

PANAMÁ RESILIENTE



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José Isabel Blandón
MAYOR OF DISTRICT OF PANAMA

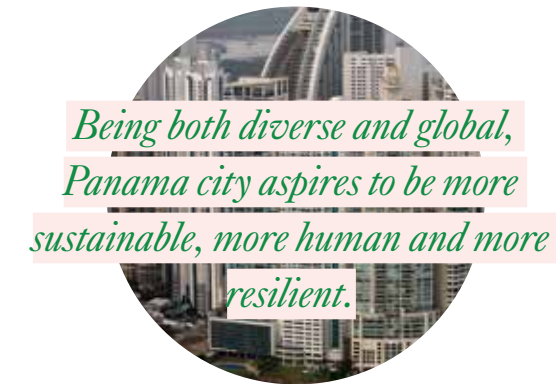
Panama City will soon be reaching its 500th anniversary since its foundation. It will be a special date for us to commemorate and come back together to our past, while thinking about the future we wish for our city.

One year earlier, we set a countdown to this historic date, with a presentation of Panama's Resilience Strategy, imbued with a comprehensive, long-term vision. It has been a titanic effort, which wouldn't have been possible without the support and timely advice of the 100 Resilient Cities Program of the Rockefeller Foundation. Today, rather than a phase coming to an end, it's the beginning of a new chapter, full of challenges and opportunities for this capital District of our beautiful country, Panama.

In 2016, when we received the great news of Panama's acceptance within the program, and thus being the only city in Central America to be a part of it, I expressed that, for this local Government, it was a great honor but, above all, a huge challenge. A challenge that we have undertaken with great responsibility and enthusiasm. I wish to recognize the efforts made by our Resilience Division and by all the teams in the Mayor's Office taking part in the making of this Strategy, as well as thank all the other governmental and private players, including the citizens who did their bit to help in the creation of such Strategy.

This Strategy is intended to serve as a guideline for any relevant course of action. It is not intended to be a lifeless document to be shelved in a hidden drawer, but it aims to serve as a living guideline bound to spark debate and encourage the launching of specific measures, with such actions having a diverse approach, as in access to opportunities for citizens, the needs for infrastructure connecting the citizens in the neighborhoods, our ecosystems, and our preparedness for risks and liabilities we all have in building this city.

Our city has always been oriented towards international trade, for its identity is diverse and built upon the successive waves of immigrants. A city with many contradictions, where we feel Caribbean from the cultural point of view, despite being geographically located on the Pacific littoral. A city that has boomed vigorously, without taking enough time for its planning. These factors have all given rise to an extraordinary, heterogeneous city, rich in nuances and with its own strengths and weaknesses, as well as structural problems that do have a solution, but which do require a lot of attention.



The making of this Resilience Strategy has given us the opportunity to develop an inward-looking perspective. To evaluate ourselves both as citizens and as a city as a whole. To admit our defects and feel proud of our virtues. The current situation has been ideal for us to define the concept of resilience and how we will apply it "in the Panamanian way", but benefiting us from the experience of the other cities in the Network.

Panama recognizes itself as a diverse and global city aspiring to be more sustainable, more human and more resilient. We have identified our major risks as well as the main lines of action to tackle and prevent them, and always get back on our feet, no matter how hard the circumstances we might have to face may be.

We thus set out in this journey with the optimism and joy that characterizes our people, with the assurance that there's no goal impossible to accomplish when we work together to achieve it. We are the small country that nowadays is successfully managing the Canal, at the service of world trade. We are the country with one of the most vibrant economies in Latin America. We are the oldest city founded by the Europeans in the Pacific littoral of the Continent, the only Central American nation to enter the Network of 100 Resilient Cities and the very first one in the region to be declared by the UNESCO as Creative City. We are embarking on this new challenge that we are now undertaking with full awareness of its importance and the firm conviction of pursuing the strategy outlined in each and every one of its integral items.



Michael Berkowitz
PRESIDENT OF 100 RESILIENT CITIES

On behalf of all teams at 100 Resilient Cities, I would like to congratulate Panama City, its Mayor Mr. Blandon and the Resilience Director, Mr. Arturo Dominici, on the launch of this strategy: Resilient Panama. Panama’s Resilience Strategy establishes a clear vision of urban resilience that may serve as a role model for other cities around the world. We’re excited to see how this ambitious strategy takes shape and gets us ready for a more flexible and dynamic Panama City.

Being both the capital and the largest city in Panama, we’re sure that it will be an example to be followed as it expands this movement of global resilience throughout the country and beyond!

Panama City takes pride in having an intimate rapport with nature, as it is bounded by the Pacific Ocean. The Panama Canal -the largest infrastructure project in history- has been one of the most important commercial assets in the world as well as a wonder of engineering ever since its opening in 1914. Nevertheless, the threats of urban development and climate change have already started to bring about some acute shocks and chronic stresses to the natural infrastructure built in Panama City, as well as on water supply and citizenship as a whole.

Resilient Panama, however, is trying to set Panama City at the forefront of the urban resilience practice. This strategy reflects the amazing progress that the city has achieved in understanding its natural assets and vulnerabilities, as well as how opportunities keep cropping up to develop its strengths and adaptability.

Panamanians play a key role in this resilience strategy. Well-known for their solidarity, energy and inventiveness, Panamanians are also a truly diverse people. Panama City has a large indigenous and Afro-Panamanian community, together with a constant migration inflow from European and Asian countries. By acknowledging the diversity of its citizens, Panama’s Resilience Strategy addresses inequalities and fosters an enhanced quality of life for all Panamanian inhabitants.

With other approaches, such as risk management, administrative improvement, the promotion of citizen engagement and the protection of natural resources, Panama City’s Resilience Strategy shows a many-sided and comprehensive vision of the building of resilience in its city.

This strategy is merely the beginning of the exciting work ahead and the long-lasting impact bound to be caused by this significant leap forward, whether in the next few months, years or even decades to come. From now on, Panama City may begin to implement, jointly with its allies, the actions and initiatives presented in this Strategy, which will have a positive impact upon its citizens and will surely lead the way towards resilient cities in the future. Congratulations Panama City!



Arturo Dominici Arosemena
RESILIENCE DIRECTOR,
DISTRICT OF PANAMA

Panama City is located in an area of constant social and environmental changes. It is a strip of land home to highly rich biodiversity comprised of living organisms evolving from both regions of the Neotropics, living together within jungles and wetlands.

Ever since pre-Columbian times, it is a meeting point for both persons and goods that play a key role across development and connectivity of human populations. What originally seemed to be areas impossible to inhabit could later begin to be settled thanks to the advances in eradicating yellow fever and malaria. Today, we can perceive a vibrant city, where many living organisms integrate within a single system, including waters, boats, merchants, immigrants, builders, fishermen and farmers, among others.

Hidden nearby or away from skyscrapers and modern shopping malls are some areas where our fellow citizens suffer from the shortage of basic utility services, poverty and insecurity. These situations reveal that the benefits of our “booming” economy have yet to reach the bulk of our population as a whole.

Many of those beaches enjoyed by our own uncles and grandparents have been disappearing. Both land fills and concrete belts have become commonplace, while at the same time we ignore our rivers and wetlands, which today, as we can see, are largely used as deposits of liquid and solid waste materials. We don’t see the possibility of creating systems that can adequately connect us, for instance, by public means of transportation, as we have a deeply-rooted culture centered on the use of cars.



We still have lots of natural, cultural and human capital to discover, recover and preserve, as new ordering plans have been developing at the local level, in order to address decades of development restraints, as well as deficient urban planning.

Decentralization brings about the opportunity for local authorities to provide support to all of the players involved by engaging them in an integrated fashion and encouraging them to participate in the search for new schemes, experiences and opportunities and, on this occasion, a comprehensive Resilience Strategy reaffirms and calls for civic engagement in the execution of their projects.

This Strategy is a key instrument to setting priorities when tackling social, economic and environmental risks, and even though it will not manage to provide us with a solution to all of them, we can indeed have a guiding course of action at hand. This course of action begins with the need for collective thoughtfulness and consensus opening the doors to new initiatives and alliances.

We are presenting a Strategy with working guidelines that address various initiatives concerning transportation, education and basic needs, an insight into our environment, the appreciation of ecosystems, a green infrastructure, a positive approach to prepare ourselves for the risks ahead, the enhancement of governance processes, citizen participation and everybody’s responsibility for all the people to have and enjoy the same individual and collective rights within a supportive society.

I hereby express my thanks to the Mayor, Mr. José Isabel Blandón, the Vice Mayor, Ms. Raisa Banfield, all the directors and officials of the District of Panama and of San Miguelito District, as well as to the community leaders, entities and officials forming part of the central government, the academy, NGOs and the international organizations for all the collaborative support they have provided to make this Strategy come true.

I also wish to thank all the team of the 100 Resilient Cities Program for their support in the development and making of this Strategy. It has been an extraordinary experience of joint, direct and coordinated work with novel ideas and insights. This has allowed us to envision change for our city and thus set an example for the other cities. In 10 years’ time, this city must be one which will, regardless of any barriers ahead, share a vision of growth based on an environment full of life, food, water, and biodiversity.

*All in all, we are what we do to
change what we are*

EDUARDO GALEANO,
THE BOOK OF HUGS





Executive Summary

City has also been the seat of international transactions for business, banking and tourism, the trade of various goods, besides having played a major role in the route of spices, silver, silk, porcelain and gold.

The consolidation of the role played by Panama City as a connection platform for the drivers of world development took place during the construction of the inter-oceanic canal. With the growth of its population, Panama City evolved and expanded. In 1907, new villages emerged along the present boundary of the protect-

The City of Panama has been a strategic route for maritime and trans-isthmian transit ever since the sixteenth century until today. Its geopolitical wealth has boosted cultural, commercial and technological exchange across the world. Panama

ed area within the canal’s basin, and a trans-isthmian highway was also built, which provided ground communication from the Pacific Ocean to the Caribbean. This would be the last standing connection stronghold of the north-south route along which Panama’s railway would run.

Two additional development hubs were established, which allowed Panama City to be connected from East to West by means of the Pan-American highway. With this growing connectivity, both formal and informal settlements forming part of the urban pattern began to compete with the ecosystems, thus creating vulnerable areas from the environmental, social, and economic point of view for the present population. In parallel, the growing inequality also simultaneously gave rise to two cities that enjoyed two different sets of rights and opportunities.

In the face of these new challenges, urbanization opportunities and incentives for the autonomy of democratic local Governments, Panama City’s administration begins a process consisting of the decentralization of the roles of the Panamanian State, thus acquiring governance and competence at a local level for many of the areas formerly governed from the national sphere. Thus, the city becomes liable for responding to

the needs of its citizens. The city is increasingly endowed with the necessary tools that allow it to create policies, plans, programs, and projects intended to strengthen the stresses adoption and incorporation of a resilience vision that includes, not only the shocks, but also the that undermine its structure and functioning.

Panama City is one of the cities included in the 100 Resilient Cities Program of the Rockefeller Foundation, which is currently developing and implementing a Resilience Strategy. The strategy-making process consisted of a diagnosis of the city’s vulnerabilities, as well as surveys and analyses of such issues and the outlining of actions contributing to the construction of the city’s resilience. This information was compiled and organized in 5 pillars, 11 goals and 45 actions that form an integral part of this resilience strategy.

STRATEGY PILLARS

1 Access to opportunities

By connecting human capital with welfare sources

It includes projects related to the educational needs of Panamanian children and youngsters; the Government staff, the development of human capital and promoting accessibility and connectivity of citizens by means of various transportation systems. With the projects proposed, we aspire to:

- 1.1. Foster a better quality of life based on more integrated mobility.
- 1.2. Enhance human capital so as to improve access to job opportunities

2 Infrastructure in neighborhoods

By making a city for everyone

It consists of making territorial investments in projects making everyone form an integral part of Panama City. It encompasses projects seeking to meet the needs for infrastructure in order to integrate the most isolated communities while seeking to integrate informal slums as well. With the projects proposed, we aspire to:

- 2.1. Drive the integration of communities through a broader and better social infrastructure.
- 2.2. Connect the population through a new basic infrastructure.

3 Rediscovering our wetland city

By coexisting in a better way with our own waters and environment

It includes projects intended to understand the environment where Panamanians live, to improve the relationship citizens have with water and water ecosystems, the management thereof and the mitigation of climate change. With the projects proposed, we aspire to:

- 3.1. Rethink the infrastructure that will protect us from the effects of climate change
- 3.2. Effectively communicate the value of water as a resource and that of the ecosystems protecting us.
- 3.3. Integrating and modernizing water coordination and management instruments and ecosystems.

4 Integral management of risk

By building and communicating for a safer city

It contains initiatives intended to understand and share information that will provide the general population with greater safety. It includes projects that help generate the necessary tools to improve risk management and create more knowledge about ourselves. With the projects proposed, we aspire to:

- 4.1. Lead local risk management in the city.
- 4.2. Create safety for residents upon understanding their vulnerabilities.

5 Joint responsibility in the making of the city

By empowering local management and its administration

It includes actions to build joint responsibility to manage the city. These actions consider the improvement of municipal governance, the decentralization process, civic participation and the reinforcement or awareness of fundamental rights. With the projects proposed, we aspire to:

- 5.1. Strengthen management by streamlining both processes and resources.
- 5.2. Foster participation in order to build more co-responsible citizens.



The term “urban resilience” has been defined by the 100 Resilient Cities program (100RC) as the capacity of individuals, communities, institutions, companies and systems coexisting in any one city to survive, adapt and grow regardless of any shocks and stresses that may take place within their environment. Thus, resilience may be seen as the capacity of a city’s systems to keep their effectiveness and functioning when adapting in the face of any given problem.

100RC promotes the use of a Conceptual Framework of Urban Resilience as a way of describing the areas where cities must take action in order to become more resilient. This is an evidence-based tool that allows cities to bring their challenges, opportunities and actions together from a resilient viewpoint.

The Resilience Framework is composed of 4 dimensions, 12 components, and 50 subcomponents helping to articulate the capabilities of the city’s processes for the building of resilience. These provide a common language that allows cities to share both their knowledge and experience.

CONCEPTUAL FRAMEWORK OF URBAN RESILIENCE



DIMENSIONS

-  **LEADERSHIP AND STRATEGY**
Processes that foster effective leadership, inclusive decision-making, thus empowering stakeholders to adopt comprehensive planning.
-  **HEALTH AND WELLBEING**
All persons living and working in a city must have access to the goods and services they need to make a living and thrive.
-  **INFRASTRUCTURE AND ENVIRONMENT**
Both natural and man-made systems providing essential services protect and connect urban goods, thereby allowing for the free flow of foods, services and knowledge.
-  **ECONOMY AND SOCIETY**
Social and financial systems allowing the population to lead a peaceful coexistence when acting collectively.

RESILIENCE QUALITIES

Both **thoughtfulness and ingeniousness** characterize the systems that have managed to learn from their past and to act in an innovative way in times of hardship. **Robustness, redundancy and flexibility** help to conceive systems and assets that may withstand shocks and stresses, as well as the willingness to implement alternative strategies to make rapid recovery easier. **Inclusive and integrated** systems are associated with the processes of good governance and effective leadership. These guarantee adequate investments and actions intended to meet the needs of vulnerable groups and collective capability for creating a resilient city for everyone.



REFLECTIVITY. This emphasizes the importance that both citizens and their leaders should use their past experiences to make decisions and modify their standards and behaviors based on their lessons learned. For example, sensible planning processes are capable of being more responsive to changing circumstances.



FLEXIBILITY. This is the willingness and ability to adopt alternative strategies in response to changing circumstances or sudden crises. Systems can be made flexible through introduction of new technologies or know-how, including recognition of traditional practices.



RESOURCEFULNESS. It means the capacity to identify alternative methods to use resources in times of hardship, with the aim to cater for shortages and achieve goals.



INCLUSIVENESS. This highlights the need to make broad consultation and take into account different standpoints in order to generate a sense of shared ownership and a joint vision for the city.



ROBUSTNESS. A robust design is one which has been properly conceived, built and managed, including provisions to make sure that any failures may be foreseeable, safe and proportionate in relation to their causes.



INTEGRATION. This links players from both public and private entities, which yields additional benefits, resources are thus shared and encourages such players to be able to work collaboratively to achieve better results.



REDUNDANCY. This is the additional capacity that is deliberately created to prevent any possible disruptions due to external pressures, sudden overloads of demand or disorders triggered by external causes. This includes diversity, should there exist several ways to satisfy any given need.

100 Resilient Cities Program

WHAT IS THE 100 RESILIENT CITIES PROGRAM?



he City of Panama was selected in 2016 to take part in the 100 Resilient Cities Program (100RC) of the Rockefeller Foundation. It is the

only city in Central America that forms part of the program and will serve as a role model for other cities across the region in the development of actions within the resilience framework.

100RC focuses on supporting cities in their adoption and incorporation of a resilience vision including not only acute shocks, whether triggered by natural disasters or caused by the action of man, such as earthquakes, floods, disease outbreaks, terrorist attacks, but also any stresses posed in the day-to-day challenges a city needs to deal with, such as the obsolescence of its infrastructure or unemployment.

All the cities in the 100RC network receive the following resources:

1. Funding to hire a Resilience Director (or Chief Resilience Officer, CRO), who acts as an advisor to the city’s mayor or vice-mayor and operational divisions by adopting a coordinating approach. He will be responsible for coordinating and implementing the initiatives of the strategy.

2. Access to experience, technical assistance and analytical tools to support the development and implementation of an appropriate strategy for the city, guidance in analysis design, work

plans and direct strategic training for the city’s team. The city also has access to funding for consultancies to respond to specific questions about the findings discussed in a Preliminary Resilience Analysis, with a network of international and national specialists.

3. Contribution of pro-bono services from the “platform partners” composed of selective members from the private, public, academic and non-profit sectors. The partners offered services for the construction of resilience, including specialized analyses and support for the application of innovative ideas reflecting on the actions composing the strategy.

4. The 100RC network is formed by Resilience Directors from all the member cities. This is a dynamic group of leaders who provide collaborative work to the field of urban resilience professionals. The network makes it possible to share knowledge and collaboration among colleagues from the cities involved both during and after the strategy-making process. Through this membership, 100RC does not only help Panama City to be more resilient, but it also facilitates the creation of a global resilience development practice in the short, medium and long term.

PHASES OF THE PROGRAM 100RC

PHASE

1

City Guidance and Preliminary Resilience Analysis

This consists of a comprehensive preliminary diagnosis of the city, which contains an identification of the areas in which the city needs to make better efforts to build a resilient city. Additionally, a support group with the Local Government is created. Likewise, the key players for development and successful implementation of the strategy are identified.

Based on the shocks and stresses thus identified in the diagnosis, the strategy then seeks to spot specific actions taken by the local Government and other players involved, tries to complete them and suggest any new ones, thus consolidating a work plan.

PHASE

2

Development and launch of the Resilience Strategy.

The issues identified in phase 1 are delved into by means of a process engaging both players and teams from the city, platform partners and other cities in the network. Actions, working teams and partnerships with new players are proposed so that they can add up to and validate the process of building the city’s resilience. This phase concludes with the publication of the Resilience Strategy.

PHASE

3

Implementation and monitoring of the Resilience Strategy.

With the identification of opportunities and outlining of actions to be developed in the strategy, the implementation process begins with the identification of strategic alliances and funding both at the local and international level.

THE 100 RESILIENT CITIES



Accra, Ghana	Cape Town, South Africa	Mandalay, Myanmar	San Juan, Puerto Rico
Addis Ababa, Ethiopia	Juarez, Mexico	Medellin, Colombia	St Louis, USA
Amman, Jordan	Colima, Mexico	Melbourne, Australia	Santa Fe, Argentina
Athens, Greece	Da Nang, Vietnam	Milan, Italy	Santiago de Chile, Chile
Atlanta, USA	Dakar, Senegal	Minneapolis, USA	Santiago de los Caballeros, Dominican Republic
Bangkok, Thailand	Dallas, USA	Montevideo, Uruguay	Seattle, USA
Barcelona, Spain	Deyang, China	Montreal, Canada	Semarang, Indonesia
Belfast, Northern Ireland	Durban, South Africa	Nairobi, Kenya	Seoul, South Korea
Belgrade, Serbia	El Paso, USA	Nashville, USA	Sydney, Australia
Berkeley, USA	Glasgow, UK	Norfolk, USA	Singapore
Byblos, Lebanon	Greater Manchester, UK	New Orleans, USA	Surat, India
Boston, USA	Guadalajara, Mexico	New York, USA	Tel Aviv, Israel
Boulder, USA	Honolulu, USA	Oakland, USA	Thessaloniki, Greece
Bristol, UK	Huangshi, China	Paris, France	Tblisi, Georgia
Buenos Aires, Argentina	Jaipur, India	Paynesville, Liberia	Toronto, Canada
Calgary, Canada	Kigali, Rwanda	Pittsburgh, USA	Toyama, Japan
Cali, Colombia	Kyoto, Japan	Porto Alegre, Brazil	Tulsa, USA
Can Tho, Vietnam	The Hague, Netherlands	Pune, India	Vancouver, Canada
Chennai, India	Lagos, Nigeria	Quito, Ecuador	Vejle, Denmark
Chicago, USA	Lisbon, Portugal	Ramallah, Palestine	Washington, D.C., USA
Christchurch, New Zealand	London, UK	Rio de Janeiro, Brazil	Wellington, New Zealand
Mexico City, Mexico	Los Angeles, USA	Rome, Italy	Jakarta, Indonesia
Miami City and Miami Beach, USA	Louisville, USA	Rotterdam, Netherlands	Yiwu, China
Panama City, Panama	Luxor, Egypt	Salvador, Brazil	
	Malaka, Malaysia	San Francisco, USA	

Tools and Methodology

The process of creating the strategy has a comprehensive and holistic approach. Engagement of players from various sectors prevails, such as groups of academic experts, (national and local) Government, civil society and the private sector by means of interviews, workshops, meetings and focus groups. In parallel, a thorough review of secondary information and research studies, review of laws, public policies and strategic plans, is carried out. Both the 100RC platform partners and consultants come together, thus creating inputs and identifying opportunities and recommendations

that are then included in the resilience strategy.

Following the strategy development process and a review of existing data, interviews, inventory of resilience actions and insights, key issues to understand about Panama City, such as: equity, social cohesion, water resource management, climate change, physical vulnerabilities, governance and municipal administration are identified.

In order to delve into understanding key issues identified at the beginning, some theme-based working groups were formed with members from the various sectors involved. Once these groups have been formed, the methodology of each was defined by conducting reviews of laws, public policies, strategic plans, technical surveys, mappings of players, consultations with experts, close linkages with 100RC platform partners and other researchers. The activities performed also included workshops, working round tables and interviews. The inputs from the various players involved are then written down in this strategy.



Panama City gathers some archeological sites, the study of which has proven to be a long-established occupation throughout the East area of the present city.

1500

Later, in 1513, when the Spaniards led by Vasco Nunez de Balboa got to see the so-called South Sea (Pacific Ocean), he confirmed that they were at an isthmus. The presence of this unknown ocean required an advanced position to be founded to conquest and control the newly-discovered lands. In response to this need, Pedrarias Davila founded the city of Our Lady of the Assumption of Panama in 1519, the first port city in the South Sea. Panama City cemented its great importance as a terminal and connection hub for the various routes of the Spanish empire for trade, transportation of passengers and military strategic defense. Even after the end of the Spanish colonial period, Panama has remained relevant as a logistic hub by playing its permanent role as a connection and destination enclave for business routes worldwide. For all these reasons, it has consolidated itself as a World Heritage Site, with the property entitled “Archeological Site of Panama Viejo and Historic District of Panama” (Osorio-Ugarte, 2012; UNESCO, 2017). The river Chagres in particular played a vital role in the establishment of the transportation network through the isthmus and in its military defense (Old School Panama, 2014).

1600

1700



1800

The Isthmus of Panama became independent from Spain in 1821 and voluntarily joined Greater Colombia in 1822. The first transcontinental railway was inaugurated in Panama in 1855, which was a technological leap forward with significant effects on the local economy as it grew more efficient than the Camino de Cruces, which was the route connecting the Pacific with the Atlantic Ocean along the river Chagres. The following logistical advance of worldwide relevance was the construction of the Interoceanic Canal of Panama. This work was started by the French and completed by the Americans, after the separation of Panama from Colombia on November 3, 1903.

1900

Construction of the Canal of Panama guaranteed the U.S.A. full jurisdiction over the Canal Zone created in 1904 and broad sovereign powers. Thus, the United States leveraged the potential of the geographic and geopolitical importance of the Isthmus of Panama in the Latin American region, and its long occupation lasted until the administration of the Canal of Panama and its surrounding stretches of land (military bases still remaining there) in 1999 after the execution of the Panama Canal Treaty in 1977 whereby it was transferred to Panama. The Basin of the Panama Canal provides water supply for human consumption in the towns located in the interoceanic region, and it is fundamental for the supply of water to the cities of Panama and Colon.

