitment to encouraging other communities and members of government to use the same methodology and tools.

Finally, Mercy Corps Indonesia would like to thank the many people from Padang City that contributed their time and energy into this work. We hope that this is an example of a methodology that the city could use in the future to understand other *kelurahan*-scale issues.

Sean Granville-Ross
Country Director
Mercy Corps Indonesia



Executive Summary:

PADANG, HOUSE BY HOUSE

The purpose and findings
of this assessment.



Many residents in Padang – like this man in Purus – are rebuilding on their own, often without the resources and information they need to make their homes earthquake-resistant.

EXECUTIVE SUMMARY

On 30 September 2009, an earthquake measuring 7.6 on the Richter scale struck off the coast of West Sumatra Province in Indonesia, causing at least 1,117 deaths and millions of dollars in damage to houses, businesses, and public infrastructure. In the capital city of Padang, 383 people were killed, public services such as electricity and water were disrupted, and major markets and transport routes were destroyed or badly damaged.

THE CONTEXT FOR THIS ASSESSMENT

- ✓ Individuals, NGOs, and local government have begun rebuilding after the earthquake. There have been increasing calls to ensure that the city is built back better, with more sustainable development and the participation of vulnerable groups in planning processes. Mercy Corps commissioned this assessment as part of that effort.

While the impacts of the earthquake were devastating, they have also had the effect of leading to serious discussion of the vulnerability of the province in general and Padang City in particular.

As individuals, NGOs, and local government have begun rebuilding, there have been increasing calls to ensure that the city is built back better, with more sustainable development, the participation of

KELURAHAN AND VULNERABILITY

- ✓ Purus is a dense, coastal *kelurahan* – its physical layout leads to many physical vulnerabilities.
- ✓ Pasa Gadang is the historic trading center – unless businesses here are reopened, there may be significant emigration out of the *kelurahan*.
- ✓ Parak Laweh is a rapidly growing area – the new housing developments here are poorly designed, with lack of access and insufficient evacuation routes.

vulnerable groups in planning processes, and greater resilience to the numerous natural disasters that threaten it.

As part of that effort, Mercy Corps commissioned this Housing and Vulnerability Assessment of three *kelurahan*, or neighborhoods, in Padang City. Chosen for their diverse environments, as well as to represent some of the poorer residents of the city, these neighborhoods offer a snapshot of the progress of recovery in Padang six to seven months after the earthquake.

The neighborhood surveys, interviews, and group discussions focused on housing conditions and physical, economic, and social vulnerabilities, all combined with GIS data and informed by a spatial perspective. A workshop with local government to discuss the

findings resulted in recommendations for planning and implementing the recovery.

The three neighborhoods targeted in this assessment are very different, yet they share some characteristics. Many of the findings about the impact of the earthquake and the pace of recovery are valid in all three.

Perhaps the most important finding of the survey is that six months after the earthquake, many people continue living in unsafe housing. Rebuilding rates are extremely low compared to the number of damaged houses.

The main reason reported for not rebuilding houses is lack of resources, in some cases due to loss of employment or livelihood after the earthquake.

While some people are waiting for promised government assistance, and others are hesitant to rebuild because of lack of land tenure or unwillingness to invest in construction for fear of additional earthquakes, it is clear that the most immediate constraint on rebuilding is financial. Since the survey also found that most of the houses that are being rebuilt continue to use the earthquake-vulnerable confined masonry model and sub-standard construction techniques, information on earthquake-resistant construction is also needed concurrently with rebuilding assistance.

All three neighborhoods also face continued risks from infrastructure damaged during the earthquake, such as clogged drains and canals as well as broken water piping.

While the traditional *gotong royong* mutual assistance programs have some impact on small-scale chronic problems (through, for example, monthly clean-ups), major works like canal repair require outside assistance. Such problems will only become more entrenched, more costly, and more damaging if they are not addressed soon.

The close examination of these three neighborhoods also points to vulnerable demographic groups that can benefit from the targeting of specific programs. The disabled, the elderly, youth, and female-headed households face additional challenges during and after emergencies.

In addition to these general issues, each neighborhood has specific characteristics leading to challenges that may be shared with other parts of the city.

Purus is a highly dense, coastal neighborhood where the primary livelihood is fishing, although it also includes some workers from the nearby city center. The layout and physical characteristics of Purus lead to significant physical vulnerability for its inhabitants. The coastal location and lack of high ground make it particularly vulnerable to tsunami. A canal that poses hygiene and flooding risks could also cut off evacuation routes. The housing block model typical of the crowded neighborhood, with semi-permanent and non-permanent houses surrounded by confined-masonry houses, leaves much of the population in areas difficult to access or evacuate.

Pasa Gadang, an historical trading center that also includes residential areas and an unusually high proportion of female-headed households, faces considerable difficulties in recovering from the physical damage to many of the traditional *rumah toko* trading houses, which were in use as warehouses before the earthquake. Particularly costly to rebuild, the *rumah toko* represent both cultural heritage and livelihoods to many of the inhabitants. There is a concern that unless businesses can be reopened, there may be significant emigration out of Pasa Gadang.

Parak Laweh is an area of rapid growth and urban sprawl, where new housing developments are being constructed faster than infrastructure can link them to key services. Rapid and low-quality construction led to this neighborhood having the highest rate of housing damage of the three, and many of the new

housing developments are poorly designed, with lack of access and insufficient evacuation routes.

With detailed information about the three neighborhoods as a basis, local government from each area discussed the challenges, priorities, and potential solutions for their *kelurahan* at a workshop organized by Mercy Corps. Overall recommendations for rebuilding included:

- Combining government programs with community or NGO initiatives;
- Designing interventions that address short-term needs while laying a strong foundation for long-term resiliency;
- Coordinating with the long-term plan developed by the city government.

Next steps for utilizing the data and experience of this assessment include:

- Share the information garnered during the survey with communities through the intermediaries of local officials;
- Facilitate the development of Community Action Plans to prioritize and address needs;
- Develop specific policies and projects based on the ideas developed during the workshop;
- Coordinate these policies and projects with the city government's long-term recovery plan;
- Train government and NGO staff in the assessment methodology so that comparable assessments can be carried out in additional neighborhoods.

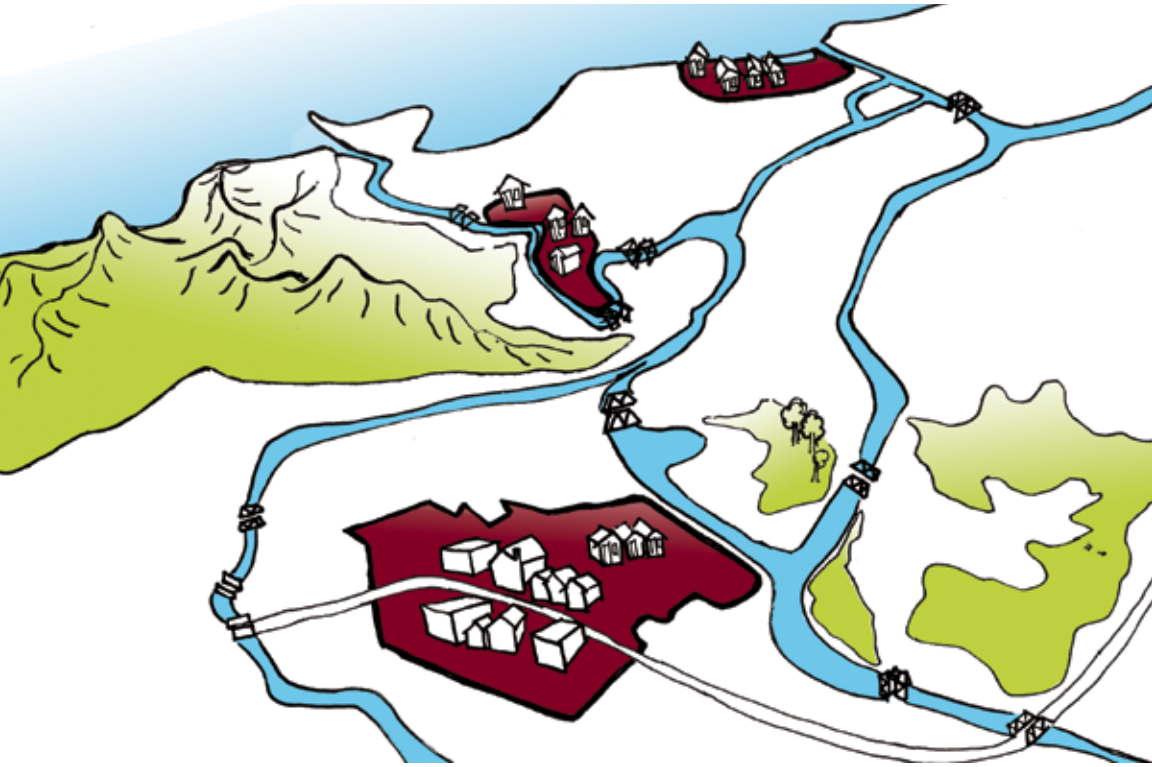


Section 1:

GOALS AND FRAMEWORKS

Defining the problem of
rebuilding in Padang City.

Padang City Urban Transect



Purus, Pasa Gadang, and Parak Laweh are three different typologies of *kelurahan* – coastal, historic district, and peri-urban.

ASSESSMENT GOALS: UNDERSTANDING NEIGHBORHOODS

Every *kelurahan*, or neighborhood, has a different story to tell about what has happened since the earthquake.

This assessment offers a housing and vulnerability analysis of three *kelurahan*: Purus, Pasa Gadang, and Parak Laweh. By focusing closely on three very distinct areas of the city, this report provides a snapshot of the earthquake impact and recovery progress as of April 2010. It identifies several vulnerable groups whose specific needs in each *kelurahan* should be addressed during the rebuilding process.

Mercy Corps undertook this Housing and Vulnerability Assessment with the goals of: providing a tool for local government to seek support for rebuilding; shaping dialogue about rebuilding; and increasing citizen participation in the rebuilding process.

This assessment report is based on a compilation of surveys, GIS data, interviews and Focus Group Discussions (FGDs), and the results of a participatory workshop.

In March 2010, six months following the earthquake, two surveys were completed for social indicators and earthquake impacts in the three selected *kelurahan*. We surveyed 90 RT, which is the total number of RT in the three *kelurahan*. The surveys also observed the condition of 4,449 houses, covering every house in the three *kelurahan*. That information was combined with GIS to produce a number of multi-layered maps containing demographic as well as geographic data, and further enhanced through qualitative information from interviews, FGDs, and the workshop discussions.

Such detailed and multifaceted information about specific *kelurahan* and how their residents recover from disaster helps to better target policies and programs. While the information from the three

kelurahan targeted in this assessment can be extrapolated to give a sense of the city-wide impact of the disaster, the picture can also be filled in with greater detail if trained government officials or NGO staff use this methodology to study other communities.

CRITERIA FOR SELECTING KELURAHAN

- ✓ Communities in poverty, which are more likely to be overlooked or underrepresented in planning.
- ✓ Diversity of housing types reflects range of housing needs.
- ✓ Different physical typologies, allowing for study lessons to be extrapolated to other areas of the city.

The three *kelurahan* surveyed for this assessment were selected based on several criteria.

The assessment was designed to focus on poorer communities that are more likely to be overlooked, ignored, or underrepresented in planning processes. All three locations show high levels of urban poverty.

Each *kelurahan* also represents a diversity of urban housing types. As the effort in Padang shifts from emergency response to rebuilding and long-term planning, it is important to understand the range of housing needs.

These *kelurahan* each are a different physical typology, allowing for a greater degree of extrapolation to diverse areas of the city.

Purus is a coastal *kelurahan* with high poverty. It is a dense, established *kelurahan*, which means people have lived here for many decades. Pasa Gadang is an historic Dutch colonial trading district located inland from the ocean on the banks of the Batang Harau river. Parak Laweh is a rapidly growing area on the city's edge. Many people move here to seek employment in the industrial corridor on Jalan Bypass. Others come to Parak Laweh to buy affordable, newly-constructed housing.

The issues in these *kelurahan* are representative of those affecting other *kelurahan*, so understanding what is happening as these three rebuild offers lessons for the rest of the city.

On 3 May 2010, Mercy Corps organized a participatory workshop in Padang City for local government officials and NGOs active in the rebuilding effort. The assessment data overlaying vulnerability with socioeconomic and geographic data formed the basis of an informed and creative dialogue about rebuilding. Participants engaged in spirited discussions about strategies for rebuilding Purus, Pasa Gadang, and Parak Laweh. This report summarizes the ideas proposed in the workshop. With a better understanding of vulnerability in each *kelurahan*, local government can respond more directly to citizen needs.

The workshop also functioned as a forum for increased collaboration between local government and NGOs in Padang City, as well as a starting point for outreach to the many citizens who are already rebuilding with their own resources.

From here, we can create a recovery process that includes all Padang City citizens.

Population and Poverty

Sources: BNPB Needs Assessment, October 2009; Mercy Corps Survey, March 2010

	Total HH	Total Residents	% of City Population	% HH in Poverty
Padang City	178,970	857,000		5%
PURUS	1,561	6,720	0.8%	34%
PASA GADANG	1,669	6,209	0.8%	15%
PARAK LAWEH	2,910	8,962	1%	13%

Total Housing Damage

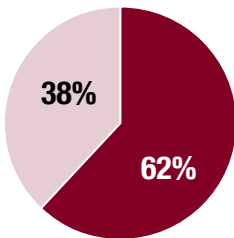
Sources: BNPB Needs Assessment, Andalas University Survey, February 2010

	Total Damaged Houses	Total Houses	% Houses Damaged	% of Total Damage in Padang City
Padang City	105,579	150,421	70%	
PURUS	1,097	1,649	67%	1%
PASA GADANG	732	1,524	48%	0.7%
PARAK LAWEH	1,350	1,833	74%	1.25%

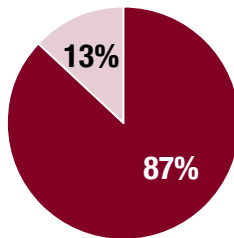
Earthquake Impact % RT with Lost Livelihood

Source: Mercy Corps Survey, March 2010

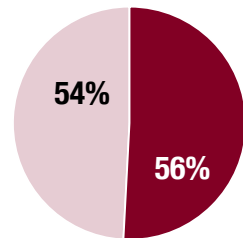
■ Yes ■ No



PURUS



PASA GADANG



PARAK LAWEH

THE EARTHQUAKE AND ITS IMPACT ON HOUSING AND LIVELIHOODS

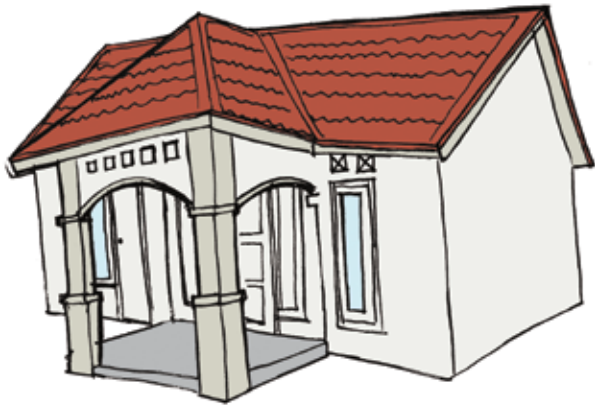
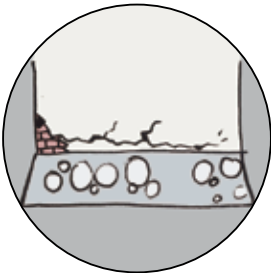
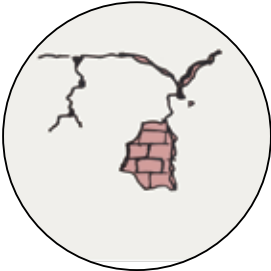
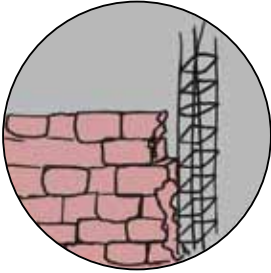
The 7.6 magnitude earthquake on 30 September 2009 affected 13 out of 19 urban and rural districts in West Sumatra Province, including Padang City. Housing accounts for 78% of all needs throughout the Province. 115,000 houses were destroyed and 135,000 were damaged in the Province. The earthquake impact is projected to increase the provincial poverty rate from 1.5% to 11%. (BNBP)

Padang City, the capital of West Sumatra Province, has an estimated 178,970 or 857,000 individuals. (BNBP) Five percent of the population – 118,139 residents – falls under the government poverty line. (BNBP)

This assessment closely examined three of Padang City's 35 *kelurahan*, Purus, Pasa Gadang, and Parak Laweh, together representing about 3% of Padang City's population. Data from the assessment survey shows that poverty is higher in each of these three *kelurahan* individually than the city as a whole.

Housing damage is the most common earthquake impact in these three *kelurahan*. Fifty-nine percent of housing in Padang City was damaged. In Purus and Parak Laweh, the proportion of housing damaged in the earthquake is greater than the city average, at 67% and 74% respectively.

The earthquake's impact on housing is directly related to the way housing is constructed in Padang City. The majority of housing in Padang City is confined-masonry. Of all housing types used in the city, confined-masonry is the most vulnerable to damage during an earthquake. Sixty-eight percent – 3,006 out of 4,449 – of the houses in the three *kelurahan* are confined-masonry.



Confined-Masonry House – The design of this house is inherently vulnerable to earthquake, especially when constructed with poor quality materials. Because they are brick, their collapse causes injury.

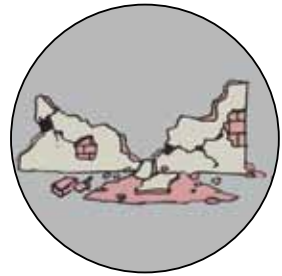
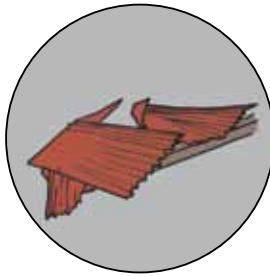
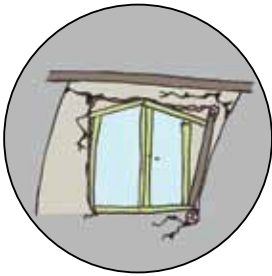
These simple brick houses are a common sight in Padang City. They are vulnerable for a variety of reasons. The brick and cement materials used in construction are usually low quality. Construction techniques used by builders do not meet earthquake-resistant standards. Rebar within the cement columns and beams is usually not tied together strongly enough, so the house frames break apart during an earthquake. Similarly, brick masonry walls are not bonded strongly enough to the columns, so they collapse.

Because confined-masonry buildings are made of heavy brick, serious injury is likely during collapse. The correlation between the high use of confined-masonry construction and high housing damage levels is especially clear in Purus and Parak Laweh.

Another common earthquake impact is lost livelihood. More than half of the *ketua RT* (neighborhood leaders) surveyed in each *kelurahan* reported that residents lost their jobs as a consequence of the earthquake.

The disaster impacted large employment centers like Pasar Raya, the city's main market, which was severely damaged. It also affected small businesses, like warehouses, that employ only a few laborers. When these facilities close, people lose their jobs.

Not everyone who lost their livelihoods in the earthquake remains unemployed. Many have either changed occupation or moved to the informal sector. However, the high level of lost livelihoods does mean families are living with less income and have fewer resources to rebuild damaged housing.



Load-Bearing Wall – The brick and timber in *rumah toko* are strong materials. Shared party-walls make them less likely to collapse, but many are damaged from both the earthquake and years of neglect.

PATTERNS OF RECOVERY

The *kelurahan* studied in Padang City are fast to recover, but slow to rebuild.

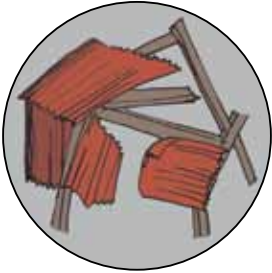
The assessment gathered data during March 2010, six months following the earthquake. People are, in general, still living in their home *kelurahan*. The streets are active and public facilities like schools are open. The rapid recovery means these *kelurahan* have not lost population and do not face immediate decline. Yet people are not yet repairing their housing, indicating a slow rebuilding phase.

Life swiftly returned to the three *kelurahan* after the earthquake. On a weekend evening in Purus six months after the earthquake, families negotiate the price of freshly-caught shrimp on Jalan Sanndra. Children rush after school along the winding side-streets of Pemancangan, an enclave in Pasa Gadang. Public mini-buses crowd the road next to the traditional markets on Jalan Parak Laweh on weekday afternoons. These scenes suggest that life in Padang City is returning to normal.

Despite these signs of activity, this survey recorded low levels of physical rebuilding. There is a high amount of housing damage, but housing vacancy is very low, with few instances of *kelurahan* areas that have become vacant since the disaster. (One exception is the *rumah toko* district in Pasa Gadang, the historic trading area.)

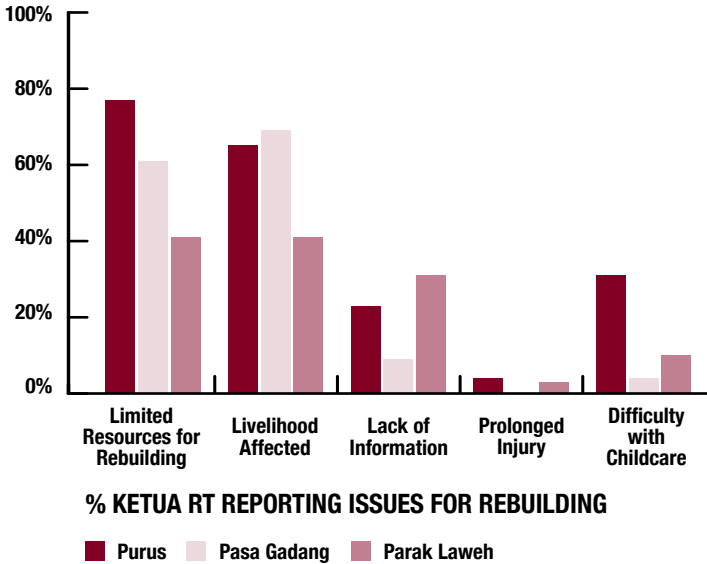
In Purus and Pasa Gadang, rebuilding activity is occurring at fewer than 10% of houses. This assessment looked only at the exterior of buildings, so it does not account for internal repairs. Nevertheless, this is a very low level of activity since people are living in nearly every house, indicating that people are living in unsafe housing.

The *ketua RT* in each *kelurahan* reported that the most significant obstacle to rebuilding is lack of resources, followed by lack of livelihood. Many people are therefore rebuilding incrementally,



Semi- and Non-Permanent House – These houses have internal and roof damage, but the earthquake caused less damage since many have wood rather than confined-masonry frames.

completing the repairs they can afford to make when they have money to do so. A family may patch a damaged roof, for example, but not have enough money to repair collapsed internal walls.



There are many reasons why people are living in unsafe housing. The IASC Shelter Cluster Assessment concluded that some people have no other place to go as they rebuild, while others are waiting for government cash programs to provide assistance for rebuilding.

Whether poor or middle-income, the common issue for all people with damaged housing is that they must rely on personal income to rebuild. In our survey, no one reported receiving government assistance to repair housing. A small percentage of *ketua RT* reported residents received NGO aid, but not necessarily for housing. The survey did not gather information on insurance payouts. While residents are generally aware of potential assistance for housing from government, many anecdotally expressed doubt that this assistance would reach them. The level of rebuilding activity is therefore closely linked to restoration of livelihoods or other sources of income.



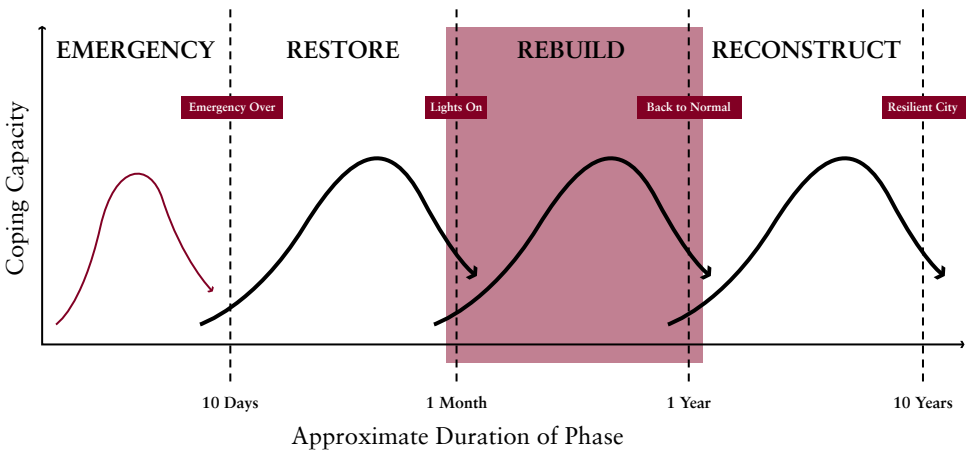
Everyone who lives in confined-masonry houses is physically vulnerable to injury from earthquake. We learned that few people are rebuilding their housing to earthquake-resistant standards.

THE RECOVERY CYCLE

The recovery cycle is a framework for describing what typically happens in a city after disaster. It includes four phases: Emergency, Restore, Rebuild, and Reconstruct. Each phase is defined by benchmarks in the recovery process, and each is characterized by a curve as coping capacity grows and diminishes over time. While every disaster is different, a rough estimate suggests that each phase is roughly ten times longer than the previous phase, as recovery efforts become more large scale and change becomes slower.

The Recovery Cycle

Source: Adapted from Bill Morrish, "After the Storm"



This Housing and Vulnerability Assessment focuses on opportunities for the Rebuilding phase, which falls after the emergency ends and city services are restored, as efforts shift to focus on rebuilding. This period is the time when the city starts to “get back to normal.”

This is a particularly key phase for the purposes of this assessment because it offers opportunities for reducing vulnerability to future disasters and building back better. The Rebuilding phase is a time to address earthquake-related impacts before they become the source of



Families who own new housing on the city's edge are economically vulnerable. Because they have debt, they cannot afford to both pay off their loan and rebuild.

chronic vulnerabilities. For example, in many *kelurahan*, earthquake debris clogged street drains. It is far easier to address this problem in the short-term while it is isolated to a few streets. If left unaddressed, drainage could build up, becoming a large-scale, chronic problem which would then require many more resources to resolve effectively.

The Rebuilding phase is also important because what happens in the first 12 months after a disaster helps to set the stage for long-term planning for a sustainable city. If people do not rebuild their houses to be earthquake-resistant, for example, they will continue to be vulnerable to future tremors, leading to repeated spending on housing reconstruction after every disaster.

At the same time, however, people will not wait to rebuild essential assets such as residences and businesses until the appropriate assistance is available. Therefore, it is essential to design short-term actions that also support long-term planning. Addressing short-term problems both frees up resources to realize long-term visions for the Reconstruction phase, and creates a sustainable, well-planned base for the larger infrastructure projects that characterize Reconstruction, reducing costs.

Rebuilding is happening in Padang City today. Most essential services, such as electricity, have been running at full capacity for months. The municipal government is in the process of restoring PDAM, the public water service. Business owners are re-opening shops. Families are repairing homes. Children are returning to school.

This assessment is designed to help communities and governments take advantage of this crucial window in the recovery process to collaborate on sustainable, attainable rebuilding.



Female-headed households are unlikely to have resources to rebuild since the mother must work and care for the family.

VULNERABILITY

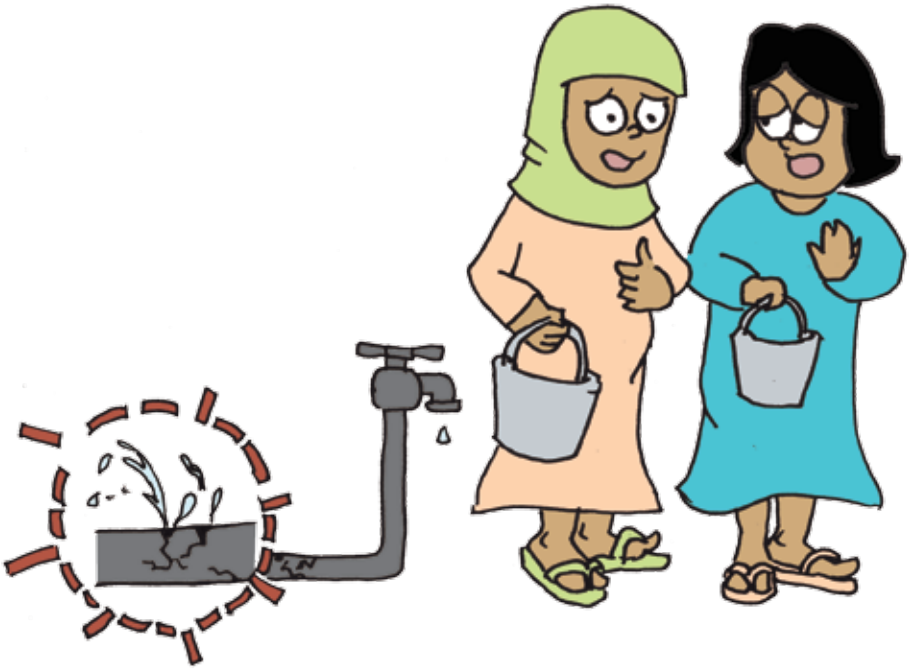
Vulnerability, which refers to the extent to which a community can be affected by the impact of a hazard, is an important concept for understanding housing conditions and the pace of recovery.

The Government of Indonesia defines vulnerability as: “a condition within a community which leads to or causes the community to be unable to be resilient in the face of a disaster or any kind of hazard.” (Directorate of Special and Disadvantaged Areas) Vulnerability relates to an individual, group, or community’s exposure to risk and capacity to adapt to the challenges that come with the larger, global pressures of rapid urbanization and climate change. Whether, how quickly, and to what degree people recover depends upon the physical, economic, and social challenges they face in daily life.

For the purposes of this assessment, identifying and describing vulnerabilities in Padang City will help to understand how to reduce the risk of future earthquakes and tsunamis.

Vulnerability can be divided into three components: physical, economic, and social. For example, a community may be more vulnerable to a tsunami because of its physical condition, such as a lack of high ground or nearby hills which might funnel the sea surge. It may be vulnerable due to an economic situation which prevents people from building appropriate houses or stocking emergency equipment. Social conditions may make a community more vulnerable if, for example, it is difficult for a certain group to access insurance coverage, or if there is a lack of government services such as electricity to certain groups (such as illegal migrants).

In some cases, vulnerabilities may lead to a situation where communities are unable to recover before another disaster comes along. For example, a family may lack the resources to repair their home before it is damaged again by another earthquake.



People who live in areas where PDAM is disrupted are exposed to health and sanitation risks.

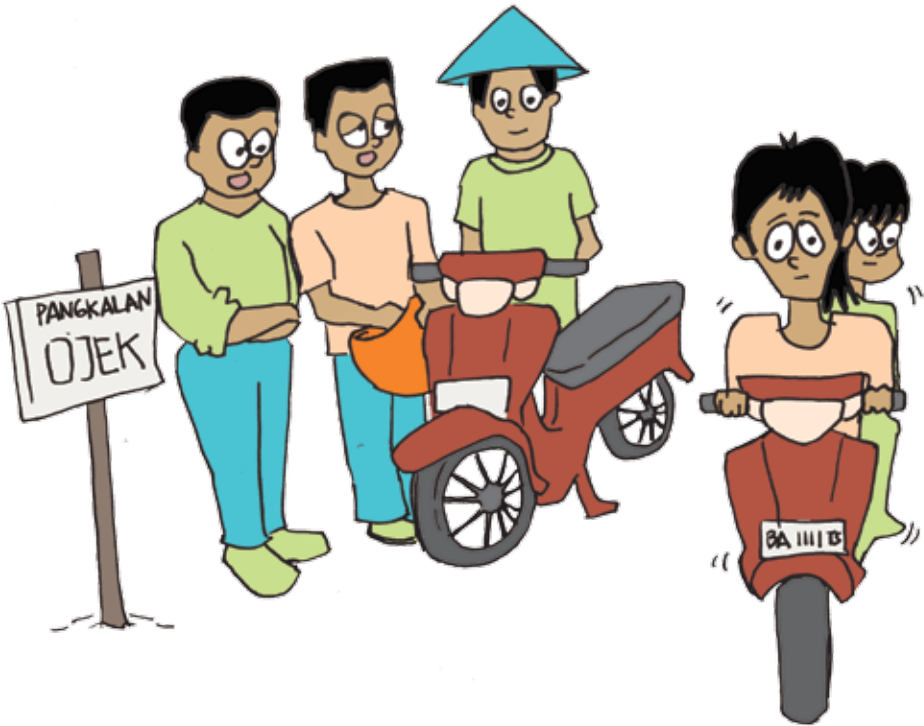
PHYSICAL VULNERABILITY IN PADANG CITY

In Padang City, which is located near a major underwater fault line – the Alpid fault – proximity to the coast is an important indicator of vulnerability. All areas of Padang City are at some risk of tsunami, particularly in the case of a major wave. However, people in coastal *kelurahan* have the least amount of time to evacuate and typically live furthest from high ground, making them especially vulnerable. The existence and configuration of high ground is another criteria for determining tsunami vulnerability, while the type and stability of the geology may have an impact on earthquake vulnerability.

Population density is also an indicator of vulnerability. High density urban areas are difficult to evacuate since there are so many people and the infrastructure is often inadequate to the needs. Densely populated areas generally correlate to high poverty and low quality housing, economic and social components of vulnerability. *Kelurahan* where confined-masonry houses are common, either for historical, cultural, or economic reasons, will face more earthquake damage.

Access to infrastructure is another factor for vulnerability. For example, some *kelurahan* are served by PDAM, the public piped water service, while others depend on dug wells or bore holes. Purus, for example, has PDAM service. Even though it is an older area of settlement, piped water service was extended into *kelurahan*. In contrast, piped water is not being provided in new housing districts in Parak Laweh. Residents here rely on private wells.

While piped water service is generally preferred, when the 30 September 2009 earthquake disrupted the piping system, those neighborhoods were left without access to water, and therefore highly vulnerable to health and sanitation risks, secondary impacts after the hazard. However, wells can be more vulnerable to tsunamis, which flood them with salt water.



Many people who lost their livelihoods after the earthquake turn to informal work, such as driving ojek.

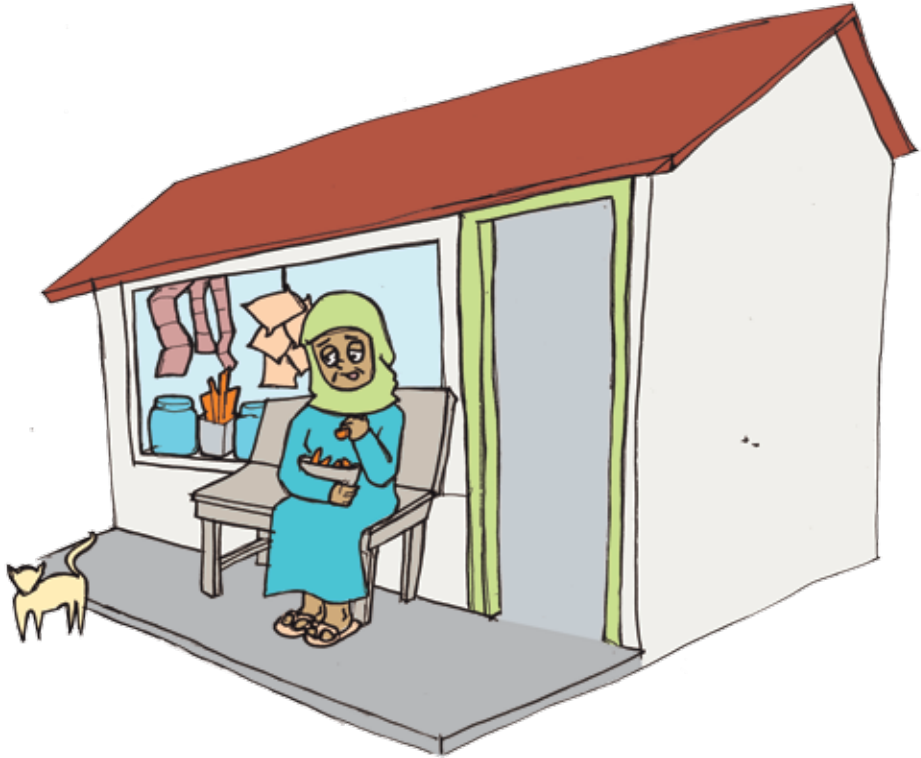
ECONOMIC VULNERABILITY

Economic hardship presents a number of obstacles to rebuilding. Poor people often live in physically vulnerable areas of the city where housing is least expensive. After a disaster, they may lack the resources they need to rebuild their homes, or to rebuild them properly.

People are less likely to invest in rebuilding if they do not have formal legal ownership of the land and their houses are not perceived to be family assets. If they cannot rebuild before another disaster, the impact on their lives will be compounded and potentially permanent.

People of all income levels may be economically vulnerable, particularly if their livelihoods are liable to disruption by hazards, if it is difficult to shift to alternative livelihoods, or if savings are insufficient or lost.

A hazard may disrupt livelihoods through damage to physical assets of specific businesses. The entire local economy may decline following a disaster, making it difficult for businesses to afford to pay employees.



The elderly depend on family or other community members for support following disaster.

SOCIAL VULNERABILITY

Social vulnerability may be linked to any number of demographic characteristics. The Inter-Agency Standing Committee (IASC) Shelter Cluster Assessment found that disability was the most common form of vulnerability in Padang after economic vulnerability. Pregnancy followed disability as a common vulnerability. People who are physically unable to do the work of rebuilding themselves are highly vulnerable to the impacts of disaster.

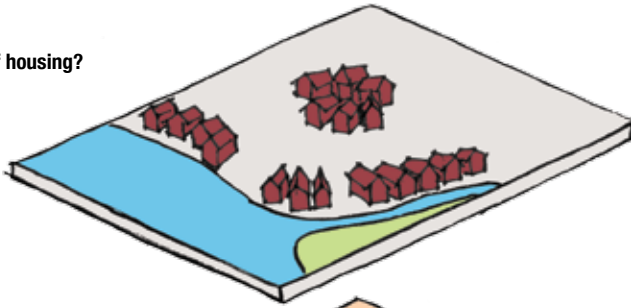
Age is often an important factor for vulnerability. Children and the elderly depend on other people to meet their food, shelter, and other needs. During a disaster, the very young and old may need extra assistance to evacuate. Physical disabilities, whether or not they are related to age, are another factor which make people especially vulnerable during and after a disaster.

Gender and family composition are other indicators of vulnerability. Female-headed households are often economically vulnerable, and are sometimes subject to social discrimination as well, particularly in societies where women have difficulties accessing loans or finding employment.

Single mothers are responsible for caring for children, making it difficult for them to leave the home for employment or to stand in line during distributions. Large families are especially vulnerable because with more people, they are less mobile during evacuation.

Other demographic factors, such as legality of residence, membership in minority or marginalized groups, or language skills may also affect the ability of some communities to access essential services and assistance for rebuilding.

What kind of housing?



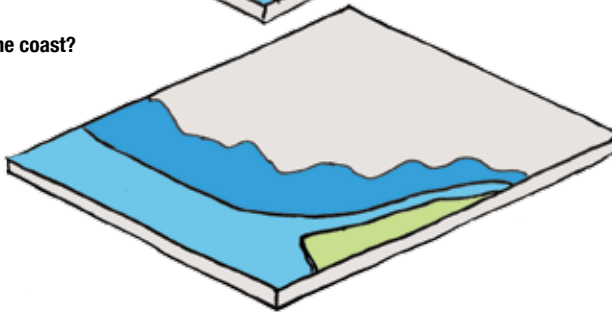
What level of poverty?



How many dependents?



How close to the coast?



Social and economic vulnerabilities are interrelated with the physical space of the city.

MULTIPLE INTERRELATED VULNERABILITIES

People who are exposed to one vulnerability are usually exposed to others, in some cases because of causation – because one vulnerability is the underlying cause of another – and in others because of correlation – because one underlying cause tends to lead to multiple vulnerabilities.

For example, economic vulnerability may lead to physical vulnerability, as the poor are crowded into cheaper and more vulnerable areas of the city. Economic and social vulnerability are often highly correlated, as some conditions, such as illegal residence, may lead both to difficulties in finding employment and a lack of essential services.

This overlap and often compounding of vulnerabilities increases overall vulnerability and complicates efforts for solutions.

Vulnerabilities may also cluster, particularly in a city like Padang, where livelihood groups may live together in one dense neighborhood. For example, a hazard that tends to disrupt fishing, such as a tsunami, can have a devastating effect on the local economy of a neighborhood where every family depends on fishing for an income.

Large communities of people often depend on a single facility for an urban service such as rubbish collection or a mainline of water piping. Damage to such facilities or disruption of services has impacts on a broad group of people. The condition of evacuation routes is also a source of vulnerability. If evacuation routes are narrow and unpaved, people may not be able to reach high ground in a tsunami.



Section 2:

ASSESSMENT FINDINGS

Analysis of housing and vulnerability in three *kelurahan*. What did we learn? How can we transform these lessons into action?

VULNERABILITY ASSESSMENT LESSONS

- ✓ *Kelurahan* are recovering at different rates for localized reasons.
- ✓ People with nowhere else to go are living in unsafe housing conditions.
- ✓ The earthquake's impact on livelihoods is a common root cause of other kinds of physical and social vulnerability.
- ✓ Poor housing construction is a vulnerability across the city and requires significant long-term resources to address – but there are many opportunities to create short-term achievable impacts in people's lives by addressing *kelurahan*-scale vulnerabilities.
- ✓ The earthquake created new physical risks in the *kelurahan* that may lead to chronic vulnerabilities if not addressed during the rebuilding phase.

OVERALL FINDINGS

The study of the three *kelurahan* shows patterns in the pace of recovery and the challenges faced by vulnerable residents, some of them common to all three *kelurahan*, others specific to certain conditions.

Common characteristics in all three *kelurahan* include:

1. Almost all damaged and undamaged housing is occupied, but levels of rebuilding activity remain low.

Only 3 to 5% of housing in Purus and Parak Laweh is vacant. Pasa Gadang has a higher rate, at 25%. The high level of vacancy in Pasa Gadang is an exception among the three *kelurahan*. We heard anecdotally that many of the historic *rumah toko* were vacant before the earthquake. Visual inspection of the interiors of these buildings suggested long-term under-maintenance.

Yet although housing damage rates ranged from 48% in Pasa Gadang to 74% in Parak Laweh, fewer than 20% of houses show major recovery activity. The contrast of high occupancy, high damage, and low recovery activity indicates that people are living in housing that is damaged or only partially repaired.

2. The same type of construction is used to build most housing.

Between 50 and 80% of housing is confined-masonry construction, which is typically not built to withstand earthquakes. Should the same type of construction be used in rebuilding, most people in the three *kelurahan* would be vulnerable to housing damage and physical injury in a future earthquake.

3. Lost livelihood is a common reason residents are unable to rebuild housing.

In Purus and Pasa Gadang, two-thirds of the *ketua RT* reported that lost livelihood is a barrier to rebuilding. Forty percent of *ketua RT* in Parak Laweh reported the same. This means restoring livelihoods is an important strategy for encouraging rebuilding.

4. Specific vulnerable groups live in all three *kelurahan*.

These include people in poverty (13 to 34% of households) and female-headed households (9 to 19%). The elderly (4 to 9% of residents) and children who are not attending school (8 to 16% of school-aged children) are two other vulnerable groups present in all three *kelurahan*.

The earthquake impact and challenges for rebuilding vary from *kelurahan* to *kelurahan*, as do the reasons why the rates of rebuilding are slow. Vulnerability to future disasters also differs in each area.

Purus is a very dense coastal *kelurahan* with 6,720 residents. Purus has a strong local fishing economy. Challenges to rebuilding here stem from high poverty, which limits residents' capacity to rebuild, and damaged infrastructure.

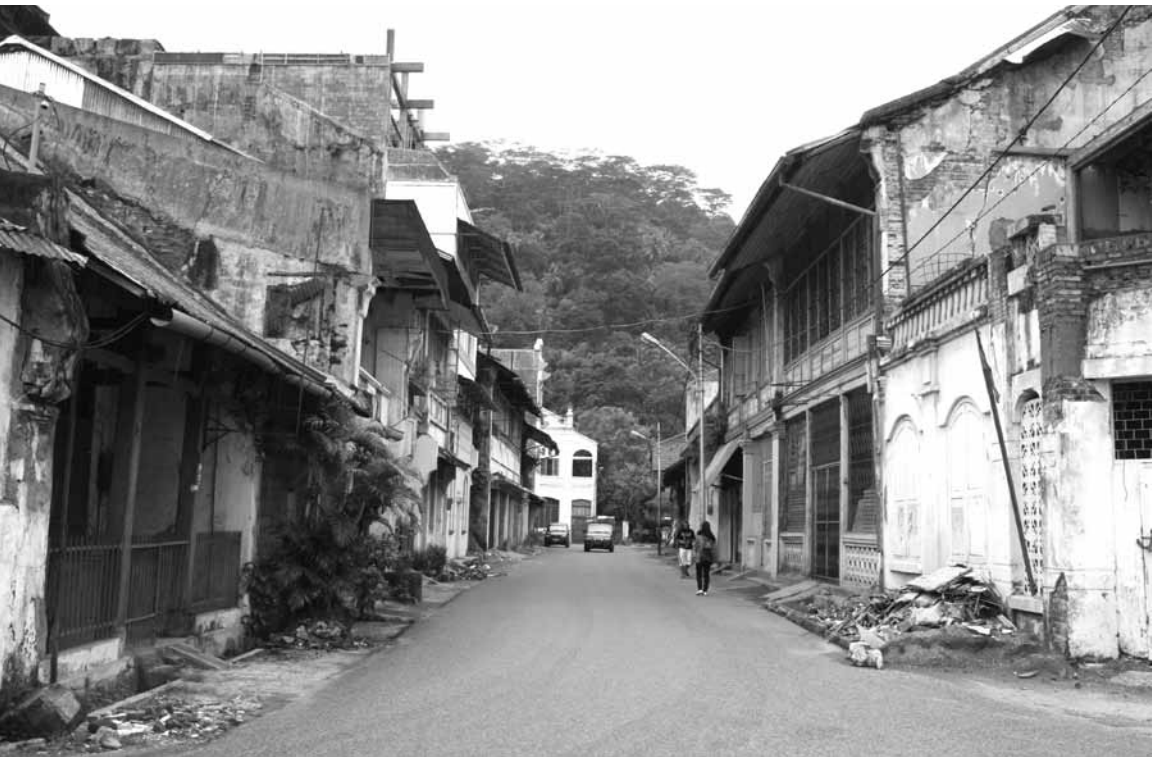
- The poverty rate in Purus – 34% – is seven times higher than the rate for Padang City.
- Purus had good PDAM service, but water infrastructure was disrupted in the earthquake.
- There are many fishermen and laborers; about 100 children from these families are not in school so they can work to support family income.

- The drainage canal was damaged in the earthquake; it now floods, which creates health and sanitation risks for about 1,000 residents.

Pasa Gadang is the historic Dutch trading district where 6,209 people live. It is a center of architectural cultural heritage. Rebuilding in all of Pasa Gadang depends upon restoring centers of employment, especially in the trading district.

Many of the historic *rumah toko* buildings are today used as warehouses to distribute cement, food, and other goods. The warehouses that provide employment for many Pasa Gadang residents were significantly damaged in the earthquake. We heard anecdotally from residents in Pasa Gadang that they need these warehouses to reopen in order for their livelihoods to be restored.

- Cultural heritage in Pasa Gadang is an important asset. Most recently the historic *rumah toko* buildings have been used as warehouses. If restored and preserved, the *rumah toko* could attract tourism and other new investments, such as housing, that benefit the city as a whole. Yet the *rumah toko* are at risk of being lost from lack of maintenance and extensive earthquake damage.
- Fifty percent of working adults – 2,267 residents – are laborers. Many of the laborers work in Pasa Gadang. In order to rebuild, they need businesses to re-open so that they can be employed.
- About 70 traders are living in unsafe *rumah toko*.
- There are about 200 female-headed households, most of which are in Pemancangan, which is a residential enclave in Pasa Gadang's east end. Rebuilding activity here is low. Information on female-headed houses and rebuilding was collected at two different scales – RT and house – so the two indicators cannot be directly correlated at the same scale. Even so, it is assumed that a



Many of the colonial-era *rumah toko*, an important source of cultural heritage, have significant damage from the earthquake.

proportion of this vulnerable group is living housing that is not being rebuilt.

Parak Laweh is a rapidly growing *kelurahan* on the edge of Padang City where 8,962 people live. Current patterns of development here make newcomers to Padang City vulnerable to disaster.

- Both middle-income and poor people live in earthquake-damaged housing.
- About 1,700 residents live in new housing districts. Housing here is poorly constructed. The districts lack water infrastructure and are characterized by narrow roads and limited connections to evacuation routes.
- There are two concentrations of elderly people in central and north Parak Laweh.
- Up to 5,650 residents do not have PDAM service, which exposes them to health and sanitation risks. Instead of PDAM, residents use public and private wells.