From 1968 through 1989, there was a military regime ruling the country which launched agrarian reform and peasant settlement programs that finally penetrated into the urban basins of the metropolitan region of Panama. The military regime collapsed with the overthrow of general Manuel Antonio Noriega after the invasion conducted by the United States in 1981. The invasion is thought to have caused a highly significant psychological shock on the population, which has not been served in furtherance of a nationwide reconciliation. In the wake of dismemberment of the political vision under the military regimen, there ensued a restructuring of the

2000

balance of partisan political power, and twenty-nine years after the collapse of such regime, citizens still perceive that corruption levels have increased (Beluche, 2004). Much of the revenues of the Republic as a whole and of its capital city come from the Canal of Panama, which has yielded net profits amounting to US\$ 2.886 billion in 2017 from tolls, electric power supply, logistics and water supply. Out of those proceeds, US\$ 1.65 billion was paid to the State by way of taxes (*La Prensa* journal, 2018). The Panama Canal's GDP is projected to account for 2.2% to 2.5% of the country's GDP for 2018 (Gonzalez-Jimenes, 2017). Nevertheless, Panama City hosts some other economic activities, such as international banking and shopping tourism, especially due to the presence of a duty-free zone and its connectivity by ground and air with Central and South America. The city also plays an important role in the marketing and supply chain of fishery products, for it has several ports and is located at an area of high fishing productivity. The city has a coastline outcrop entailing a significant concentration of nutrients which bring about a broad availability and large density of maritime species of nutritional importance. Another important activity is port logistics, since it has large areas of containers surrounding the Canal of Panama. Likewise, Panama City functions as an air logistics center, both for passenger and freight flights.

THE PANAMA CANAL

Net profits

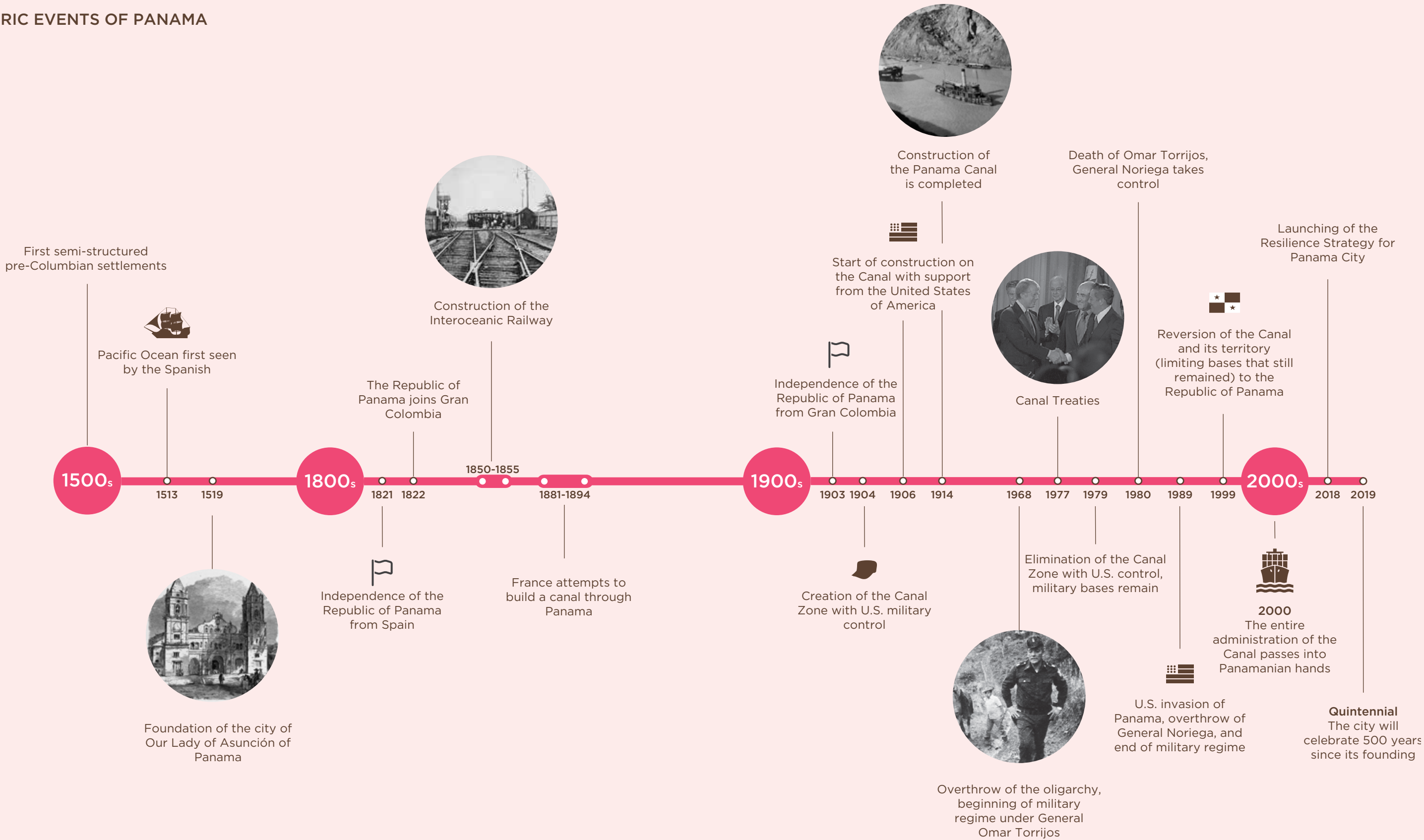
US\$ 2.886 billion

Canal's GDP

2.2-2.5% of the national GDP



HISTORIC EVENTS OF PANAMA





Migrations: Cultures in a Melting Pot

The history of the city is closely related to migrations that have led to a very diverse ethnographic and economic composition of the population. The manpower employed for the construction of the interoceanic railway between 1850 and 1855, and the Interoceanic Canal between 1906 and 1914, offered opportunities for migration to Panama City. After the creation of the Panama Canal Zone in 1904, the urban area grew towards the east, the direction that the city is still growing today. After the elimination of the Canal Zone in 1979, Panama City started a process of development northwards, along the trans-isthmic highway, and another development westwards, thus transforming a substantial part of the cities of Arraijan and La Chorrera into “bedroom areas” where many of their inhabitants commute to work in the districts of Panama and San Miguelito (Castro, 2006).

“The Banking Act of 1970 was conceived with a spirit oriented to promote and attract the physical presence of new and prestigious international banks from all over the world. Panama’s comparative advantages afforded unique conditions for the creation and development of an International Banking Center specialized in foreign transactions and a modern telecommunications center that would allow our country to focus on processing countless international financial transactions and a U.S. dollar-based currency system” (Supervisory

Banking Board of Panama, 2018). Both banks and institutions related to the International Banking Center settled down along Via España and Calle 50, two of the major streets in Panama City.

During the same period, San Miguelito became an area of informal slums for migrants to the city who came from other regions in the country and it was designated as a Special District separated from the Municipality of Panama, inserted at the center of the Metropolitan Area.

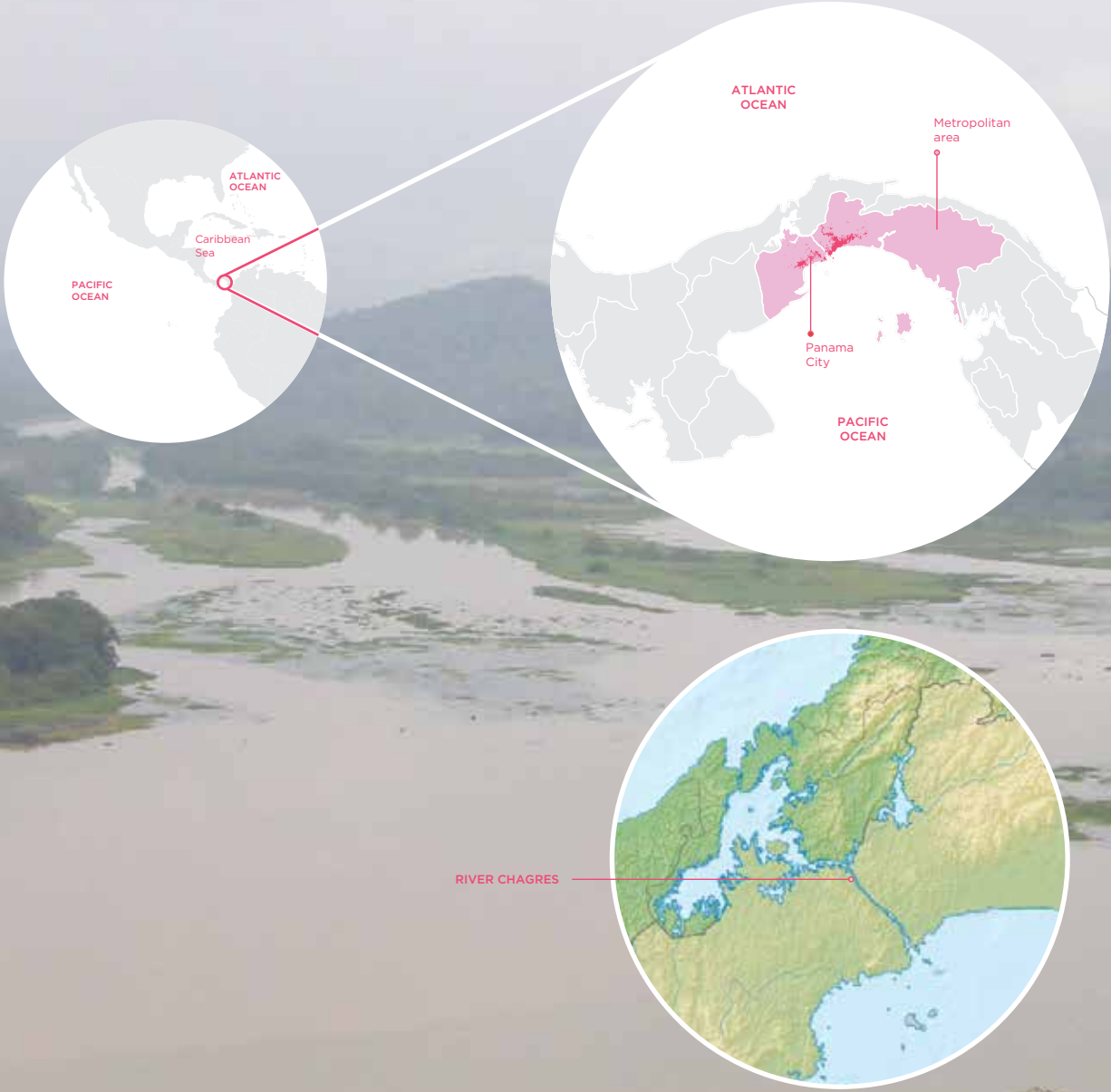
WATER CONNECTION

Built at the narrowest part of Panama, by leveraging the course of river Chagres, is the Panama Canal, which began operations in 1914 and accounts for 4% of Panama’s national territory.

The river Chagres was chosen as a major affluent for the canal due to its historic rises, which took place ever since c. 1870. One example was the rise of 1880, where the river reached a flow volume of 2.266 cubic meters per second, thus increasing by eight times its average flow volume during the rainy season (Osorio-Ugarte, 2014).

Before the construction of the canal, the river Chagres used to drain towards the Atlantic along the mountain chain. The construction of the canal involved detonating the nearby mountain chain to create the access through locks and sluiceways for ships and vessels towards the Pacific. This geologic cut shortened the flood plain of the rises of river Chagres, both in distance and depth, confining them to the area nearby Lake Alhajuela. Alhajuela is an artificial lake withholding the flow volume of river Chagres for its regulation and later use, as a source of water to transport vessels from the Atlantic to the Pacific and as a source of potable water supply for at least two million inhabitants, which is equivalent to half the population of the Republic of Panama (Osorio-Ugarte, 2014).

STRATEGIC POSITION OF PANAMA



The water resource in Panama impacts the canal’s protected areas and basins in the city, which form part of the capital city, as are the basins of River Abajo, River Matasnillo, River Juan Diaz, River Matias Hernandez, River Curundu, River Tocumen, River Tapia, River Pacora, among others.

The basins intertwine with a mountainous system separate from the Central Mountain Chain towards the north of the coastline strip occupied by a humid rain forest with a rich biodiversity. Protected national parks form an integral part thereof, including the Metropolitan Natural Park at the center of the city, Sovereignty National Park, Camino de Cruces National Park, and Ancon Hill. These hydrological, geographical and urban conditions result in a complex interaction between humans and the native flora and fauna of protected areas surrounding the city. Its connectivity provides the city with a landscape resource.

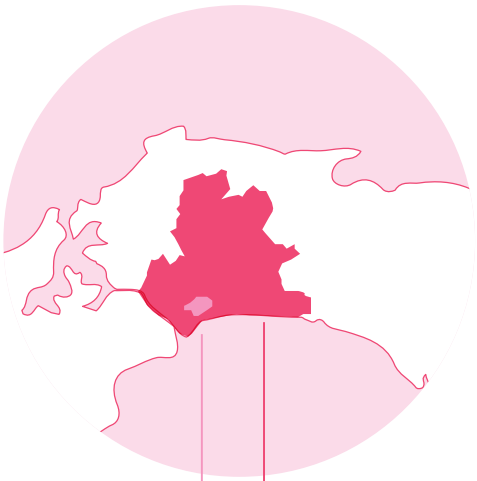
ECOSYSTEMS AND URBAN PATTERN

The growth of Panama’s urban pattern has been partly dictated by the changes occurring in water ecosystems. During the construction of the canal, the nearby towns surrounding the River Chagres were flooded, where the majority of the national and foreign workers employed in the canal were living. This caused new towns, which later became home to such workers, to emerge.

The areas closer to the coastline have been subject to urban development built on flood zones with predominant wetland plains, a network of various tributaries and on areas near various hydrographic basins.

The Panama Canal kept an indirect relationship with Panama City, which isolated it from the rest of the country, by constraining its growth directing it along the strip running between the Canal Zone and the sea towards the east. This pressure caused much of the population to settle on high risk zones. The disappearance of the Zone as determined in the Canal Treaty of 1977 made it possible for the city to expand towards the west

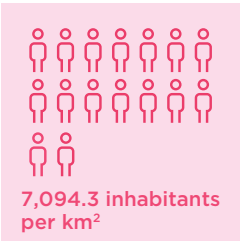
THE URBAN PATTERN:
PANAMA AND SAN MIGUELITO DISTRICTS



DISTRICT OF PANAMA
191 KM² (19,127 ha)
1,098,068 PEOPLE



SAN MIGUELITO DISTRICT
36 KM² (3,628 ha).
355,429 PEOPLE

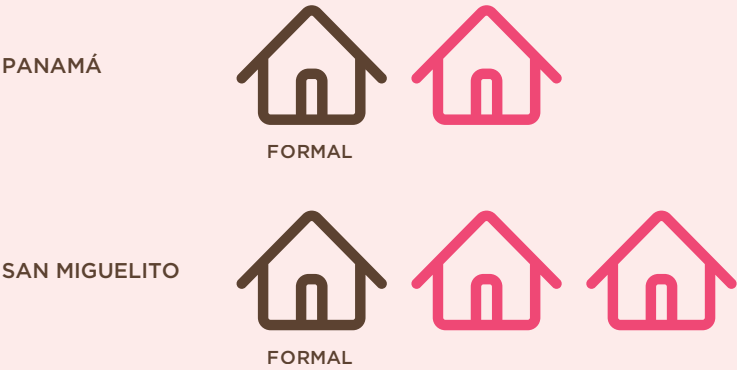


Source: National Statistics and Census Institute (INEC, 2017).



40% of the population lives in the metropolitan area of Panama City, i.e. over 1.268 million inhabitants

1 out of every 2 homes in the District of Panama are formal, whereas 1 in 3 are formal in San Miguelito.



Population of the metropolitan area per neighborhood origin of the home they live in

District	Formal housing	Social housing	Informal housing
Panama	52.71%	9.92%	37.38%
San Miguelito	27.05%	21.31%	51.64%

Source: FOBUR, 2015.

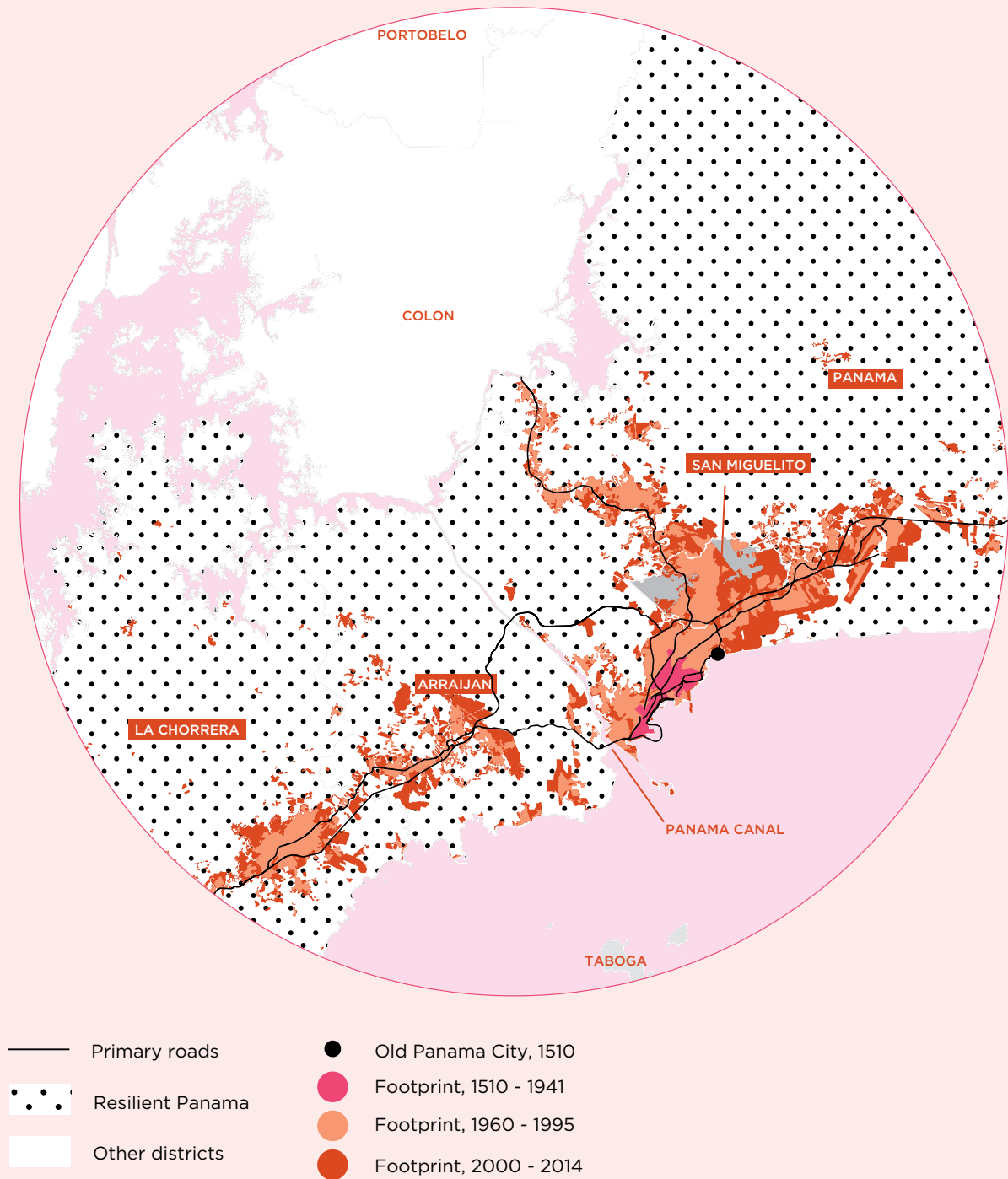
“Informal housing” means any home built in violation of the urbanization and construction rules currently in force; rapidly at the beginning, in an improvised way and with second-hand materials, and on lands which are not legally owned by their occupants.

“Social housing” are those located in neighborhoods originated from a state-run housing project. It may consist of served plots of land, basis units, finished houses or apartments built by the State, which sold it to their occupants.

“Formal housing” refers to homes located in neighborhoods originally built by private companies or individuals, by following currently applicable urban development and building regulations. The development would also occur in plots of land with the necessary authorization for such purposes, and having the minimum urban services (potable water, sewage and storm-water drainage system, and electric wiring).

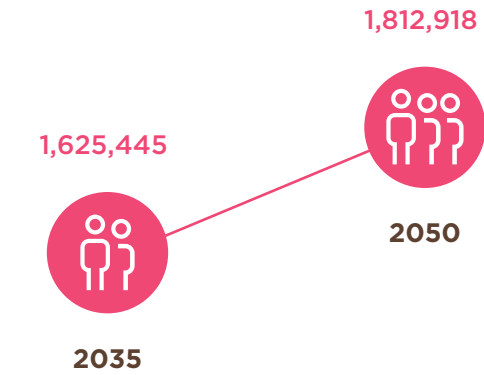
GROWTH OF THE URBAN PATTERN

1510-2014



Source: Preliminary Resilience Analysis, 2017.

POPULATION GROWTH OUTLOOK
(2035-2050)



Scodelaro et al, 2015.

coastline of the canal and, especially, northwards. So far, this expansion has taken place without a vision focused on the conservation of green areas. Even so, national parks are kept in good condition, however, they are under high levels of threat, such as the felling of woods, hunting and mining, among others.

The changes in the urban pattern are correlated with a growth of urban areas towards the east and the north. Middle-class Panamanians have been settling down in neighborhoods of houses and massive housing complexes, which have little recreation space and reduced green areas and experience an isolation of transportation systems and employment and educational opportunities. These neighborhoods are located in areas adjoining extreme poverty zones where many people settled illegally, thus creating a marked inequality problem and big difficulty for the Government to accomplish the supply of basic utilities. The privilege of residing on the seaside has spurred construction of tall buildings on vulnerable coastline zones, thus increasing risks for people who live in sea-level neighborhoods. This has contributed to deterioration of wetlands at Panama Bay towards

the east, where middle- and lower-class neighborhoods are adjoining large real estate projects, and golf courses built on sanitary landfills raised above six meters high. This difference in elevation has increased the risks of flooding in nearby neighborhoods built below sea level. Additionally, the removal of wetlands to keep expanding the city has also impacted fishing productivity.

TOWARDS A LOCAL GOVERNANCE

In spite of the challenges and problems accrued from the past, the country has taken on a new direction towards strengthening of Local Governments through the enforcement of the Municipal Decentralization Act. This law was enacted in 2006 and became effective in 2014 under the leadership of the Municipality of Panama. New operating divisions were created, including those of Urban Planning, Environmental Management, Citizenship Participation and Transparency, and Culture and Education, among others. The Social Management Division was strengthened and the Resilience Division was created in 2017. International organizations have also invested resources targeted at taking sustainable urban development actions, for instance, with the Action Plan entitled “Metropolitan, Human and Global Panama” in 2015. This survey is of utmost importance as it involves a joint effort made by the Mayor’s Office of Panama City and the initiative Emerging and Sustainable Cities (ICES, as per its official acronym in Spanish) of the Interamerican Development Bank (Scodelaro et al, 2015). The study uses technical and statistical analyses to arrive to the diagnosis of the city’s current situation and has supports sustainable and comprehensive planning. This study also includes strategic lines of analysis, such as mobility and transportation, urban inequality and use of soil, vulnerability to natural disasters, water management, cleanup and drainage, solid waste disposal and modernization of municipal management.

On the other hand, the Comprehensive Plan

for Sustainable Urban Mobility (PIMUS, as per its official acronym in Spanish) is a planning tool that defines mobility policies and programs required by Panama’s metropolitan area in the next 30 years to come. In 2018, the making of the Land Use Plan (POT), as per its official acronym in Spanish) began, which is the core initiative to finally provide the Municipality of Panama with the jurisdictional competences of local urban development authority. The development of the Resilience Strategy is currently aligned with the definition of the strategic lines of said plan. The plan will include participatory construction of a sustainable growth model and formulate the drafting of the Legal Instrument of Territorial Ordering and Management by means of public consultations and coordination with national and regional plans. Additionally, a proposal will be made for legal support of the project portfolio and execution of training and publicity activities within the framework of this plan.