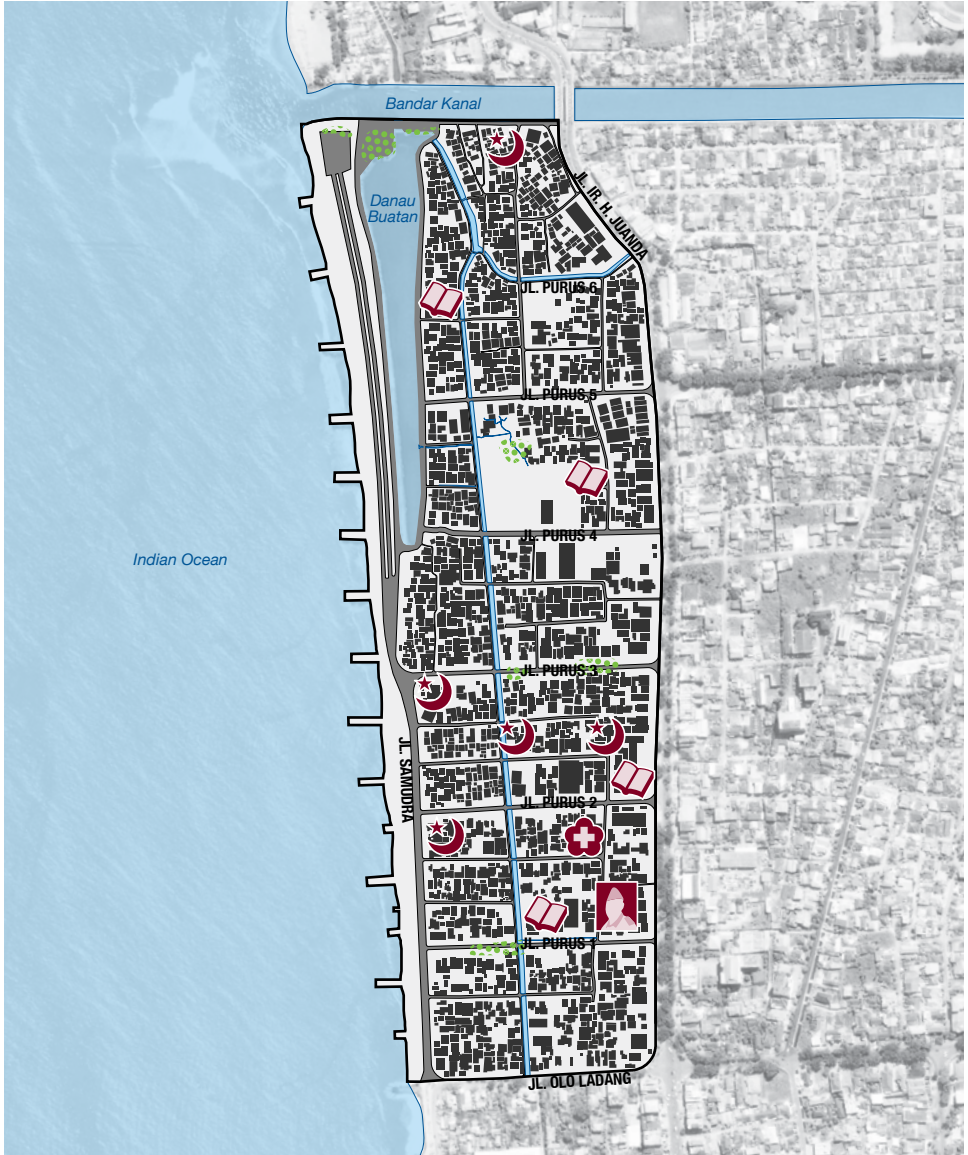
Section 2:

PURUS ASSESSMENT

Analysis of housing conditions and vulnerability of the people of *kelurahan* Purus.

Purus Habitat Map

Sources: BAPPEDA, Google Earth, Mercy Corps Survey, March 2010



- | | | |
|---|--|---|
|  Neighborhood Center |  School |  Trees |
|  Masjid |  Hospital | |



PHYSICAL STRUCTURE

Kelurahan Purus is located between the Indian Ocean and central Padang City. A coastal neighborhood, many of its residents earn their livelihoods on the sea. Other people come to Purus to visit Jalan Sannandra, where they gather to enjoy sunsets on the coast.

Purus is also an urban neighborhood. It is close to the city center and major employment centers like Pasar Raya, making it convenient for families who work in those areas.

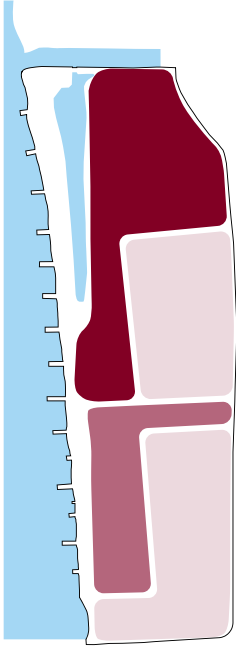
Purus is a very dense residential neighborhood. The grid formed by the streets creates many smaller residential enclaves within Purus. The drainage canal located in the middle of the *kelurahan* divides

Purus Basic Statistics

Sources: Mercy Corps Survey, March 2010

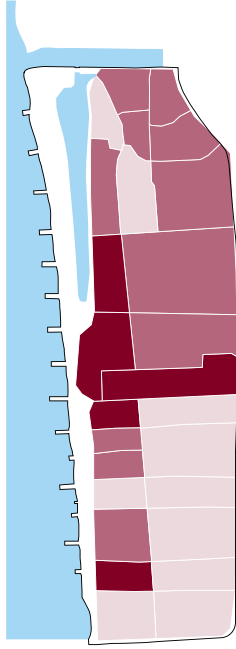
	Total	%
TOTAL HH	1,561	
TOTAL RESIDENTS	6,720	
AGE 0 6	787	12%
AGE 7 18	1,573	23%
AGE 18 65	3,730	56%
AGE 65+	630	9%
DEPENDENCY RATIO	0.80	
TOTAL HH POVERTY	533	34%
AREA (Hectare / Acre)	41 / 101	
POPULATION DENSITY (People per Ha. / Ac.)	163 / 66	

Purus into eastern and western areas. These two features of the built environment – the grid and canal – shape where people live and how housing types are distributed.



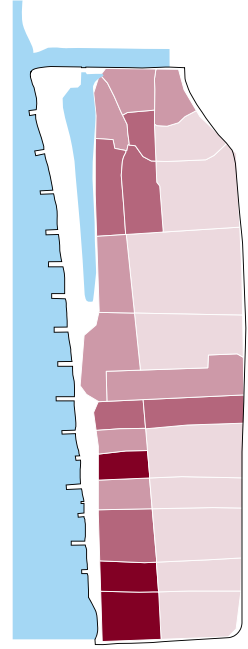
TOP OCCUPATIONS

■ Laborers ■ Private Company Employees
■ Fishermen



% HH in POVERTY

■ 2 25% ■ 50 75%
■ 25 50%



**POPULATION DENSITY
(People per Hectare)**

■ 60 150 ■ 250 350
■ 150 250 ■ 350 438

Laborers and fishermen live on the coast. Both poverty and population density are high in this area of Purus.

Fishermen and laborers live in densely populated areas west of the canal and in the north of Purus. Poverty is concentrated in these areas. On many streets, confined-masonry houses are on the block perimeters. Semi-permanent and non-permanent houses are located in the interior of the blocks. Population density is lower east of the canal, where more people who work for private companies live.

ISSUES IN PURUS

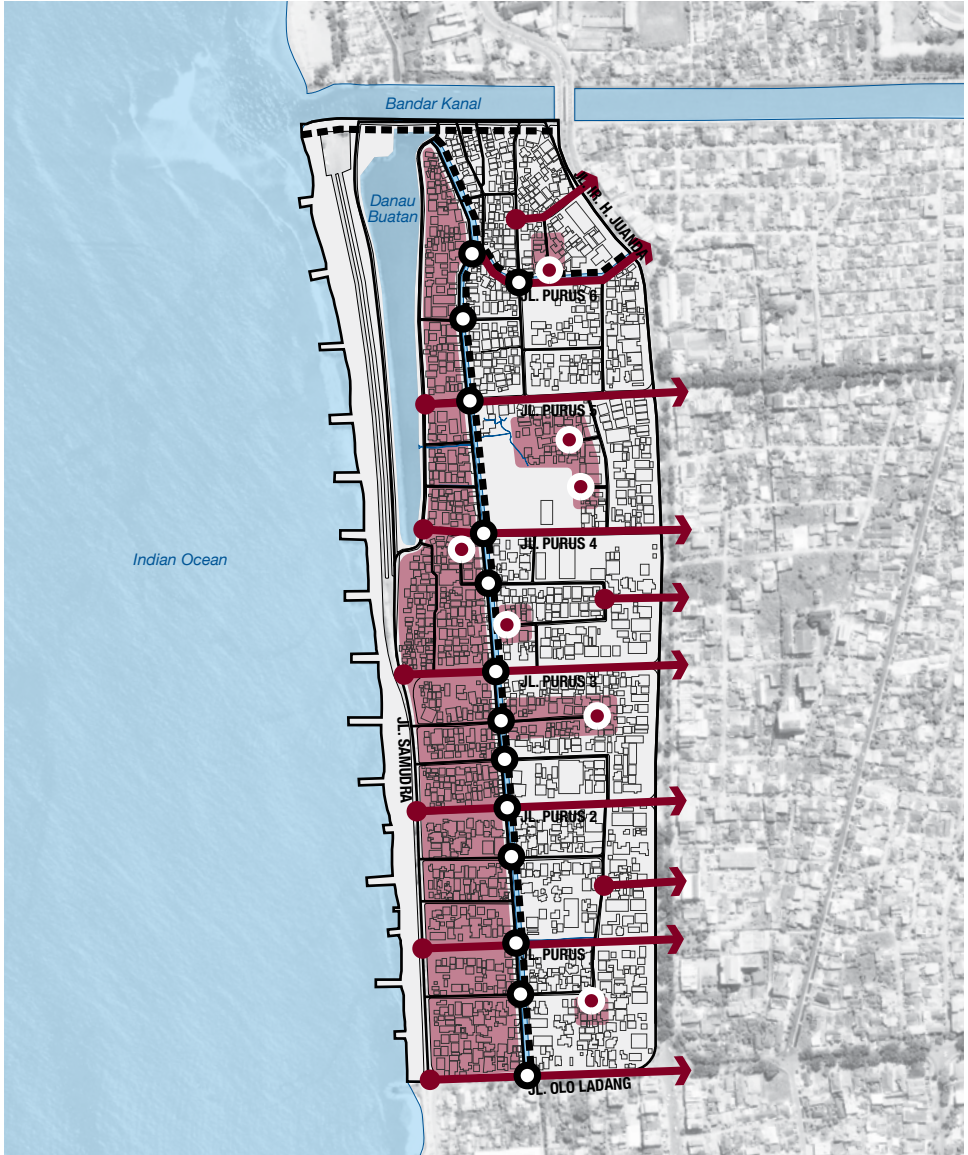
- ✓ Very few vacant houses, but low level of rebuilding activity.
- ✓ Mix of income and occupations, but poverty is an obstacle to rebuilding.
- ✓ Many areas of the *kelurahan* are isolated and difficult to evacuate.

Buildings in Purus are mostly one-story houses. These houses are self-built, which means either the owners constructed them on their own or hired laborers to help. Many residents have small enterprises in front of their homes where they sell food or drinks. However, commercial activity is mostly on Jalan Veteran. The small offices and auto dealerships on Jalan Veteran are employment centers for many Purus residents.

The coast is an important public gathering space. The fish markets and boats remind people of Padang City's cultural connection to fishing and the ocean. Near Danau Buatan, the abandoned lagoon, Jalan Sanndra was damaged in the earthquake. Because there are no automobiles here, people now use the road as a recreation area. On

Purus Circulation Diagram

Sources: BAPPEDA, Google Earth, Mercy Corps Survey, March 2010



weekends, people come to bicycle, run, and ride motorbikes. The mosques are another important gathering space for men, women, and children.

Purus has been settled for a long time, and is well-serviced with public schools and water infrastructure. PDAM was disrupted after the earthquake and Dinas Pekerjaan Umum (Department of Public Works) provided water tanks for residents.

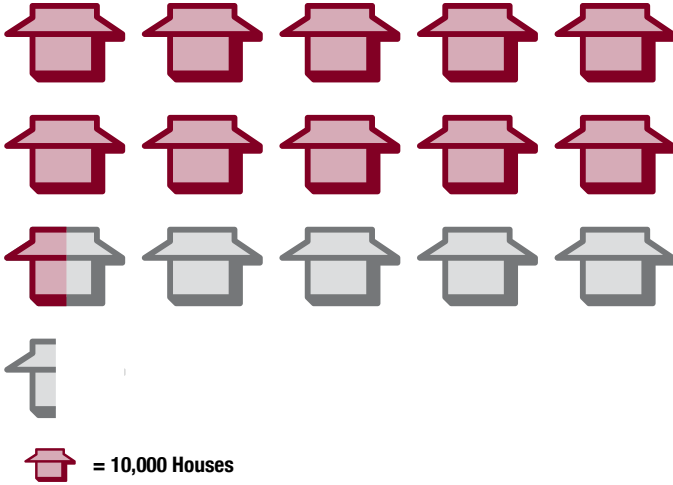
Purus has many strengths. Though there is poverty, there is a diversity of occupations among residents. Most residents live close to their places of employment. Many people associate the coast with the identity of Padang City, so Purus residents have a strong sense of their cultural heritage. Purus is served by infrastructure that many other areas of Padang City lack.

Living in Purus has many advantages, but these come at great physical risk.

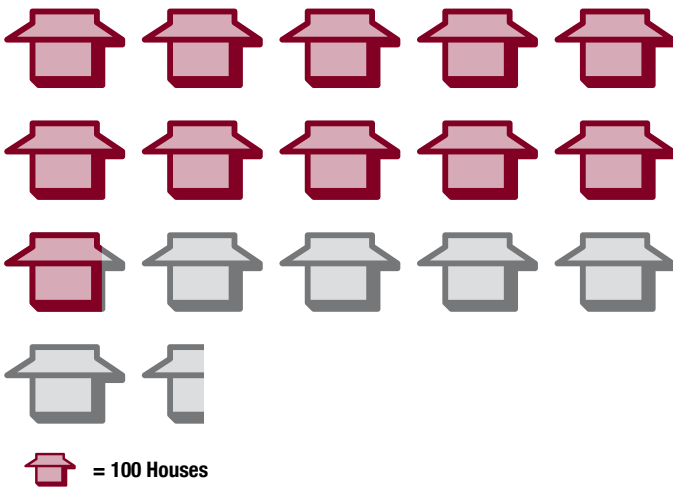
Because it is coastal and high ground evacuation areas are far away, Purus is the *kelurahan* most vulnerable to tsunami among the three we studied. Gunung Pangilun Hill is over four kilometers away. Most of the housing is confined-masonry type, which is likely to collapse in an earthquake.

The *kelurahan's* circulation system – its streets and sidewalks – is another source of physical vulnerability. The many small, narrow bridges over the canal may become barriers in an evacuation. People who live west of the canal will have to cross these bridges, which could be damaged in an earthquake. Many people live on dead-end streets. These could become blocked, slowing evacuation.

PADANG HOUSING DAMAGE = 70%



PURUS HOUSING DAMAGE = 67%



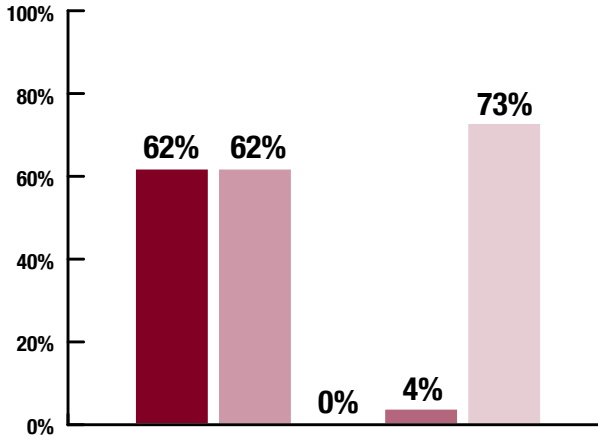
THE EARTHQUAKE IMPACT

The Focus Group Discussion made it clear that residents are aware of tsunami risk, but do not want to relocate. Many have lived their entire lives in Purus. Others – like the fishermen – must be near the sea for their livelihoods. At the same time, our survey data tells us many people are not rebuilding damaged houses, increasing vulnerability to future disaster.

The 30 September 2009 earthquake impacted housing, livelihoods, and infrastructure in the following ways:

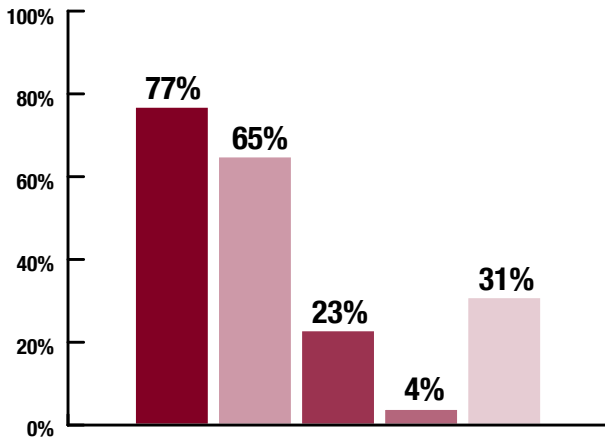
- Housing damage is almost the same in Purus as in Padang City as a whole. Sixty-seven percent of houses in Purus are damaged.
- Sixty-two percent of *ketua RT* reported both damaged housing and lost livelihoods as significant earthquake impacts.
- Seventy-three percent of *ketua RT* reported PDAM was disrupted, making this the most common problem. PDAM has been partially restored, but many pipes are crushed, leaving people to access water through public spouts at the canal.
- The drainage canal is clogged by debris and sediment since the earthquake. It floods after heavy rain. Household and sanitary waste is accumulating here.
- Participants in the Focus Group Discussion reported there is no tsunami early-warning system.

Many factors affect residents' capacity to rebuild housing. Seventy-seven percent of *ketua RT* report that residents have limited resources for rebuilding. Sixty-five percent report lack of livelihood as an obstacle. Survey data indicates that less than half of the *kelurahan* has self-recovered. People have not yet received government assistance, so they must use personal resources to rebuild, but this is



% KETUA RT REPORTING EARTHQUAKE IMPACTS

- Lost Livelihood
- Limited Access to Health Services
- Damage to Home
- Lost Water / Electricity
- Loss of Family Members



% KETUA RT REPORTING ISSUES FOR REBUILDING

- Limited Resources for Rebuilding
- Prolonged Medical Injury
- Livelihood Affected
- Difficulty with Childcare
- Lack of Information

occurring in only 42% of *RT*.

An important sign of capacity are the *gotong royong* (mutual assistance) programs. Since the earthquake, residents have organized to address localized flooding and clean drains. However, flooding in the drainage canal may be too big of a problem for *gotong royong* to address.



HOUSING OCCUPANCY

- Vacant
- Occupied

RECOVERY ACTIVITY

- No Activity
- Rebuilt
- Demolished
- Rebuilding in Process
- No Data

Even though very few houses are vacant, there is little recovery activity. This means people are living in unsafe housing.

THE STATUS OF HOUSING AND RECOVERY PROGRESS

Housing in Purus is almost fully occupied since the earthquake, but many people live in unsafe buildings. The rebuilding progress in Purus is influenced by the following issues:

- Residents lack resources for rebuilding.
- Residents are reluctant to invest in housing for a variety of reasons. Some residents do not have title to their land and so do not want to invest in housing they do not own. Others are waiting in expectation of government assistance.
- Many residents are rebuilding confined-masonry buildings, which are not earthquake-resistant.
- Semi-permanent and non-permanent housing is at risk, and tends to be located on dense interior blocks that may be physically isolated during disaster.

People are living in Purus. Only 81 houses (5%) are vacant. These vacant houses are thinly distributed across the neighborhood. Even so, there is a low level of rebuilding activity. Only about 120 out of 1,582 houses (8%) have rebuilding activity on the outside of the houses, although interviews with residents indicate that many people are making minor repairs inside houses.

Rebuilding activity is concentrated in two small clusters, one in the fishers community and the other on Jalan Veteran. The clustering of activity indicates where families and neighbors are working together and have the resources to rebuild.

Purus is primarily residential, and most housing is single-family and one-story. Sixty-two percent of housing in Purus is confined-masonry, which is the most vulnerable type of building in an earthquake.



A common pattern in Purus is confined-masonry houses along the perimeter of the block with semi- and non-permanent houses on the interior. This means people are crowding into the interiors of blocks.

Residents do not have resources to make these buildings earthquake-resistant. We heard anecdotally from residents that information is not available about earthquake-resistant construction. Typically a home-owner hires laborers to help with home construction. Laborers also lack access to knowledge and resources for earthquake-resistant construction. The cement, brick, and other materials available for construction are usually low quality.

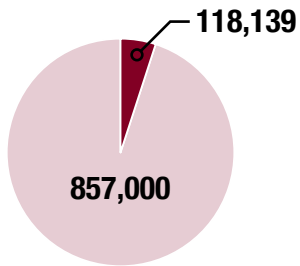
Another 27% of housing is semi-permanent, constructed of both wood and masonry. Semi-permanent buildings are more stable, but tend to be located inside blocks, potentially isolating them.

There is the potential for semi-permanent and non-permanent housing located in dense areas to remain only partially rebuilt.

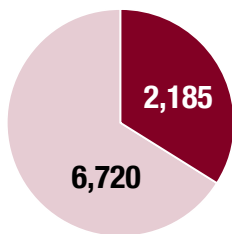
West of the canal, in a high density and high poverty area, many housing types are mixed together on the same block – confined-masonry, semi-permanent, and non-permanent. The composition of housing types reflects the self-built and informal character of area, with people crowding into the interiors of blocks. Since these are poor areas, many residents lack the resources to rebuild, leaving houses partially repaired and highly vulnerable to future disasters. This creates concentrations of unstable housing in areas that are isolated and difficult to evacuate.

Lack of resources to rebuild is only one of the reasons that came up in the Focus Group Discussions. Some people are waiting for promised government assistance. Others doubt it is wise to repair housing when it may be damaged in a future disaster. One resident said the perception of vulnerability makes residents “think twice” about investing in their home. In addition, many residents have complicated land title arrangements. Residents said those without land title are reluctant to invest in their houses.

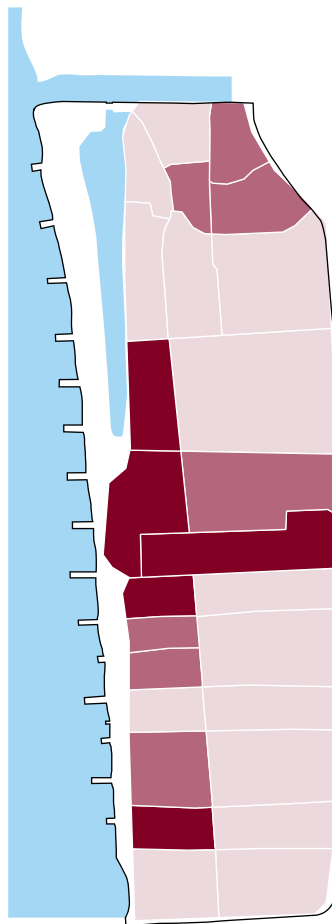
Both financial need and uncertainty about the future are slowing rebuilding in Purus.



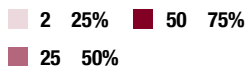
PADANG CITY POVERTY RATE = 5%



PURUS POVERTY RATE = 34%



% HH in POVERTY



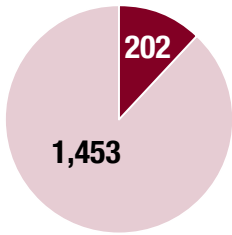
The poverty rate in Purus is seven times higher than the overall rate for Padang City.

VULNERABLE GROUP # 1 – THE POOR

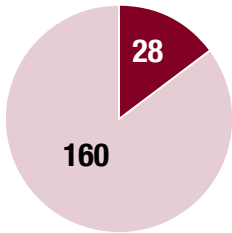
There are 533 households in poverty in Purus, including 2,185 people. The poverty rate in Purus (34%) is almost seven times the poverty rate for Padang City. This high level of poverty creates serious challenges for rebuilding in a timely fashion, while the impacts of disasters can sink people further into poverty. This cycle of disaster and poverty increases vulnerability to future earthquake and tsunami.

In Purus, the areas with the highest concentrations of poverty are where confined-masonry, semi-permanent, and non-permanent housing is most mixed. The laborers and fishermen in these areas generally lack the resources to rebuild and make their homes earthquake-resistant. So their vulnerability to future disasters is likely to increase.

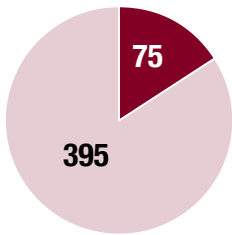
While it may be difficult to immediately alleviate poverty, there may be other ways to reduce vulnerability. For example, people are reluctant to rebuild because of uncertainty about future disasters and lack of information. To address these, NGOs or civil society groups can work to socialize earthquake-resistant building practices among young laborers. Local government could provide targeted services for repairing specific structural problems that cause injury, such as masonry gables.



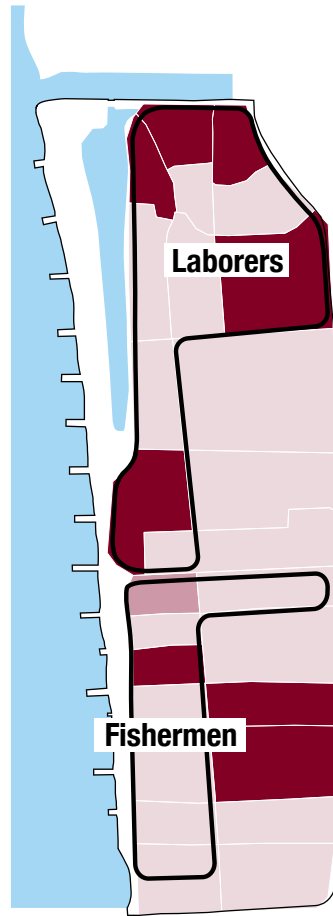
PURUS CHILDREN
% OUT SCHOOL = 14%



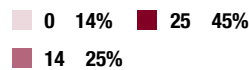
LABORER CHILDREN
% OUT SCHOOL = 18%



FISHERMEN CHILDREN
% OUT SCHOOL = 19%



% OUT OF SCHOOL



More children are out of school in the areas where laborers and fishermen live. Since the earthquake, they are leaving school to work to supplement family income.

VULNERABLE GROUP # 2 – CHILDREN OF FISHERMEN AND LABORERS

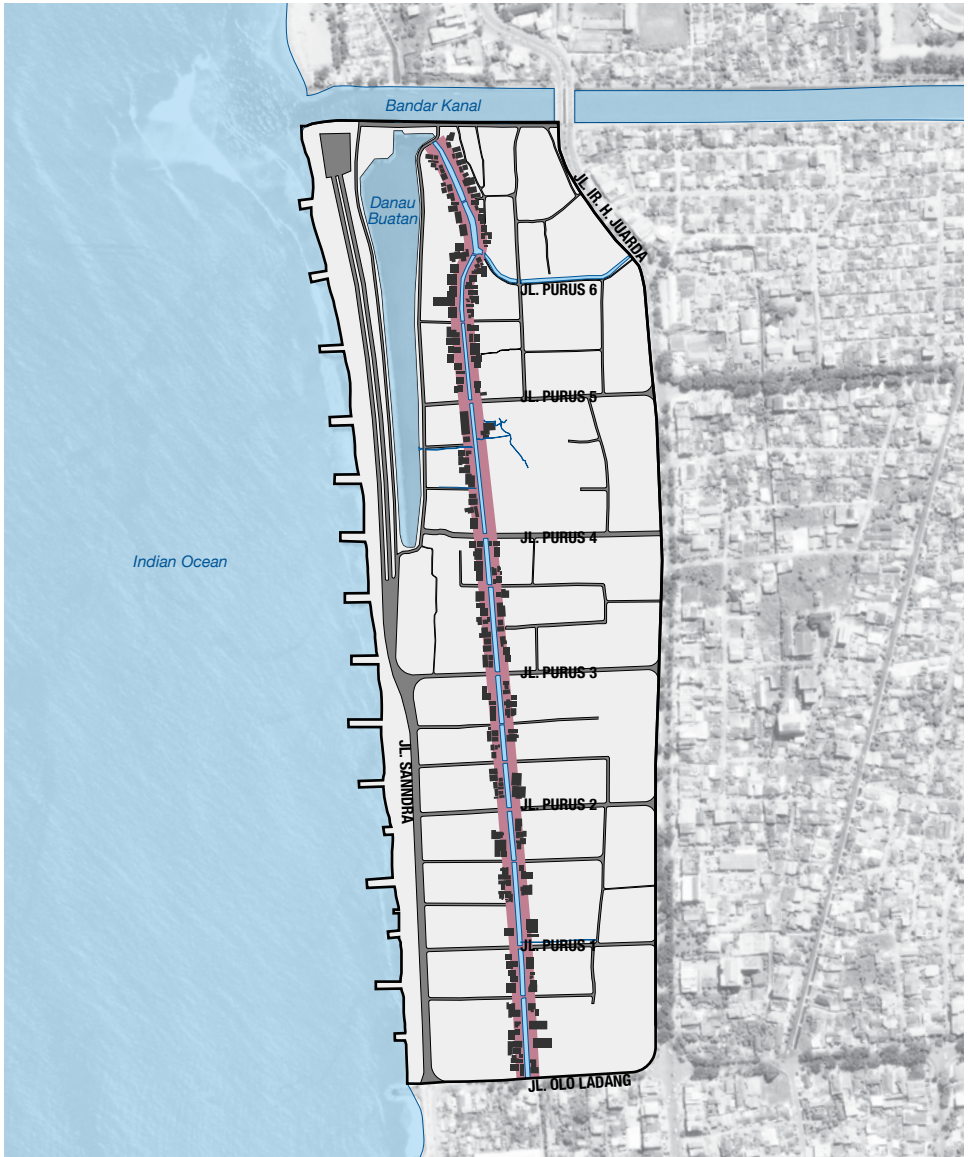
The proportion of children who are out of school in the fishing and laborer communities is higher than the *kelurahan* as a whole. About 18% of children from these two groups are out of school, as compared to 14% overall.

Children out of school are socially vulnerable.

In interviews, residents spoke anecdotally about children leaving school. Some leave to work and supplement family income that was lost after the earthquake. Others are out of school because their families can no longer afford fees. Families may be adapting to lost livelihoods, but missed school will have a long-term effect on youth. The earthquake impact on education is therefore creating long-term social and economic vulnerabilities in the community.

Areas at Risk of Flooding

Sources: BAPPEDA, Google Earth, Mercy Corps Survey, March 2010



15 m. Buffer House at Risk of Flooding

0 100 200 m.



VULNERABLE GROUP # 3 – PEOPLE LIVING NEAR CANAL

There are 250 houses – about 1,000 people – located next to the canal. These people face health and sanitation risks when the canal floods in heavy rain.

Following the earthquake, debris and sediment clogged drains and raised the bed of the canal. Waste backs up and household rubbish dumped in the canal does not wash away.

The canal floods are an earthquake impact that risks becoming a chronic physical vulnerability for the neighborhood. The longer this situation goes on, the more difficult and costly it will be to remedy.



PRIORITY ISSUES IN PURUS

The following documents issues and strategies identified by participants in the 3 May 2010 workshop.

The earthquake had widespread physical impacts on Purus. The damage to water infrastructure is increasing health and sanitation risks. The broken drainage canal is accumulating solid waste and floods in heavy rain, making it a priority issue for Purus.

IDEAS FOR PURUS

- ✓ Build capacity by organizing young people to lead efforts that address health and sanitation risks.
- ✓ Provide information and resources to help *gotong royong* initiatives focus on reducing physical vulnerability related to housing and water infrastructure.

Another issue is capacity for residents to address physical vulnerability. There is a high level of awareness, for example, that certain housing construction types create risks during earthquake. In many cases, residents lack resources to rebuild and the information needed for reducing physical vulnerability to disaster.

STRATEGIES FOR PURUS

Youth can play a central role in addressing physical vulnerability related to drainage and sanitation. The Padang City Health Department can train groups of youth to carry messages to Purus residents about rubbish disposal and keeping drainage clear. Youth could also help organize and participate in cleaning and repair of the canal.

Empowering youth to be leaders in reducing physical vulnerability could help address social vulnerability. In places where youth are out of school, participation in youth organizations could be coordinated with education as an incentive for youth to return to school.

The youth organizations should be coordinated with Strategy 3.5 in “Aiming to Rebuild” (Rehabilitating the Infrastructure and Facility of Education and Health).

Local government can collaborate with *gotong royong* initiatives to provide information about reducing physical vulnerability. Information would help build capacity among residents to make homes earthquake-resistant and take on local projects, such as cleaning the canal.

The improvement of *gotong royong* through information should be coordinated with Strategy 3.7 in “Aiming to Rebuild” (Recovering the Community Psychological Aspects and Implementing Disaster Preparedness).



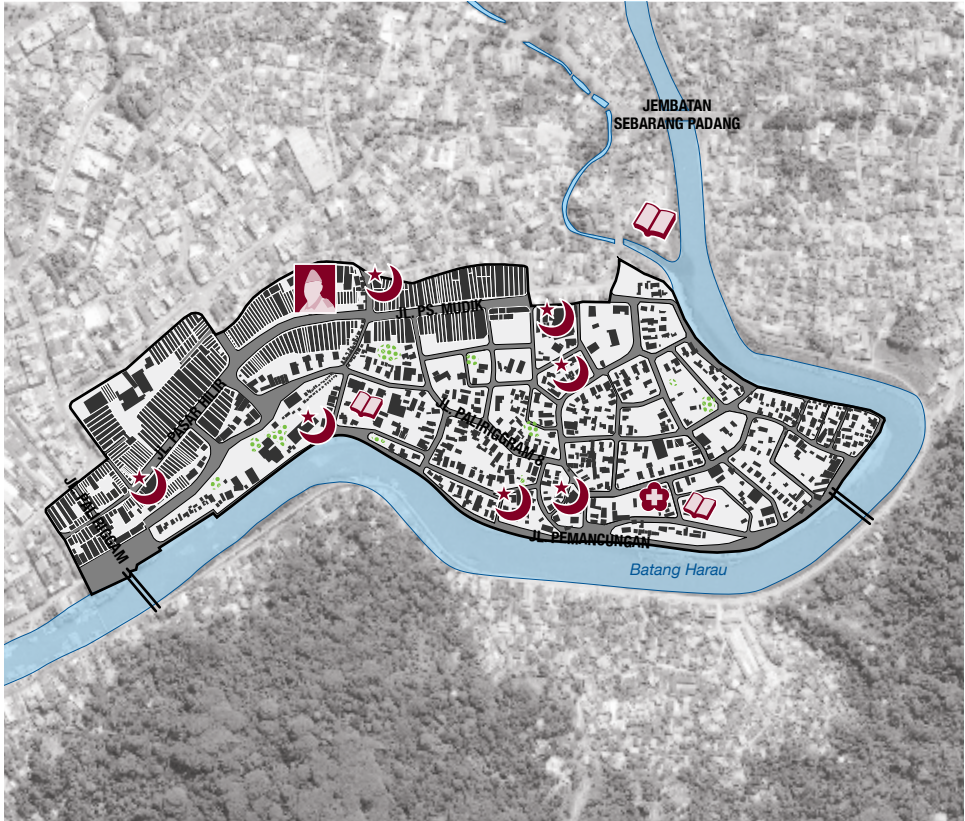
Section 2:

PASA GADANG ASSESSMENT

Analysis of housing conditions and vulnerability of the people of *kelurahan* Pasa Gadang.

Pasa Gadang Habitat Map

Sources: BAPPEDA, Google Earth, Mercy Corps Survey, March 2010



 Neighborhood Center	 School	 Trees	 0 100 200 m.	
 Masjid	 Hospital	 Pedestrian Bridge		

PHYSICAL STRUCTURE

Pasa Gadang has three distinct areas: the historic trading district, central Pasa Gadang, and Pemancangan. Each has different activities and qualities, but what happens in one has strong implications for recovery in the other areas. The economic and social lives of Pasa Gadang residents are closely tied together.

The first enclave is the historic trading district. Here two-story *rumah toko* buildings are tightly packed onto Jalan Pasar Hilir.

Pasa Gadang Basic Statistics

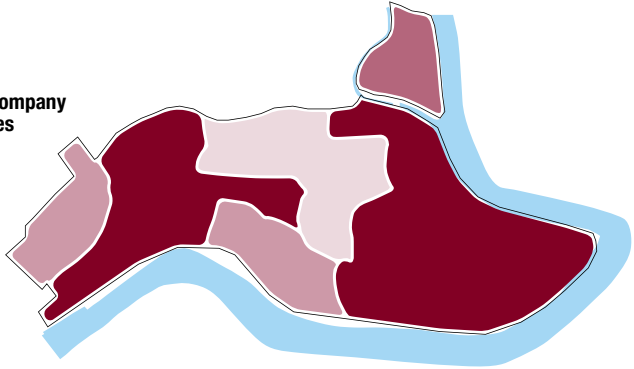
Sources: Mercy Corps Survey, March 2010

	Total	%
TOTAL HH	1,669	
TOTAL RESIDENTS	6,209	
AGE 0 - 6	491	8%
AGE 7 - 18	957	15%
AGE 18 - 65	4,446	72%
AGE 65+	315	5%
DEPENDENCY RATIO	0.40	
TOTAL HH POVERTY	245	15%
AREA (Hectare / Acre)	37 / 91	
POPULATION DENSITY (People per Ha. / Ac.)	167 / 68	

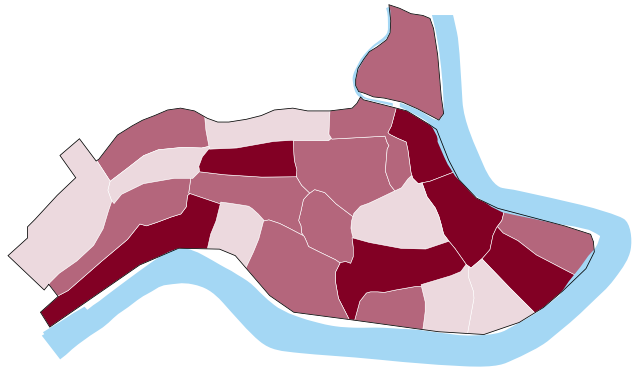
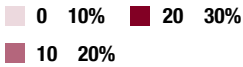
This is where the Dutch originally traded spices. Trading continues today in new forms. Some *rumah toko*, for example, are used as warehouses for cement. A railroad used to pass through this area. Today a group of families lives in semi-permanent houses near the abandoned train station.

In central Pasa Gadang, old buildings sit next to new ones. Extended families live in wooden colonial homes on the riverfront. These

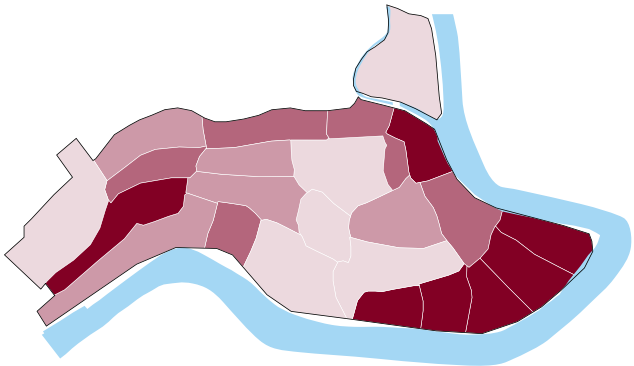
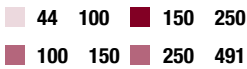
TOP OCCUPATIONS



% HH in POVERTY



POPULATION DENSITY (People per Hectare)



Poverty is evenly distributed across Pasa Gadang, but population density is highest along the river in Pemancangan.

houses from a past era have intricately carved gables and window frames as well as painted patterns. In contrast, newcomers have built large modern houses.

ISSUES IN PASA GADANG

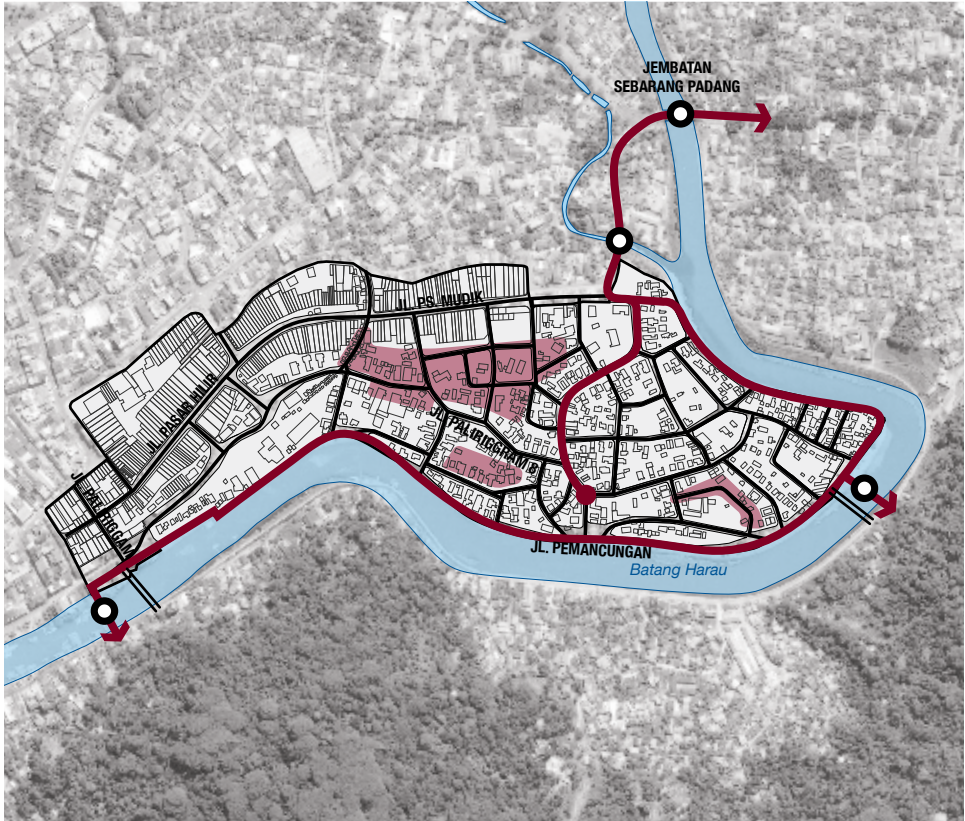
- ✓ A smaller proportion of housing was damaged than in the city as a whole.
- ✓ The earthquake impact on *rumah toko* could lead to lost cultural heritage.
- ✓ Fewer people are living in the trading district than in than residential areas, but there are low levels of self-recovery among families in the residential areas.
- ✓ People live in Pasa Gadang to be close to work, so migration may occur if the local economy is not restored.

The third enclave is Pemancangan. This area in Pasa Gadang's east end was settled in the late 1970s. Drainage improvements reduced flooding and made it safe for housing. Poverty and population density are higher here than the other two areas, and it is mainly populated by laborers who live in one-story, single-family homes.

Pasa Gadang has three prominent streets: Pasar Hilir, Jalan Paririggram 8, and Jalan Pemancangan. The winding side streets make an irregular pattern. The river defines the *kelurahan's* southern

Pasa Gadang Circulation Diagram

Sources: BAPPEDA, Google Earth, Mercy Corps Survey, March 2010



boundary. Two new pedestrian bridges – built by Dinas Pekerjaan Umum (Department of Public Works) – connect to high ground on the river’s other side.

Many people use Jalan Pemancungan along the river get around. This makes it an important gathering space for the community. People meet here or come to enjoy the view.

The river views, surrounding jungle-covered hillsides, and old buildings makes Pasa Gadang feel cut off from the world, a tranquil and mysterious place to live.

Another important public space is the plaza on Jalan Pasar Hilir. The municipal government recently invested in new paving for the plaza, and this area provides an outdoor market space surrounded by *rumah toko*.

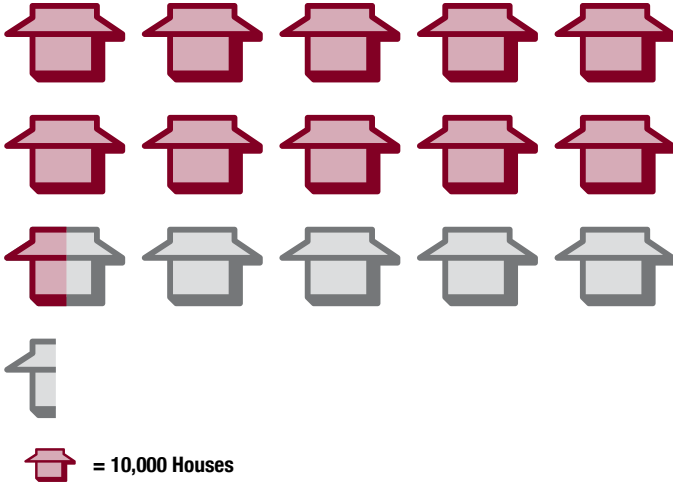
Water services in this area are lacking. Only 574 households (34%) have access to piped water from PDAM. Two-thirds of households rely on private wells, which were not disrupted after the earthquake, but would be vulnerable to a tsunami.

There was less housing damage here than in other parts of Padang City. Nevertheless, there are many physical risks. Many *rumah toko* were significantly damaged and are now unsafe

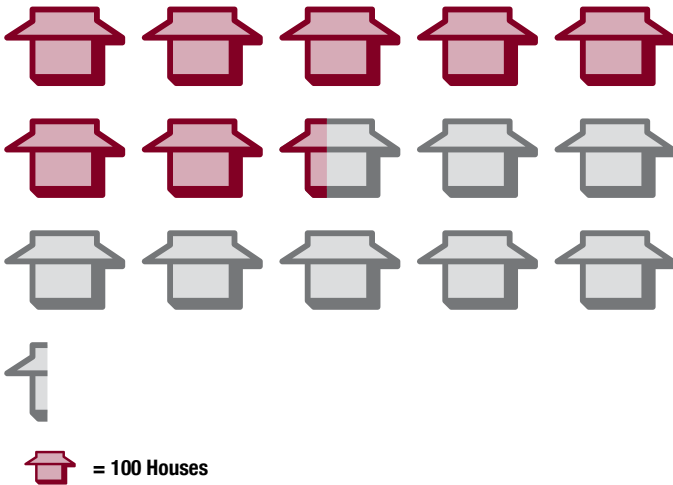
Pasa Gadang is two kilometers from the coast, leaving it vulnerable to a strong tsunami wave. There is also risk of flooding from the river, which would block riverfront evacuation routes. The two new bridges are assets, but they are narrow and easily blocked by motorbikes.

The *kelurahan*’s circulation system – its streets and sidewalks – is actually highly connected. There are no dead-end streets. Only a few areas do not have direct connections to routes leading out of the *kelurahan*.

PADANG HOUSING DAMAGE = 70%



PASA GADANG HOUSING DAMAGE = 48%



EARTHQUAKE IMPACT

The community perception expressed in the Focus Group Discussion is that Pasa Gadang has quickly returned to normal.

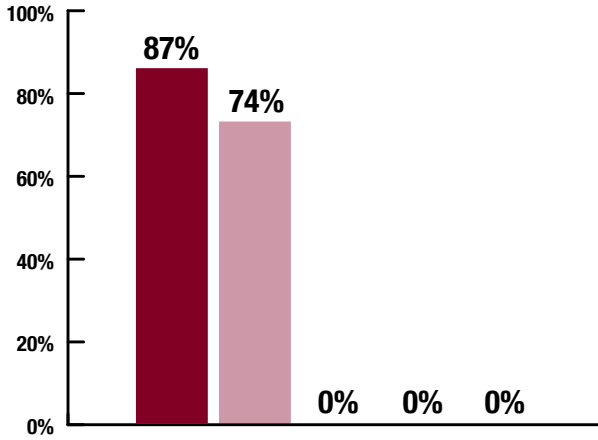
Housing damage is, in fact, significantly less in Pasa Gadang (48%) than in Padang City as a whole (70%). This is because there are more wooden and semi-permanent houses here, which are less likely to collapse in an earthquake. However, loss of livelihoods, directly related to physical damage to businesses, is affecting many residents, especially the laborers.

Many laborers work in warehouses made of converted *rumah toko*, which are now closed and are expensive to rebuild.

A possible consequence of slow recovery in the historic trading district is that laborers in Pemancangan will migrate out of Pasa Gadang. In other words, decline in one area of Pasa Gadang will hasten the decline of other areas.

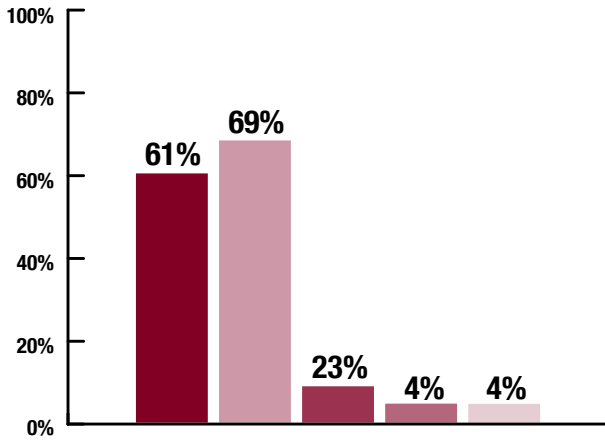
The 30 September 2009 earthquake impacted housing, livelihoods, infrastructure, and cultural heritage in the following ways:

- The proportion of damaged houses in Pasa Gadang is less than the proportion for Padang City as a whole. Forty-eight percent of housing is damaged.
- Eighty-two percent of *ketua RT* reported livelihoods are impacted, particularly for laborers working in warehouses on Pasar Hilir and in Pasar Raya, which are now closed.
- Drainage is clogged from earthquake debris.
- Cultural heritage is at risk because historic buildings are severely damaged.



% KETUA RT REPORTING EARTHQUAKE IMPACTS

- Lost Livelihood
- Limited Access to Health Services
- Damage to Home
- Lost Water / Electricity
- Loss of Family Members



% KETUA RT REPORTING ISSUES FOR REBUILDING

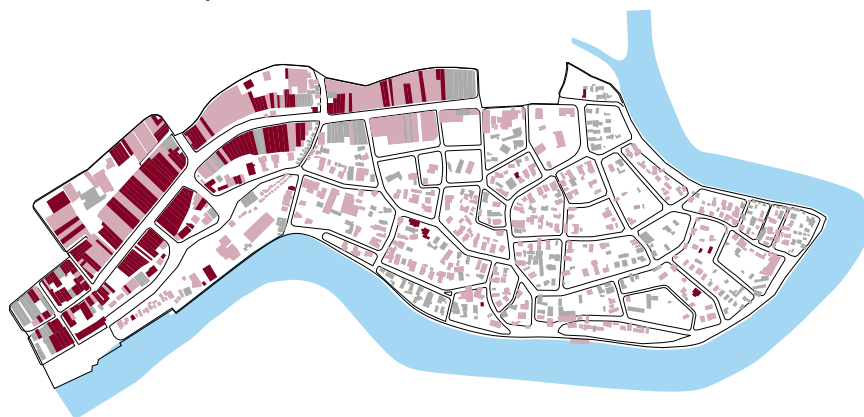
- Limited Resources for Rebuilding
- Prolonged Medical Injury
- Livelihood Affected
- Difficulty with Childcare
- Lack of Information

For those who were impacted, lost livelihood slows the pace of rebuilding. Only 20% of *ketua RT* report self-recovery – families rebuilding on their own – in their areas. Self-recovery is occurring mostly in western Pasa Gadang, the trading area. People in Pemancangan are for the most part not rebuilding their homes and are therefore living in unsafe housing.

Each month, residents organize *gotong royong* to address localized flooding and drainage issues. This is a sign of capacity to recover from disaster. However, residents in the Focus Group Discussion said Pasa Gadang has no tsunami early-warning system. Residents watch the river for signs of tsunami.