In addition to this, the Municipality of Panama is already working on implementation of the Eco-Protocol, which consists of developing a system of green buildings to evaluate the environmental impact and performance of existing buildings. It will provide a comprehensive framework that will give necessary input to assess the overall environmental performance of the buildings located in Panama. The assessment criteria of the Eco-Protocol evaluate social connectivity, the existing infrastructure and management of the site, energy-efficiency and conservation, water-efficiency and conservation, organizational awareness, procurement and operations, quality of inner air, waste disposal and recycling, calculation of the CO₂ reduction, among other green and innovative features. The evaluation process aims to verify relevant reports and pieces of evidence so that the building complies with the intent pursued by those criteria, the minimum performance of the chapter and the expected standard of certification.



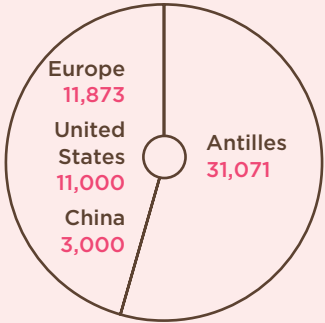
Native peoples in Panama City

Panama City hosts the ethnic group Embera-Wounaan along the Curundu neighborhood, Lake Alajuela in Chilibre and Pacora; the Ngabe-Bugle concentrate in the neighborhood Pacora (Las Garzas) and 24 de Diciembre. The Gunas have mainly settled down in the villages of Calidonia, Santa Ana, and Ancón, with the latter containing Kuna Nega, a neighborhood nearby Patacon Hill, which is the garbage dump of the province of Panama.

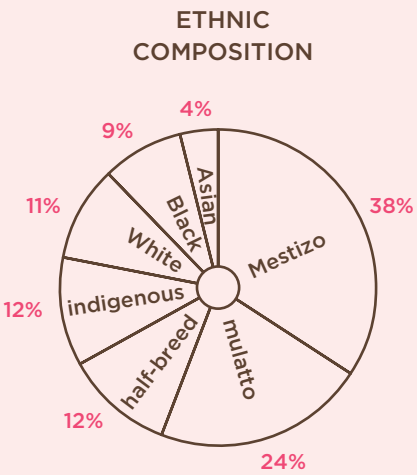
Migrants for the World Bridge

Between 1904 and 1913, some 56,944 people worked on the construction of the Panama Canal, of whom 11,873 came from Europe, 31,071 from the Antilles; 11,000 from the United States; 3,000 Chinese and some more from other unidentified places. Around 27,000 workers died, mainly from malaria and yellow fever. The accidental deaths occurred in relation to the failed French project resulted in a total of at least 22,000 and more than 5,000 in the works performed by the United States. The Afro-Antillean population who continued their lives in the metropolitan area settled down in neighborhoods such as Santa Ana, el Chorrillo, El Marañon, Curundu and River Abajo.

ORIGIN OF THE WORKERS OF THE PANAMA CANAL



Immigrants to the present



IMMIGRANTS IN THE COUNTRY



184,000
From 2010 through 2016

RESIDENCE PERMITS



137,798
From 2010 through 2016

LOCATION OF MIGRANTS



80%
In the metropolitan area of the Pacific

Source: National Migration Service 2018; Lizcano-Fernandez, 2005; INEC, 2010.

THE CITY IN FIGURES

ECONOMIC DATA

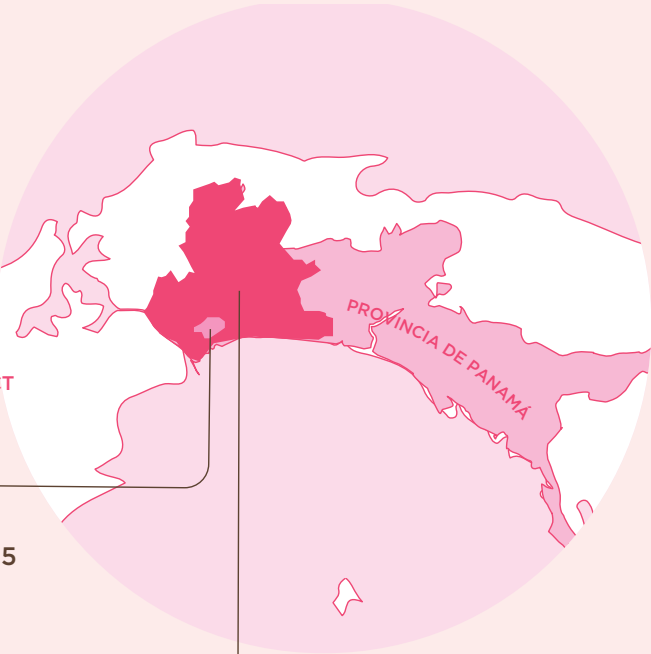


SAN MIGUELITO DISTRICT

Income per capita
511.5
dollars
GINI coefficient: 0.45

DISTRICT OF PANAMA

Income per capita
537.3
dollars
GINI coefficient: 0.47



GDP



DOMESTIC
37,471
millions of dollars
(2017)

PROVINCE OF PANAMÁ

7,930
dollars per capita
(2017)

INFLATION



0.75%
national inflation
(2017)

0.37%
inflation districts
of Panamá and
San Miguelito
(2017)

POVERTY



13%
general poverty,
district of Panama
(147,519 people)

2.5%
extreme poverty in
the district of
Panama

2.4%
extreme poverty in
San Miguelito

Sources: MEF, 2013; General Comptroller's Office of the Republic, 2017; INEC, 2017; Scodelaro et al, 2015.

EDUCATION

SPENDING ON EDUCATION

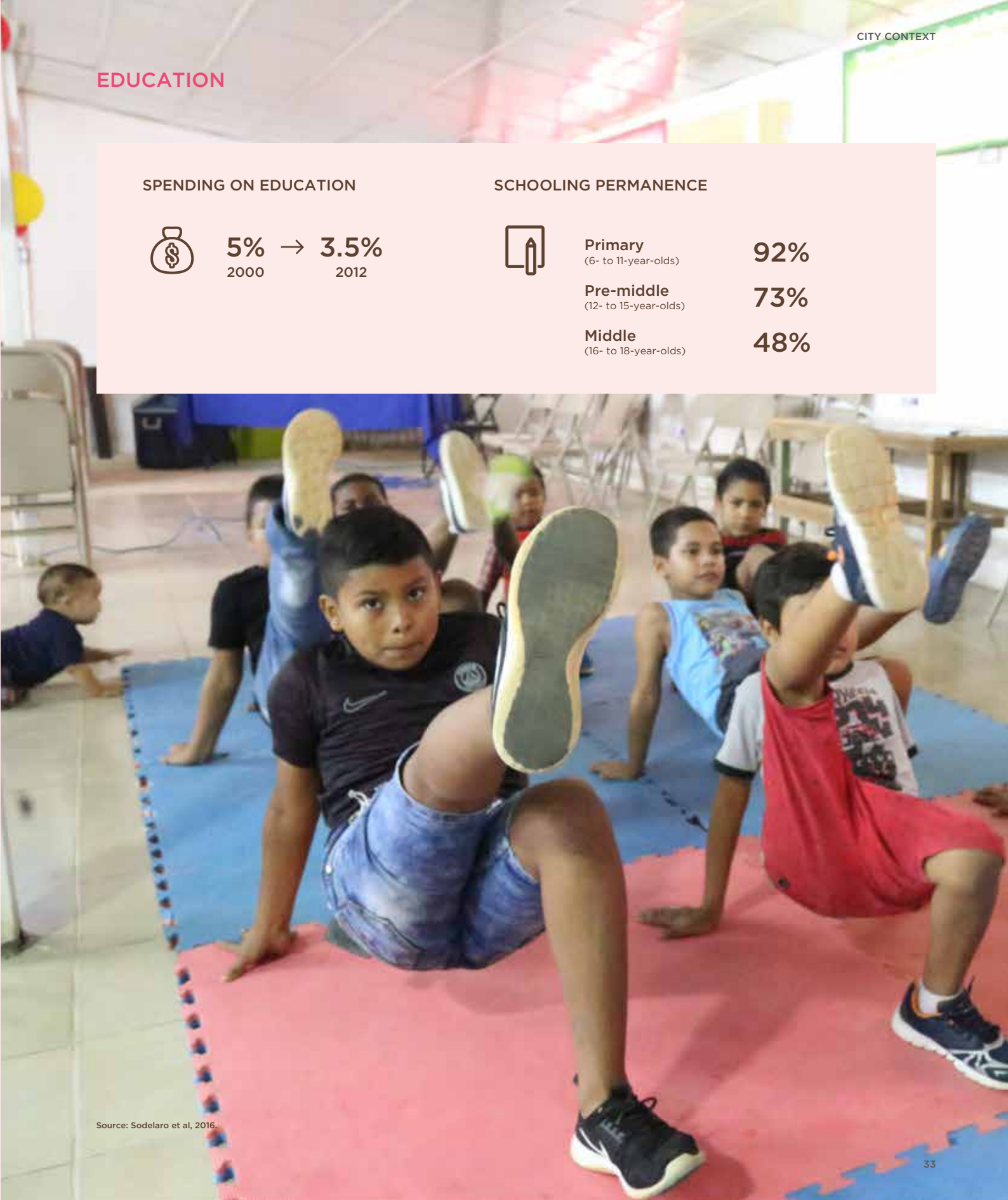


5% → **3.5%**
2000 2012

SCHOOLING PERMANENCE



Primary
(6- to 11-year-olds) **92%**
Pre-middle
(12- to 15-year-olds) **73%**
Middle
(16- to 18-year-olds) **48%**

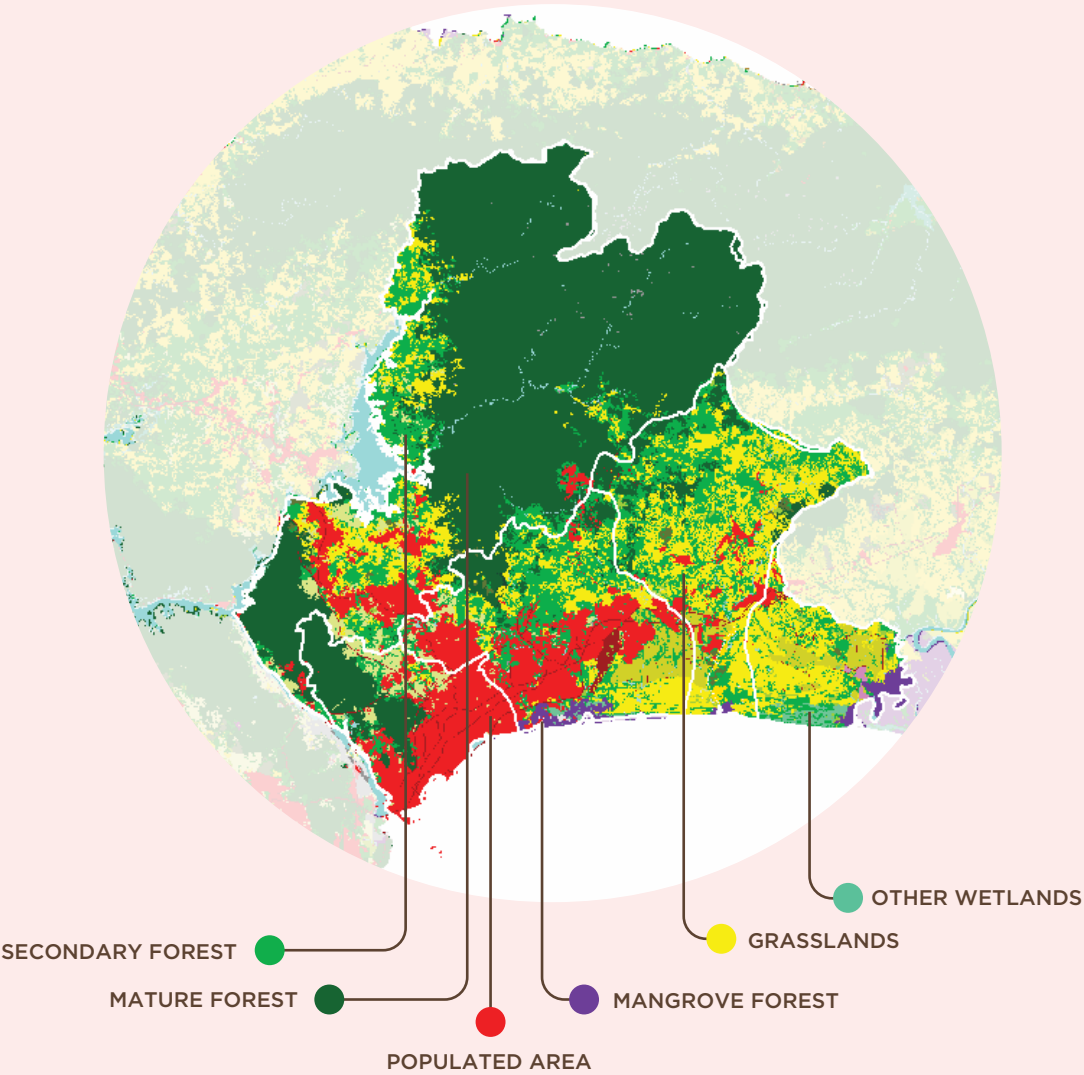


Source: Sodelaro et al, 2016.

The economic value of natural capital in the basins and associated ecosystems of Panama City

The economy depends on natural wealth. With a population of almost 801,000 people, and one of the fastest growing economies in Latin America, Panama City receives nearly US\$1.6 billion every year on critical ecosystemic services for the basins surrounding the city.

TYPES OF SOIL COVERAGE



Source: Ecosystemic Assessment Survey conducted by Earth Economics, 2018.

ECONOMIC VALUE OF NATURAL CAPITAL
US\$ 1.6 billion per year



Units represent annual values for 2015 in 10 types of ground coverage

WATER FIGURES

57%
Unaccounted water percentage

56%
Delinquency percentage in the payment of water utility

DENGUE 7.5 cases per every 100,000 inhabitants
MALARIA 19.4

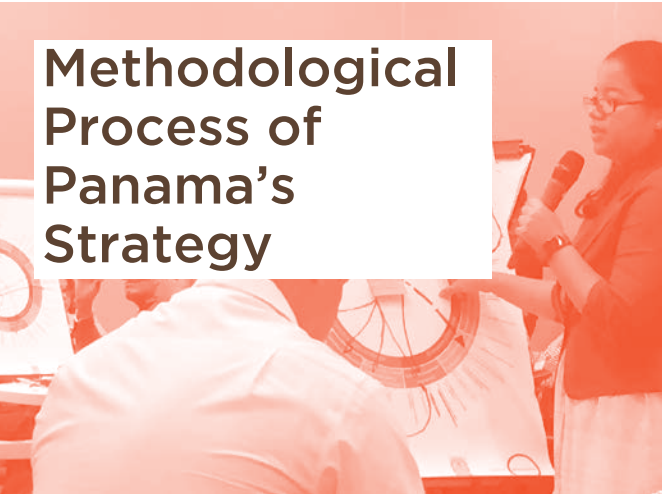
Source: Delgado 2014; Thompsom et al 2016.

FLOOD DAMAGES
PANAMA-SAN MIGUELITO SECTOR IN PRESENT SITUATION

Current scenario	T10	T20	T50	T100	T500	PAE
Total damages (in US\$M)	144.92	216.82	284.05	344.12	491.85	35.44
Affected persons	11,829	13,970	16,386	18,220	24,014	2,439
Economic damage index (% damages over revenues)	0.95%	1.42%	1.87%	2.26%	3.23%	0.23%
Human damage index (%)	0.93%	1.10%	1.29%	1.43%	1.88%	0.19%

Source: IH Cantabria





Methodological Process of Panama's Strategy

For a better understanding of these issues, such evaluation was completed with an online survey of 489 respondents that helped the team to determine insights into resilience. Likewise, the actions posed by the Action Plan for Metropolitan Panama were discussed: Sustainable, Human and Global (IDB, 2015). The 117 indicators included in the Action Plan were compared with the Conceptual Resilience Framework so that the relationship between both methodologies could be understood. All these elements were collated with the Conceptual Resilience Framework provided by 100RC.

The strategy development process began with a workshop organized in 2016 by the Municipality of Panama, jointly with 100 Resilient Cities. The objective of the workshop was to publicize the concept of urban resilience and to identify on a preliminary basis the shocks and stresses facing the city. This workshop was attended by various officials of the Municipality, community leaders, civil and academic organizations, businesspersons, 100RC program representatives, and resilience directors from other cities involved in the network.

For phase 1, a Preliminary Resilience Analysis was conducted, consisting of a preliminary diagnosis of the city's threats, from May through November 2017, which was complemented with a total tally of 104 participants in 52 interviews, 2 workshops, 4 forums (Dominici-Arosemena et al 2017). During this first phase, several players and specialists were involved from fields such as economics, urban, environmental and social planning; central- and municipal-level governance topics (specialists from the District of Panama and San Miguelito District) as well as some academic representatives, NGOs and the private sector.

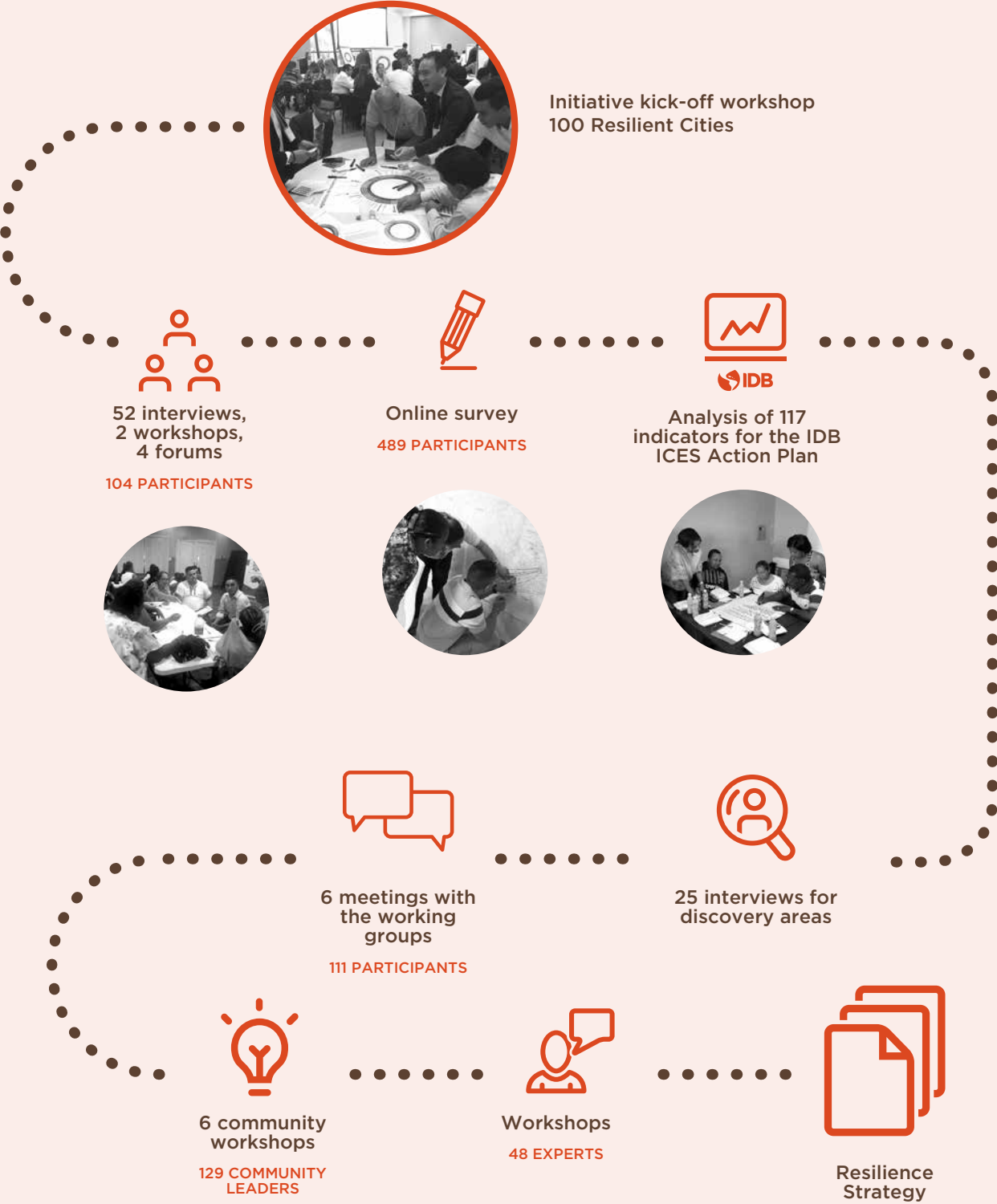
This phase closed with the call for a Municipal Technical Board attended by 15 members, who gave their support to the Preliminary Resilience Analysis, which identified five "discovery areas", namely: equity, social cohesion, management of water resources, physical vulnerabilities and municipal governance. These "discovery areas" serve as core ideas to guide research work conducted during the second phase of strategy development. A work plan based on these areas was drawn up by taking into account the respective questions posed in the Preliminary Resilience Analysis.



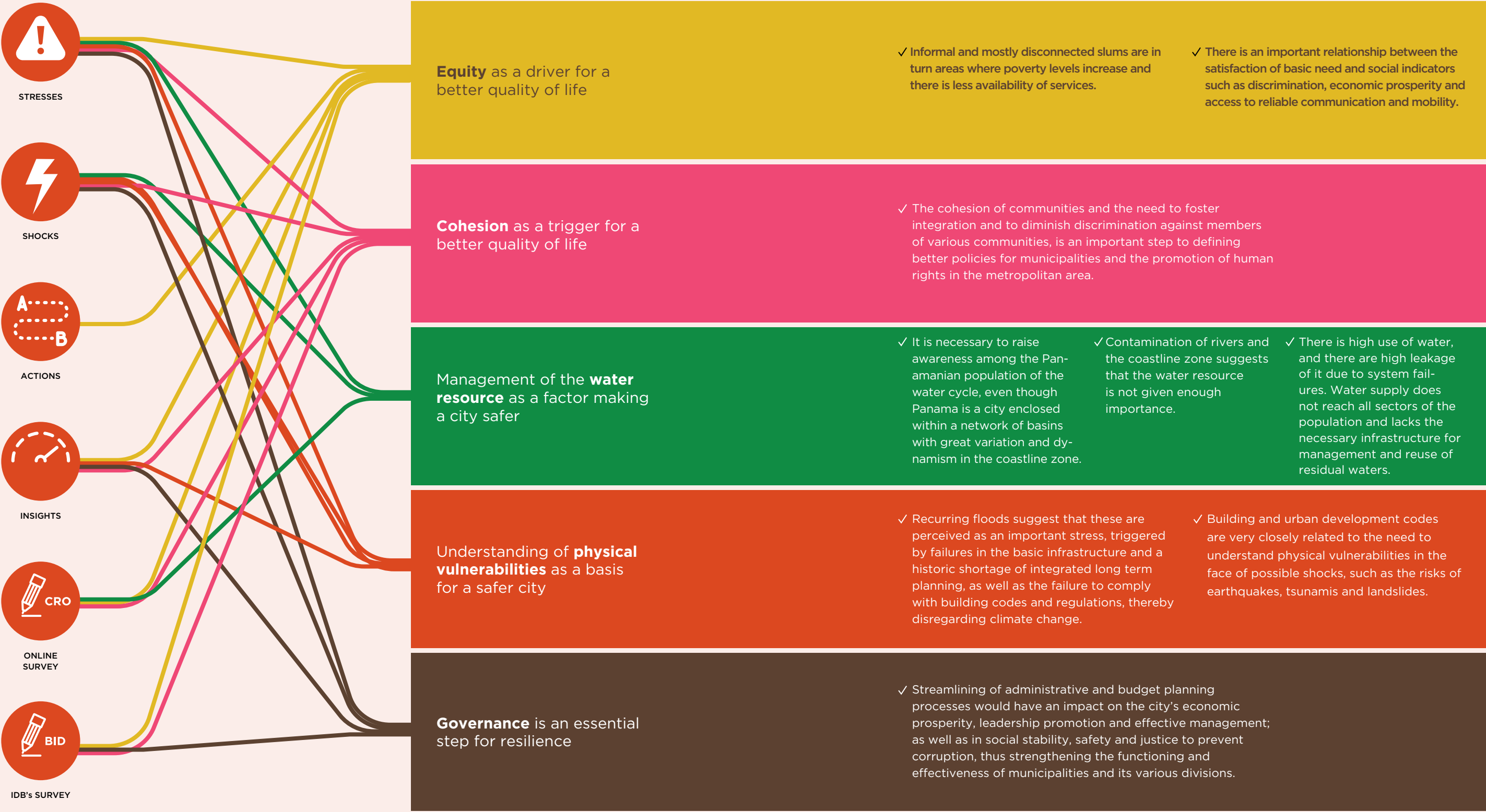
In order to answer these questions, 25 interviews in person were conducted and 6 meetings were held with working groups of experts concerning various discovery areas, which were attended by 111 people. Also, 6 community workshops were conducted in 6 neighborhoods (such as Alcalde Diaz, Ernesto Cordoba, Pedregal, Tocumen, Pacora and in the community of the predominant ethnic group Guna based in the neighborhood of Kuna Nega located in the neighborhood of Ancon) with the participation of 129 community leaders. Similarly, two synthesis workshops were made, which were coordinated jointly with the 100 Resilient Cities Program and with presentations delivered by both consultants and partners of the 100RC Platform. Additionally, a workshop about topics concerned with infrastructure, wa-

ter, ecosystems, and risk management, was conducted with the attendance of 30 experts; and another workshop on the topics of equity, economy, transportation and social cohesion, with 18 experts who took part in it. Finally, a call was made to the Municipal Technical Resilience Board attended by 20 participants, who gave their recommendations, feedback and ideas for programs and projects for the Resilience Strategy. The findings of these workshops, besides identification of opportunities based on the various reports quoted in this strategy, gave rise to the project portfolio found in this document.