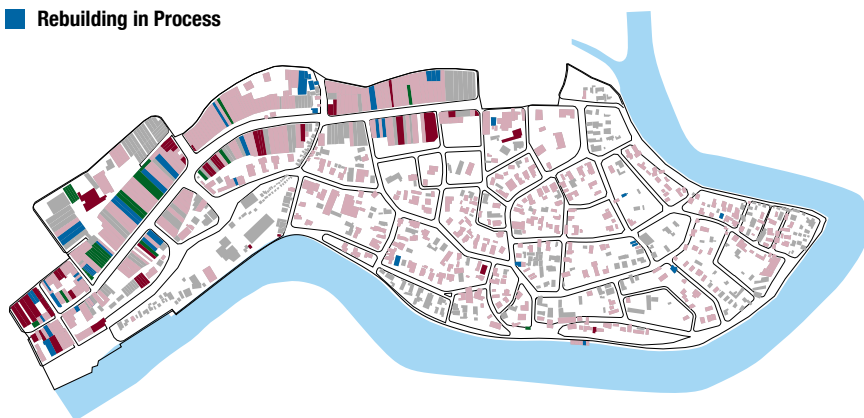
HOUSING OCCUPANCY

- Vacant
- Occupied



RECOVERY ACTIVITY

- No Activity
- Rebuilt
- Demolished
- No Data
- Rebuilding in Process



There is a mixed response to the earthquake in the historic trading district. While there is rebuilding activity at some *rumah toko*, owners of other *rumah toko* are not rebuilding.

THE STATUS OF HOUSING AND RECOVERY PROGRESS

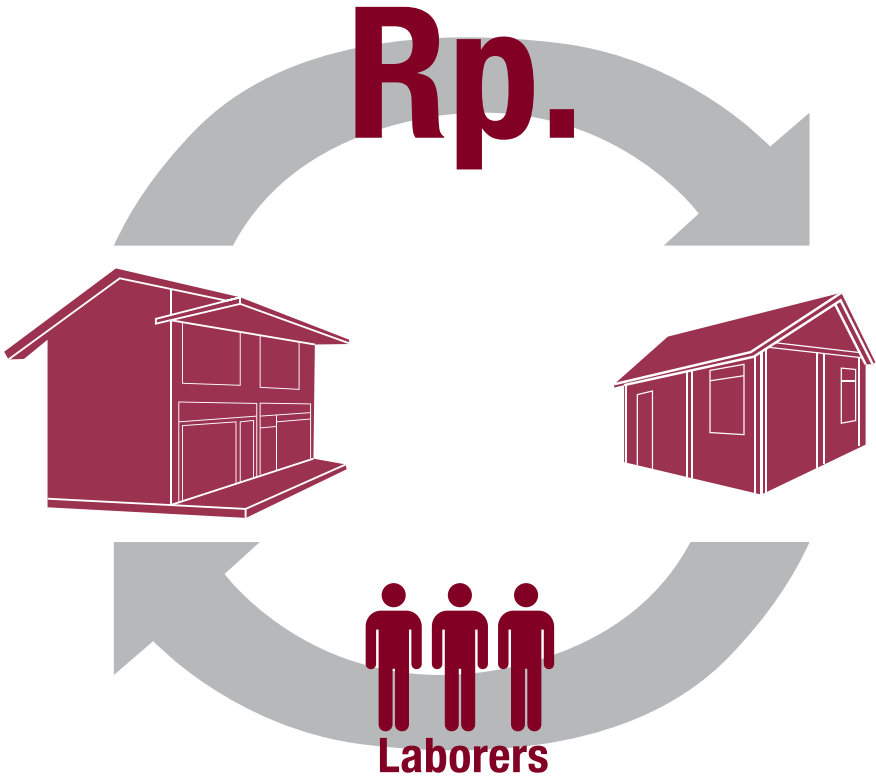
Residents who are rebuilding in Pasa Gadang face different challenges. Some people in Pemancangan, for example, are living in unsafe housing. Owners of *rumah toko* are responsible for buildings that were in need of repair before the earthquake and are expensive to rebuild. Because of the range of different challenges, recovery is uneven across the *kelurahan*.

The recovery progress in Pasa Gadang is influenced by the following issues:

- There was less damage to housing than in the city as a whole, but many people still lack resources to rebuild.
- Some owners of *rumah toko* are rebuilding, while others are not, creating uncertainty about the future of the trading district.
- *Ketua RT* in 69% of Pasa Gadang reported lost livelihood as the primary obstacle to rebuilding.
- Historic wooden houses in central Pasa Gadang were spared significant damage. Like the *rumah toko*, these houses date to the Dutch colonial era, but they differ since they are single-story residential buildings near the river.

Vacancy is low in residential areas, but very high in the historic trading district. Almost all housing is occupied in central Pasa Gadang and Pemancangan, either because housing is not damaged or because residents are living in unsafe housing.

In contrast, 181 of the 431 *rumah toko* – 41% – are vacant. Some of these buildings may have been vacant long before the earthquake. Visual inspection of the interiors of these buildings suggested long-term under-maintenance.



Many laborers in Pemancungan work in the *rumah toko*. Until the *rumah toko* are rebuilt and businesses reopened, laborers will lack income to repair their homes.

Some *rumah toko* are well over 100 years old. Their load-bearing walls are actually very strong. The party-walls shared between *rumah toko* provide added stability in earthquake. Yet years of neglect mean the scale of the damage and the expense of needed repairs is high.

Building owners in the trading district are having varying responses to the earthquake. It is typical to see a fully rebuilt *rumah toko* next to an empty building. Recovery activity in the trading district, at 25%, is higher than in the *kelurahan* as a whole.

The signs of rebuilding are promising, but full recovery here is not a foregone conclusion. Some owners are waiting for government assistance.

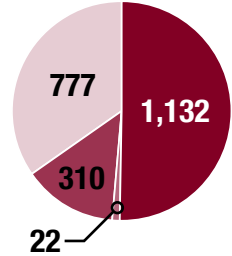
Sixty percent of houses in Pasa Gadang are one-story, single-family buildings, mostly located outside the trading district. There is mix of building types – confined-masonry, semi-permanent, and non-permanent. The survey documented low recovery activity in central Pasa Gadang and Pemancangan. Since these are poor areas, people lack resources to rebuild damaged housing.

The perception expressed in the Focus Group Discussion is that poor people face the greatest obstacles to rebuilding, and the survey indicates that many residents in Pemancangan lack resources to rebuild.

Livelihoods and income are urgently needed in order to rebuild. For those who work in the neighborhood, livelihood restoration depends on reconstruction and reopening of local enterprises like those housed in *rumah toko*.

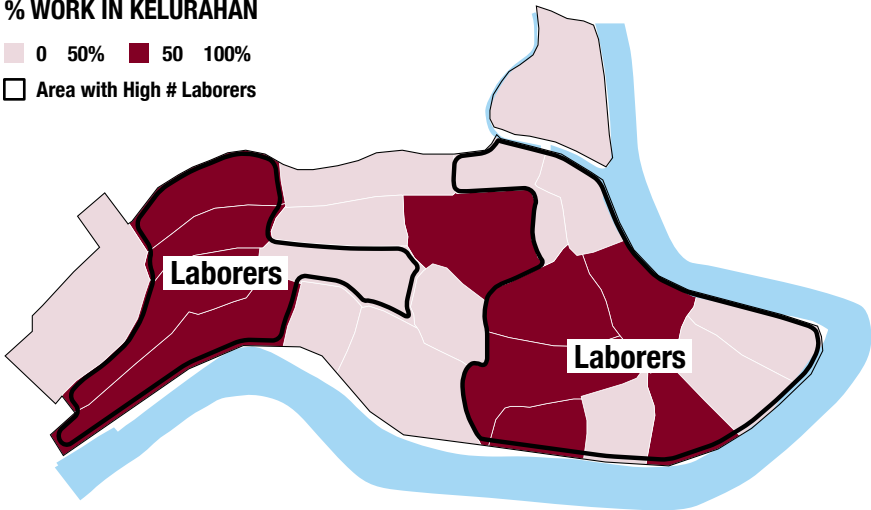
TOP OCCUPATIONS

- Laborers = 51%
- Civil Servants = 14%
- Skilled Laborers = 1%
- Private Company Employees = 34%



% WORK IN KELURAHAN

- 0
- 50%
- 50
- 100%
- Area with High # Laborers



Half of the working-age population in Pasa Gadang are laborers. They live in the historic trading district and Pemancungan.

VULNERABLE GROUP # 1 – LABORERS AND THEIR FAMILIES

There are 2,267 laborers in Pasa Gadang, 51% of the working population, a significantly higher proportion than in other *kelurahan*.

A large proportion of the laborers living in Pasa Gadang find employment within the same *kelurahan*. In two areas where the majority of residents work within the neighborhood, there are 1,132 laborers. They choose to live in Pasa Gadang because of proximity to places of employment.

Many of the laborers have lost their livelihoods in the businesses that were destroyed in the earthquake, affecting their ability to repair their homes. If the local employment opportunities do not re-open, it is possible the laborers will migrate out of Pasa Gadang, and there is a risk of overall neighborhood decline.



Traders who live in *rumah toko* face the complicated and expensive challenge of rebuilding severely damaged traditional buildings.

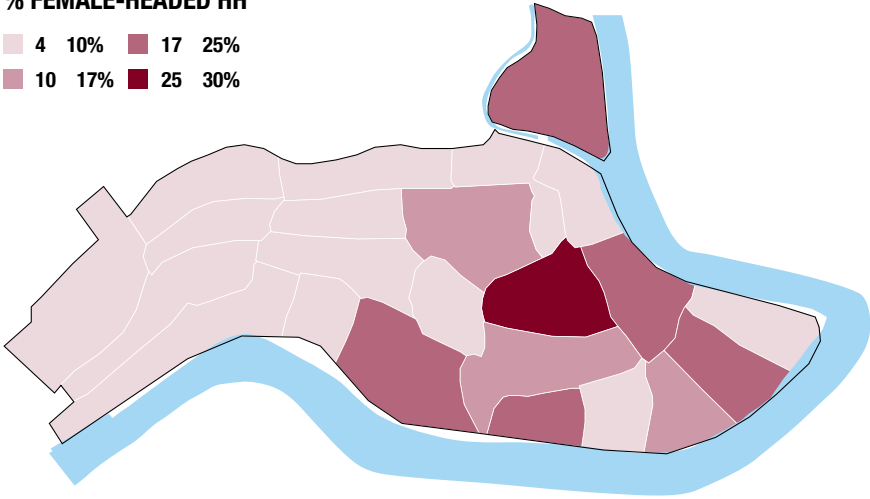
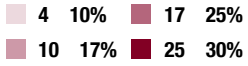
VULNERABLE GROUP # 2 – TRADERS AND THEIR FAMILIES

The 462 traders in Pasa Gadang make up about 10% of the workforce and are a culturally important group since Pasa Gadang was Padang City's original trading center. Like the fishermen in Purus, traders in Pasa Gadang are very aware of their cultural and economic identities.

There is an enclave of about 70 traders who still live in *rumah toko* on Pasar Hilir. Buildings were severely damaged in this area, and while some are being repaired, there is no activity in others. Most of the *rumah toko* have significant external and internal damage, making them unsafe to live in and expensive to repair.

With unsafe housing and disrupted livelihoods, the traders on Pasar Hilir face significant challenges in rebuilding. Since the traders run local businesses and lead the local economy, their ability to recover has implications for economic vulnerability of other Pasa Gadang residents.

% FEMALE-HEADED HH



Female-headed households are concentrated in Pemancungan.

VULNERABLE GROUP # 3 – FEMALE-HEADED HOUSEHOLDS

There are 199 female-headed households in Pasa Gadang.

About 12% of the households in Pasa Gadang are female-headed. The average household size in Pasa Gadang is 3.7, though families commonly have up to five people. This means between 700 and 800 people live in female-headed families.

These may be widows or families in which the husband has migrated for work, or has simply left. The women in charge of these families face significant challenges in balancing household management responsibilities with the need to earn an incomes.

Female-headed families are concentrated in Pemancangan. There are between 10 and 25 female-headed households in each of the *RT* in Pemancangan. These families are more likely to live in unsafe housing and so are exposed to physical vulnerability.

Information on female-headed houses and rebuilding was collected at two different scales – *RT* and house – so the two indicators cannot be directly correlated at the same scale. Even so, it is assumed that a proportion of this vulnerable group is living in housing that is not being rebuilt.

PRIORITY ISSUES IN PASA GADANG

The following documents issues and strategies identified by participants in the 3 May 2010 workshop.

Restoration of livelihoods, a priority issue for Pasa Gadang, will help some residents rebuild, but not everyone.

Challenges faced by residents in Pasa Gadang are primarily related to buildings. Middle-income residents with resources may be able to repair single-family houses. However, the historic *rumah toko* buildings – which house the many warehouses where Pasa Gadang

IDEAS FOR PASA GADANG

- ✓ Increase stability among local population through skills training program for young people.
- ✓ Make *gotong royong* stronger and more effective. Local government could lend support to existing *gotong royong* initiatives to clear debris from streets and clean clogged drains.

residents are employed – are expensive and complicated to rebuild. Many *rumah toko* have extensive structural damage, roof damage, and destroyed interiors. Since the *rumah toko* are employment centers for residents, restoration of livelihood is connected to repair of these buildings. If livelihoods are not restored, residents may migrate from the *kelurahan*.

Another priority issue is the condition of streets and drains. Debris on streets and clogged drainage increase health and sanitation risks. Though many streets have been upgraded and repaved in recent years, the earthquake worsened drainage issues that had not yet been addressed.

STRATEGIES FOR PASA GADANG

Improving the local economy requires action at a scale larger than the *kelurahan*. This is because the many *rumah toko* that are used as warehouses have extensive structural damage, which may be beyond the means of many owners to repair.

At the same time, small-scale initiatives can help stabilize Pasa Gadang. Skills training for young people could increase capacity for finding employment or starting small enterprise, and decrease the likelihood that young workers will migrate away.

Skills training in Pasa Gadang should be coordinated with Strategy 4.2 in “Aiming to Rebuild” (Households Economic Recovery).

Community-organized *gotong royong* are already clearing debris from streets and cleaning drains. Local government support of these initiatives could increase their effectiveness at reducing health and sanitation risks. *Gotong royong* could also help to improve the public spaces where Pasa Gadang residents gather.

Support for *gotong royong* should be coordinated with Strategy 3.4 in “Aiming to Rebuild” (Revitalizing the Old City Center Areas).



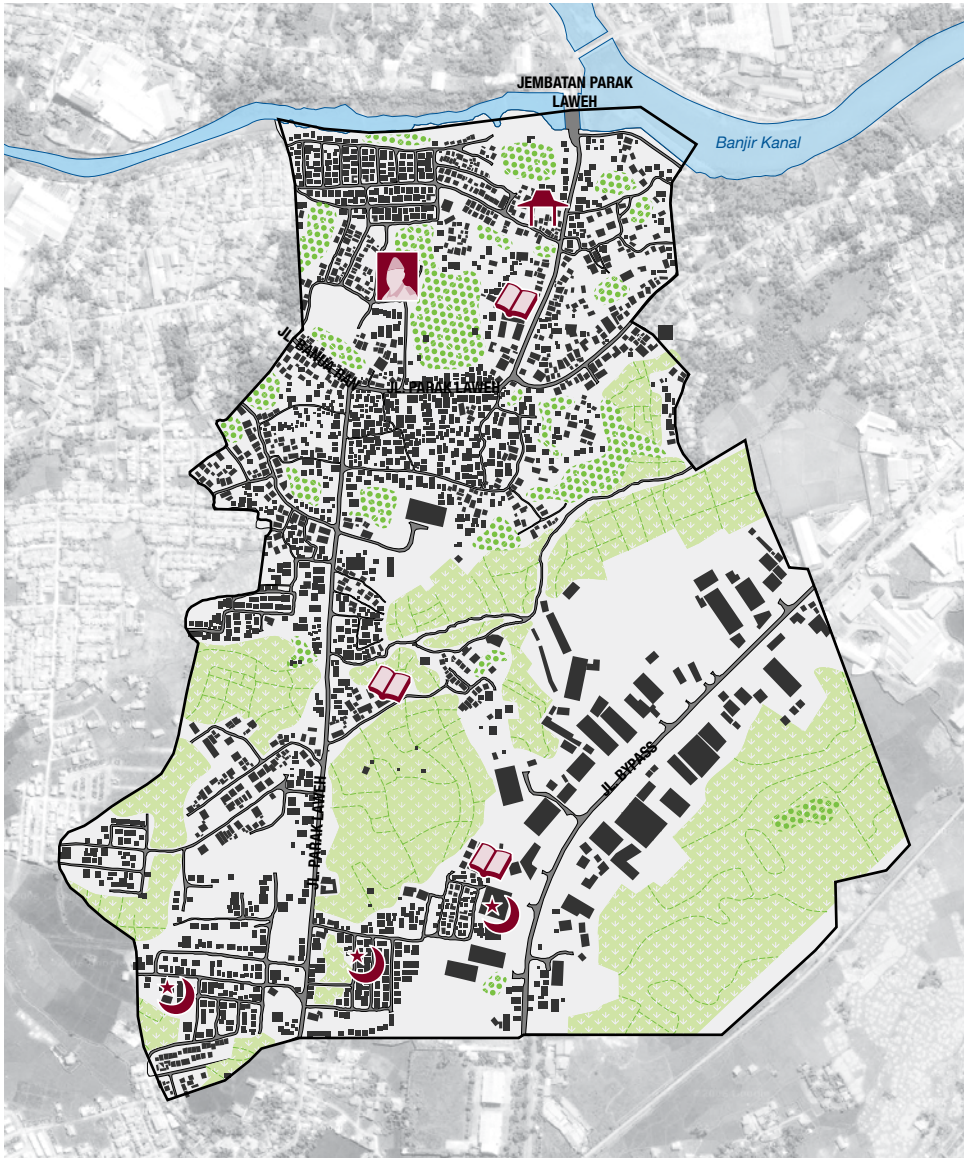
Section 2:

PARAK LAWEH ASSESSMENT

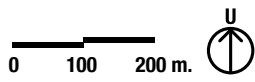
Analysis of housing conditions and vulnerability of the people of *kelurahan* Parak Laweh.

Parak Laweh Habitat Map

Sources: BAPPEDA, Google Earth, Mercy Corps Survey, March 2010



- | | | | | | |
|---|---------------------|---|--------|---|------------|
|  | Neighborhood Center |  | School |  | Trees |
|  | Masjid |  | Market |  | Rice Field |



PHYSICAL STRUCTURE

Parak Laweh is on the edge of Padang City’s urban growth. Many people are moving to the area for housing and jobs, and new housing is rapidly replacing rice fields.

Newcomers live in Parak Laweh, but so do indigenous Minang Kabau families. Laborers crowd into humming cement factories on Jalan Bypass.

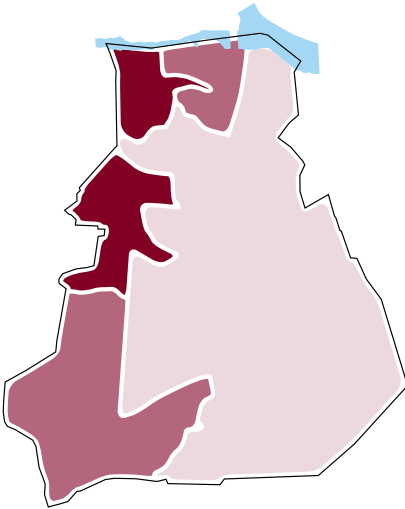
A lot is changing in Parak Laweh, so future models of development are being defined here, offering an opportunity to make people more resilient to natural hazards.

Parak Laweh Basic Statistics

Sources: Mercy Corps Survey, March 2010

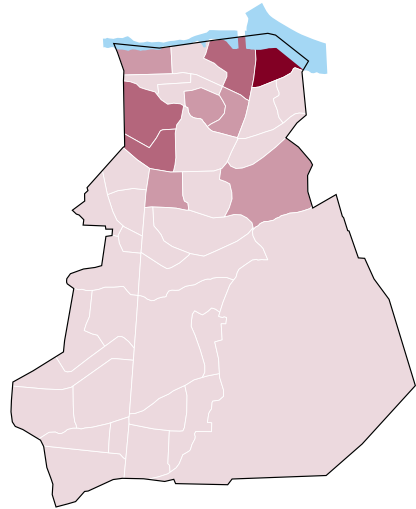
	Total	%
TOTAL HH	2,910	
TOTAL RESIDENTS	8,962	
AGE 0 6	880	10%
AGE 7 18	1,712	19%
AGE 18 65	6,023	67%
AGE 65+	338	4%
DEPENDENCY RATIO	0.49	
TOTAL HH POVERTY	377	13%
AREA (Hectare / Acre)	147 / 364	
POPULATION DENSITY (People per Ha. / Ac.)	60 / 25	

Both old residential enclaves and new housing districts are located off of Jalan Parak Laweh, the main commercial road. Most of the housing in Parak Laweh is one-story, single-family homes. Traditional markets and small enterprises line either side of Jalan Parak Laweh.



TOP OCCUPATIONS

- Civil Servants
- Private Company Employees
- Laborers



% HH in POVERTY

- 25%
- 50%
- 75%
- 95%

Civil servants and private company employees are buying homes in the new developments west of Jalan Parak Laweh. Laborers live east of Jalan Parak Laweh where they are close to jobs on Jalan Bypass.

Jalan Bypass was constructed to connect the airport and seaport, which are north and south of Padang City. It is a fast-growing industrial corridor. Jalan Parak Laweh and Jalan Bypass do not connect within Parak Laweh, but meet south of the *kelurahan* boundary.

Urban development is rapidly expanding in Parak Laweh, yet the *kelurahan* is large and has many rice fields, so the population density so far has remained low. Poverty is concentrated in the northern areas, which were settled first. An enclave of poor people is located on the river.

ISSUES IN PARAK LAWEH

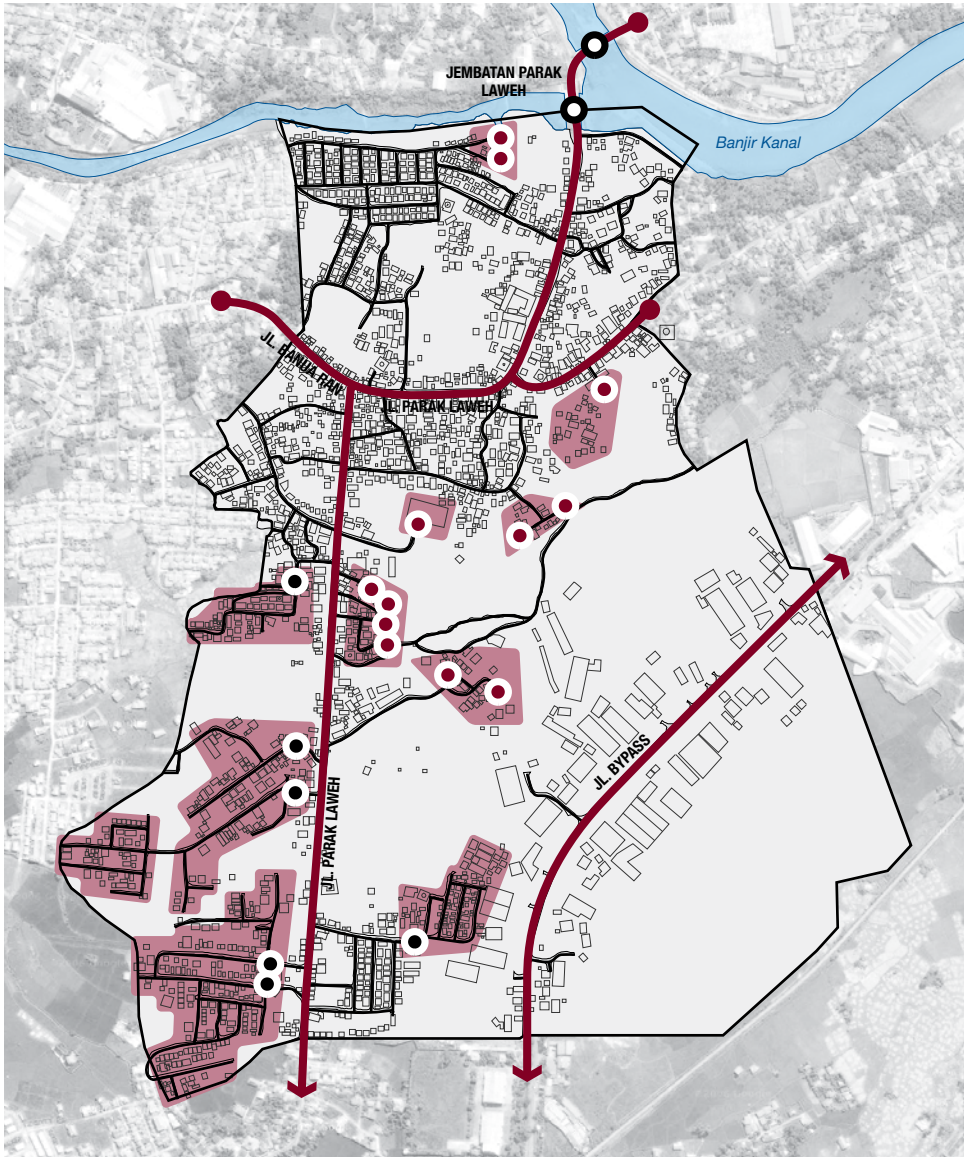
- ✓ Level of housing damage is higher than in Padang City as a whole, but rebuilding is slow.
- ✓ Pattern of housing district development increases physical vulnerability.
- ✓ Lost livelihoods among people in poverty is a barrier to rebuilding.

Many indigenous Minang Kabau people live near rice fields that they continue to maintain and cultivate. They share *tanah adat*, family land held in common ownership.

The newcomers to this area are primarily civil servants and employees of private companies. They may work in Padang City, but want to live outside the city center. They are buying new houses west

Parak Laweh Circulation Diagram

Sources: BAPPEDA, Google Earth, Mercy Corps Survey



of Jalan Parak Laweh. Migrant laborers live close to Jalan Bypass, where they have access to industrial jobs.

Since Parak Laweh is not yet a dense urban area, there are no public gathering spaces similar to the coast in Purus or the plaza in Pasa Gadang. Mosques provide a common meeting place for residents.

New housing districts are often built with electricity infrastructure in place and some public services such as rubbish collection. However, the new housing districts lack PDAM water service. Roads in these districts are usually unpaved.

Only 23% of households are connected to the PDAM water network. PDAM is available in four areas – one housing district built in the 1990s, two new housing districts in the south, and a cluster of houses near rice fields in central Parak Laweh. Fifty-two percent of households have private wells.

Parak Laweh is a place where people come for opportunities. Some people come to increase family assets by purchasing affordable housing. Others seek employment in expanding industries. Yet even though people benefit from opportunities in Parak Laweh, they also live with many physical vulnerabilities.

Three-fourths of the housing in Parak Laweh has earthquake damage. Most housing in Parak Laweh is confined-masonry. The physical vulnerability of these confined-masonry houses is increased by poor foundations laid on the improperly compacted soil of former rice fields.

Parak Laweh is 4.5 kilometers from the coast, located behind two hills. Some residents in the Focus Group Discussion expressed community awareness of tsunami risk, but others believe Parak Laweh is safe because of the hills. These conflicting perceptions suggest that reliable information about tsunami risk is not widely available in the community.



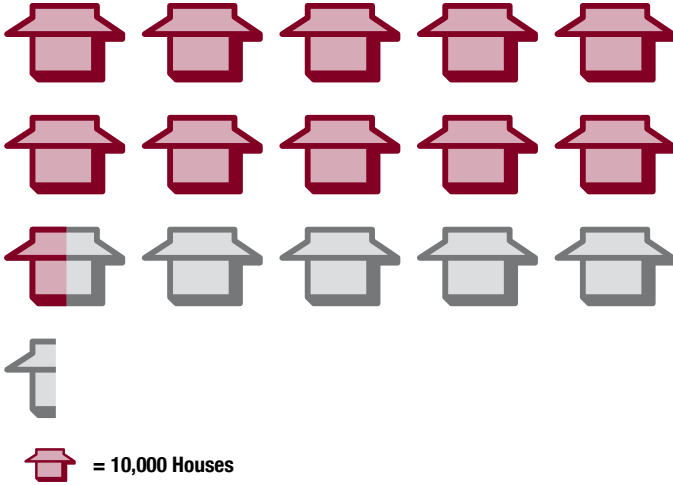
Rice fields in central Parak Laweh.

The *kelurahan*'s circulation system – its streets and sidewalks – is another source of physical vulnerability.

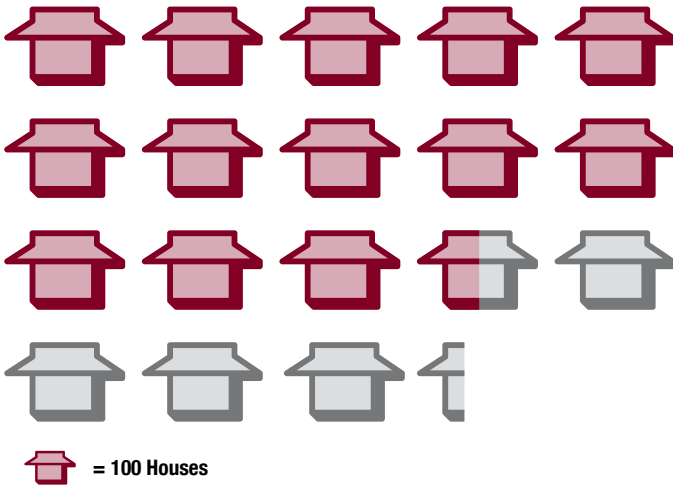
New housing districts are built with only one access road to Jalan Parak Laweh. These are potential bottlenecks in an evacuation. Housing in poor areas is located on narrow roads that were formerly rice field paths. These are often dead-ends. Jalan Parak Laweh is too narrow for its important role as an evacuation route. Much of the city center will evacuate along Jalan Parak Laweh.

Patterns of development make Parak Laweh physically vulnerable. Yet these patterns can be corrected since much of the land here is still undeveloped.

PADANG HOUSING DAMAGE = 70%



PARAK LAWEH HOUSING DAMAGE = 74%



EARTHQUAKE IMPACT

The impact on housing is shared across income levels, but the loss of livelihoods affects poor people more.

Parak Laweh had the highest proportion of earthquake damage to housing among the three *kelurahan* in this assessment. The damage was distributed evenly between the new housing districts and older settlement areas. Loss of livelihoods, however, was reported by more *ketua RT* representing areas where laborers predominate.

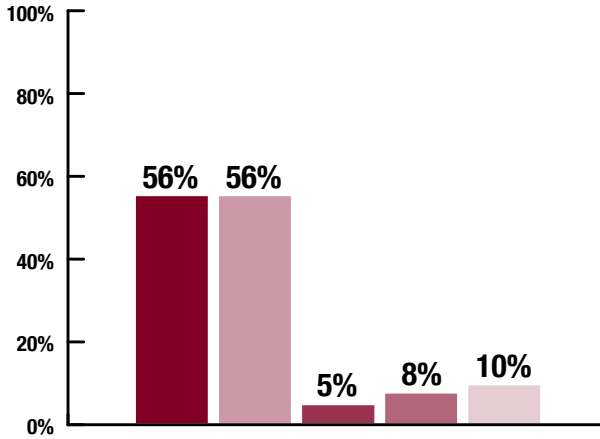
The 30 September 2009 earthquake impacted housing and livelihoods in the following ways:

- The proportion of housing damaged in Parak Laweh is greater than the city as a whole. Seventy-four percent of housing was damaged – 1,350 out of 1,833 houses.
- Fifty-six percent of *ketua RT* reported livelihoods were impacted, particularly among laborers. Civil servants and private company workers have more stable employment.
- The closing of Pasar Raya in the city center has increased activity at local traditional markets.

Only 19% of *ketua RT* reported self-recovery in their areas, indicating that people are living in unsafe housing. Self-recovery is concentrated in the housing districts west of Jalan Parak Laweh. No self-recovery was reported in the areas where poverty is concentrated in north Parak Laweh.

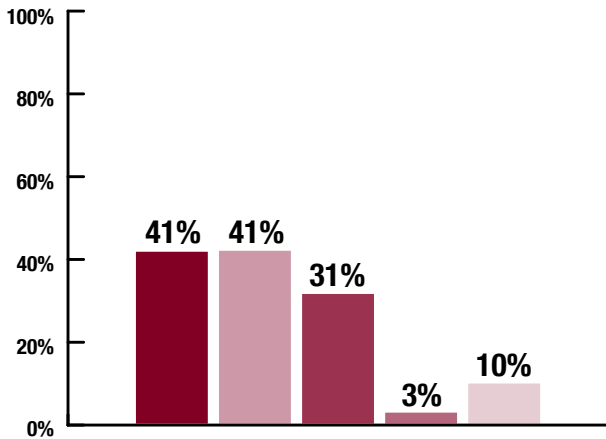
People in poverty and middle-income people lack resources to make their housing safe – but for different reasons.

Residents at the Focus Group Discussion expressed the perception that poor people are most affected and face the greatest barriers to



% KETUA RT REPORTING EARTHQUAKE IMPACTS

- Lost Livelihood
- Limited Access to Health Services
- Damage to Home
- Lost Water / Electricity
- Loss of Family Members

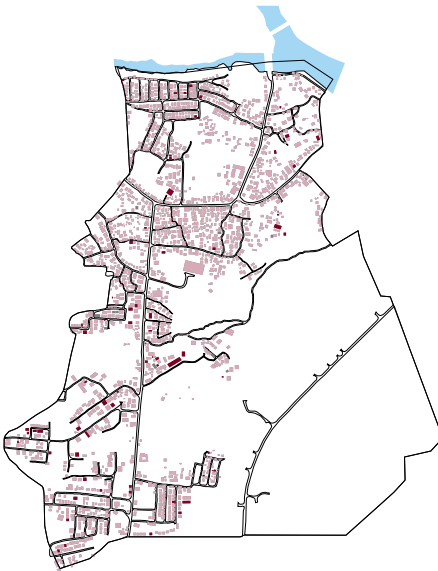


% KETUA RT REPORTING ISSUES FOR REBUILDING

- Limited Resources for Rebuilding
- Prolonged Medical Injury
- Livelihood Affected
- Difficulty with Childcare
- Lack of Information

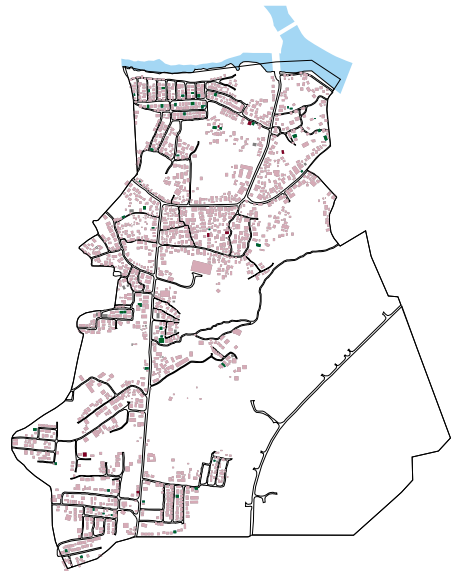
rebuilding. This is true of the laborers. Because of lost livelihood, they lack resources to rebuild their homes.

Residents living in new housing districts face a different challenge. Anecdotal evidence from interviews indicates that most new housing is bought with credit. The civil servants and private company employees who live in these houses may not have lost their livelihoods, but after making monthly debt payments, they have no money to make repairs.



HOUSING OCCUPANCY

- Vacant
- Occupied
- No Data



RECOVERY ACTIVITY

- No Activity
- Rebuilt
- Demolished
- No Data
- Rebuilding in Process

In new housing districts, people cannot afford to repair housing because they have debt on their houses to pay. Laborers have lost livelihoods and so lack resources to rebuild.

STATUS OF HOUSING AND RECOVERY PROGRESS

Housing in Parak Laweh is occupied, but people are living in unsafe buildings. The pattern of constructing new housing on rice fields is increasing overall vulnerability to earthquakes.

Since Parak Laweh is on the city edge, it is not surprising to find a mix of housing types. There is housing from many time periods, but the newest housing is all confined-masonry.

Self-built masonry houses were damaged, but new confined-masonry buildings in the housing districts visually appear to be the most severely impacted by the earthquake. These houses show many kinds of damage – roof, columns, wall, and foundation.

However, it was mentioned anecdotally in interviews that there is little earthquake damage in one housing district in north Parak Laweh, which was built in the 1990s. We heard anecdotally from residents that housing in this particular district was built with high quality cement and stronger materials.

The recovery progress in Parak Laweh is influenced by the following issues:

- People of all incomes lack resources to rebuild. People in poverty lack income and savings to invest in housing. Higher-income residents in Parak Laweh often have significant debt on their houses, which prevents them from spending income on rebuilding.
- Based on visual observation, damage is more severe in new housing districts than in older areas where housing is self-built.
- Information is available about earthquake-resistant construction, but the community perception is that it is too expensive to build.



New housing districts like this one are being constructed on former rice fields in Parak Laweh.

Only 71 houses – 3% of all housing – are vacant, and these are thinly distributed across the *kelurahan*. People are living in Parak Laweh, but rebuilding activity remains low, and was observed at just 81 houses – 5% of all housing – mostly located in the new housing districts. People throughout Parak Laweh are living in unsafe housing.

A significant planning challenge is to reduce vulnerability in Parak Laweh as it grows. The mix of housing types shows that Parak Laweh is a neighborhood in transition. Seventy-eight percent of houses in Parak Laweh are confined-masonry buildings. However, 10% are semi-permanent. Most of these are in northern Parak Laweh, the older area of settlement. In central and southern Parak Laweh, residential development is replacing agricultural uses.

More development is likely come to Parak Laweh in the future. The *kelurahan* is close to employment centers and there is considerable space to build on, most of it now in use as rice fields. At the same time, the pace of rebuilding is slow. This means existing houses in the *kelurahan* may remain partially rebuilt, even as more housing is added.

Forty-one percent of *ketua RT* reported residents lack resources to rebuild. Many have lost their livelihoods. Civil servants have debt payments to make, so families in new homes lack money to rebuild.

Current residents will be more vulnerable to future disasters if the pace of rebuilding does not increase.



New confined-masonry housing in the new developments is severely damaged from the earthquake.

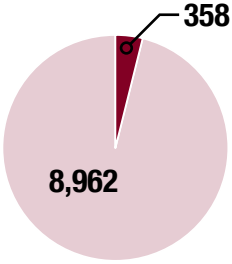
VULNERABLE GROUP # 1 – PEOPLE LIVING IN NEW HOUSING DISTRICTS

There are 552 households, or about 1,700 people, living in new housing districts, mostly in confined-masonry houses.

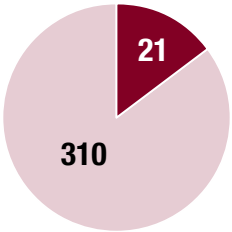
The design of the housing districts creates additional vulnerability. These areas have no piped water services. Roads are narrow and unpaved. Typically, a district has only a single connection to the main road. These features of the built environment combine to increase physical vulnerability.

The residents here are also economically vulnerable. Even though they may not have lost livelihood and have stable employment, residents are still unable to rebuild because of the debt owed on their houses.

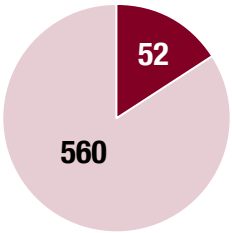
Parak Laweh is a growth area with available land. If new districts follow the pattern of recent development, more people moving into this area will be exposed to physical and economic vulnerability.



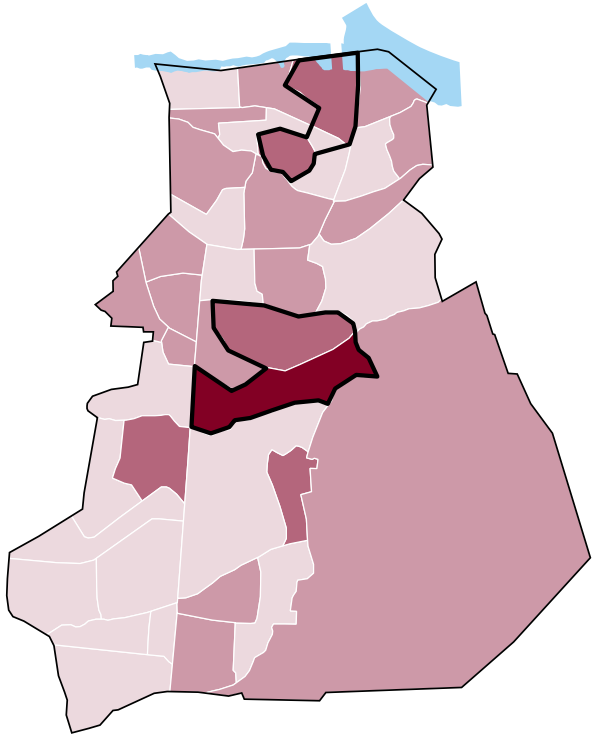
**% OF ELDERLY IN
PARAK LAWEH = 4%**



**% OF ELDERLY IN NORTH
PARAK LAWEH = 7%**



**% OF ELDERLY IN CENTRAL
PARAK LAWEH = 9%**



% AGE 65+
 1 3% 7 10% 3 7% 10 13%

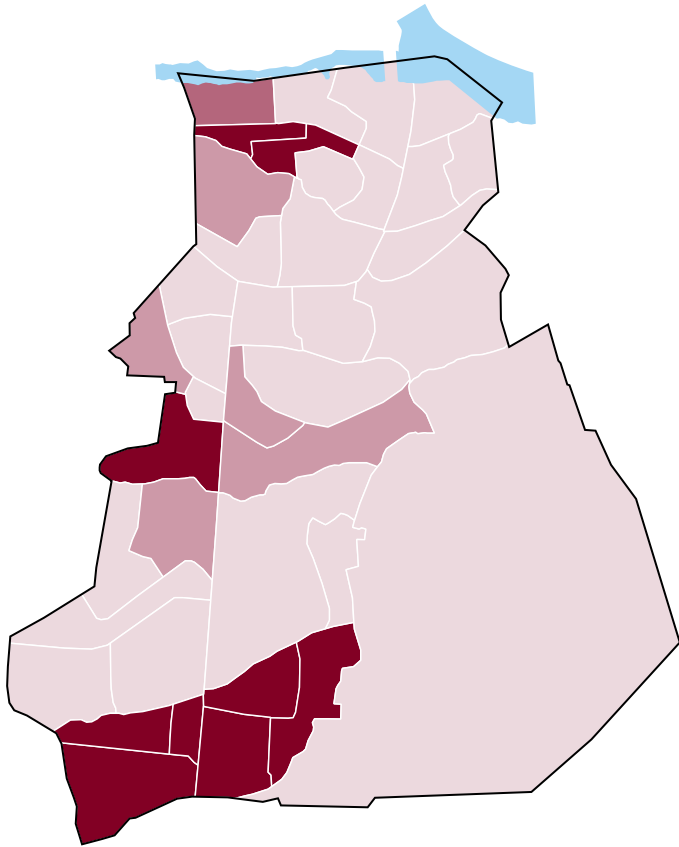
Elderly people are vulnerable because they depend on family or other community members to rebuild. There are concentrations of elderly people in northern and central Parak Laweh.

VULNERABLE GROUP # 2 – ELDERLY PEOPLE

There are two concentrations of elderly people in Parak Laweh, one in the northern area, the other in the center, with a total of about 340 people age 65 and older.

Elderly people in Padang City have a diversity of living arrangements. Some are widows, others are heads of families whose children have all migrated away, while some elderly people live in houses with large extended families.

The elderly depend on family members or other people for housing, food, and health care. Those who live alone are unlikely to have resources to repair their homes. Several elderly people interviewed during the survey are living in unsafe housing. Elderly people tend to be less physically mobile, increasing the possibility of being left behind in an evacuation.



% HH with PDAM



New housing districts were constructed without PDAM.

VULNERABLE GROUP # 3 – PEOPLE WITHOUT PIPED WATER SERVICE

There are 2,088 households in *RTs* where piped water coverage is less than 25%, leaving approximately 5,655 people without public water service.

Relying on private wells is common practice in Padang City, but although these wells serve as an important back-up system to piped water, they also have significant health and hygiene risks.

New housing districts in Parak Laweh have been developed without connection to the main water pipeline. Residents in these districts face health risks, particularly after a disaster if private wells are damaged or groundwater becomes contaminated.

Parak Laweh is a growing area of the city. If housing continues to be developed without water infrastructure, the new residents will become progressively more vulnerable.

PRIORITY ISSUES IN PARAK LAWEH

The following documents issues and strategies identified by participants in the 3 May 2010 workshop.

Restoring livelihoods in Parak Laweh is a priority strategy for reducing physical vulnerability, since the earthquake damaged a high proportion of houses in Parak Laweh, and people need to get back to work in order to invest in housing repair.

IDEAS FOR PARAK LAWEH

- ✓ Expand traditional markets to make them local economic development centers. Locate micro-loan and skills training programs at the traditional markets.
- ✓ Improve evacuation routes in Parak Laweh through road widening and surfacing as well as signs.

The condition of roads in Parak Laweh is a key source of physical vulnerability. Jalan Parak Laweh, in particular, is too narrow to support the number people who will use it in the case of an evacuation. Housing districts have limited access to evacuation routes. Local government is responsible for improving large-scale infrastructure and addressing these physical vulnerabilities.

STRATEGIES FOR PARAK LAWEH

The traditional markets on Jalan Parak Laweh can play an important role in restoring livelihoods. After the main market, Pasar Raya, closed due to earthquake damage, the traditional markets have become more active. More residents access the small traditional markets for daily needs now than before the earthquake.

Since the traditional markets are growing *kelurahan* centers, they can also be places where residents go for job training. Micro-loan programs and skills training programs could be located at traditional markets to stimulate local employment growth.

The expansion of the traditional markets should be coordinated with Strategy 3.2 in “Aiming to Rebuild” (Improve Padang City’s Satellite Market System) and Strategy 4.2 (Households Economic Recovery).

Action at a variety of levels is needed to address the deficiencies of Parak Laweh’s roads. Even though roads lack capacity for their role as evacuation routes, information about evacuation is not currently available in the community. A small-scale, short-term initiative could be to increase awareness of evacuation routes with strategically positioned signs. This would be a first step towards building capacity to evacuate during disaster.

A medium-term strategy would be to increase capacity on Jalan Parak Laweh through road widening and resurfacing. In the long-term, residential areas need to be better connected to evacuation routes. New evacuation routes could be created for existing districts. New housing districts should be required to have at least two access roads.

The improvement of Parak Laweh’s road system should be coordinated with Strategy 3.3 in “Aiming to Rebuild” (Re-organize Urban Public Transport Network).



Section 3:

MOVING FORWARD

Ideas and strategies from the
3 May 2010 participatory
planning workshop.



THE RESULTS OF THE PARTICIPATORY WORKSHOP

A common understanding of physical, economic, and social vulnerability helps local government, communities, and NGOs better understand how to collaborate in rebuilding Padang City in a more sustainable and resilient way.

The following ideas and strategies for rebuilding were developed in participatory planning exercises during the 3 May 2010 workshop. Government officials from Padang municipal departments, *kelurahan Lurah*, and NGOs worked together to discuss what can happen in the next 12 months in the three *kelurahan*.

The discussion was far-ranging, creative, and optimistic. Each group of participants was responsible for developing ideas for one of the *kelurahan* – Purus, Pasa Gadang, or Parak Laweh.

These ideas should complement and inform “Aiming to Rebuild Padang,” the rebuilding plan prepared by local government in December 2009.

Several themes were common to all three discussions.

- *Kelurahan* strategies can be additive and may be more effective if they are combined with existing initiatives. Local government can provide support for existing *gotong royong* (community-led mutual assistance programs) or new strategies can build on existing government programs and policies.
- Local improvements over the next 12 months – the rebuilding period – can support city-scale planning and the ideas of “Aiming to Rebuild.”



- Rebuilding strategies can address vulnerability in two important ways. Strategies can address both root causes of vulnerability and the immediate symptoms at the same time.

Young people have an important role to play in reducing vulnerability. Since they will inherit Padang City's *kelurahan*, building capacity among young people helps create long-term stability.

RECOMMENDED ACTIONS

- ✓ Share the assessment lessons with residents in Purus, Pasa Gadang, and Parak Laweh and seek their responses.
- ✓ Create Community Action Plans (CAP) in pilot *kelurahan*.
- ✓ Develop ideas from the participatory workshop into packaged program and policy proposals.
- ✓ Evaluate workshop ideas and assessment conclusions in the context of “Aiming to Rebuild Padang,” the rebuilding plan prepared by local government in December 2009. “Aiming to Rebuild” is included in Annex 3.
- ✓ Build capacity within local government to replicate the assessment methodology.

NEXT STEPS

The assessment gives a picture of what recovery looked like in Padang City four months after the earthquake. As such, the assessment is a tool for local government and NGOs to understand the pace of recovery and needs of vulnerable groups. The assessment provides a basis for planning rebuilding activities and policies.

This study emphasizes the important role of rebuilding initiatives during the next 12 months. What happens now sets the stage for whether or not Padang City will rebuild as a sustainable city. The data compiled and analyzed in this report can help local government and NGOs be more effective with resources for recovery.

The assessment conclusions should first of all complement and inform “Aiming to Rebuild Padang,” the rebuilding plan prepared by the city government in December 2009. “Aiming to Rebuild” is included in Annex 3, and focuses primarily on long-term, large-scale reconstruction strategies for Padang, while this assessment seeks short-term solutions at the *kelurahan* level.

There are five recommendations for local government and NGOs wishing to apply the findings of this assessment to current planning efforts.

- 1. Share assessment findings with residents in Purus, Pasa Gadang, and Parak Laweh and seek their input.**

The maps and information in this assessment are designed to be visual and easy to understand, making them ideal communication tools for reaching out to residents. The information from the assessment will help families understand what is happening in their *kelurahan*, as well as forming the basis for greater participation in planning. Sharing the findings will provide an opportunity for local government to include more resident input in decisions about rebuilding.



Most streets in *kelurahan* Purus lead to the Indian Ocean coast.

The *lurahs* from Purus, Pasa Gadang, and Parak Laweh are well-informed about the information in the assessment, as each participated in the 3 May 2010 workshop. They are ideal leaders to share the findings with the greater community. The *lurahs* should identify other city-level government officials to participate in these presentations.

2. Create Community Action Plans (CAP) in pilot *kelurahan*.

Community Action Plans are created by residents in collaboration with local government or NGO facilitators to identify specific actions in the short- and medium-term to address community-prioritized problems. They are also used by the community to identify budget item requests as part of the *musrenbang* decentralized budgeting process.

The data compiled in the assessment provides the basis for beginning the CAP process in Purus, Pasa Gadang, and Parak Laweh. Implementing CAP in these *kelurahan* will provide a model for CAP throughout Padang City.

The completed CAP will have two immediate benefits for residents:

- Identify rebuilding initiatives that can be implemented through *gotong royong* (community-led mutual assistance programs), with the help of local NGOs, or through *musrenbang* participatory budgeting processes.
- Articulate community needs in the format used to request funding through local government's next *musrenbang* planning and budgeting cycle.