Events and process of the development of the strategy



Discovery Areas



Contributions to the development of the strategy

PRO-BONO SERVICES



EY: Proposal of intervention in Urban Mobility. Based on a participatory process, EY proposed initiatives to improve mobility between the economic development axis and the periphery of Panama City.



CSA GROUP: Pre-feasibility study conducted in relation to the discovery area: Coexistence with Water, Ecosystems, and Climate Change. CSA reviewed technical studies and consultancy reports concerned with the management of water resources and ecosystems, and it investigated available data about practices and techniques intended for effective management and protection of the quality of the water resource, and adaptation to climate change.



CITYMART : Bidding process based on needs. It addressed the project for promoting waste disposal good practices at the North Municipal Park (PMN, as per its official acronym in Spanish) and informal settlements through an innovative bidding process proposed by Citymart and access to its urban solution platform.

CONSULTANCY SERVICES



CEASPA: Workshops held in five neighborhoods with the attendance of community leaders and referents. These workshops focused on exploring both the physical and cultural factors that contribute to social cohesion at a local level. Special emphasis was put on exploring the specific characteristics of each community, any ideas aiding to foster cohesion, and specific needs for social infrastructure. These workshops were attended by officials of the Municipality of Panama.

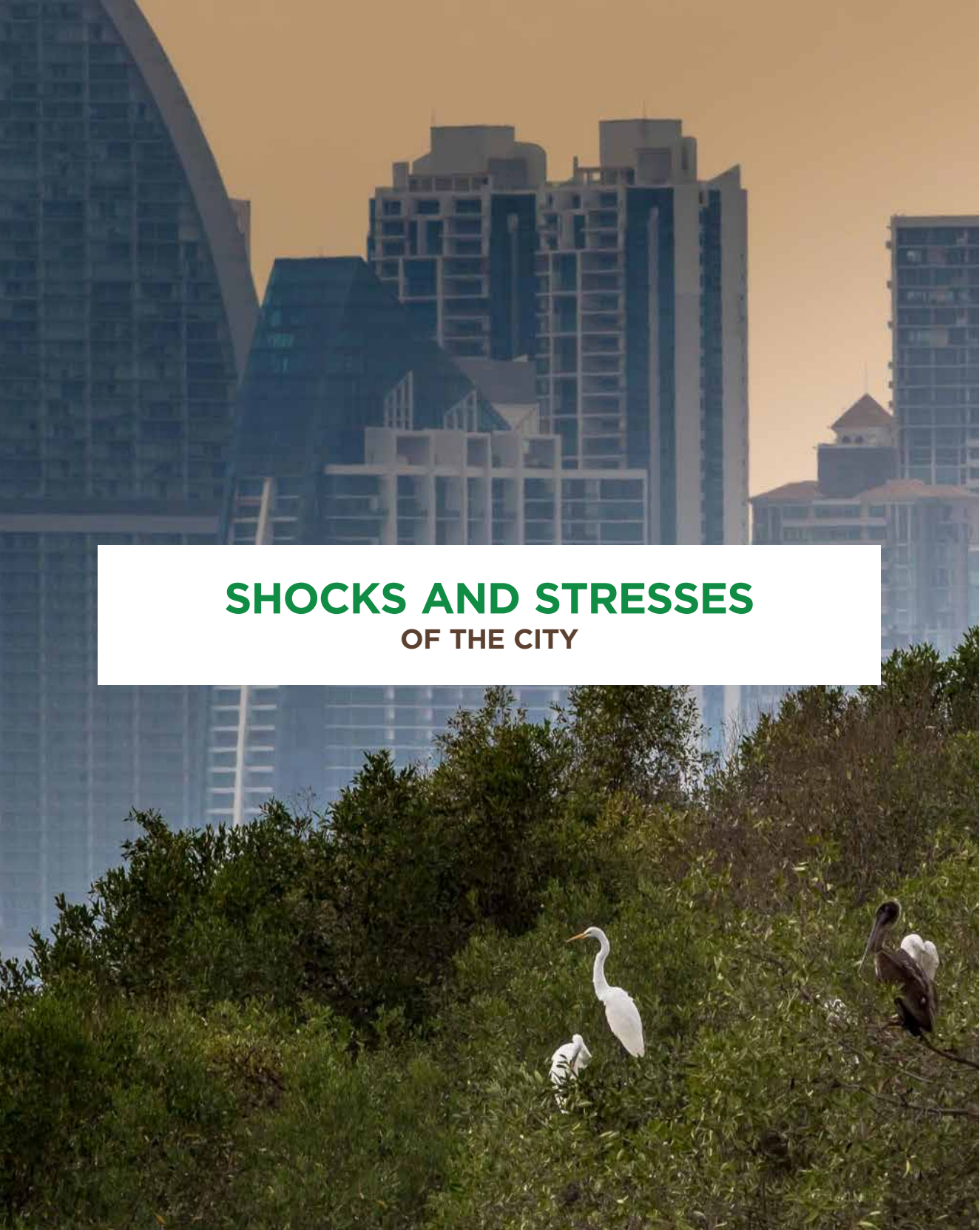


EARTH ECONOMICS: Analysis of the economic value of natural capital in the basins and associated ecosystems of Panama City. Earth Economics created a spreadsheet with appraisal of the natural capital of Panama Bay and related basins.



ARUP: Technical analysis of the workforce and the economy. Was focused on understanding the connection between economic dynamism and the setting built.





SHOCKS AND STRESSES OF THE CITY



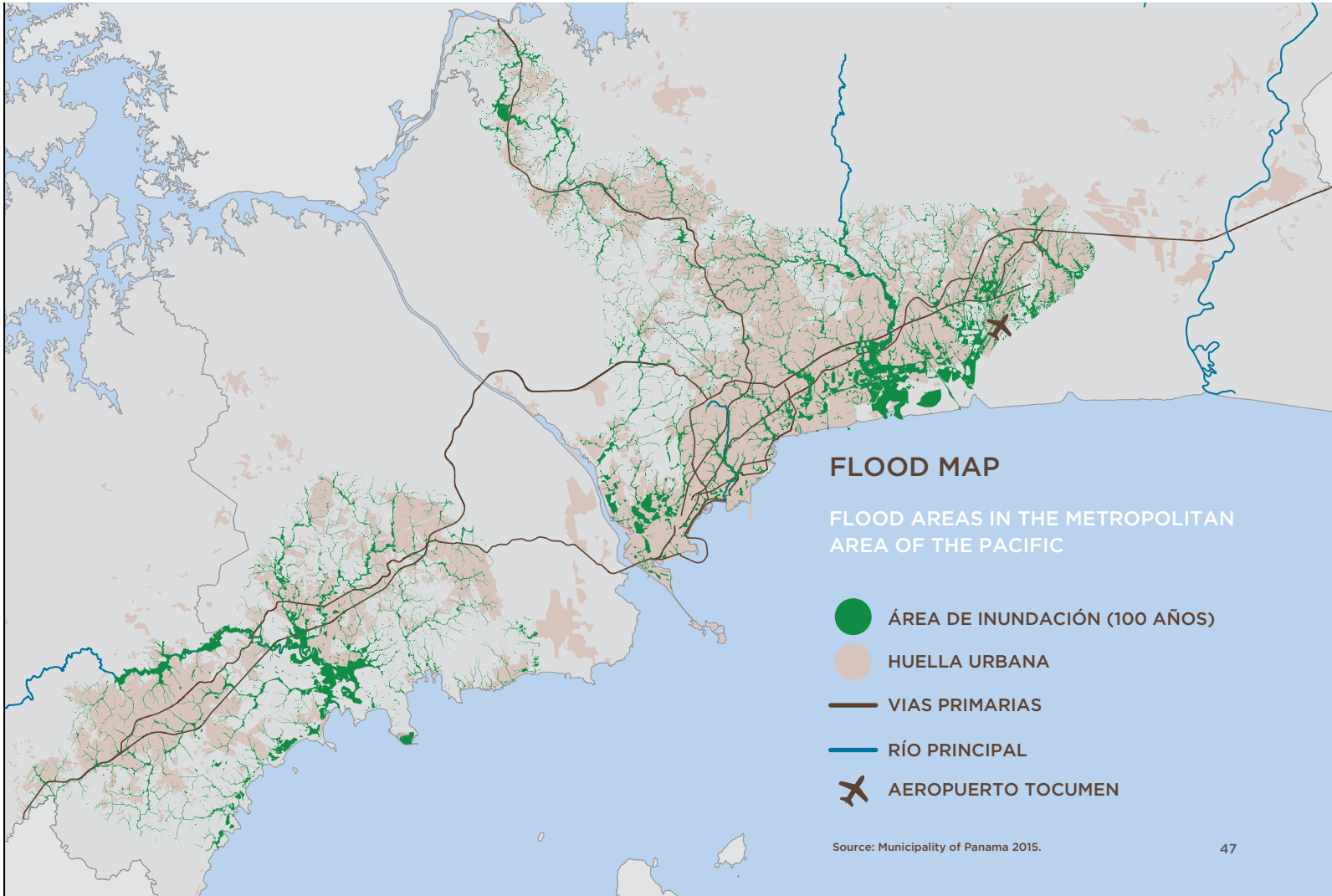
hocks are generally catastrophic events, such as: fires, earthquakes and floods. Stresses are factors that exert a frequent or recurrent pressure on the city, e.g. chronic shortage of food or water, an overloaded transportation system, or high unemployment. Every city has shocks and stresses with different levels of incidence, this is why it is critical for Panama City to be well informed about its current situation with the aim to address priority issues that may impair its functioning and development.

SHOCKS TO THE ENVIRONMENT AND INFRASTRUCTURE

Panama City’s geographic position (an inter-tropical convergence zone) is characterized by heavy

rains during the rainy season running from May through December. This season brings about on-going floods affecting the lowest coastal zones. Recent studies suggest that floods tend to concentrate in the areas where the basins have been canalized and cemented (Scodelaro et al, 2015).

In the past, Panama City suffered from large-scale earthquakes. In 1621, the largest ever-recorded earthquake occurred, with a Richter-scale magnitude of 7. In 1882 there was another seism of magnitude 7.9 and the last one took place in 1971 with a magnitude of 5.6. After the latest one, there have been no other earthquakes that have caused serious damages in the infrastructure; however, recent research suggests that there are some active faults in the region (Bennett et al, 2014; Rockwell et al, 2010) with enough potential to cause earthquakes.



SHOCKS



Flood in the area nearby the Juan Diaz River

Heavy rains bring about floods. The most disastrous one in the last 10 years took place in September 2004. It affected 12,986 people, 2,770 houses and left a tally of 13 casualties (IDB, 2015).



Landslides in Nuevo Veranillo

Landslides often occur (especially in the district of San Miguelito) due to buildings made without ordering, which would bring about situations that are hard to control and could hinder the movement of people (Serracan, 2002).



Impact of the 1882 earthquake on the works of the Panama Canal



Strong winds affect houses of poor constructive quality, typical in these areas, with tile roofs and light enclosures that end up contributing to the destructive effect of the blowing wind (IDB, 2015).



Risks of tsunamis associated with seismic activity in the Pacific Ocean, or the fire belt (Rosenberg, 2017), endanger the buildings still under development in danger zones along the coastline of the cities located across this region. The most relevant case has been the tsunami of San Juan del Sur, Nicaragua, in 1992, with 170 casualties (INETER, 2005). Strategic sites have been established to perform drills mobilizing people with the corresponding signage of places to go after receiving notice of evacuation (AMP, 2016).

The overall poverty level in the district of Panama is 13% (147,519 people) and in San Miguelito, it reaches 12.7% (44,135 people). The levels of extreme poverty amount to 2.5% (29,590 people) and 2.4% (8,408 people), respectively (MEF, 2017). Poverty increases in peripheral areas to the north and east, which are rural in nature.



Poor disposal of solid waste impairs the population's health, blocks drainage pipes and results in an increase of floods (Thompson, 2016).

Improper disposal of waste entails that extreme hydrometeorological phenomena bring about large concentrations of suspended solid waste materials that affect the provision and quality of the potable water supply (IDB, 2015).



Gender violence is also considered an important problem. Every year, hundreds of women are assaulted in the province of Panama, with a total tally of 11 women murdered in 2016 (Public Prosecution Service, 2016).

Discrimination against sexual minorities which translates into various forms of aggressive behavior, especially towards trans-gender persons (without having exact figures), and including, in many cases, rapes (ICHR, 2015; Public Prosecution Service, 2015).



Poorly controlled immigration, with 137,798 residence permits issued to foreigners between 2010 and 2016, and 184,000 immigrants. At this moment, there is no evidence of planning and procedure to inform the population about this issue.

STRESSES

Corruption increases with money laundering, which then creates a considerable negative effect on the banking subsector. Between 2013 and 2015, a total number of 236 investigations were reported, involving drugs, embezzlement, bribery of public officials, unjust enrichment, white-collar crimes, transnational precedents, crimes against copyright and related rights (CNBC, 2016).

The expansion of the urban pattern (northwards, eastwards and westwards) is not accompanied by suitable structural and management measures. It is difficult to move in the farthest, isolated, poorest, and unsafe areas.



The decline of wetlands which help to control the hydrological regime, is caused by landfills that heighten risks, in addition to climate change (IH Cantabria, 2016). This decline, in turn, could also affect food resources and fishing productivity, whose related exports are estimated to amount by way of national economic revenues to 2,937 U.S. dollars/hectare/year for the fishing resources coming from all over the Pacific area (ANAM-ARAP 2013).

The city has a plain topography towards the coast, which elevates towards the mountainous range of Peñon Hill and Azul Hill, so it is possible to observe an increase in landslides towards the area of houses, as well as the collapse of infrastructure over weak foundations in raised zones. This has happened mainly in the district of San Miguelito and these effects have, in turn, been aggravated by the construction being performed without the corresponding land-use planning (Seracan, 2002). Moreover, Panama City also faces strong winds ahead affecting low-quality housing (Scodelaro et al, 2015).

**STRESSES CONCERNING
INFRASTRUCTURE, BASIC UTILITIES,
HEALTHCARE AND NATURAL
RESOURCES**

The economic growth of the country encouraged the building industry, which brought about a high concentration of buildings in the coastline

strip, without any coordination from the inter-institutional level and little intervention of Local Governments. Said disorderly construction has restricted access to various zones and has resulted in low availability of public transport choices, a situation which has worsened in the farthest, isolated zones (Scodelaro et at, 2015).

Informal housing has poor drainage systems that undergo interruptions to the potable water supply due to a lack of planning thereof and caused by fractures within the networks. The lack of maintenance of the system is also a result of a high level of delinquency in payment of utilities, since tax collection does not manage to provide sufficient funds for the maintenance of those systems (Delgado, 2014). Poor disposal of solid waste impairs the population’s health, blocks drainage pipes and results in an increase of floods (Thompson, 2016). In this context, rivers tend to drag large concentrations of suspended solid waste during extreme hydrometeorological phenomena, thus affecting both the provision and quality of



Photo: MUPA

the potable water supply (Scoderalo et al, 2015). Water courses contaminated by the concentration of solid waste material foster the development of diseases, such as dengue and malaria (Thompson, 2016). In addition, soil has inadequate permeability which has aggravated the effects of floods. One example of this practice is the removal of wetlands for construction of buildings, roads and landfills. These, of course, function as natural controls of the hydrological regime, so the disappearance thereof can only worsen the effects of climate change (IH Cantabria, 2016).

ECONOMIC AND SOCIAL STRESSES

Despite the benefits of economic development, in comparison with the other cities in the region, Panama City has the following characteristics (Arup, 2018):

- A high inequity
- High poverty levels and extreme poverty
- Low achievement results in reading and mathematics tests

“Money laundering” has brought about corrosive effects on the economy, for instance: the bankruptcy of legally established businesses, a distortion of economic growth, changes in inflation, destabilization of prices, social breakdown, loss of assets and violence (Journal La Estrella de Panamá, 2011; CNBC, 2016).

Between 2009 and 2014 unemployment showed a downward tendency from 5.9% through 3.8%, which proves a significant decline since 2011 in Panama City (3.2% in the province of Panama and 2.2% across the country). However, in 2014, informal employment in the province of Panama reached 30%, i.e. there is one informal worker for every two formal employees. The high informal employment rate implies a loss of tax revenues for the State (Arup, 2018).

Racial discrimination against Afro-descendants and indigenous people has brought about a tendency to drive them towards the poorest neighborhoods. This population also tends to get lower-paid jobs (OACNUDH, 2013; De León 2016).

In Panama, gender violence still is a problem to be solved. In the Province of Panama, 11 women were murdered in 2016 and 13 women were killed in 2017 (Public Prosecution Service 2016a, 2018). Also, sexual minorities are discriminated, as their members are assaulted and restrained in their citizenship rights (CIDH-OEA, 2015; Public Prosecution Service 2015, 2016b). Security is relatively stable, since there are between 0 and 100 crimes per year (SIEC, 2016) in most of the City’s downtown; however, there are high crime rates, between 101 and 520 crimes per year (SIEC, 2016), in the areas with a higher level of poverty (as in the farthest northern and eastern areas of the city). Uncontrolled migration has also brought about conflicts between immigrants and nationals, as there has been no adequate integration of these groups within the local setting.

An aerial photograph of Panama City, showing a dense urban landscape with numerous high-rise buildings in the background and a vast area of lower-rise residential and commercial buildings in the foreground. The sky is overcast with soft, diffused light.

RESILIENCE STRATEGY OF PANAMA

Resilient Panama City Vision

To get ready for its next 500 years, Panama City, the World's Bridge, will connect citizens and their environment, thereby empowering them to manage their human wealth, prosperity and ecosystems effectively.

How to Read the Resilience Strategy

This resilience strategy presents five pillars made up of eleven goals and forty-five actions.

Strategy Pillars

Each pillar is envisaged as action lines in the construction of resilience for the City, one which recognizes its own dynamics and power, in addition to its own strategic value. The goals outline the target at which the results of actions are aimed.



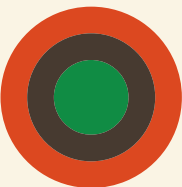
1

Access to opportunities
Connecting human capital with welfare sources



2

Infrastructure of neighborhoods
Building a city for everyone



3

Rediscovering our wetland city
Coexisting in a better way with our own waters and environment



4

Comprehensive risk management
Building and communicating for a safer city



5

Joint responsibility when building the city
Empowering local management and its administration

Actions account for a variety of programs, projects, and plans, which, given their value, have been estimated as a top priority for the city and others as flagship to make it possible to establish the evaluation logic.

Each and every one of the actions presented within the pillars are actions that give a resilience value for the city, while having a special value for the working tasks of the Sustainable Development Growth, which must be aligned with the Action Plan.

STATUS

Proposal: new action emerging from the strategy process

Planning underway: action being studied

In progress: action in process of implementation

TIMEFRAME

Implementation time

Short term
0 months-1 year

Medium term
1-4 years

Long term
5 years onwards

TYPE

What method will the implementation of this action be subject to?

Program, Campaign, Plan, Public Policy, Infrastructure Project, Research

CONTRIBUTION TO THE CITY'S RESILIENCE

What are the multiple benefits of this action that add up to the building of the city's resilience

RESPONSIBLE

Person either inside or outside the municipality in charge of developing the action

PARTNERS

Participating addresses, private players, academia, community, from 100RC platform partners.

NETWORK OF CITIES

Cities of the 100RC network with similar actions that have served or may serve as a source of support and inspiration

INDICATORS

How the execution and effect of this action will be measured

RESILIENCE QUALITIES

Reflective; Ingenious; Robust; Flexible; Redundant; Inclusive; Integrated

Action Number

ACTION 1.13.

TYPE: RESEARCH AND PUBLIC POLICY

STATUS

Proposal

TIMEFRAME

Medium term

CONTRIBUTION TO THE CITY'S RESILIENCE

It will reduce traffic load and moving times.
It will promote the social values of harmony, social cohesion and empathy.
It will benefit the air quality.

RESPONSIBLE AUTHORITY

Urban Planning Division (MUPA)

PARTNERS

Resilience Division (MUPA), Citizenship Participation and Transparency Division (MUPA), Community Services Division (MUPA), Information Systems Sub-Division (MUPA), Municipal Security Division (MUPA), Traffic and Ground Transportation Authority (ATTT), Georgia Tech Panama, Technological University of Panama (UTP).

NETWORK OF CITIES

Melbourne, Atlanta.

INDICATORS

The advance percentage in the feasibility study and options.
Number of given options. Number of actions applied based on the study.
Number of people using shared transport per day.
Number of unused private cars per day.

RESILIENCE QUALITIES

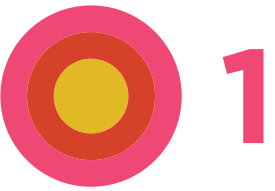
Resourceful Redundant Inclusive Integrated

Description of action

One of the transport issues identified in Panama City was that the initiatives to do carpooling are limited, for there is no social communication about how it works and its main differences with respect to collective means of transport. Carpooling is a global trend, which has been implemented in cities wishing to maximize transportation options for their citizens.
As an integral part of this action, the feasibility to create a carpooling application will be analyzed in order to lower costs for users and integrate safety features and lessons learned across the world.
INSPIRATION: the application of cycle lanes in the city of Melbourne and carpooling schemes in the city of Atlanta.