The CAPs should be resident-led, but facilitation can assist them to fully consider the earthquake impacts and the needs of vulnerable groups identified in this assessment.

3. Develop ideas from the participatory workshop into packaged program and policy proposals.

The many creative ideas voiced during the 3 May 2010 workshop are summarized in Section 2. These ideas should be developed in more detail, particularly as regards feasibility and potential beneficiaries. These proposals can either improve existing government programs or be used to seek funding during the next planning and budgeting cycle.

The innovative strategies described in the *kelurahan* assessments in Section 2 were all proposed by Padang City municipal government staff. Local government staff are therefore ideally positioned to lead the effort to develop these ideas into policy and program proposals with input from residents and technical support from local NGOs.

4. Evaluate workshop ideas and assessment conclusions in the context of “Aiming to Rebuild.”

The local government rebuilding plan, “Aiming to Rebuild Padang,” proposes a series of strategies for addressing both immediate needs of residents after the earthquake and long-term reconstruction. This assessment focuses on what can happen during the next 12 months – the Rebuilding phase – and can dovetail to support the longer-term planning.

The Rehabilitation and Reconstruction Implementation Body (BPRR) should refer to this assessment as “Aiming to Rebuild” is carried forward. In particular, BPRR should:

- Consider whether the data in this assessment suggests ways to shift the focus of reconstruction strategies to better address needs of vulnerable groups.

- Evaluate how to coordinate short-term rebuilding needs and initiatives in order to support long-term goals of “Aiming to Rebuild.”

5. Build capacity within local government to replicate the assessment methodology.

Assessments help local government and NGOs be more effective with limited resources for rebuilding. Assessment data can show which groups to target, which problems are important, and where vulnerable groups are located in the city.

Local government needs to be trained to implement effective, useful assessments. Future assessments that use the same methodology can provide comparison data from other *kelurahan*. The assessment methodology can also be a tool for studying other urban problems.

Capacity building for future assessments should be led by BAPPEDA, the government department responsible for planning and budgeting. Future assessments will require an ongoing partnership with local universities using student volunteers to conduct surveys. It will also require at least one staff person or consultant who is familiar with Geographic Information Systems (GIS) computer software. All of the information will need to be analyzed and shared.

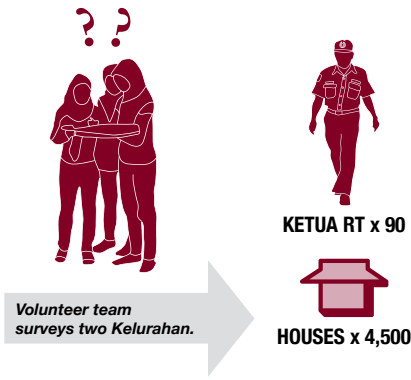


Annex 1:

METHODOLOGY

The methodology for the survey and analysis in this assessment is a tool local government can use to analyze other *kelurahan*.

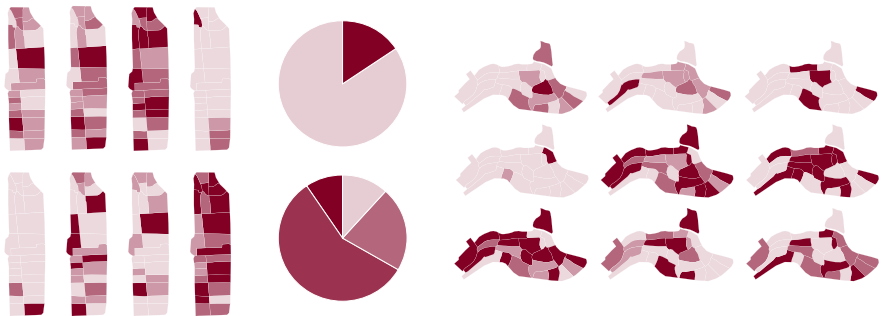
1. Do Outreach and Gather Data



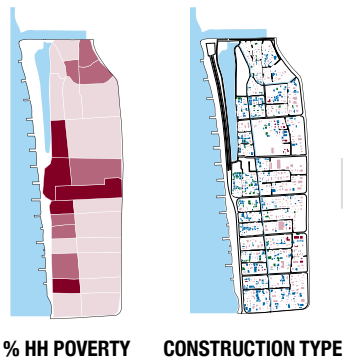
2. Organize Tabular Data

SOCIAL INDICATORS	EARTHQUAKE INDICATORS
# Households	Earthquake Impact
Population	Issues for Rebuilding
Female-head HH	Assistance Received
Age	HOUSING DATA
Youth Out of School	Recovery Activity
Occupations	Building Type
Location of Work	Occupancy
Mobility	Elevation
Poverty	# Floors
Land Tenure	Construction Materials
Access to Water	Utilities
Sanitation	

3. Make Maps with GIS and Visualize Data



4. Do Comparative Analysis



Physical and social data compared.

5. Make Conclusions

ASSESSMENT QUESTIONS

How is recovery progressing?

Are there spatial patterns to the social indicators?

Who are the vulnerable groups and where do they live?

What are issues for rebuilding?

ASSESSMENT METHODOLOGY

The assessment methodology in this study is a tool for local government and NGOs to understand the pace of recovery in Padang City. It can also be used to understand the needs of vulnerable groups during the rebuilding process.

The methodology has five steps: 1) survey, 2) data tabulation, 3) mapping, 4) analysis, and 5) conclusions.

It is important to emphasize the spatial focus of this methodology.

The use of mapping technology facilitates understanding how patterns of recovery are distributed within a neighborhood and targeting the most vulnerable. This study therefore focused on how social and economic needs are related to the built environment, which includes housing, public space, waterfronts, and infrastructure.

Mercy Corps partnered with Bung Hatta University to complete the first step, the survey. About 35 students volunteered to complete two surveys in three *kelurahan*. One survey asked the *ketua RT* about social and economic conditions in the *RT* the *ketua* represents. The second survey documented every house in the three *kelurahan*. The housing survey observed building types and construction materials as well as signs of rebuilding activity.

The students surveyed 90 *ketua RT* and 4,449 houses. They completed the survey over three weekends. The rapid pace of this survey shows how much ground it is possible to cover with a large team of student volunteers.

Next, the survey data was compiled into tabular spreadsheets using Excel. This task was also completed by the student volunteers. This allows for greater manipulation of the data, including the compiling of totals and averages for the indicators. More importantly,

tabulating the data allows the creation of a Geographic Information Systems (GIS) database.

GIS uses a relational database to develop maps of physical space from tabular data. By putting survey information into a GIS database it is possible, for example, to display a map of poverty levels in each *RT*. Similarly, housing survey data can be used to make a map of which houses are occupied and which are vacant.

IMPORTANCE OF COMMUNITY VOICES

The community perspective expressed in FGD and informal interviews is critical for analyzing what the quantitative data means. Quantitative data cannot be appropriately understood without the voice of residents.

The data was also compiled into charts. This task can be completed by two people, one who is familiar with GIS and another person familiar with graphics software such as Illustrator or Corel Draw.

Maps and charts make it easier to understand and communicate the data visually. Visualizing data in this way helps to make comparisons and see spatial patterns, which is important for the next step.

The analysis is a process of looking at maps, asking a series of questions, and making comparisons.

The first step is to look at demographic statistics and quantities. (For example, how many female-headed households are there in the *kelurahan*?) Next, these numbers should be compared with spatial patterns. (Where are female-headed households located?) If there

is a spatial pattern, the next step is to ask why and try to explain it by looking at maps of other indicators. (Are female-headed households concentrated in areas where poverty is high?) The next step is to consider what may happen in the future. (Given what we know about the *kelurahan*, is it likely the number of female-headed households will change?)

This analysis includes not just quantitative data from the survey, but also qualitative data. For this assessment, one Focus Group Discussion (FGD) was conducted in each *kelurahan*, as well as informal interviews with individual residents. The team also spent a lot of time walking in the neighborhood, observing conditions and uses of urban space.

The community perspective expressed in FGD and informal interviews is critical for interpreting quantitative data. Thoughtful analysis of the quantitative data cannot be done without taking into account the voice of residents.

The last step is to draw conclusions from the analysis. At this last stage, the big questions the assessment sets out to study are addressed. In the case of Padang City, the goal was to understand the housing conditions and the pace of recovery after the earthquake. This assessment also sought to identify who is vulnerable and where they live.

This assessment methodology is fairly straightforward and with proper training can easily be implemented. However, there are also many challenges to be taken into account in order to implement a successful assessment.

This methodology is decentralized, meaning that a large group of people are trained and then become individually responsible for the survey. The advantage of a decentralized process is the ability to cover a lot of ground in a short amount of time.

ASSESSMENT CHALLENGES

- ✓ The decentralized methodology covers a lot of ground in a short amount of time, but working with large teams increases chances for errors in the data.
- ✓ *Lurahs* need to show support so *ketua RT* are willing to share information.
- ✓ It helps to have a Community Facilitator become a familiar face in the *kelurahan*.
- ✓ Government department staff need to be open about sharing information.
- ✓ Technical capacity with GIS is required to do this type of assessment.
- ✓ Some people may be surprised by the assessment and question its accuracy if it presents “bad news” about the city.

However, working with many people increases the potential for errors in the data collection. Sometimes volunteers do not complete the survey, which leaves gaps in the data.

Another advantage is that the assessment methodology is scalable. GIS mapping technology is designed so that once an assessment is

completed, more data from future assessments can be added. For example, a survey of recovery activity in the three target *kelurahan* a year from now could easily be added to the database, allowing for tracking of the rebuilding over time.

Engaging government officials, including *kelurahan* leaders and government department staff, is another challenge. It is important to establish communication with the *Lurahs* and *ketua RT* of target *kelurahan* at the beginning of the project, and fully explain the goals and methodology. In this assessment, a Community Facilitator was assigned to each *kelurahan* to spend time in the area and get to know residents. Familiarity with the Community Facilitator was helpful in convincing *ketua RT* to share information.

Government department staff also need to be willing to share information. For this assessment, Padang City BAPPEDA provided important AutoCAD drawings of the three *kelurahan* to our team. This information both facilitated our survey, and showed government support for the project. If local government staff are reluctant to share information, it can slow down the assessment and lower its quality.

The assessment methodology also requires technical capacity. The methodology is straightforward and low-cost GIS software is available. Even so, a staff person with GIS mapping skills is needed to implement this methodology.

A last challenge of the methodology is that sometimes both local government and residents are surprised by what the data says. For example, poverty may be higher than was previously known. People may question the accuracy of the data and conclusions if the assessment presents “bad news” about the city. When this occurs, it is important to confirm the data through site observation and resident interviews and use a participatory methodology so that community members are themselves involved in data collection and analysis.

This assessment is intended to improve the quality of the conversation about rebuilding Padang City by providing clear information about what is happening in the city. Information helps to better define and understand vulnerability in Padang City. More importantly, the data can facilitate understanding of why vulnerability exists and where it is located. Local government and NGOs therefore can more effectively target their programs and resources.


Information also helps to describe the situation better to agencies and foundations who want to help. When shown clear data about needs and problems, agencies and foundations are more willing to contribute their resources.

With good data, we make better choices.


House by House Survey Form

<input style="width: 95%; height: 20px;" type="text"/> Name of Facilitator	HOUSE BY HOUSE ASSESSMENT FORM 	<input style="width: 95%; height: 20px;" type="text"/> Date of Completion	
<input style="width: 95%; height: 20px;" type="text"/> Neighborhood Name	RW: <input style="width: 40px; height: 20px;" type="text"/>	RT: <input style="width: 40px; height: 20px;" type="text"/>	House No: <input style="width: 40px; height: 20px;" type="text"/>
Recovery Status	Housing Type (Choose 1)	Occupancy Status	
1. No Activity _____ Demolished _____ Rebuilt _____ In the Process of Rebuilding _____	2. Single Family _____ Shared (multiple families) _____ Mixed Use (commercial and housing) _____	3. Vacated _____ Occupied _____	
Structure			
4. Number of storeys _____	5. Foundation <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <input style="width: 40px; height: 40px; border: 1px solid black;" type="checkbox"/> On Grade <i>The building sits on a concrete slab or directly on the ground.</i> </div> <div style="text-align: center;"> <input style="width: 40px; height: 40px; border: 1px solid black;" type="checkbox"/> Elevated <i>Building sits on CMU blocks or some other form of foundation.</i> </div> </div>		
6. Wall Type <div style="display: flex; justify-content: space-between;"> <div style="text-align: center; width: 15%;"> <input style="width: 40px; height: 40px; border: 1px solid black;" type="checkbox"/> Permanent <i>Confined-masonry</i> </div> <div style="text-align: center; width: 15%;"> <input style="width: 40px; height: 40px; border: 1px solid black;" type="checkbox"/> Permanent <i>Load bearing masonry</i> </div> <div style="text-align: center; width: 15%;"> <input style="width: 40px; height: 40px; border: 1px solid black;" type="checkbox"/> Semi-permanent <i>Half-brick half-timber construction</i> </div> <div style="text-align: center; width: 15%;"> <input style="width: 40px; height: 40px; border: 1px solid black;" type="checkbox"/> Ferrocement light walls <i>Timber structure, filled in with chicken wire mesh and thickly plastered over with a sandy cement-chalk plaster.</i> </div> <div style="text-align: center; width: 15%;"> <input style="width: 40px; height: 40px; border: 1px solid black;" type="checkbox"/> Non-permanent, rumah tradisional, or rumah kayu <i>Timber houses or any other (slum, temporary, cheap) using timber, board, and other light weight materials.</i> </div> </div>			
Services			
7. Water Connection _____			
8. Electricity Connection _____			

RT Survey Form Front

<div style="border: 1px solid black; height: 30px; margin-bottom: 5px;"></div> Name of Facilitator	RT ASSESSMENT FORM 	<div style="border: 1px solid black; height: 30px; margin-bottom: 5px; display: flex; align-items: center; justify-content: center;"> / / </div> Date of Completion						
<div style="border: 1px solid black; height: 20px; margin-bottom: 5px;"></div> Neighborhood Name	RW: <div style="border: 1px solid black; width: 40px; height: 20px; display: inline-block;"></div>	RT: <div style="border: 1px solid black; width: 40px; height: 20px; display: inline-block;"></div>						
Demography								
1. How many households are there in the RT? _____								
2. From this total, how many are women-headed families, including widows? _____								
3. How many residents are there (total) in the RT? _____								
4. How many children are there in the RT between 0 and 6 years? _____								
5. How many children are there in the RT between 7 and 18 years? _____								
6. How many adults are there above 65 years? _____								
Education								
7. How many of the children age 7 to 18 are not currently enrolled in school? _____								
Water								
8. How many households receive the city water supply (PDAM)? _____								
9. How many households use public wells? _____								
10. How many households use private wells? _____								
Sanitation								
11. How many households (total) have private toilets? _____								
12. How many households use public toilets? _____								
13. How many times a week is the rubbish collected? _____								
Housing								
14. How many houses are there in the RT? _____								
15. Of these houses, how many have land titles? _____								
Livelihoods								
16. List the top four jobs that people have and estimate the percentage of people who work for them. <table style="width: 100%; border: none; margin-top: 5px;"> <tr> <td style="width: 60%; border: none;"></td> <td style="width: 20%; border: none; text-align: center;">_____</td> <td style="width: 20%; border: none; text-align: center;">_____</td> </tr> <tr> <td style="border: none;"></td> <td style="border: none; text-align: center;">_____</td> <td style="border: none; text-align: center;">_____</td> </tr> </table>				_____	_____		_____	_____
	_____	_____						
	_____	_____						
17. What percentage of people work in the Kelurahan as opposed to outside? _____								
Mobility								
18. Estimate how many motorbikes there are in the RT. _____								
20. How many people have difficulties with mobility in the RT? _____								

RT Survey Form Back

<div style="border: 1px solid black; height: 20px; width: 100%;"></div> Name of Facilitator	RT ASSESSMENT FORM 	<div style="border: 1px solid black; height: 20px; width: 100%;"></div> Date of Completion
<div style="border: 1px solid black; height: 20px; width: 100%;"></div> Neighborhood Name	RW: <div style="border: 1px solid black; width: 40px; height: 20px; display: inline-block;"></div>	RT: <div style="border: 1px solid black; width: 40px; height: 20px; display: inline-block;"></div>
Effect of Earthquake		
21. What were the ways in which people were most affected by the earthquake? (Choose 2 of 5)		
Lost jobs or livelihood affected	_____	
Severe damage or loss of home	_____	
Loss of family members	_____	
Limited or no access to medical services	_____	
Loss of services (water, electricity, schools, etc...)	_____	
22. What are the top issues faced in rebuilding? (choose 2 of 5)		
Limited resources for rebuilding homes	_____	
Livelihood affected	_____	
Lack of information	_____	
Prolonged medical injury	_____	
Difficulty with children's education or child care	_____	
22. Estimate the proportion of assistance that came to earthquake victims.		
Self-recovery	_____	
Government programs	_____	
Aid agencies	_____	



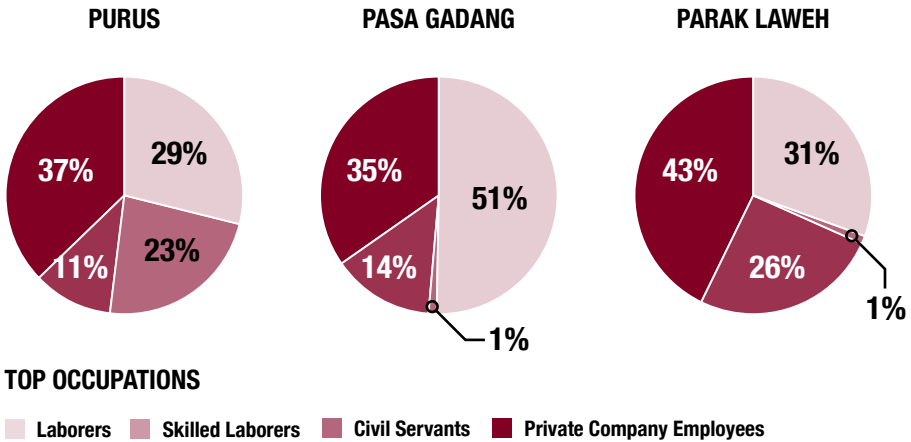
Annex 2:

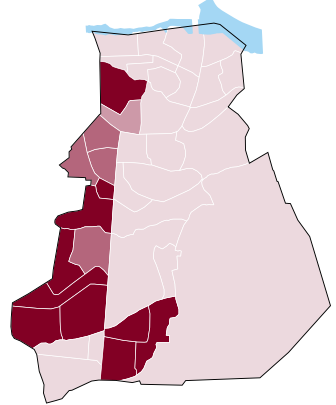
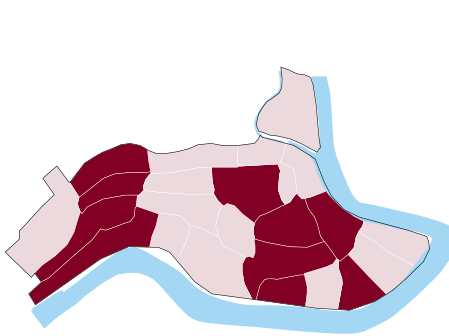
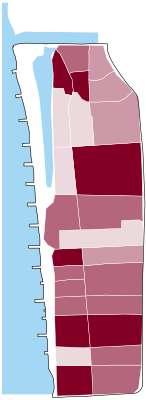
SELECTED MAPS AND STATISTICS

Population and Livelihoods

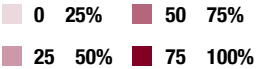
Sources: BNBP Needs Assessment, October 2009; Mercy Corps Survey, March 2010

	Padang City	Purus	Pasa Gadang	Parak Laweh
TOTAL HH	178,970	1,561	1,669	2,910
TOTAL RESIDENTS	857,000	6,720	6,209	8,962
AREA (Hectare / Acre)	69,496 / 171,728	41 / 101	37 / 91	147 / 364
POPULATION DENSITY (People per Ha. / Ac.)	12 / 5	163 / 66	167 / 68	60 / 25
TOTAL HH IN POVERTY	42,850	533	245	377
% HH IN POVERTY	5%	34%	15%	13%
TOTAL EMPLOYED		3,352	2,220	1,857
% TOP OCCUPATIONS				
% Laborer		29%	51%	31%
% Skilled Laborer		23%	1%	1%
% Civil Servant		11%	14%	26%
% Private Employee		37%	35%	43%
% WORK OUTSIDE KELURAHAN		42%	57%	63%

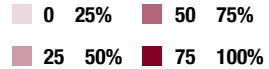




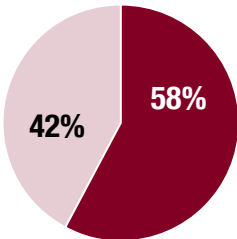
**% WORK INSIDE KELURAHAN
(Purus and Pasa Gadang)**



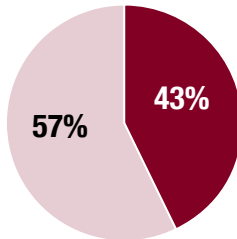
**% WORK OUTSIDE KELURAHAN
(Parak Laweh)**



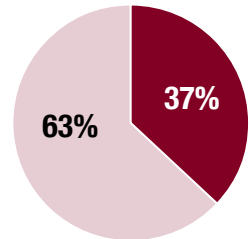
PURUS



PASA GADANG



PARAK LAWEH



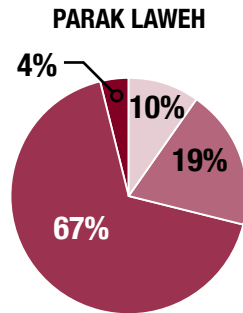
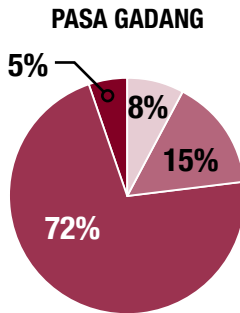
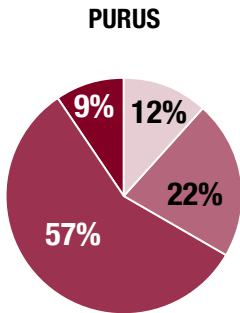
LOCATION OF WORK



Age and Education

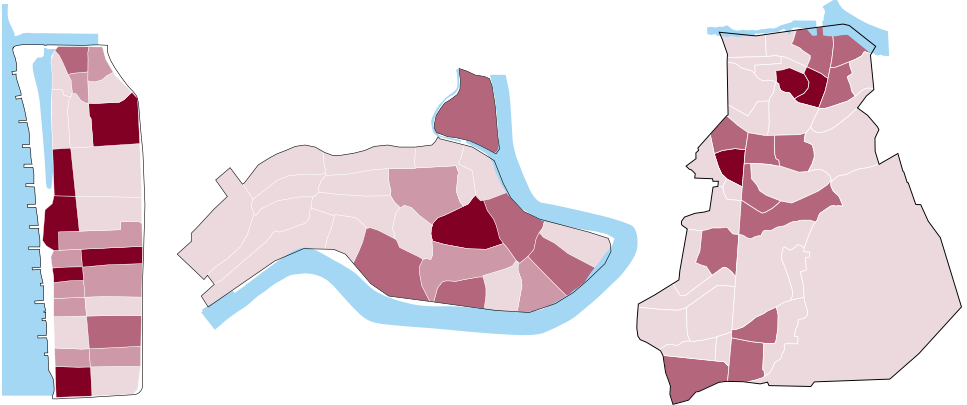
Sources: Mercy Corps Survey, March 2010

	Padang City	Purus	Pasa Gadang	Parak Laweh
TOTAL HH	178,970	1,561	1,669	2,910
TOTAL RESIDENTS	857,000	6,720	6,209	8,962
FEMALE HEADED HH		289	199	250
% FEMALE HEADED HH		19%	12%	9%
AGE 0 - 7		787	491	880
AGE 7 - 18		1,573	957	1,712
AGE 18 - 65		3,730	4,446	6,023
AGE 65+		630	315	338
DEPENDENCY RATIO		0.8	0.40	0.49
TOTAL CHILDREN NOT IN SCHOOL		256	107	145
% CHILDREN NOT IN SCHOOL		16%	11%	8%

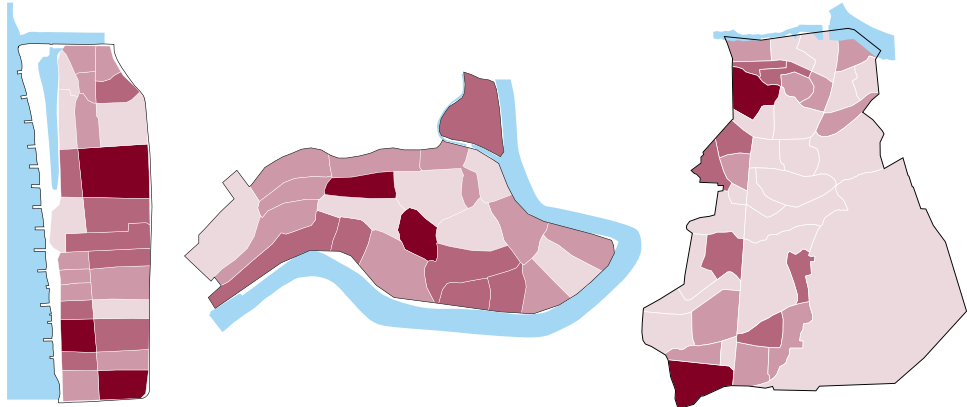
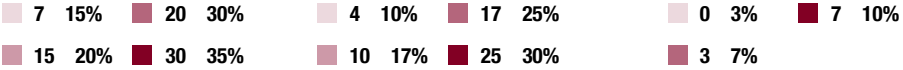