Inspiration

Strategy Cornerstones



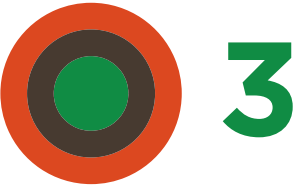
Access to opportunities

It includes projects related to the educational needs of Panamanian children and youngsters; the Government staff, the development of human capital and promoting accessibility and connectivity of citizens by means of various transportation systems. With the projects proposed, we aspire to:



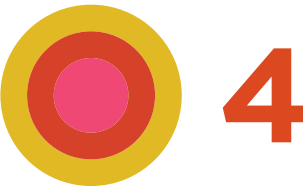
Infrastructure of neighborhoods

Consists of territorial investment in projects that make everyone an integral part of Panama City. It encompasses projects seeking to meet the needs for infrastructure in order to integrate the most isolated communities while seeking to integrate informal slums as well. With the proposed projects , we aspire to:



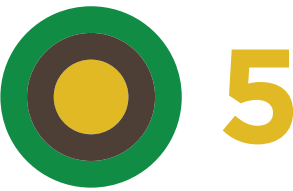
Rediscovering our wetland city

It includes projects intended to understand the environment where Panamanians live, to improve the relationship citizens have with water and water ecosystems, the management thereof and the mitigation of climate change. With the projects proposed, we aspire to:



Comprehensive risk management

It contains initiatives intended to understand and share information that will provide the general population with greater safety. It encompasses projects to generate the necessary tools to streamline risk management and create more knowledge about ourselves. With the projects proposed, we aspire to:



Joint responsibility when building the city

It includes actions to build joint responsibility to manage the city. These actions consider the improvement of municipal governance, the decentralization process, citizen participation and the reinforcement or awareness of fundamental rights. With the projects proposed, we aspire to:

Specific Goals		Actions per pillar	
1.1	To foster a better quality of life based on a more integrated mobility	1.1.1.	Design and implementation of the non-motorized mobility Master Plan for Panama City
		1.1.2.	Strategic Plan for the ordering of informal transport
1.2	Enhance human capital so as to improve access to job opportunities	1.1.3.	New policy for carpooling in neighborhoods
		1.1.4.	Network of preferential lanes for the exclusive use of public transport
		1.1.5.	Heavy vehicle traffic control
		1.1.6.	Metrocable in San Miguelito and Panama
2.1	To drive the integration of communities through a broader and better social infrastructure	1.2.1.	Pilot Program for municipal charter schools
		1.2.2.	STEAM (activities involving science, technology, engineering, arts and mathematics) Program
2.2	To connect the population through a new basic infrastructure	1.2.3.	Panama, a Destination for Natural and Sustainable Tourism
		1.2.4.	Training exchange programs for nationals and foreigners
3.1	To rethink the infrastructure that will protect us from the effects of climate change	1.2.5.	Plan intended to strengthen fishing and agricultural markets for the benefit of community suppliers
		2.1.1.	Action Plan for an integrated city
3.2	To effectively communicate the value of water as a resource and that of the ecosystems protecting us	2.1.2.	Women's centers
		2.1.3.	Municipal healthcare centers
3.3	Integrating and modernizing water coordination and management instruments and ecosystems	2.2.1.	Municipal Corporation of Basic Utilities
		2.2.2.	Tactic Urban Planning in downtown neighborhoods
4.1	Local leadership of risk management in the city	2.2.3.	Accessibility Program in neighborhoods
		2.2.4.	Implementation of the Comprehensive Mobility Plan for the Historic District (San Felipe Neighborhood)
4.2	To create safety for residents upon understanding of their vulnerabilities.	3.1.1.	Green-Blue Micro-Infrastructure Program
		3.1.2.	Coastline System of Open Spaces
5.1	To strengthen management by streamlining both processes and resources	3.1.3.	Map of vulnerabilities and risks in the basin of Tocumen River
		3.1.4.	Resilient urban Juan Díaz Basin
5.2	To foster participation in order to build more co-responsible citizens	3.1.5.	Integrated risk Atlas: Hydraulic models of municipal hydrographic basins
		3.2.1.	Communication and education plan on water, ecosystems and biodiversity
5.1	To strengthen management by streamlining both processes and resources	3.3.1.	Land Use Plan (POT) for District of Panama
		3.3.2.	Comprehensive cost-benefit analysis of development options around wetlands
5.2	To foster participation in order to build more co-responsible citizens	3.3.3.	Monitoring of the status of ecosystems in the wetlands and quality of water in the basins of the metropolitan area
		3.3.4.	Municipal Waste Management Plan
5.1	To strengthen management by streamlining both processes and resources	4.1.1.	Municipal multi-department system of geographic information
		4.1.2.	Certificate of Prior Disclosures
5.2	To foster participation in order to build more co-responsible citizens	4.1.3.	Structural assessment: training and construction for vulnerable areas
		4.1.4.	Municipal Comprehensive Contingency Plan
5.1	To strengthen management by streamlining both processes and resources	4.1.5.	Comprehensive Disaster Risk Reduction Program
		4.1.6.	Multi-Department Technical Board of Works & Infrastructures
5.2	To foster participation in order to build more co-responsible citizens	4.2.1.	Communication and Education Program for Disaster Risk Reduction
		4.2.2.	Early Alert Program for the boroughs of the Metropolitan Area
5.1	To strengthen management by streamlining both processes and resources	5.1.1.	How are we doing, Panama?
		5.1.2.	Bidding processes based on more and better opportunities
5.2	To foster participation in order to build more co-responsible citizens	5.1.3.	Collecting 110% for Panama
		5.1.4.	Strengthening our capabilities to implement better management
5.1	To strengthen management by streamlining both processes and resources	5.1.5.	Plan for joint management of projects with the Central Government
		5.1.6.	Municipal Property Registry Office
5.2	To foster participation in order to build more co-responsible citizens	5.1.7.	United Boroughs
		5.2.1.	Alliance for citizen security
5.1	To strengthen management by streamlining both processes and resources	5.2.2.	Let's watch out for human rights



1 Access to opportunities:

Connecting human capital with welfare sources

Goals

- 1.1 To foster better quality of life based on more integrated mobility.
- 1.2 Enhance human capital so as to improve access to job opportunities.

Problem Statement

The Republic of Panama is one of the fastest growing economies across the world, but at the same time with the highest inequality rate (Arup, 2018). Both population and economic activities are concentrated in the metropolitan area of the Pacific, where roughly 44% of the population actually reside. Panama City’s challenge is to promote broader access to opportunities both in terms of education and infrastructure, in order to achieve better results that may improve its residents’ quality of working life. The lack of skilled human capital (due to poor-quality education) has had negative effects both in terms of economic fairness and exploitation of present opportunities. The population is not being adequately trained to satisfy the city’s economic demands. For instance, the building industry has been relying on abundant, but unskilled, manpower. While the sectors involving professional, financial, insurance, real estate and ICT services (which account for 30% of new jobs) need to rely on skilled manpower (Arup, 2018) which is hardly furnished with the local work force.

Over the years, a considerable gap has been growing between labor supply and demand, which has been somehow mitigated thanks to foreign migration of skilled manpower (Hausmann, 2017). Nevertheless, said economic concentration on services associated with foreign trade has made it vulnerable to foreign conditions. It is necessary to diversify the economic system so that it can become sustainable and, therefore, have the capacity to include most of the population within economic growth, thus capitalizing on synergies among various industries, such as ecotourism, agriculture and fishing for export. Also, it is mandatory to narrow the bonds between the private and education sectors so as to bridge the gap between job supply and demand (Arup, 2018). Growth of the urban pattern in terms of infrastructure and population, especially due to informal slums, has brought about some problems in the city that particularly affect marginalized sectors in their capacity to develop their potential and access new opportunities. Lack of public transport options makes it difficult for the population to occupy spaces in educational

and labor settings. Nowadays, public transport is inadequate both in the city’s downtown and outskirts, mobility services are not integrated and this causes costs to rise, the use of private transportation to be preferred, and the population’s insecurity to increase since they are forced to use informal means of transport operating along dangerous roads with high crime rates (EY, 2018).

Panama has both the infrastructure and will within its institutions necessary to make a change. These features may contribute to obtain a better education supply proposing short- and medium-term solutions in order to allow the population to make the most of the fledgling opportunities arising during the process of economic growth.

1.1 To foster better quality of life based on more integrated mobility

The city must establish policies supporting the infrastructure and existence of an Integrated Transportation System by specially focusing on quality in the operation of transport and including the most isolated areas so that they can also take part in said process of integration.

LUIS PINZÓN
—DIRECTOR OF STUDIES AND ENGINEERING, COMPANY MIBUS

Design and implementation of the non-motorized mobility Master Plan for Panama City

The Comprehensive Plan for Sustainable Urban Mobility (PIMUS, as per its official acronym in Spanish) proposes for Panama City to adopt a policy targeted at fostering a new layout of road space, as well as the harmonic, efficient, and safe coexistence of all the means of transport, including pedestrians and cyclists under a full-street model. The PIMUS provides the bases for promoting and installing non-motorized mobility as an alternative mobility choice for the city, especially the use of bikes as an alternative mobility option to effectively move within the city.

The non-motorized mobility Master Plan will identify and define a network of cycle pathways and lanes in Panama City in an integrated fashion within the framework of the city’s transportation plans. The network will respond both to the demand and the needs of users who still don’t see this alternative means of transport as a resource for their own mobility. The plan will include the layout and technical, economic, financial, environmental and legal feasibility for the execution and operation of cycle pathways and lanes. A layout handbook will be developed and institutional policies will be defined for the planning and execution of the cycling infrastructure networks. In addition, cycling education and promotion plans will be proposed and the existing regulations will be reviewed. The execution of all these components will enable the construction of cycle pathways in Panama City to be implemented in accordance with best global practices. At present, some cycle lanes have been implemented in Ecuador Avenue, by way of tactic urban planning. However, the Plan will promote an integrated vision for sustainable mobility in Panama City.

The design and implementation of the Plan will make it possible to position non-motorized mobility as a means of optimum and efficient means of transport both with environmental and public health benefits.



STATUS
Proposal



TIMEFRAME

DESIGN OF THE PLAN	IMPLEMENTATION OF THE PLAN
Short term	Medium term



CONTRIBUTION TO THE CITY’S RESILIENCE
It will bring about an alternative to transportation and decongestion of road traffic.

Non-motorized mobility will foster positive effects on public health.



RESPONSIBLE
Urban Planning Division (MUPA)



PARTNERS
Special Projects (MUPA's Secretary General's Office), Social Management Division (MUPA), Citizenship Participation and Transparency Division (MUPA), Traffic and Ground Transportation Authority (ATTT), Cyclists' Movement of Panama (MCCP), Panama Metro.



NETWORK OF CITIES
Mexico City, Santiago de Chile, Thessaloniki, New York, Juarez, Melbourne.



INDICATORS
Number of km² built since the completion of the design of the Non-Motorized Mobility Master Plan / year.



RESILIENCE QUALITIES
 Inclusive  Integrated



Strategic Plan for the ordering of informal transport

The Plan proposes the ordering of public transportation providers in the least connected neighborhoods, starting in the north and east of the city. Currently, there is no smooth functioning, or sufficient shuttle buses for the main public transportation routes. However, there are some providers with some regulation by the ATTT, but without the engagement of local authority.

This action consists of reorganizing the service of the existing collective transportation providers. The use of new technologies under study will play a fundamental role, including the use of centralized electronic backup, as well as innovation systems to regularize the service frequency.



Credit: America Panama



STATUS
Proposal



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE

It will reduce the travelling times of people living in the farthest areas from the city.

It will improve and establish the income for drivers offering transportation services.

It will improve the people's health and quality of life.

It will augment safety and time availability for other recreational and entertainment activities.

It will contribute to improving the employment situation of service providers so as to generate further income.



RESPONSIBLE AUTHORITY
Urban Planning Division (MUPA)



PARTNERS

Community Services Division (MUPA), Citizenship Participation and Transparency Division (MUPA), Municipal Treasury Division (MUPA), Traffic and Ground Transportation Authority (ATTT), Mibus, Panama Metro, Georgia Tech Panama, Technological University of Panama (UTP).



NETWORK OF CITIES
Santa Fe, Dakar, Semarang.



INDICATORS

Number of people transported from the last mile to the stops and subway stations associated with the neighborhoods.

Number of suppliers entering the system.



RESILIENCE QUALITIES

Resourceful Redundant Inclusive Integrated

New policy for carpooling in neighborhoods

One of the transport issues identified in Panama City was that the initiatives to do carpooling are limited, for there is no social communication about how it works and its main differences with respect to collective means of transport. Carpooling is a global trend, which has been implemented in cities wishing to maximize transportation options for their citizens.

As an integral part of this action, the feasibility of creating a carpooling application will be analyzed in order to lower costs for users and integrate safety features and lessons learned across the world.



STATUS
Proposal



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE

It will reduce traffic load and moving times.

It will promote the social values of harmony, social cohesion and empathy.

It will benefit the air quality.



RESPONSIBLE AUTHORITY
Urban Planning Division (MUPA)



PARTNERS

Resilience Division (MUPA), Citizenship Participation and Transparency Division (MUPA), Community Services Division (MUPA), Information Systems Sub-Division (MUPA), Municipal Security Division (MUPA), Traffic and Ground Transportation Authority (ATTT), Georgia Tech Panama, Technological University of Panama (UTP).



NETWORK OF CITIES
Melbourne, Atlanta.



INDICATORS

Advance percentage in the feasibility study and options.

Number of given options. Number of actions applied based on the study.

Number of people using carpooling per day.

Number of unused private cars per day.



RESILIENCE QUALITIES

Resourceful Redundant Inclusive Integrated

 ACTION 1.1.4.

INFRASTRUCTURE PROGRAM

Network of preferential lanes for exclusive use of public transport

Panama has some important transportation challenges ahead, associated with the excessive use of private vehicles to the detriment of other mobility means. The latest investment in new infrastructure (the Panama Metro, Mi-Bus, Fast-Lanes) shows the positive effect new investment has on public transportation. Therefore, opportunity arises at the local level to contribute to the creation of an integrated transportation system with universal access. A part of such initiative is to have fast-lanes giving priority to public transportation.

Within the context of PIMUS (Comprehensive Urban Mobility Plan), the ATTT, together with the Municipality and other mobility agencies, will implement preferential and/or exclusive lanes for the main corridors concentrating bus routes. This system has the potential to be expanded to other important roads, such as Calle 50, Avenue Ricardo J. Alfaro, Av. Simon Bolivar (trans isthmus highway), so as to form an integrated network covering the whole city. The implementation of exclusive public transportation lanes also creates the opportunity to improve the urban landscape. The stops may concentrate shelter areas for rains and extreme weather conditions, as well as provide wireless connection to the Internet (Wi-Fi). The alterations of the width or number of lanes also offer the opportunity to integrate cycle lanes and forestry suitable for the city's climate.



STATUS
Planning underway



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE
It will reduce the travelling time spent by citizens.
It will reduce the stress triggered by traffic.
It will decongest and order the general vehicle traffic.



RESPONSIBLE
Urban Planning Division (MUPA)



PARTNERS
Urban Planning of San Miguelito Municipality, Municipal Safety Division (Sub-Division of Citizenship Safety, MUPA), MiBus, Traffic and Ground Transportation Authority (ATTT), Panama Metro.



NETWORK OF CITIES
Amman, Santiago de Chile, Buenos Aires, Mexico City, London.



INDICATORS
Arrival time for users from the shuttle bus system to their destination.
Number of reports on traffic violations applied.
Users' perception of the transportation system.



RESILIENCE QUALITIES
Reflective Resourceful Integrated



Thus, this action proposes the following interventions for the infrastructure of roads:

- To adjust the width of lanes or to eliminate the circulation or parking lane to be assigned as the exclusive lane. By making these changes, the city may incorporate a cycling lane and widen the sidewalks to give priority to pedestrians.
- To demarcate exclusive lanes with physical elements. These elements may be plants, shrubs and/or trees giving shade, thus cooling those areas and functioning as carbon dioxide recollection agents.
- To install vertical signals and cat's eyes on the pavement to indicate the use of lanes with distinctive colors.
- To use permeable or porous pavement allowing water to flow through it and thus promote water drainage. The ground surface stays relatively dry and without stagnant water.

At transportation stops:

- To improve the distance between stations, which should neither be any shorter than 0.3 km nor any longer than 0.8 km (The Scorecard, n.d.).
- Stops must be both safe and comfortable for users. Four elements contribute to create good stations: width, weather sheltering, safety and attractive look. In Panama, stop roofs may be green spaces absorbing water and functioning as a cooling system for the waiting zone.
- Stations must be designed to afford universal access, including clients with disabilities or visual or hearing impairments.

In regard to coordination/planning:

- The Municipality will lead actions to improving mobility and coordinate, jointly with the stake-holding authorities, a review of the applicable regulations.
- Regulations will be implemented so that lanes are kept free of any parking vehicles.

In regard to communications:

- The Municipality will lead a campaign for the use of exclusive lanes, massive transportation and active mobility with the corresponding public hearings.
- In the long term, bus operators may provide information about the service schedule, changes of routes or delays and any other kind of dynamic information on electronic panels or by using the Wi-Fi zones available at stops.
- Static information at stops, routes, maps, and emergency information will be marked at every station.

In regard to monitoring and evaluation:

- The Municipality will monitor the use of the existing lanes (Justo Arosemena, Calle 50 and Cinta Costera -Coastline Belt-) in order to streamline, improve, and redesign them. For such monitoring, there are several alternatives including:
- To install surveillance OCT (Optical Character Recognition) cameras to detect misuse of exclusive lanes.
 - Cameras on buses to monitor the use of lanes. This system may be connected to MiBus and to the Municipality's Surveillance Center.
 - Police presence and/or traffic authority's control to watch out for proper use of lanes.
 - The municipality will have a monitoring system for the public so as to evaluate any further improvements.



 INSPIRATION FROM
Amman, Jordan

The city of Amman, Jordan, is in the process of planning and building an efficient bus rapid transportation (BRT) system. The first phase of the project will create three routes in key areas; afterwards, it will expand to cover all the neighborhoods of Amman. The resilience strategy initiative implies the creation of the city's first BRT system, where high-capacity buses will run along exclusive and separate lanes; likewise, it will require the development and design of stops, stations, passenger information, vehicle specifications, and BRT exchanges and terminals. Once these first three routes have been completed, a massive, safe, and attainable traffic system competing with the use of cars for all the citizens of Amman, also including vehicle owners, will be offered. The city's goal is that this system can increase the use of public transportation from 13% to 20% for 2019. Amman's BRT system will not only offer new mobility options, but it will also improve citizens' access to goods and services, as well as reduce polluting emissions thus improving the quality of air, and it will contribute in furtherance of Amman's resilience goals concerning efficiency, inclusion and sustainability.

 ACTION 1.1.5.

PUBLIC POLICY

Heavy vehicle traffic control

The Comprehensive Sustainable Urban Mobility Plan (PI-MUS) proposes adopting a program for the urban distribution of goods, with exclusive spaces for controlled loads and unloads. Within this context, the Municipality has already begun the ordering of parking spaces in certain areas such as the Via España (Spain Road). This action implies the creation of a transfer center for large- and small-scale freight vehicles. Working roundtables will be held with the participation of municipalities and authorities in order to review the current situation and propose necessary regulations and improvements. By way of contribution by the local authority to the manner in which regulations are being implemented, all the players involved will be convened in order to review the examples where they could see how other cities have managed to act upon this issue. Thus, they will also review the way in which municipalities can be capable of complying with the time-schedule regulations in respect to the supply of commercial premises.

 **STATUS**
Proposal

 **TIMEFRAME**
Medium term

 **CONTRIBUTION TO THE CITY'S RESILIENCE**

It will reduce vehicle congestion.

It will reduce travelling times within the city.

It will increase the joint responsibility of the private sector.

 **RESPONSIBLE AUTHORITY**

Urban Planning Division (MUPA)

 **PARTNERS**

Urban Planning of San Miguelito Municipality, Traffic and Ground Transportation Authority (ATTT), Logistical Cabinet of Panama, National Association of Business Executives (APEDE), National Council of Private Companies (CONEP), Chamber of Commerce and Industries and Agriculture (CCIP).

 **NETWORK OF CITIES**

London, New York, Santiago de Chile.

 **INDICATORS**

Number of regulations reviewed.

Number of regulations to be implemented.

Number of consolidation and logistic distribution centers.

Number of truck parking spaces implemented.

Number of large-scale trucks found in times of peak vehicle congestion.

Number of small-scale vehicles found in times of peak vehicle congestion.

 **RESILIENCE QUALITIES**

 Resourceful  Robust  Integrated

 ACTION 1.1.6.

PLAN

Metrocable in San Miguelito and Panama

The Municipality of San Miguelito has taken the initial steps to carry out the evaluations and review the feasibility of the construction of the Metrocable; however, this must be merged into a plan intended for the construction and subsequent implementation thereof in the neighborhoods located in elevated areas. The neighborhoods of San Miguelito will thus have connection with the neighborhoods associated with the District of Panama, for example: Ernesto Córdoba, Alcalde Díaz and Las Cumbres. The Municipality of Panama will coordinate with the Municipality of San Miguelito on the review of the advances, to jointly make a plan and to procure the financial resources for the design, construction and implementation thereof, in cooperation with the public transportation authorities and companies.



STATUS
Planning underway



TIMEFRAME
Long term



- CONTRIBUTION TO THE CITY'S RESILIENCE**
- It will connect inaccessible public transportation areas in order to improve the quality of life there.
 - It will reduce travelling times.
 - It will provide the inhabitants of neighborhoods in elevated areas with a public transportation alternative.
 - It will leverage the city's landscape resource and promote local tourism.



RESPONSIBLE
Municipality of San Miguelito



PARTNERS
Urban Planning Division (MUPA), Traffic and Ground Transportation Authority (ATTT), Panama Metro, MiBus, World Bank (WB), Interamerican Development Bank (IDB), Latin American Development Bank (CAF), Technological University of Panama.



NETWORK OF CITIES
Medellin.



- INDICATORS**
- Percentage of progress in the making of an action plan for the design of Metrocable.
 - Percentage of progress in the implementation of the plan.



- RESILIENCE QUALITIES**
-  Resourceful
 -  Redundant
 -  Inclusive
 -  Integrated



Photo: Emilia Carrera

1.2 To enhance human capital so as to improve access to job opportunities.

Panama has reached a time in its history when its trans-isthmian capacity has gone against its road traffic. Efficient and sustained operation of the Canal and the Platform of Global Services associated with it will increasingly rely on the sustainable growth of the country as a whole. And such development, unlike that based on its trans-isthmian capacity, demands all of the potential of its geographic position as well as our population's full capabilities.

GUILLERMO CASTRO

—VICE PRESIDENT OF RESEARCH & TRAINING, CIUDAD DEL SABER (CITY OF KNOWLEDGE)

Culture has always had the power to unite communities around their memory and expressions, and it is thanks to such union that we can bring forth the necessary forms of governance required to solve community problems.

ALEXANDRA SCHELDERUP

—DIRECTOR OF CULTURE AND EDUCATION, MUNICIPALITY OF PANAMA

ACTION 1.2.1.

PROGRAM

Pilot Program for municipal charter schools



Charter schools are institutions that receive governmental funding, but they operate separately from the state-run educational system. These are an example of public and private partnering in furtherance of formal schooling education. Thus, this action focuses on implementing a pilot program for charter schools, as an alternative to boost core basic education. Said schools are half-autonomous and have greater flexibility to choose their teachers and usually have high participation from students' parents. These schools raise private funds to serve educational needs, ranging from procurement of equipment to hiring of personnel. The Municipality will promote, jointly with Central Government institutions and the private sector, a pilot program with emphasis on educational centers where additional investments have already started. The Municipality's team will support the creation of the respective programs and communication with contacts in the international sphere so as to implement these programs.



STATUS
Proposal



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE

It will strengthen the educational basis and thus help to overcome the citizens' training barriers.

New educational schemes will modernize educational management and create better citizens to help improve their performance in various careers.



RESPONSIBLE AUTHORITY

Director of Culture and Education (MUPA).



PARTNERS

Social Management Division (MUPA), Citizenship Participation and Transparency Division (MUPA), Ministry of Education (MEDUCA), Ministry of Social Development (MIDES), City of Knowledge, National Secretariat of Science, Technology and Innovation (SENACYT), National Association of Business Executives (APEDE).



INDICATORS

Quarterly achievement level of students based on the results of their school report cards for the system established by the MEDUCA.

Number of students entering this kind of training at schools.

Number of schools entering the application of the pilot programs for charter schools.



RESILIENCE QUALITIES

Reflective Resourceful Flexible

STEAM

(ACTIVITIES INVOLVING SCIENCE, TECHNOLOGY, ENGINEERING, ARTS AND MATHEMATICS) PROGRAM

This program will focus on the training of human resources with more skills to participate in the emerging labor market in the service, art and science sectors. This will also improve the diversification of the work force in Panama City.

The Municipality will explore sponsorships with the productive sector for the creation of extracurricular STEAM programs and new schools in coordination with the private sector and universities or vocational technical career development centers, such as those of the INADEH.

The Municipality of Panama, through the Culture and Education Division, has already launched STEAM programs through Culture Points, which are given by virtue of a framework agreement between MEDUCA and the Municipality of Panama. Every official educational center will become a cultural center once a week. In them, thousands of children and adolescents may access, within their own neighborhoods, a wide variety of activities, such as: painting, music, modern dance, hip hop, robotics or drama. These workshops will be led by specialists in social pedagogies, popular education and artistic techniques to stimulate creativity and intelligence. This action will expand and strengthen theme areas, by broadening coverage towards neighborhoods that have not implemented this work yet. Extended school days will be considered jointly with the schools, in order to strengthen the integration of artistic concepts with scientific fields. In this respect, art will be a tool to enhance the abilities of youngsters, thus promoting critical thinking, integration of disciplines, teamwork capacity and the appreciation of art.

PROGRAM



STATUS
In progress



TIMEFRAME
Short term



CONTRIBUTION TO THE CITY'S RESILIENCE
It will foster trained citizens who will develop new ways of leveraging job opportunities.



RESPONSIBLE AUTHORITY
Culture and Education Division (MUPA).



PARTNERS
Social Management Division (MUPA), Citizenship Participation Division (MUPA), Resilience Division (MUPA), Ministry of Education (MEDUCA), Ministry of Social Development (MIDES), Council of University Presidents (CONARE), National Institute of Professional Training for Human Development (INADEH), City of Knowledge, National Secretariat of Science, Technology and Innovation (SENACYT), Businesspersons Network SUMARSE, National Association of Business Executives (APEDE), Chamber of Commerce and Industries and Agriculture (CCIP), Arup.



NETWORK OF CITIES
Melbourne, Medellin.



INDICATORS
Number of training centers entering the application of the STEAM systems promoted by the municipality.



RESILIENCE QUALITIES
Reflective Resourceful Inclusive



Photo: Karl Kaufmann



Photo: Karl Kaufmann

 ACTION 1.2.3.

TYPE: MUNICIPAL PROGRAM

Panama, a Destination for Natural and Sustainable Tourism

 STATUS
In progress

 TIMEFRAME
Medium term

The “Panama, a Destination for Natural and Sustainable Tourism” Program proposes promoting empowerment of operators from vulnerable communities near natural areas (basins, seaside resorts, swamps with bird sighting) in the northern and eastern area. In addition, communities with underexploited cultural elements (unknown monuments and pathways in the tropical rain forest, among others) will be sought. The program includes the making of a referenced tourism guide both for tourist guides and promoters. Also, it seeks to provide new operators with useful tools.

Another aspect proposed is to place existing promoters into programs or to calculate the odds of creating one or more associations within the community setting.

For this purpose, a parallel diagnosis will be made in the communities, marketing and business plans with the aim to guarantee sustainability of the program. Finally, it is proposed that municipalities should work with the divisions in the making of a plan intended to review the various elements from all the players involved.

 **CONTRIBUTION TO THE CITY'S RESILIENCE**
It will create training and economic development alternatives for those citizens living in vulnerable areas.

It will promote conservation and sustainable use of natural resources of the District of Panama.

It will boost the communities' income from tourism.

 **RESPONSIBLE AUTHORITY**
Municipal Corporation of Tourism (MUPA).

 **PARTNERS**
Resilience Division (MUPA), Environmental Management Division (MUPA), Culture and Education Division (MUPA), Citizenship Participation and Transparency Division (MUPA), National Institute of Professional Training for Human Development (INADEH), Ministry of Environment, Tourism Authority of Panama, Chamber of Tourism of Panama, Panamanian Center of Studies and Human Services (CEASPA), Audubon Society of Panama (SAP).

 **NETWORK OF CITIES**
Juarez, Santa Fe.

 **INDICATORS**
Number of people from trained communities.

Number of people working as guides.

Number of tourism operators joining the initiative to connect these services to local tourism networks.

Percentage of income of the municipal corporation coming from these activities.

 **RESILIENCE QUALITIES**
 Reflective  Resourceful  Inclusive
 Integrated



Photo: MUPA

ACTION 1.2.4.

PROGRAM

Training exchange programs for nationals and foreigners

The program puts forward some knowledge exchange and intercultural dialog projects between immigrants and locals with similar training levels and with a social integration approach. Evaluations conducted during development of the strategy indicate that much of the specialized job positions are covered by foreign skilled personnel and, at the same time, Panama has some difficulties in that respect, as it doesn't have enough skilled personnel.

This program opens new opportunities to the youngsters of Panama City so as to receive a direct benefit of the skills, experiences and knowledge of the foreign professionals residing in Panama. This would give rise to a highly valuable setting to foster knowledge exchange and thus promote the valuable presence of immigrants for a better city.

The pilot program will involve the Ciudad del Saber (City of Knowledge), an entity that gathers various international organizations and institutions where foreigners from different walks of life work, and it will also seek to integrate other technical training institutions, the National Migration Service, Universities and private sector.



STATUS
Proposal



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE
Learning from citizens from other countries will provide new ideas and lessons learned to improve the training of professionals from Panama City.

New opportunities and contacts will thus be generated between academic entities in order to boost training programs in Panama.

It will promote social cohesion and integration of immigrants in the Panamanian society.



RESPONSIBLE AUTHORITY
Culture and Education Division (MUPA).



PARTNERS
Resilience Division (MUPA), Citizenship Participation and Transparency Division (MUPA), City of Knowledge, National Institute of Professional Training for Human Development (INADEH), National Migration Service, National Secretariat of Science, Technology and Innovation (SENACYT), Council of University Presidents (CONARE), U.N.'s High Commissioner for Refugees (ACNUR), International Organization for Migrations (OIM).



INDICATORS
Number of foreigners entering the program.

Number of youngsters trained in information exchange programs.

Number of academic initiatives resulting from such exchange programs.



RESILIENCE QUALITIES
Reflective Resourceful Robust
Flexible Inclusive Integrated

ACTION 1.2.5.

PLAN AND PUBLIC POLICY

Plan intended to strengthen fishing and agricultural markets

FOR THE BENEFIT OF COMMUNITY SUPPLIERS



Marketing research study and development of financial and business strategies are proposed to improve the productivity and income of merchants at the community level. It will seek to identify factors influencing the value chain and the feasibility to innovate in these local productive activities.

This process will be accompanied by programs aimed at underpinning associations, business plans of entrepreneurs, and participative evaluations all intended to boost sustainable management of natural resources.

The Municipality will start this collaborative work with local providers of fish, seafood, fruits and vegetables who work in the city. This work will be carried out jointly with the fishing and agricultural authority, respectively.



STATUS
Proposal



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE
It will improve the income of poorest citizens.

It will improve the quality of products in local markets, thus strengthening communities.

It will enable the cohesion and partnering of citizens, by ensuring the sustainability of products.

It will promote adequate protection and management of resources.



RESPONSIBLE AUTHORITY
Community Services Division (MUPA) and Resilience Division (MUPA).



PARTNERS
Environmental Management Division (MUPA), Citizenship Participation and Transparency Division (MUPA), Social Management Division (MUPA), Water Resources Authority (ARAP), Ministry of Agricultural and Livestock Development (MIDA), National Secretariat of Science, Technology and Innovation (SENACYT), University of Panama (UP), International Maritime University of Panama (UMIP), companies from the fishing and agricultural industries, MarViva, International Conservation, Wetlands International Panama, Audubon Society of Panama, City of Knowledge.



INDICATORS
Percentage of progress in development of the strengthening plan.

Increase in the percentage of income of fishermen and farmers in the city.

Number of fishermen and farmers organized at the partnering scheme level.



RESILIENCE QUALITIES
Reflective Resourceful Robust
Inclusive Integrated



2 Infrastructure of neighborhoods: Building a city for everyone

Goals

- 2.1** To drive integration of communities through a broader and better social infrastructure.
- 2.2** To connect everyone in Panama City through a new infrastructure.

Problem Statement

Social cohesion is a necessary condition for optimum community development and this is created, above all, when housing conditions are transformed into friendly spaces for coexistence. In other words, a community without spaces for interaction leaves no chance for neighbors to mutually coexist and face problems together (CEAPSA, 2018 b). The Local Government plays a key role in the creation of infrastructures promoting participation of its citizens, as well as the obligation to guarantee the quality of basic services, such as: healthcare, education, housing and security (elements that can all add up to social cohesion) (CEASPA, 2018 b).

Cohesive communities facilitate interventions of authorities and long-term permanence of programs and projects. The main needs in this area are infrastructure projects, training programs, and service programs for vulnerable groups and greater mobility facilities for disabled people. The city has witnessed worsening

community participation, while new communities and informal slums that have little governmental support are constantly being developed (CEASPA, 2018b). Sidewalks, streetlights and communication lines tend to wear out in peripheral areas surrounding Panama City. Recent efforts to improve connectivity of peripheral neighborhoods through transportation have allowed citizens to integrate (CEASPA, 2018b).

The work done by workshops and direct consultation meetings with communities and non-governmental organizations, held within the framework of this strategy, suggests a number of projects with the potential to generate more cohesion within communities and provide the city with a sense of belonging. These ideas include cultural, recreational and sports-related proposals. Emphasis should also be placed on covering the basic mobility and cleanup needs, making an effort to ensure everybody's integration with the city.



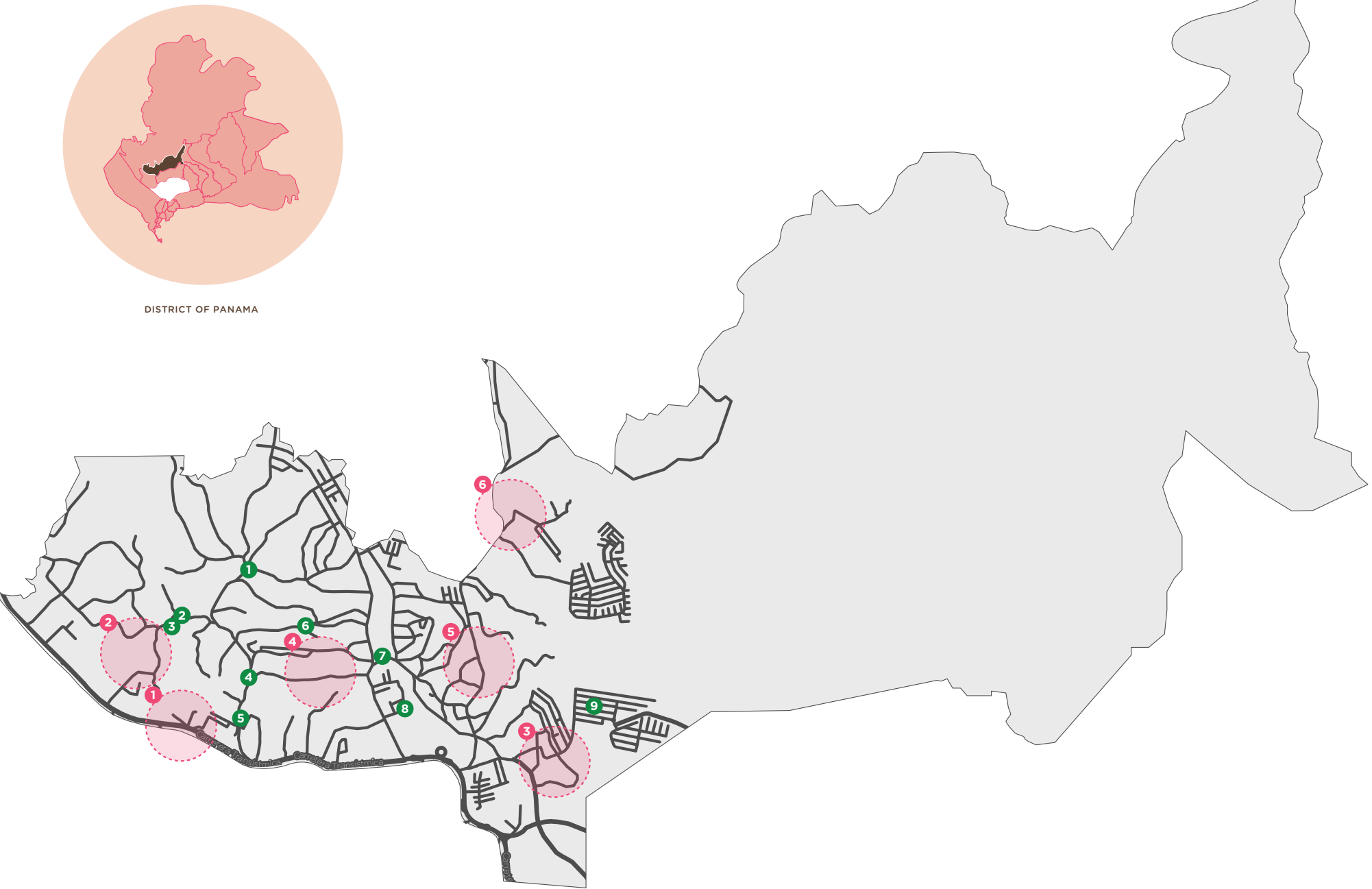
2.1 To drive integration of communities through a broader and better social infrastructure.

Social infrastructure is what we would call the “city’s hardware” because it helps to build physical spaces, both material and tangible, for coexistence and learning, where people can get together. When it comes to resilience, we mean social cohesion, identities and collectively shared visions. It is a topic not thoroughly understood in public policies, for we have to invest in human beings and their development, while creating the necessary conditions for the existence of social interaction and the construction of the social fabric that will make the communities strong enough to face any challenge.

ALONSO RAMOS

—SUB-DIRECTOR OF CITIZENSHIP EDUCATION, MUNICIPALITY OF PANAMA

ALCALDE DIAZ NEIGHBORHOOD



Community infrastructure

- 1 La Medalla Milagrosa Park
- 2 Alcalde Díaz Cemetery
- 3 Construction of administrative offices and perimeter walls for the Alcalde Díaz cemetery
- 4 Synthetic court for Alcalde Mayor
- 5 Díaz Nursery School in Díaz Park
- 6 4th Street Park
- 7 Bolivar City Park
- 8 La Providencia Park
- 9 Las Cumbres del Norte

New infrastructure

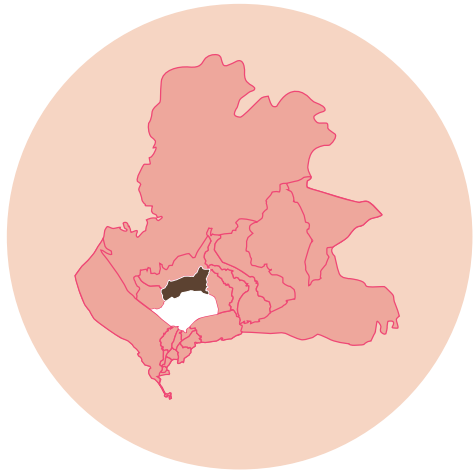
- 1 Las Malvinas
 - Construction of lighting fixtures, sidewalks and streets
 - Sistema de abastecimiento de agua potable y alcantarillados
- 2 La Tormenta
 - Construction of lighting fixtures, sidewalks and streets
 - Drinking water and sewer system
- 3 Maria Henriquez
 - Construction of lighting fixtures, sidewalks and streets
- 4 Calle H
 - Construcción de luminarias, veredas y calles
- 5 Cabima
 - Construction of lighting fixtures, sidewalks and streets
- 6 El Chungal
 - Drinking water and sewer system

Note (entire district):
Improvements to resource centers creative and artistic (CERCA)

ERNESTO CORDOBA CAMPOS NEIGHBORHOOD

Community infrastructure

- 1 Vehicular bridge Gonzalillo 2017
- 2 Basketball court
- 3 Gonzalillo Park
- 4 Alambra
- 5 Gonzalillo Court
- 6 Gonzalillo Sector 8
- 7 Naos
- 8 Edgardo Vernanza vehicular bridge 2017
- 9 Villa Alpina
- 10 La Rotonda
- 11 Villa Campestre
- 12 Santa Librada El Mirador
- 13 Jardines de Sevilla
- 14 Casa Real
- 15 Santa Librada Quinta Etapa



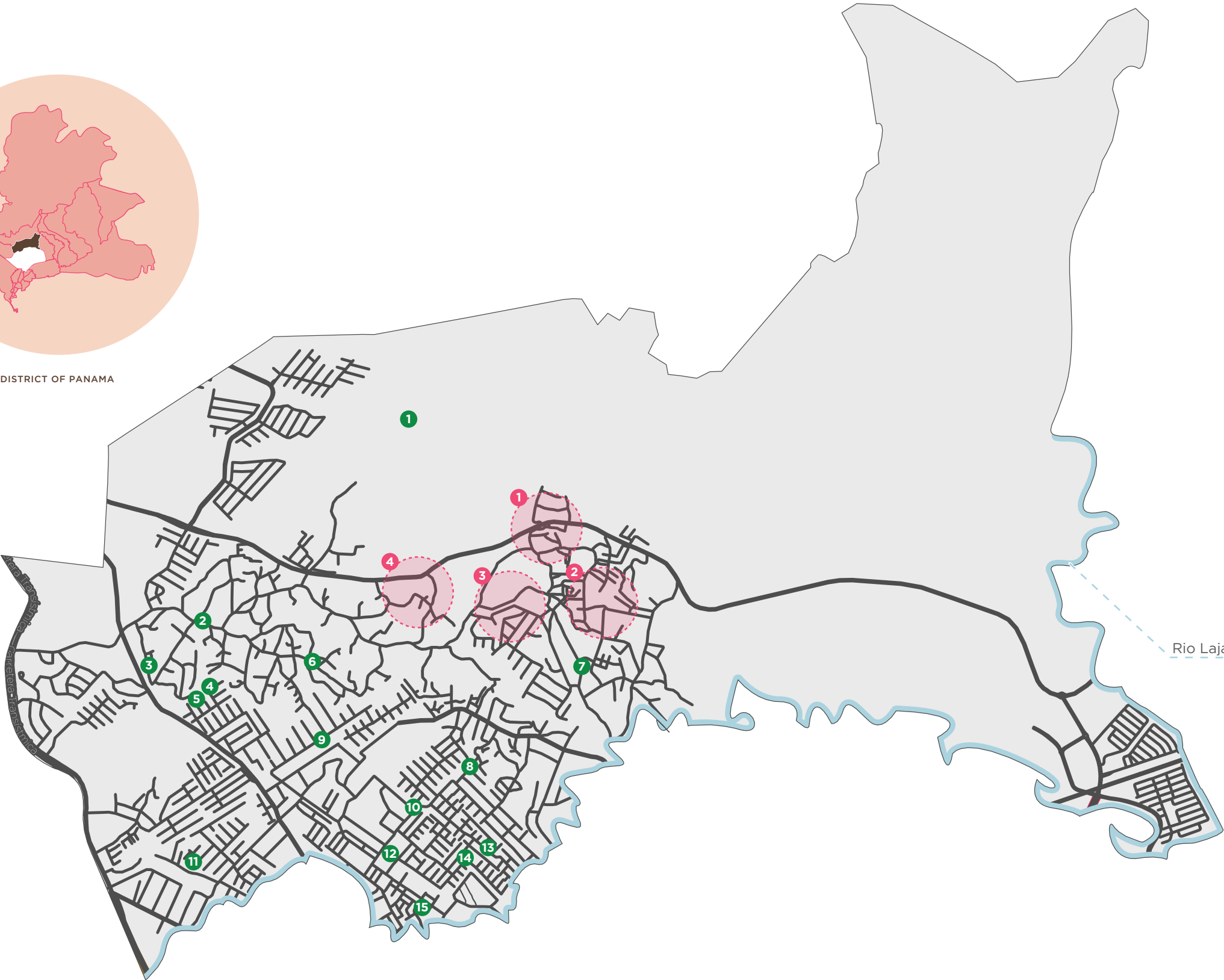
DISTRICT OF PANAMA

New infrastructure

- 1 Promised land
 - Infraestructure for sports (multipurpose courts)
- 2 Villa María
 - Infraestructure for sports (multipurpose courts)
- 3 Barriada el Progreso
 - Infraestructure for sports (multipurpose courts)
- 4 Gonzalillo
 - Infraestructure for sports (multipurpose courts)

Note (entire district):

- Improvements to resource centers creative and artistic (CERCA)
- Construction of new health care centers



KUNA NEGA VICINITY

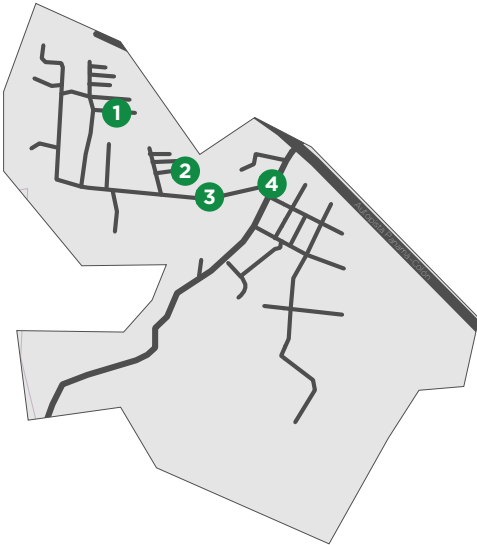


Community infrastructure

- 1 La Paz Park
- 2 Park
- 3 Kuna Nega Park
- 4 Pending park

New Infrastructure

- Note (entire district):**
- Improvements to Creative and Artistic Resource Centers (CERCA)
 - Arrangement and improvement of structures for the elderly and library
 - Construction of lighting fixtures, sidewalks, and streets



PEDREGAL NEIGHBORHOOD

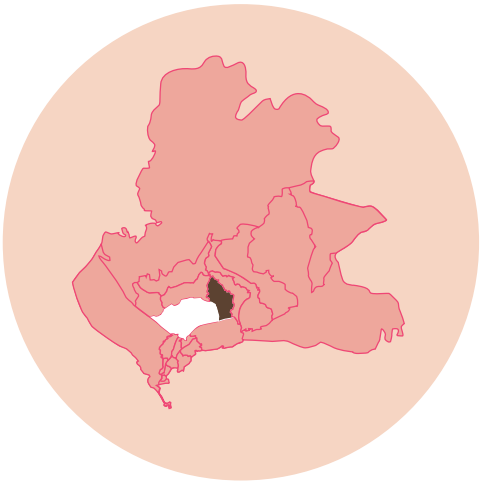


Community infrastructure

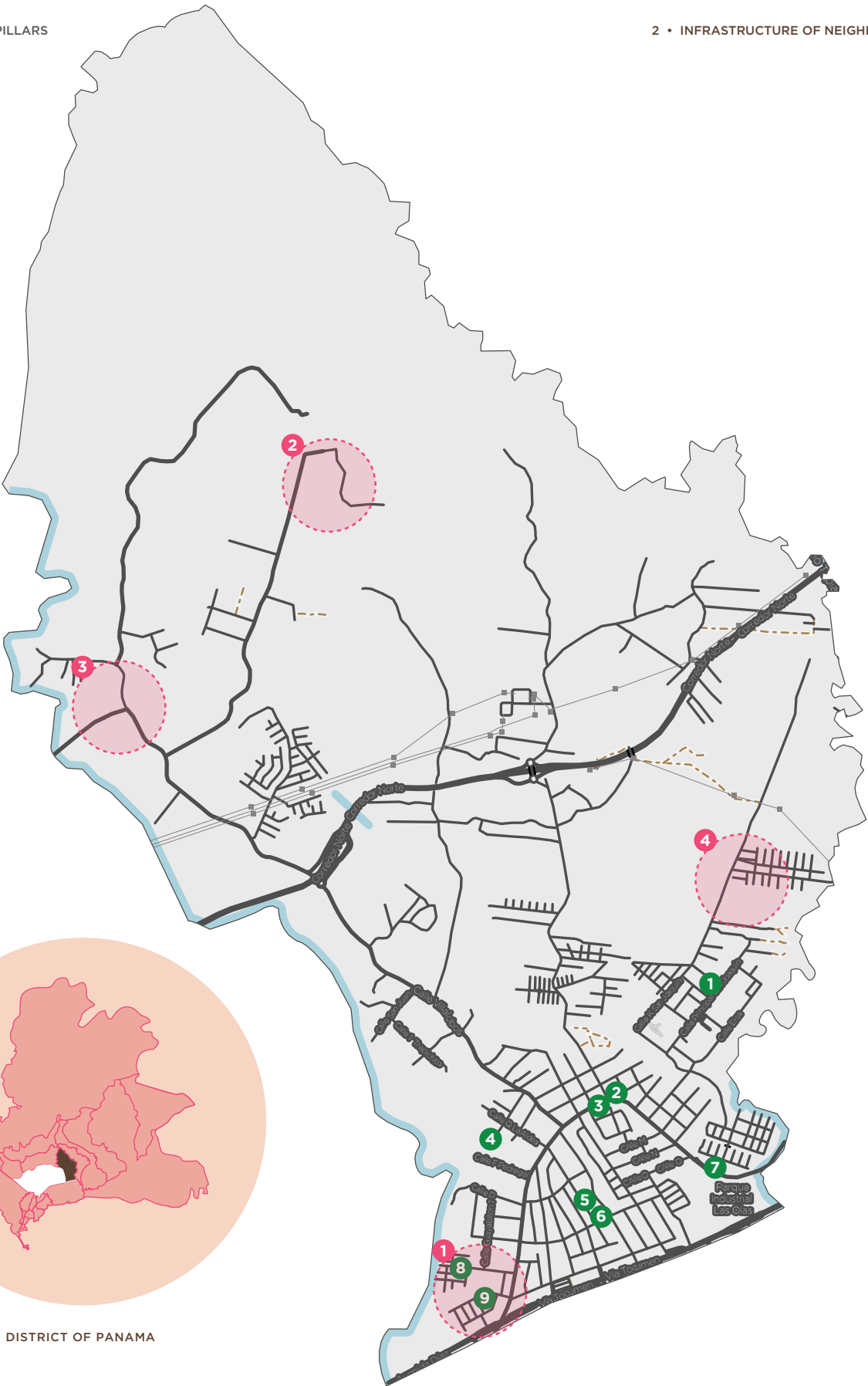
- 1 La Amistad Park
- 2 Las Madres Park
- 3 Pedregal nursery school
- 4 La Aldea Park
- 5 La Florida Park
- 6 La Riviera Park
- 7 Monteria Park
- 8 Villa Graciela Park
- 9 Balmoral Park

New infrastructure

- 1 **El Balmoral**
- Construction of cultural center
- 2 **Santa Cruz**
- Construction of cultural center
- Construction of sports city and soccer fields
- 3 **Villalobos**
- Construction of cultural center
- Construction of sports city and soccer fields
- 4 **Santa Isabel**
- Construction of sports city and soccer fields