% AGE GROUP

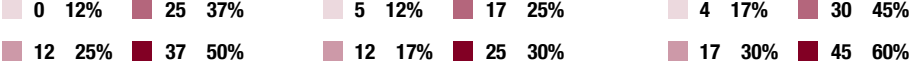
0 - 7
 7 - 18
 18 - 65
 65+



% FEMALE HEADED HH



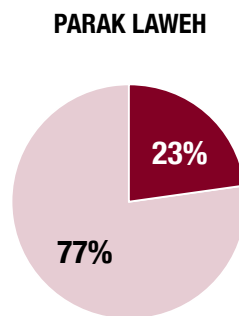
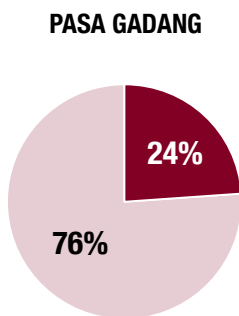
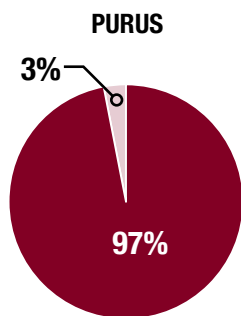
% AGE 7 18



Water and Sanitation

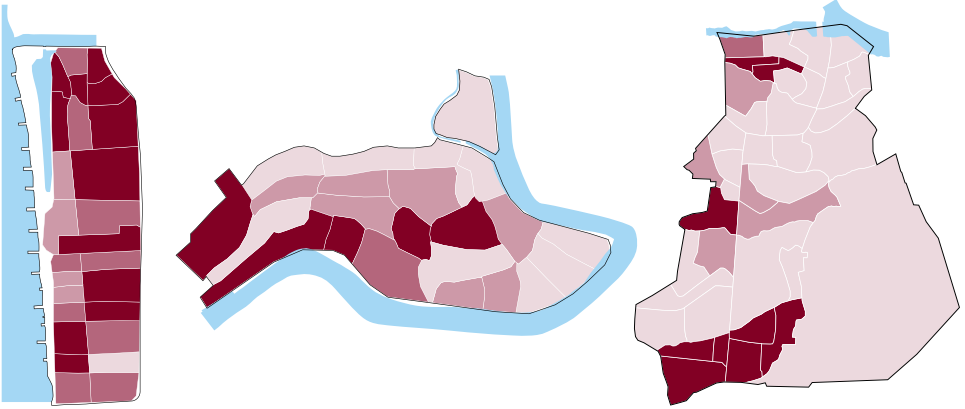
Sources: Mercy Corps Survey, March 2010

	Padang City	Purus	Pasa Gadang	Parak Laweh
TOTAL HH	178,970	1,561	1,669	2,910
TOTAL HH WITH PDAM		1,511	574	661
% HH WITH PDAM		97%	24%	23%
TOTAL HH WITH PUBLIC WELL		10	11	15
% HH WITH PUBLIC WELL		1%	1%	1%
TOTAL HH WITH PRIVATE WELL		311	1,117	1,504
% HH WITH PRIVATE WELL		20%	67%	52%



% HH with PDAM

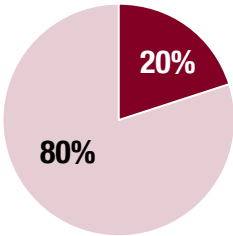
■ PDAM ■ No PDAM



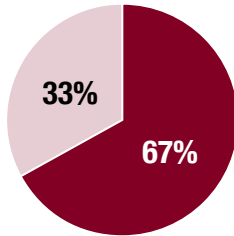
% HH with PDAM



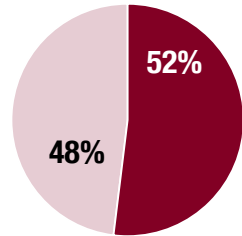
PURUS



PASA GADANG



PARAK LAWEH



% HH with PRIVATE WELL

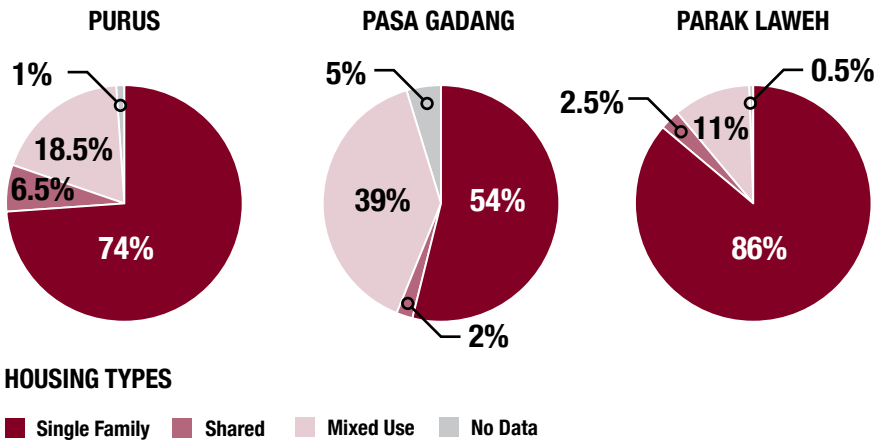


Housing and Land Tenure

Sources: Mercy Corps Survey, March 2010

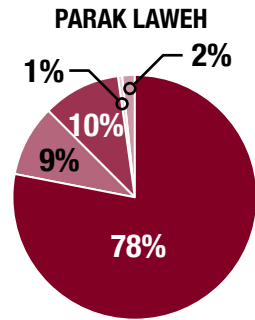
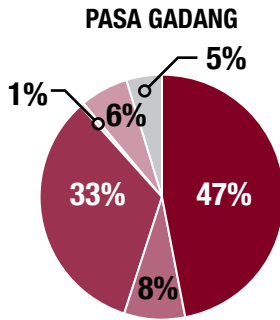
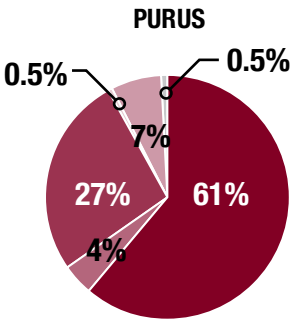
	Padang City	Purus	Pasa Gadang	Parak Laweh
TOTAL HOUSES	150,421	1,649	914*	2,068
% HOUSING TYPE				
% Single Family		74%	54%	86%
% Shared		6.5%	2%	2.5%
% Mixed Use		18.5%	39%	11%
% No Data		1%	5%	0.5%
% # STOREYS				
% 1		85.5%	54%	89%
% 2		11%	30%	10%
% 3		1%	4%	0.1%
% 4		0.5%	0.25%	0.1%
% 5		2%	0.75%	0.8%
% No Data				
% CONSTRUCTION TYPE				
Confined-masonry		61%	47%	78%
Load-Bearing		4%	8%	9%
Semi-Permanent		27%	33%	10%
Ferrocement Wall		0.5%	1%	1%
Non-Permanent		7%	6%	2%
No Data		0.5%	5%	0%
% LAND TENURE		53%	28%	77%

* Mercy Corps survey in Pasa Gadang is partial; the Andalas University survey includes 1,525 houses.





CONSTRUCTION TYPES



CONSTRUCTION TYPES

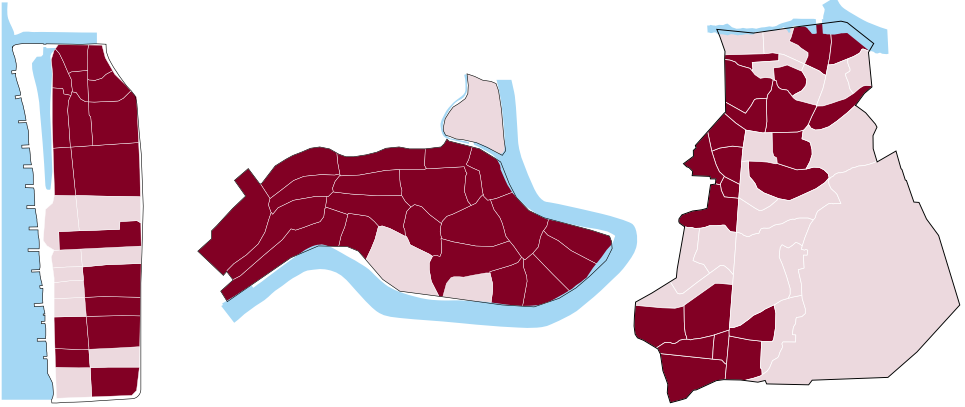


Earthquake Impact and Recovery Status

Sources: Mercy Corps Survey, March 2010

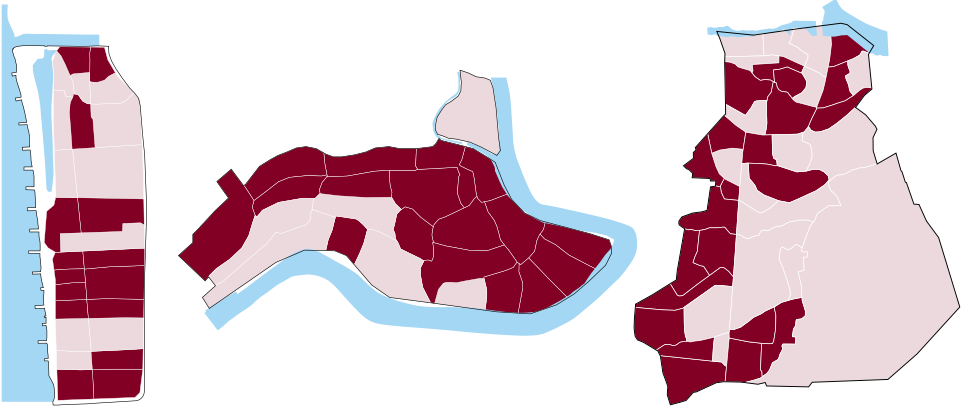
	Padang City	Purus	Pasa Gadang	Parak Laweh
TOTAL RT		26	23	39
% RT REPORTING EARTHQUAKE IMPACT				
% Lost Livelihood		62%	87%	56%
% Damage to Home		62%	74%	56%
% Loss of Family Member		0%	0%	5%
% Limited Access to Health Services		4%	0%	8%
% Loss of Water / Electricity		73%	0%	10%
% RT REPORTING ISSUES FOR REBUILDING				
% Limited Resources for Rebuilding		77%	61%	41%
% Livelihood Affected		67%	69%	41%
% Lack of Information		23%	9%	31%
% Prolonged Medical Injury		4%	4%	3%
% Difficulty with Childcare		31%	4%	10%
% RT REPORTING AVAILABLE RECOVERY ASSISTANCE				
% Self-Recovery		44%	20%	19%
% Government Assistance		45%	8%	22%
% Aid Agency Assistance		11%	4%	5%
TOTAL HOUSES	150,421	1,649	914*	2,068
HOUSING VACANCY				
% Vacant		5%	26.5%	3.25%
% Occupied		95%	69%	96.5%
% No Data		0%	4.5%	0.75%
RECOVERY STATUS				
% No Activity		92.5%	64%	94%
% Demolished		1%	6.5%	0.3%
% Rebuilding in Process		2%	2.5%	0.7%
% Rebuilt		4%	5%	2.5%
% No Data		0%	21%	0.5%

* Mercy Corps survey in Pasa Gadang is partial; the Andalas University survey includes 1,525 houses.



KETUA RT REPORTING LOST LIVELIHOOD

■ Yes ■ No



KETUA RT REPORTING DAMAGE TO HOUSING

■ Yes ■ No



Annex 3:

“AIMING TO REBUILD”

The following is a transcript of the Padang City local government plan for rebuilding. It was published in December 2009.

AIMING TO REBUILD PADANG, OUR BELOVED CITY

*General Policy for Rehabilitation and Reconstruction of Padang City
and Emergency Action Plans*

*Prepared by: Expert Team and Strategic Planning Unit,
Rehabilitation and Reconstruction Implementation Body
(RRIB / BPRR)*

Padang, December 2009

1 INTRODUCTION

On September 30, 2009 an earthquake of 7.9 on the Richter scale occurred in Padang City and other regions of West Sumatra resulting in loss of life, heavy damage to infrastructure and government facilities, disruption of economic sectors, and the destruction of housing and other settlements.

There is an urgent need to provide recovery support through systematic, well-organized and effective recovery and reconstruction programs. Efforts to recover and re-invigorate life in the city require general policy and emergency action plans as the basis for planning and rebuilding Padang New City.

This document provides general policy, emergency action plans and identifies priority activities for rehabilitation and reconstruction. It provides direction for revising the scenario for future development of Padang City and should be used as reference by government agencies and NGOs in implementing their rehabilitation and reconstruction related activities.

The aim of Padang New City is a rebuilding that is disaster responsive and economically prosperous requires the revision of strategic planning documents such as regional city spatial / land use

plan (Rencana Tata Ruang Wilayah / RTRW) and city mid-term development plan (Rencana Pembangunan Jangka Menengah / RPJM Kota). In order to accelerate responses by the City Government, the proposed development budget for Fiscal Year 2010 needs to be reviewed and revised to reflect the aims of rebuilding Padang City.

This general policy and emergency action plan describes priority actions to provide a strong basis for rebuilding a Padang City that is cultural, dynamic, comfortable, orderly and fosters prosperous citizens.

2 URGENCY AND OBJECTIVES OF GENERAL POLICY AND EMERGENCY ACTION PLAN

a) To provide direction for Padang City government in implementing an accelerated response relating to the rehabilitation and reconstruction of Padang New City.

b) To provide direction and to ensure that accelerated responses are in line with the aim of rebuilding Padang City (which is disaster responsive and economically successful) and will be used as the basis to revise strategic planning documents such as the as the regional city spatial / land use plan (Rencana Tata Ruang Wilayah / RTRW) and city mid-term development plan (Rencana Pembangunan Jangka Menengah / RPJM Kota).

c) To provide reference for and facilitate aid agencies and NGOs (international and national) in implementing their activities and / or mobilizing resources for rehabilitation and reconstruction of Padang City.

d) To be used as the basis for mapping needs and developing proposals as a way of accessing resources from the national government as well as international agencies and NGOs.

e) To provide information for any potential donor who requires the support and participation of the Padang community in accordance with their mission and available resources.

3 GENERAL POLICY FOR REHABILITATION AND RECONSTRUCTION OF PADANG CITY AND EMERGENCY ACTION PLAN

3.1 RELOCATION OF CITY GOVERNMENT CENTRE TO NEW LOCATION

Reason for Relocation:

- Based on academic analysis, the possibility of the occurrence of a strong earthquake and tsunami are high.
- To reduce high concentration of population in high risk areas.
- To optimize the use of land in the city region and promote the emergence of areas of new growth.

Criteria for new location:

- Physical criteria based on: topography, hydrology, accessibility, soil resettlement and stability, environmental impact and security.
- Community densities, housing, schools, soil types, land-use trends, risk, transport network.
- Land availability.
- Budget availability and economic potential and risk.
- Preference for concentration of city government centre in one location.

Final decision for nominated location needs to be assessed, in accordance with the following cost parameters:

- Cost of land acquisition.
- Cost of land preparation.
- Cost of road development.
- Cost of infrastructure development: water, electricity, communication networks.
- Costs associated with building construction: foundation, structure, interior and exterior.

3.2 REVITALIZATION OF PASAR RAYA AND SATELLITE MARKETS

- Identify traders who occupied Pasar Raya Inpres I, II, III and IV, and involve them in the planning and construction process and ensure them access to new space.
- Mobilize government as well as private funds for the reconstruction of a Pasar Raya building, so that the prices of the spaces are affordable to the traders.
- Prepare a framework for a synergic interaction between small-scale and larger-scale traders.
- Rehabilitate and reconstruct Pasar Raya market as a modern community market that is disaster resistant.
- Develop an urban public transport terminal at Pasar Raya to improve trading dynamics and community interaction in public spaces.
- Develop and optimize of the operation of satellite markets, made accessible by urban public transportation terminals and inter-city transportation terminals (Siteba, Belimbing, Gaung, Bandar Buat, Ulak Karang, Simpang Haru, Indarung, Terminal Angkutan Kota)

and inter-city public transportation terminals in Lubuk Begalung and Lubuk Buaya.

- Organize Pasar Raya traders who want to be relocated to satellite markets closer to where they live.

3.3 REORGANIZATION OF URBAN PUBLIC TRANSPORT NETWORK

- Reorganize existing urban public transport routes to support the economic center growth and development.
- Reorganize the modes of urban public transport and establishing minimum services standards and criteria.
- Open new urban public transport routes which use mass capacity vehicles (bus way, tram, and monorail train) for major routes.
- Revise the regulation of urban public transport logistics and routes to support the development of Padang New City.

3.4 REVITALIZING THE OLD CITY CENTER AREAS: PONKOK, MUARO AND PASAR GADANG

- Revitalize and repair old Padang city in order to preserve its historic characteristics.
- Construct public spaces for healthier and more convenient community interaction.
- Revitalize the old city center area to augment and preserve its economic value and cultural characteristics.
- Promoting a multicultural life in the city.
- Apply the concept of public-private partnerships in the reconstruction of medium and large-scale businesses, infrastructure and facilities.

3.5 REHABILITATING INFRASTRUCTURE AND EDUCATION AND HEALTH FACILITIES

- Reconstruct non-functional infrastructure and health and educational facilities according to new safety standards.
- Evaluate and ensure that educational and health services buildings (schools, campuses, hospitals) are disaster-resistant.
- Relocate educational and health facilities in high risk regions, based on the results of the scientific evaluation, to safer places or compliment them with vertical evacuation structures.
- Provide special financial assistance to private educational institutions (kindergarten to high-school) for reconstructing classrooms damaged by the earthquake.
- Give special attention to the reconstruction of the health facilities and their infrastructure in suburban areas.
- Mobilize and access funds from non-government sources for the rehabilitation of educational and health infrastructure.

3.6 RECOVERING HOUSING AND SETTLEMENT INFRASTRUCTURE

- Stimulate, facilitate and provide financial and technical assistance for the development of housing damaged by the disaster.
- Revise the regulation of Building Construction licenses.
- Establish a technical construction services unit or construction clinic.
- Disseminate a construction manual for earthquake resistant building methods.

- Promote local knowledge, and the use of locally available and recyclable materials.
- Rehabilitate clean drinking water facilities and other nonfunctional basic public utilities.
- Provide training for carpenters and masonry workers.

3.6 RECOVERING COMMUNITY PSYCHOLOGICAL HEALTH AND IMPLEMENTING DISASTER PREPAREDNESS

- Implement activities related to recovery from traumatic experiences and post-traumatic stress such as group study, religious speeches, films, drawing, games, playing, recreation, sports, and group prayer.
- Improve community knowledge, awareness and preparedness to anticipate the possibility of future disaster occurrences.
- Provide facilities and means for disaster mitigation such as the acceleration of the completion of evacuation routes, high-rise buildings and evacuation areas on high ground.
- Ensure the early warning system functions.

3.8 REVIEWING AND REVISING THE REGIONAL LAND USE PLAN AND MID-TERM DEVELOPMENT PLAN

- Identify the basic changes in city structure and land use, changes in the dynamics of community activities related to the relocation of the city government center and the development of new economic growth centers and reorganizing of transportation network system.

- Review and identify the aspects requiring adjustments in revising the regional land use plan and mid-term development plan.
- Revise and legalize the regional land use plan and mid-term development plan.

4 EMERGENCY ACTION PLAN PRIORITY ACTIVITIES

4.1 REVISING AND PREPARING PLANING DOCUMENTS

- Revise budget allocations for Fiscal Year 2010 to reflect the aims of rebuilding Padang New City.
- Review and revise regional land use plan (RTRW) and mid-term development plan (RPJMD).
- Prepare the master plan for a new Padang City government center.
- Prepare a long-term road map for economic recovery and development.

4.1.2 HOUSEHOLDS ECONOMIC RECOVERY

- Provide agricultural products (seeds, fertilizers, young fish) for affected farmers in Pauh, Kuranji and Koto Tangah sub-districts.
- Provide support for agriculture infrastructure rehabilitation such as small-scale irrigation structures and fish-ponds to affected farmers in Pauh, Kuranji and Koto Tangah sub-districts.
- Provide fishing equipment and tools to small-scale fishermen in Padang Utara, Padang Selatan and Koto Tangah sub-districts.
- Provide financial and technical assistance for rehabilitation of semi-permanent bridges used mostly by poor local communities.

- Provide financial and technical assistance for rehabilitation and expansion of local/traditional market capacity to accommodate small-scale traders in Pondok, Simpang Haru and Siteba markets.
- Provide equipment and tools for home-based industries affected by the earthquake such as cracker industries, tofu and tempeh producers and fried banana vendors.
- Provide training to run small-scale enterprises for the people who lost livelihood due to the collapse of businesses such as hotels, supermarkets, retail establishments, and other businesses.

4.1.3 DEVELOPMENT OF “TEMPORARY” HOUSING FOR EARTHQUAKE VICTIMS

- Provide housing rehabilitation and reconstruction for vulnerable groups: the very poor, families with children under five, elderly people, those with heavily damaged homes or those still staying in tents in *kelurahan* with damage to overall housing of more than 22%.
- Rehabilitate communal facilities such as clean drinking water sources, wells and waste and sanitation systems.
- Provide wood construction and masonry training in *kelurahan* with damage to housing of more than 22%.
- Provide training on disaster mitigation and risk reduction for Badan Penanggulangan Bencana Daerah (BPBD) staff and sub-district government staff.

4.1.4 REHABILITATION OF EDUCATION AND HEALTH FACILITIES

- Develop mental health services within Pusat Kesehatan Masyarakat (PUSKESMAS) to serve the largest number of affected residents.

- Provide playgrounds for kindergartens, elementary schools and housing areas in *kelurahan* which experienced heavy earthquake damage.
- Provide medical equipment and medicine to PUSKESMAS which has the capacity to reach the largest number of residents.
- Reconstruct classrooms in the private elementary, junior- and senior-high schools, including vocational schools.
- Provide teaching aids and equipment for the private elementary, junior- and senior-high schools, including vocational schools.

4.2 STEPS AND TIME SCHEDULE

FINALIZATION OF EMERGENCY ACTION PLAN (Until 31 December)

- Aspirations communicated electronically via the web and through public consultation.
- Legalizing the Memorandum of Understanding (MOU) by the Mayor and DPRD as Justification of Action TA 2010
- Implementation of construction plan to begin in March 2010 for the Centre of Governance, Pasar Raya, Satellite Markets and the Terminal.

ARRANGE MASTER PLAN (January to 30 May 2010)

- Centre of Governance
- Road map of Recovery and Economic Development
- Manual, Capacity Building, and Building Houses for Earthquake Victims

- Road map of Education and Health Facility Recovery
- Master Plan of Padang's Transportation Networks
- Revitalization of Pasar Raya Area
- Revitalization of Padang Lama Area
- Scenario on Early Mental Recovery Post-Earthquake

**REVISION TO RTRW (CITY SPACE ALLOCATION PLAN)
AND RPJM (CITY MID-TERM PLAN)**

(January to 30 April 2010)

- Drafting TOR
- Revision of RTRW and RPJM
- Discussion of Draft by DPRD
- Final Regulation on RTRW and RPJM

ARRANGE LINE DEPARTMENT WORK PLAN

(30 April to May 2010)

- Revision of Strategic Plan for Line Departments
- Arrange Work Plan by adapting Strategic Plan
- RKA (Budget Plan of Line Department) and RAPBD (Draft of City Budget Plan)



Annex 4:

SOURCES

This assessment builds upon several other plans and studies completed since the earthquake.

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United Nations Office for the Coordination of Humanitarian Affairs. “West Sumatra Earthquake: Humanitarian Response Plan in Coordination with Government of Indonesia.” 2009.

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Inter Agency Standing Committee (IASC), Indonesia Shelter Cluster. “Assessment Report of Shelter Need in Padang City: West Sumatra Earthquake Response.” April 7, 2010.

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H. Taubenbock, et. al. “Last-Mile preparation for a potential disaster – Interdisciplinary approach towards tsunami early warning and an evacuation information system for the coastal city of Padang, Indonesia.” Natural Hazards Earth Systems Science, 9, 1509–1528, 2009.

Morrish, William. “After the Storm: Rebuilding Cities on a Reflexive Landscape.” Revitalizing Community within and across Boundaries: Community Resilience in the 21st Century. Woodrow Wilson Center, Washington, D.C. 8 – 9 December 2008.



Annex 5:

WORKSHOP PARTICIPANTS

The workshop gathered many voices to discuss ideas for recovery and rebuilding.

3 MAY 2010 WORKSHOP PARTICIPANTS

H. Mahyeldi Ansharullah, SP, Padang City Deputy Mayor

Yulinas Nur, *Kelurahan Lurah* Pasar Gadang

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Liza Arlenoza, KOGAMI

Elisda, S.sos, *Kelurahan Purus*

Ramli Parna, PMI Padang City

Rusdi Harun, PT. *Semen Padang*

Rudy Rinaldy, BAPPEDA Padang

Aya Syofia, DKP Padang City

Tutwuri Handayani, DKK

Syafril, *Kelurahan Parak Laweh*

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Patra Rina Dewi, Msc, KOGAMI

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Firdaus, *Dinas PU*

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Ratna Yenti, *Dinas Sosial*

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Asnul ZA, Kabid CKPU
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