DISTRICT OF PANAMA



PACORA NEIGHBORHOOD

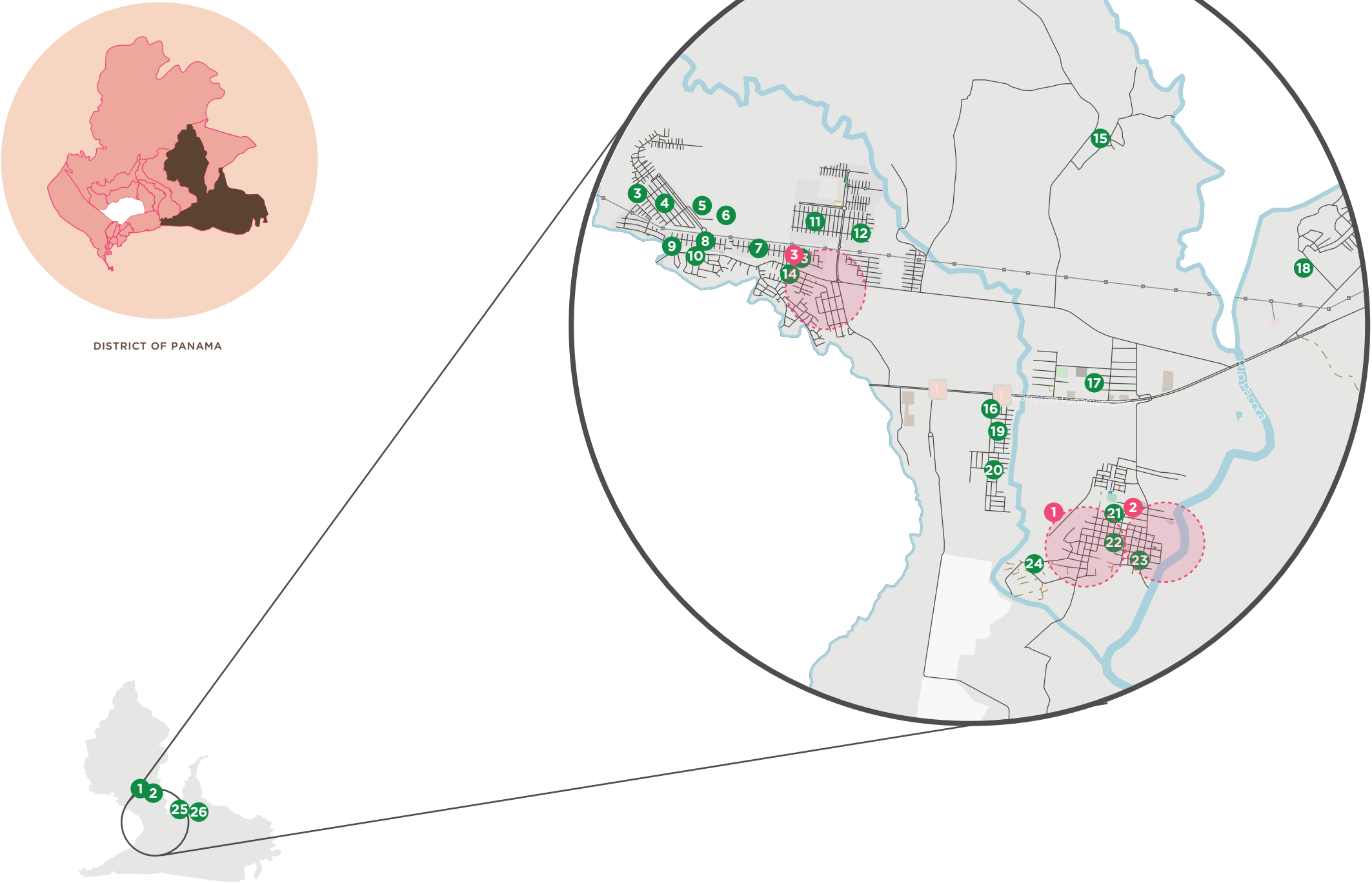
Community infrastructure

- 1 Utive playground
- 2 Utive Cemetery
- 3 Villa de Santa Rita 2 park
- 4 Santa Rita park
- 5 Villa de Santa Rita 1 park
- 6 Villa de Santa Rita 3 park
- 7 El Trébol 2B park
- 8 Trébol #1 park
- 9 Trébol #3 park
- 10 Cabra Nuevo park
- 11 Santa Isabel park
- 12 Santa Fé park
- 13 El Trébol 2C park
- 14 Cabra park
- 15 Los Lotes park
- 16 Isleta Central Barriada de San Juan park
- 17 Tatara playground
- 18 Las Mireyas park
- 19 San Juan park
- 20 San Juan #2 park
- 21 República de Honduras park
- 22 Pacora Cemetery
- 23 Pacora Centro park
- 24 Sector 4 Pacora park
- 25 Las Garzas park
- 26 Paso Blanco park

New infrastructure

- 1 Sector 2
- Construction of cultural center
- 2 Sector 3
- Construction of cultural center
- 3 Caminos de Omar
- Construction of cultural center

Note (entire district):
- Improvements to Creative and Artistic Resource Centers (CERCA)
- Drinking water and sewer system



TOCUMEN NEIGHBORHOOD

Community infrastructure

- 1

Dos Ríos Park
- 2

Dos Ríos 2
- 3

Benjamin Castillo Park and Court
- 4

Punta del Este
- 5

La Siesta Playground
- 6

La Siesta roundabouts
- 7

La Siesta nursery school
- 8

La Siesta 2 Trébol park
- 9

Villa la Siesta Park
- 10

Buena Vista Park
- 11

La Siesta 2 Park
- 12

Buena Vista 2 Park
- 13

Buena Vista 1 Park
- 14

Ciudad Belén 2 Park
- 15

Miguel Moreno Sector Sur Park
- 16

Ciudad Belén 3 Park
- 17

Torremolino Park
- 18

Ciudad Belén 1 Park
- 19

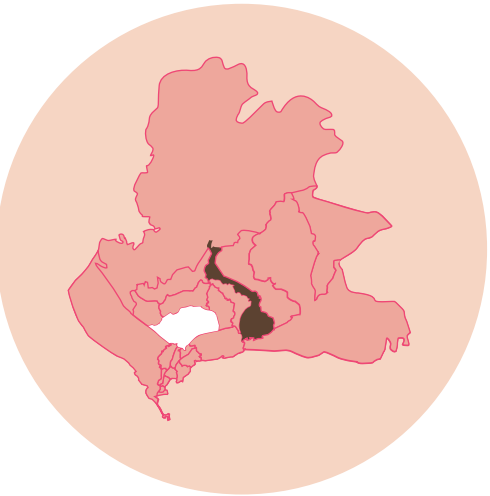
Barriada Puerta del Este Park
- 20

6th and 7th Street Park
- 21

Torremolino 1 Park
- 22

Puerta del Este Park
- 23

Ave. Principal Torremolino Park



DISTRICT OF PANAMA

New infrastructure

- 1

Santa Eduviges neighborhood
 - Construction of cultural center
- 2

Victoriano Lorenzo neighborhood
 - Construction of cultural center
- 3

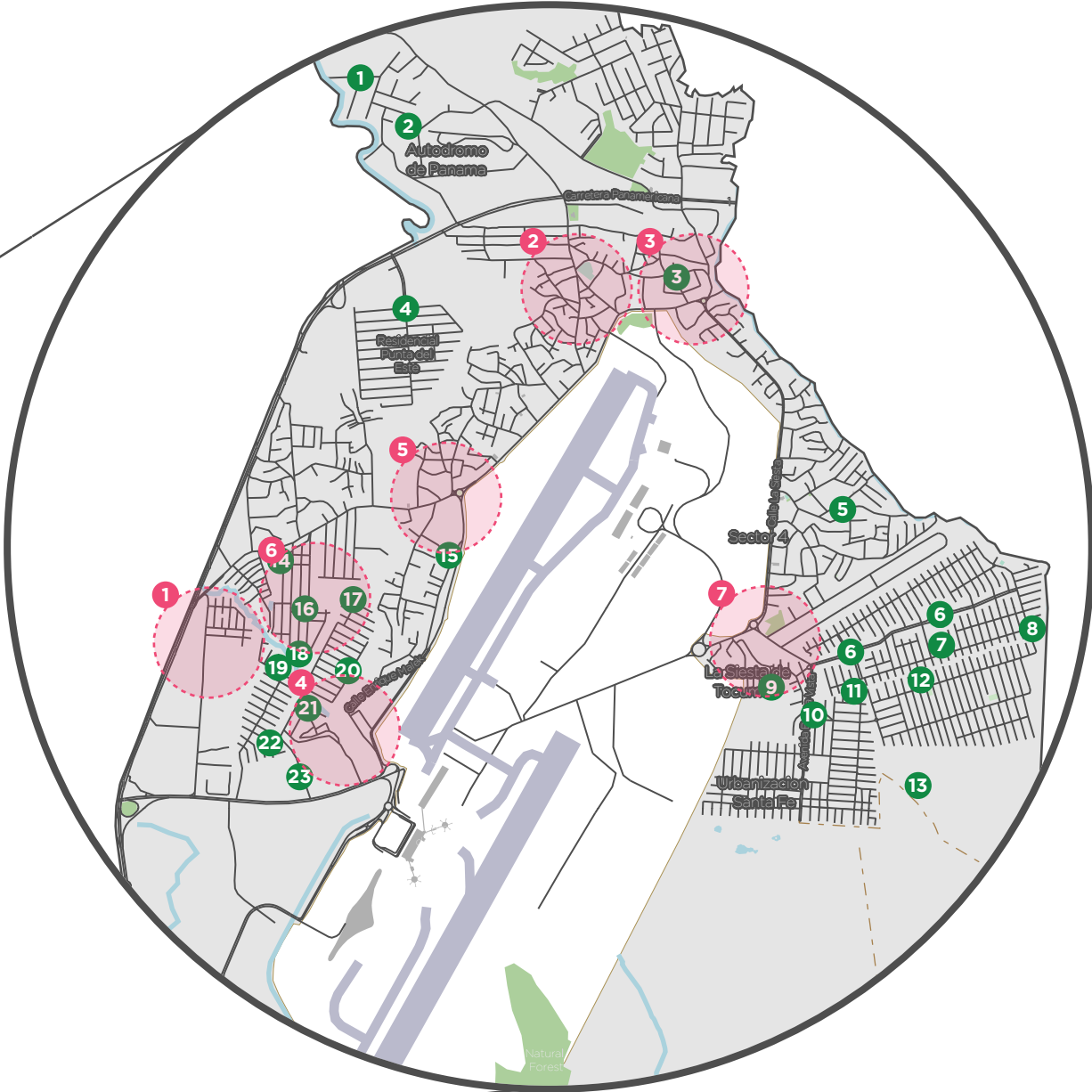
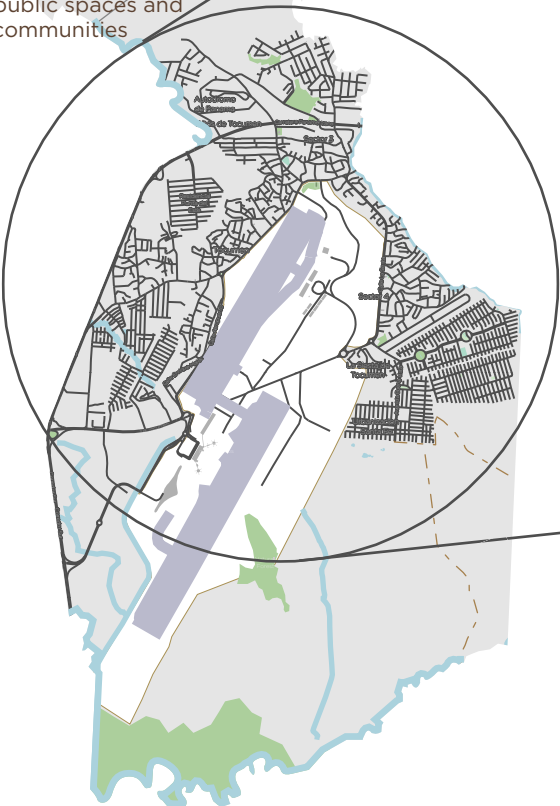
Altos de Cabuya
 - Construction of cultural center
 - Family centers and early education communities (CEFACEI)
 - Recovery of public spaces and parks in the communities
- 4

Pantanal
 - Construction of cultural center
- 5

La Morelos
 - Construction of cultural center
 - Family centers and early education communities (CEFACEI)
 - Recovery of public spaces and parks in the communities
- 6

Belén
 - Family centers and early education communities (CEFACEI)
 - Recovery of public spaces and parks in the communities
- 7

Via Luchín
 - Family centers and early education communities (CEFACEI)
 - Recovery of public spaces and parks in the communities



Note (entire district):
- Improvements to the Creative and Artistic Resource Centers (CERCA)
- Construction of new health care centers

Action plan for an integrated city



In order to monitor the construction of social infrastructure carried out by the local authority since 2014 and on the basis of the diagnosis made within the framework of the Resilience Strategy, with the participation of community leaders, surveys about the needs for infrastructure that make it possible to create spaces to strengthen social cohesion and local identity, were carried out. The “Action Plan for an Integrated City” proposes a new portfolio of pilot projects for prompt execution in the farthest areas from the city’s

downtown (to the north and east). Said areas are deficient in infrastructure and funding options will be sought with the aim to broaden the reach and effectiveness of such improvements. Proposals range from cultural centers, family centers and libraries to spaces for practicing sports. These pilot projects, even though intended for Alcalde Diaz, Ernesto Córdoba, Tocumen, Pacora and Kuna Nega neighborhoods, constitute the beginning of a similar process for other communities of Panama.



STATUS
In progress



TIMEFRAME
Medium term



NETWORK OF CITIES
Los Angeles



CONTRIBUTION TO THE CITY’S RESILIENCE
Cultural spaces will bring about cohesion among citizens and, therefore, reduce conflicts, which are violent all the more often and related to little socialization, solidarity and communication between neighbors.

Empathy between different cultures will thus be promoted, thereby creating more societies that are united and prepared to face any common challenges.

The creation of spaces for sports will open opportunities for the young population to do alternative recreational activities.

It will promote good mental and physical health of citizens.



RESPONSIBLE AUTHORITY
Culture and Education Division (MUPA), Social Management Division (Sub-Division of Sports MUPA).



INDICATORS
Number of buildings identified and refurbished.

Number of cultural centers built.

Number of sports fields/courts built.

Number of people using the infrastructures built or refurbished.

Number of new social infrastructure projects identified (mobility in neighborhoods, culture, sports, education, healthcare and basic utilities).



PARTNERS
Citizenship Participation and Transparency Division (MUPA), Urban Planning Division (MUPA), Works and Constructions Division (MUPA), Ministry of Education (MEDUCA), Ministry of Social Development (MIDES), Ministry of Public Works (MOP), Community Boards, National Institute of Culture (INAC), National Institute of Sports (INDE), CEASPA, Kuna Nega Association.



RESILIENCE QUALITIES
 Robust  Inclusive  Integrated



INSPIRATION FROM
Los Angeles,
United States

The city of Los Angeles, in the United States, is prioritizing a resilience strategy initiative that will connect community organizations with experts and resources, with the aim to effectively guide and support the development of resilience centers in the surrounding vicinities. Chosen for their ease of access both for cycle and pedestrian lanes, as well as for their ability to reach vulnerable populations, these centers are conceived as physical spaces, located within reliable community organizations, which will add up to social and climate resilience, as well as to preparedness for and recovery from disasters. These centers will be reinforced with advanced technologies that will enhance electricity and water supply, communications, and seismic contingency services with the aim to guarantee that critical services remain active during and after the occurrence of a disaster. The centers will foster social cohesion while addressing the usual stress factors in the community through education and liaisons with existing programs and services of social and environmental management. Finally, the city of Los Angeles will encourage the creation of resilience centers based in the vicinities by streamlining the relevant regulatory processes and connecting the organizations that have key stakeholders who can provide guidance, technical assistance and financial capacity.

PROGRAM

Women’s Centers

This action consists in the unification of efforts for gender equality. On the one hand, through the refurbishment of infrastructures and performance of activities organized by the National Women’s Institute (INAMU), an entity focusing on equal opportunities for women and on the construction of Comprehensive Service Center for Women (CINAMU), in the Bella Vista neighborhood, and the seat of the San Miguelito District. On the other hand, the Municipality of Panama is currently developing the CEDIM’s project (Center for Entrepreneurship and Integral Development of Women), which will be in the sector of Juan Diaz in Panama City, intended for women’s empowerment and training courses, as well as psychological, social and legal counseling. Then, there is an integration plan for joint processes and actions between the CINAMUs and the CEDIM, accompanied by NGOs and other organizations pursuing empowerment of women and the reinforcement of the role played by such institutions. The adaptation of the infrastructure of the Bella Vista CINAMU in association with the IDB’s representatives and those of the National Women’s Institute, could boost their cooperative work and thus bring about the strengthening of both initiatives, their infrastructures, programs, and ideas by means of a resilience-oriented approach.



STATUS

Proposal



TIMEFRAME

Medium term



CONTRIBUTION TO THE CITY’S RESILIENCE

It will promote social resilience by providing support to women affected by gender violence and inequality issues.

It will allow for a space that facilitates settlement of conflicts and their insertion into new opportunities for women.

It will boost human development of women throughout educational levels.

It will enhance economic development through women’s participation.



RESPONSIBLE AUTHORITY

Municipal Security Division (MUPA), (Sub-Division of Citizenship Security, CEDIM MUPA), Social Management Division (MUPA).



PARTNERS

National Women’s Institute (INAMU), Interamerican Development Bank (IDB), Culture and Education Division (MUPA), Citizenship Participation and Transparency Division (MUPA), Municipality of San Miguelito, Ministry of Social Development (MIDES), Ministry of Education (MEDUCA), National Prosecution Service, PNUD.



NETWORK OF CITIES

Juarez.



INDICATORS

Number of joint processes and actions among centers.

Number of women served.

Number of women benefited from the strengthening plans and social rescue



RESILIENCE QUALITIES

 Integrated

 Inclusive



Photo: Karl Kaufmann

Municipal healthcare centers

This project was one of the initiatives given priority by citizens during the making of the consultations on the infrastructure needs for social cohesion in vulnerable communities located in the northern and eastern area of the District of Panama.

In the Ernesto Cordoba neighborhood, a new alternative location is expected for a healthcare center, thus replacing the existing facilities. In the Tocumen neighborhood, the initiative seeks to improve and expand the infrastructure now heavily worn out.

The Municipality of Panama is expected, with the decentralization process under way, to be able to start undertaking pilot projects intended to underpin the construction of infrastructure, which is prioritized by communities.

Two pilot projects will be implemented in these two neighborhoods - one for construction and the other for refurbishment of infrastructure; once these two pilot projects have been finished, any new interventions in other neighborhoods can be assessed.



STATUS

Planning underway



TIMEFRAME

Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE

It will result in available access to integrated emergency services.

It will connect citizens with a supply network to cater to their basic healthcare needs, thus reducing the risk for diseases and epidemics.



RESPONSIBLE AUTHORITY

Social Management Division (MUPA).



PARTNERS

Community Boards of the Ernesto Cordoba and Tocumen neighborhoods, Ministry of Health (MINSa), Social Security Fund (CSS).



NETWORK OF CITIES

Surat.



INDICATORS

Percentage of progress in the construction of healthcare infrastructure for Ernesto Cordoba.

Percentage of progress in refurbishment of the healthcare center for Tocumen.

Number of healthcare centers built.

Number of healthcare centers refurbished.



RESILIENCE QUALITIES



Reflective



Inclusive



Redundant

2.2 To connect the population through a new basic infrastructure

Communities clearly understand the importance of infrastructure and social programs in social cohesion conditions. Hence, the importance of meeting expectations and generating an active relationship of participation and cooperation with local governments. This is the essence of success and the guarantee for a resilient city.

JOSE LASSO

—SOCIOLOGIST, SCHOOL OF HUMANITIES, UNIVERSITY OF PANAMA

 ACTION 2.2.1.

TYPE: PROGRAM

Municipal corporation of basic utility services

We propose that a municipal corporation be created based on the opportunities given by the Decentralization Act. Nowadays, basic utility services are managed from various institutions such as the IDAAN for aqueducts and sewage systems, the Mi Ambiente and the ACP for the hydro-graphic basins, and the ASEP for the overall regulation of basic utility services, including private electric distribution companies. Central Government management requires support from the Local Government so that these utilities can reach the communities more effectively and promptly. The priority will be on serving the vulnerable neighborhoods of Panama City. In this respect, the municipal corporation will give priority to providing the following utility services: potable water and sewage systems, green energy (e.g. solar panels, LED) and cleanup of storm-water drainage systems, rivers and blocked ravines (e.g. removal of solid waste materials from the drains). The priority approach for establishment of those utility services shall be participatory.



STATUS
Planning underway



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE

It will provide vulnerable zones with basic top-quality utility services.

It will provide basic requirements for people's healthcare and quality of life.

It will enable citizens to have direct contact with the local government and their levels of participation, for a better understanding of the population's needs.



RESPONSIBLE AUTHORITY

Urban Planning Division (MUPA).



PARTNERS

Social Management Division (MUPA), Works and Constructions Division (MUPA), Citizenship Participation and Transparency Division (MUPA), National Aqueducts and Sewage Systems Institute (IDAAN), Public Utility Services Authority (ASEP), Ministry of Environment (Mi Ambiente), Panama Canal Authority, electric power distribution companies.



NETWORK OF CITIES

Amman, Byblos, New Orleans.



INDICATORS

Number of houses benefited from the water supply.

Number of households benefited from the sustainable electric power systems (solar panels).

Number of systems implemented.

Percentage of progress in the infrastructure for water, cleanup and electric power supply.

Number of storm-water drainage systems maintained.



RESILIENCE QUALITIES

 Reflective  Resourceful  Robust

 Redundant  Inclusive  Integrated

 ACTION 2.2.2.

TYPE: PROJECT

Tactic urban development in downtown neighborhoods

The Municipality has recently implemented projects concerning public space, infrastructure, and basic services in the different neighborhoods in the city's downtown. Areas such as Salsipuedes, Santa Ana, Chorrillo, Curundu, El Marañon, San Sebastián, Brooklincito, Calidonia, Avenida Central, Boca La Caja, Panama Viejo, among others, have benefitted from new sidewalks, buried infrastructure and landscape. These interventions are localized and have the potential to be connected within a network of coherent public spaces legible for citizens.

In order to enhance recent investments in public spaces, implementing a pilot project of Tactic Urban Development in a downtown neighborhood is proposed, thereby connecting some of the interventions already implemented by the Municipality. The Tactic Urban Development process centers on the fact that users and residents of any given area will define the vision of what is to be done with public space in order to carry out low-cost interventions. These can include the widening of sidewalks, cycle lanes, recreational spaces, green micro-areas, among others.

The methodology of Tactic Urban Development is based on an urban intervention approach to construction and start-up of neighborhoods and their communities. It is an open and interactive concept based on short-term, scalable, and low-cost interventions and policies. This arises as a response to the limitations of the city's conventional development process, which is often slow and disconnected among the different players involved. This process is divided into small and incremental intervals, which then allows for quicker implementation, greater citizenship participation, and streamlining of resource allocation.



STATUS
Planning underway



TIMEFRAME
Short term



CONTRIBUTION TO THE CITY'S RESILIENCE

It will integrate citizens into the city spaces, thus creating points of social cohesion.

It will increase citizens' commitment to care for the city.

It will increase the level of citizenship participation in governmental processes.

It will allow people to experience a novel use of public space.



RESPONSIBLE AUTHORITY

Urban Planning Division (MUPA).



PARTNERS

Social Management Division (MUPA), Works and Constructions Division (MUPA), Culture and Education Division (MUPA), Urban Planning and Transparency Division (MUPA), Citizenship Security Division (MUPA).



NETWORK OF CITIES

New Orleans, Amman, Buenos Aires, San Francisco.



INDICATORS

Number of participants in tactic urban development processes.

Users' perception of improvement of public space.

Number of households benefited from improvements.



RESILIENCE QUALITIES

 Reflective  Inclusive  Resourceful

It is proposed that the Resilience Division should conduct workshops that enable neighbors and users to learn how to make a short-term change in their neighborhoods. These workshops will be important for the joint creation of interventions in public spaces. At the same time, a monitoring and evaluation system must be established in order to understand the project’s results and thus proceed with any improvements.

Once the intervention has been decided, a temporal, physical demonstration of the proposal involving all of the relevant players with the aim that any short-term measure should thus become permanent in the long run.

The implemented project must be measured and evaluated in order to show its impact so it can be scaled up to other neighborhoods.

This pilot project is expected to end in 2019.



Credit: Gehl, San Francisco Parklets



Credit: Emerging City, Santiago de Chile, Shared Streets

 ACTION 2.2.3.

INFRASTRUCTURE PROJECT

Accessibility program in neighborhoods

This action is sustained as a concrete recommendation to be implemented in the neighborhoods evaluated in 2018 with the participation of community leaders. There is a proposal centered on strengthening the work done by various divisions working on construction of sidewalk and pavement projects, with their respective integration with decentralization projects and other means of financial resources. Many projects are in the planning stage; however, the idea is to boost the effort and speed up its execution given the urgency existing in the communities subject to evaluation. Moreover, they suggest adding recommendations concerning the resilience approach, as well as the inclusion of an infrastructure refurbishment program for disabled people and the inclusion of streetlights (with a LED technology-based approach). Initially, pilot programs will be carried out in the indigenous hamlet Kuna Nega, Gunglier Nega and the neighborhood Alcalde Diaz, where two thousand square meters of sidewalks have already been built. These actions will then be evaluated and expanded to other communities, based on needs and depending on the priorities thus established. It should be mentioned that the Municipality has already launched the construction of 95,000 m² in various neighborhoods, 40,000 m² for the northern area and 55,000 m² are scheduled to be executed for the east side. Nevertheless, 200,000 m² are required to cover the mobility infrastructure needs in the different boroughs of the City, therefore, these programs are a beginning of a short-, medium-, and long-term process that must go hand in hand with other construction processes, such as the new subway lines.



STATUS
In progress



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE
It will foster social cohesion and appropriation of the city through citizenship participation.

It will provide a larger number of citizens from vulnerable areas with access to better services and appropriate infrastructure in order to offer inclusion, welfare and development opportunities within the city.

It will enhance citizen security.

It will boost connectivity among citizens and, therefore, social cohesion.



RESPONSIBLE AUTHORITY
Social Management Division (MUPA).



PARTNERS
Urban Planning Division (MUPA), Citizenship Participation and Transparency Division (MUPA), Municipal Security Division (MUPA), Ministry of Social Development (MIDES), National Secretariat for Disabled People (SENADIS), Community Boards, Ministry of Public Works (MOP), Panamanian Center of Studies and Human Services (CEASPA).



NETWORK OF CITIES
Santiago de Chile, Athens, Quito.



INDICATORS
Square meters of sidewalks and streets built.

Number of streetlights fitted. Number of people modifying their means of transport and using the new infrastructure.

Infrastructure areas for disabled people.



RESILIENCE QUALITIES
 Reflective  Inclusive  Redundant
 Integrated



Credit: MUPA

 ACTION 2.2.4.

PLAN

Implementation of the Comprehensive Mobility Plan for the Historic District

(SAN FELIPE NEIGHBORHOOD)

Through the IDB’s Integral Program of the Historical Center, it is sought to implement actions within the framework of the Center Plan for the neighborhood of San Felipe, Historical Center, since it presents three major mobility problems in the area, namely:

- Reduced pedestrian space (70% of space is allocated to cars); barriers that hinder integration with the public transportation system, as there is no full service of internal transportation and adequate infrastructure for non-motorized mobility.
- Insecurity problems and deterioration of spaces.
- Poor parking space management (demand from 4,200 vehicles/day v. total supply of 1,579 parking lots; 30% of cars are illegally parked on public roads).
- The Mobility Plan for the Historical Center of Panama (Center Plan) includes the neighborhoods of Santa Ana, San Felipe, and El Chorrillo. It has seven lines of interrelated actions including the creation of public spaces, comprehensive management of parking space, improvements in public transportation, integration of the Historical Center with the coastline belt.

There will be joint efforts by and between the various entities involved, thereby integrating new ideas from the Municipality and recommendations with a resilience approach. The Municipality would be the executor entity for this implementation project concerning the Center Plan.



STATUS
In progress



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY’S RESILIENCE

This initiative will promote an active center that will boost economic prosperity.

It will develop a diverse and reliable mobility, thus making it possible for citizens from nearby neighborhoods to proceed with their integration.

It will provide citizens with multiple mobility means. It will boost tourism. Improvements of public space will give rise to an inhabitable and accessible center.



RESPONSIBLE AUTHORITY
Urban Planning Division (MUPA) / BID.



PARTNERS
Social Management Division (MUPA), Culture and Education Division (MUPA), Citizenship Participation and Transparency Division (MUPA), Municipal Corporation of Tourism (MUPA), Community Board of San Felipe, Historical Center Office, Ministry of the Presidency, Ministry of Foreign Affairs, UNESCO.



NETWORK OF CITIES
Quito, Santa Fe.



INDICATORS

Square meters of enhanced infrastructure.

Percentage of connectivity between nearby neighborhoods.

Number of circulating vehicles.

Number of residents, institutions, and companies benefited in the area.

Number of buses acquired.



RESILIENCE QUALITIES

 Reflective  Robust  Inclusive

 Integrated



3 Rediscovering our wetland city: Coexisting in a better way with our own waters and environment

Goals

- 3.1** To rethink the infrastructure that will protect us from the effects of climate change.
- 3.2** To effectively communicate the value of water as a resource and that of the ecosystems protecting us.
- 3.3** Integrating and modernizing water coordination and management instruments and ecosystems.

Problem Statement

The City of Panama developed on the flood plains of its rivers, which led to the loss of riverbanks, deforestation of the natural habitat of species and the formation of danger zones for the population. Likewise, the infrastructure of slums is inadequate and the value of water and ecosystems is not well understood by the population, so good education in that respect is required. It is also relevant to highlight that there are governance issues and decentralization offers opportunities for better local management.

Since 2014, the municipality has conducted technical studies to understand problems concerned with floods so as to design proposals aimed at mitigating them. Initially, these studies focused on the basin of Juan Diaz River. It is thereby sought to recover and protect riverbanks and their ecosystem services provided by urban wetlands. The municipality has a sustainability vision with investment proposals, city cleanup programs

and improvement of drainage networks. In addition to technical studies, it is necessary to consolidate the capacity of action upon basins and ecosystems crossing and bordering the city (100 Resilient Cities, 2018a). Thus, the purpose is to contribute to an adequate management of such resource, and with a reduction of vulnerabilities, in order to promote a control of contamination from waste, to perform actions for the management of the water capacity of rivers and basins, to prevent any damage to ecosystems, and to foster the restoration thereof. Civic engagement in environmental communication and education will strengthen its capabilities, thus fostering its support. (100 Resilient Cities, 2018a). In order to rediscover the natural environment, it will be sought to promote biodiversity and landscape amenities, as well as the integration of wetland ecosystems with the decision-making process in danger zones.

3.1 To rethink the infrastructure that will protect us from the effects of climate change

Panama City is perched on five water basins, whose aquifers run along and bathe the city; however, its development has traditionally been treated by belittling this condition and, therefore, somehow “channeling” the water; to the point that, today, by way of a strainer effect, it overflows and oozes at various points across the 26 neighborhoods. In the middle of rapid population growth and urban development in areas which were formerly natural drains, today, proposing within the framework of resilience to address water management as an essential part of a development process bound to be sustainable, is one of the greatest urban challenges that we could face in this 21st century. Because, in addition to this prior natural and anthropological condition, there is a situation caused by climate change, thus increasing our risk for floods. This is why we, as a city facing its future development, propose that this must include water, not as an element to be overcome, but as a portion of the spaces to be recovered with the urban landscape and as a vital element in risk mitigation. The proper management of water can provide us with countless opportunities, ranging from supply for the growing percentage of the population who do not have access to potable water, and the mitigation of floods, through the valuation of soil in terms of its landscape value adding up to recreational space and visual enjoyment, to the various types of possible development.

RAISA BANFIELD

—VICE MAYOR, MUNICIPALITY OF PANAMA

Photo: Ennio Arcia

 ACTION 3.1.1.

INFRASTRUCTURE PROGRAM

Green-Blue Micro-Infrastructure Program



Photo: Karl Kaufmann

Floods can be reduced by means of interventions intended to encourage bioretention in parks and easement areas, such as islands, roundabouts and open spaces. These facilities serve as depressed basins located, for instance, in gardens, parks and other green areas allowing for storm water runoffs to build up and seep through plants and soils with a temporary storage layer (evaporation of perspiration helps to deal with the volume). Said spaces make it possible for waters usually spreading across undesired ground spaces, such as houses and commercial premises, to head for

planned underground areas by means of their infiltration. The components of said areas are the following: pretreatment, inflow runoff zone, storage zone, topsoil layer, soil mixture for bioretention, vegetation, lower draining bed, additional storage in gravel layer, and water overflow outlet. In order to select suitable areas of the project, it is proposed that consultations be made and, should intervention agreements be struck with other entities involved, to present the criteria for green infrastructure systems' planning and design. These latter actions are divided into three al-

ternative pilot projects: permeable pavement, bioretention area and green roof. These kinds of interventions must be implemented all around the city.

For the development of pilot projects, we are considering 12 months for implementation and 24 months for maintenance and monitoring of such systems. In parallel, we will

fulfill all the necessary procedures with competent authorities, such as the MOP and the IDAAN, in order to have the latest information supporting these initiatives, such as the storm water drainage registry, to be coordinated by the authorities of the central government.



STATUS
Proposal



TIMEFRAME
Medium term



NETWORK OF CITIES
Santa Fe, Oakland, Athens, Mexico City, and Atlanta.



CONTRIBUTION TO THE CITY'S RESILIENCE

It will allow the landscape to play a key infrastructural role to aid in mitigating the risk of floods. Also, the areas will provide high quality public and recreational spaces.

It will create public spaces that will end up integrating green infrastructure while preserving biodiversity in certain areas of the city.

It will face challenges posed by climate change by integrating an approach to green infrastructure, thus fostering healthy, safe, and sustainable settings.



INDICATORS

Percentage of progress in the implementation of the green infrastructure pilot projects.

Percentage of flood areas for monitoring effectiveness.

Retention volume in damping areas during the interventions.

Annual percentage of progress in the maintenance of green infrastructure.

Number of pieces of equipment and properties affected by floods.



RESPONSIBLE AUTHORITY
Urban Planning Division (MUPA).



PARTNERS

Works and Constructions Division (MUPA), Resilience Division (MUPA), Environmental Management Division (MUPA), Ministry of Public Works (MOP), National Aqueducts and Sewage Systems Institute (IDAAN), Ministry of Environment (Mi Ambiente), Technological University of Panama (UTP), Florida State University (FSU), Wetlands International Panama.



RESILIENCE QUALITIES

 Resourceful  Robust  Redundant
 Integrated



INSPIRATION FROM
Santa Fe, Argentina

This initiative takes as benchmark some national and international analogous cases, such as del Northern Park of Santa Fe, Argentina, the Water Park in Rotterdam, the green Infrastructure Plan in Oakland, USA, and Athens, Greece. Another example is the strategy titled Towards a Water-Sensitive Mexico City that promotes adequate water management by means of retention, storage, infiltration, and reuse.

ACTION 3.1.2.

INFRASTRUCTURE PROGRAM

Coastline System of Open Spaces

Panama City is located on the shores of Panama Bay, which occupies some 20 kilometers of waterfront. Over its history, the city has been developing different interfaces with the Pacific Ocean, mostly invading and degrading coastal swamps, and often constructing high-density buildings up to the coastline.

The Coastline Belt project was initiated in 2007 as an opportunity to establish a network of public spaces along the waterfront. The Action Plan titled Metropolitan Panama, made by the Municipality of Panama, jointly with the Interamerican Development Bank (IDB) in 2015, proposes the extension of this public space system towards the east. The waterfront taken into account for this stretch of land is located at a point where several significant environmental factors converge, namely: the nearness to the Pacific ocean coast, the network of rivers flowing into this area, the rapid development of slums without a suitable control of the use of soil, the degradation of swamps, the limited drainage and sewage systems, and the isolation of communities.

Therefore, the city seeks to develop a large-scale project, to be coordinated by means of the Urban Planning Division, jointly with the World Bank. The objective of this initiative is to create an integration plan for the coastline edge so as to foster measures intended for the mitigation of present and future risks, including a better drainage from slums into coastal plains, improvement of urban infrastructure to create multimodal access to the coast, and the strengthening of the institutional capacity to move infrastructure funding resources.

The extension of the Coastline Belt and the System of Open Spaces is then a comprehensive initiative for the renewal and transformation of the coastline zone through the introduction of green infrastructure by way of dampeners

for vulnerabilities such as the effects caused by floods and storms. This project involves reinforcing the protection of coastal swamps and basins in order to improve the provision of local ecosystem services; thus enhancing the public’s access to the coast, the enjoyment of the coastline landscape resource and available spaces for multimodal mobility.

The project includes three sections:

- 1. Central Zone with existing coastline interventions (from Amador to Marbella): This segment is largely developed and interventions will consist of connectivity and access.
- 2. Urban Expansion Zone without coastal treatment (from Punta Paitilla to Punta del Este): A section with the interventions seeking to connect neighborhoods, create public access to the pier, and improve the neighborhood at Boca La Caja.
- 3. Protection Zone of wetlands in Panama Bay (Ramsar Swamp Reserve): This section includes Juan Diaz River where interventions will focus on mitigating floods, protecting natural habitats, and connecting the coastline edge.

This project will be accompanied by a Resilience Communication Plan.



STATUS
Planning underway



TIMEFRAME
Long term



CONTRIBUTION TO THE CITY'S RESILIENCE

It will encompass mitigation actions for vulnerabilities in the coastline area nearest to tidal variations and runoffs of storm waterfall.

It will make the most of the landscape resource for more citizens' enjoyment, while promoting the conservation of ecosystems, their valuation and the use of environmental services, including, among others, fishing, tourism, and environmental protection against the poundings of climate change.

It will improve urban development by means of better distribution and integration of uses of soil.



RESPONSIBLE AUTHORITY
Urban Planning Division (MUPA).



PARTNERS

World Bank (WB), Vice-Office, Resilience Division (MUPA), Environmental Management Division (MUPA), Works and Constructions Division (MUPA), Citizenship Participation Division (MUPA), Ministry of Environment (Mi Ambiente), Sponsoring Office for the Panama Viejo, Ministry of Public Works (MOP), Ministry of Housing (MIVIOT), Community Boards, Wetlands International, National Committee of Wetlands of Panama (CNHP).



NETWORK OF CITIES
Boulder, Pittsburgh, Melbourne, Santiago de Chile.



INDICATORS

Percentage of progress in project execution.

Coverage area of restored and recovered wetlands.

Number of people annually benefiting from landscape resource.

Percentage of progress in cleanup infrastructure.



RESILIENCE QUALITIES

Robust Inclusive Integrated



Photo: 100RC



INSPIRATION
FROM
Thessaloniki,
Greece

The city of Thessaloniki, in Greece, dedicated a complete pillar of its resilience strategy to “rediscovering the city’s relationship with the sea”, by means of refurbishment of the Thermaikos bay, where the water body along which the city stretches extends throughout the coastline edge. A recent refurbishment of the waterfront gave Thermaikos a new and important role within citizens’ daily life: now it is the most popular public space in town. In its resilience work, however, Thessaloniki recognized that all of the bay’s potential was still underused in terms of economic, environmental and recreational exploitation. The eleven initiatives within this pillar will combine to accomplish the city’s objectives: to integrate the bay’s economic and urban development; to improve environmental monitoring and to restore the bay’s ecosystem, thereby launching new regional governance systems for the management of coastal activities; to grow the bay’s cultural and natural capital to improve social cohesion and, in general, the city’s quality of life.

 ACTION 3.1.3.

RESEARCH

Map of vulnerabilities and risks in the basin of Tocumen River

This action consists of a survey intended to understand vulnerability to floods in the expected urban development areas to the east of the city. By means of a mapping of vulnerabilities to floods. The existing regulations concerning the use of soil will be evaluated, as well as the implementation thereof, in order to determine the scope of this development. One of the major critical spots in the area is Tocumen International Airport, which poses some threats and risks for floods. This survey will contribute some key information for other initiatives in Panama, such as the project for reducing and mitigating floods in Juan Diaz River (funded by IDB), the Coastline System of Open Spaces (funded by WB), and some other assessments involving the drawing up of models and/or scenarios for the city’s water basins. This action is going to be performed in coordination with the various sectors involved in the interventions due for the area; advances will be communicated and key information will be shared so that it can help to achieve the maximum use of resources, thus avoiding the duplicity of efforts.



Photo: Joao Carlos Medau



STATUS
Proposal



TIMEFRAME
Short term



CONTRIBUTION TO THE CITY'S RESILIENCE

- It will provide the planning tools necessary to prevent risks for population and add up to key infrastructure, such as Tocumen airport.
- It will foster the application of the necessary regulations to change poor development practices.
- It will allow for the conservation of basins, wetlands, and its environmental services.
- It will strengthen the existing protection schemes for wetlands in Panama Bay. The local authority will take the appropriate precautions to safeguard the populations' security.
- It will be an input for the District Land Use Plan.



RESPONSIBLE AUTHORITY
Urban Planning Division (MUPA)



PARTNERS
Vice-Office (MUPA), World Bank (WB), Resilience Division (MUPA), Environmental Management Division (MUPA), Works and Constructions Division (MUPA), Ministry of Environment (Mi Ambiente), Ministry of Public Works (MOP), Ministry of Housing (MIVIOT), National Aqueducts and Sewage Systems Institute (IDAAN), National Committee of Wetlands of Panama (CNHP), Technological University of Panama (UTP), University of Panama (UP), Florida State University (FSU).



NETWORK OF CITIES
Bristol, Da Nang, Norfolk, Boston.



- INDICATORS**
- Percentage of progress in the making of analyses and maps.
 - Number of properties affected by floods.
 - Number of proposals of interventions for shock mitigation.
 - Number of regulations reviewed and implemented with the technical support of the assessment.
 - Number of Environmental Impact Assessments approved for the Tocumen area.



RESILIENCE QUALITIES
 Reflective  Integrated

 ACTION 3.1.4.

INFRASTRUCTURE PROGRAM

Resilient Urban Juan Diaz Basin

The Juan Diaz River basin has undergone an accelerated urbanization process, especially since 1960. The lack of ordering plans and loose enforcement of environmental protection regulations has resulted in a high degradation of the river’s water course. At this moment, Juan Diaz River’s riverbanks present some illegal occupations, infrastructure works not matching the basin’s flows, and developments carried out in violation of the river protection easements; hence, this results in frequent and raging floods, public and private property damage, and a low quality of public space.

The project of regeneration of the urban basin of Juan Diaz River aims at the design and construction of green and blue infrastructure measures intended to mitigate climate vulnerability, increase the value of environmental assets, and thus improve the quality of urban habitat along the basin.

The project has three components:

1. Strategic canalizing of Juan Diaz River, which includes developing retention ponds. This green infrastructure is a low-impact measure to supplement strategic drainage works that are necessary in various sections of the river. In the upper areas, it is proposed to create runoff micro-retention measures and works to reduce the speed of water flows. In the intermediate sections, the construction of green water absorption and retention infrastructure, such as flood parks and green areas, will be given priority, jointly with the landscape recovery and regularization of the river box. In the lower basin of Juan Diaz River, as in Radial City (a mostly low- and medium-income community) and Metro Park (a logistical development with high income), specific infrastructure measures intended for reducing floods to a minimum, such as the recovery of coastline meanders and swamps, will be given priority.



STATUS
Planning underway



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY’S RESILIENCE

It will promote the conservation and valuation of environmental services and ecosystems in the face of the impact caused by climate change.

It will reduce the number of people and houses affected by floods, due to the implementation of specific actions for the mitigation of the impact of climate change.

It will foster a planned urban ordering and adequate distribution of the uses of soil.

It will reduce contamination in the associated basins and the disposal of solid waste, while having a positive effect on the population’s health and quality of life.



RESPONSIBLE AUTHORITY
Urban Planning Division (MUPA).



PARTNERS
Vice-Office (MUPA), IDB, Resilience Division (MUPA), Environmental Management Division (MUPA), Works and Constructions Division (MUPA), Municipality of San Miguelito, Ministry of Environment (Mi Ambiente), Ministry of Public Works (MOP), Ministry of Housing (MIVIOT), Community Boards, National Committee of Wetlands of Panama (CNHP) Advocacy Association for Juan Diaz River, Tocumen S.A.



NETWORK OF CITIES
Vejle, Bristol, Da Nang, Norfolk, Santiago de Chile.



INDICATORS
Percentage of progress in project execution.
Protection area of swamps and other wetlands.
Coverage area of restored and recovered wetlands.
Homes protected from floods on account of these measures.



RESILIENCE QUALITIES
 Reflective  Robust  Integrated

2. Land Use (including a Basin Plan considering the identification of danger zones), which will seek to pursue a clear public policy in the basin’s strategic zones. The ordering of these areas will make it possible to reduce the vulnerabilities associated with the occupation of grounds subject to floods, thus permitting better adaptation to climate change. Thus, territorial ordering will enable the promotion of mixed, medium-density developments, thus creating new housing opportunities while

providing better protection of riparian spaces, such as wetlands (floodplains and swamps). It is proposed to create a network of public spaces allowing for easy access to the river.

3. Communications Plan to publicize the benefits from having a holistic approach to a basin’s project and the importance of its different components.



Credit: Resilient Vejle



**INSPIRATION FROM
Vejle, Denmark**

The city of Vejle, in Denmark, is facing risks caused by floods from the adjacent fjord. The city is providing resilience to this challenge through the ambitious initiative called “Fjordbyen”, where they will use its waterfront areas as urban design laboratories to explore innovative and integrated solutions, e.g.: the adaptation of public spaces to improve the administration of water and thus boost economic growth while reducing risk. In particular, Vejle is planning to design defenses against floods that should also encourage investments, developments and have a higher real estate worth. One example is the vicinity of Østbykvarteret, which has a testing area where interventions concerning floods have a recreational and community value; moreover, it is sought to protect the inner areas of river Grejs by installing solutions to floods, already integrated along the road infrastructure so that they can reduce the water flow. The key to all this work will be a broad commitment undertaken by the stakeholders, participating experts and citizens, and an inclusive community-oriented urban design.

 ACTION 3.1.5.

RESEARCH

Integrated risk Atlas:

HYDRAULIC MODELS OF MUNICIPAL HYDROGRAPHIC BASINS



Photo: Karl Kaufmann

The changes in the use of soil and occupation of areas subject to floods with landfills, urbanizations and communication lines has reduced the hydraulic capacity of urban land, thereby increasing floods. Local authorities do not have a full map of risks in the urban basins; it requires a comprehensive, validated tool to integrate the map of risks to the ordering plans and thus foster an informed decision-making process. The area under study encompasses basins such as those of rivers Chagres, Matasnillo, Juan Diaz, and Pacora. The aim is to create a database containing hydraulic models of the basins and to develop a platform where users can

observe the flood levels in rivers and floodplains for a recurrence between 2 to 500 years, thereby taking into account the changes in sea level. With this model, flood maps would be created in order to evaluate the impact of projects on danger zones.

The project will be conducted in phases by means of surveys and field measurements, collection of models, modeling, analyses, calibration and training for the staff so as to proceed with the assessment and updating of information. For such purposes, it is necessary to validate all of the existing studies and to create a database that contains



STATUS
Planning underway



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE
It will generate the tools needed to manage risks in the two districts of the metropolitan area.

This tool may be used by other entities on a consensus basis, in order to promote comprehensive risk management.

The availability of maps of all the basins will add up to technical support so that the institution can have tools providing for risk zoning and therefore appropriate decisions could be taken in response to the requests for approvals and permits for the development of infrastructure.

This tool will promote a better decision-making process to orient urban development.



RESPONSIBLE AUTHORITY
Urban Planning Division (MUPA).



PARTNERS
Resilience Division (MUPA), Works and Constructions Division (MUPA), Environmental Management Division (MUPA), Urban Planning of the Municipality of San Miguelito, Ministry of Public Works (MOP), National Aqueducts and Sewage Systems Institute (IDAAN), Ministry of Housing (MIVIOT), Ministry of Environment (Mi Ambiente), National Civil Protection System (SINAPROC), Technological University of Panama (UTP), University of Panama, Florida State University (FSU), Wetlands International Panama.



NETWORK OF CITIES
New Orleans.



INDICATORS
Variations in the occupation area of flood zones.

Number of basins under analysis.

Construction percentage of the platform.

Number of studies validated and integrated to the analysis.

Number of resulting models.

Number of officials and other specialists receiving training for using the tool.



RESILIENCE QUALITIES
Reflective Redundant



Photo: Regional Center for the Western Hemisphere (CREHO)

hydraulic models of the major hydrographic basins. The necessary data for the making of a hydraulic model are the identification of water bodies, the materials lying on the bed and the banks of water bodies, types of soils in the basin, the vegetation and features of the flood valley, description, dimensions and layout details of the hydraulic structures, bathymetry or cross sections of rivers and the use of land. The Municipality of Panama will cooperate with other entities that will have to collaborate and be impacted by this project, such as the MOP, the IDAAN, the MIVIOT, and MiAmbiente.

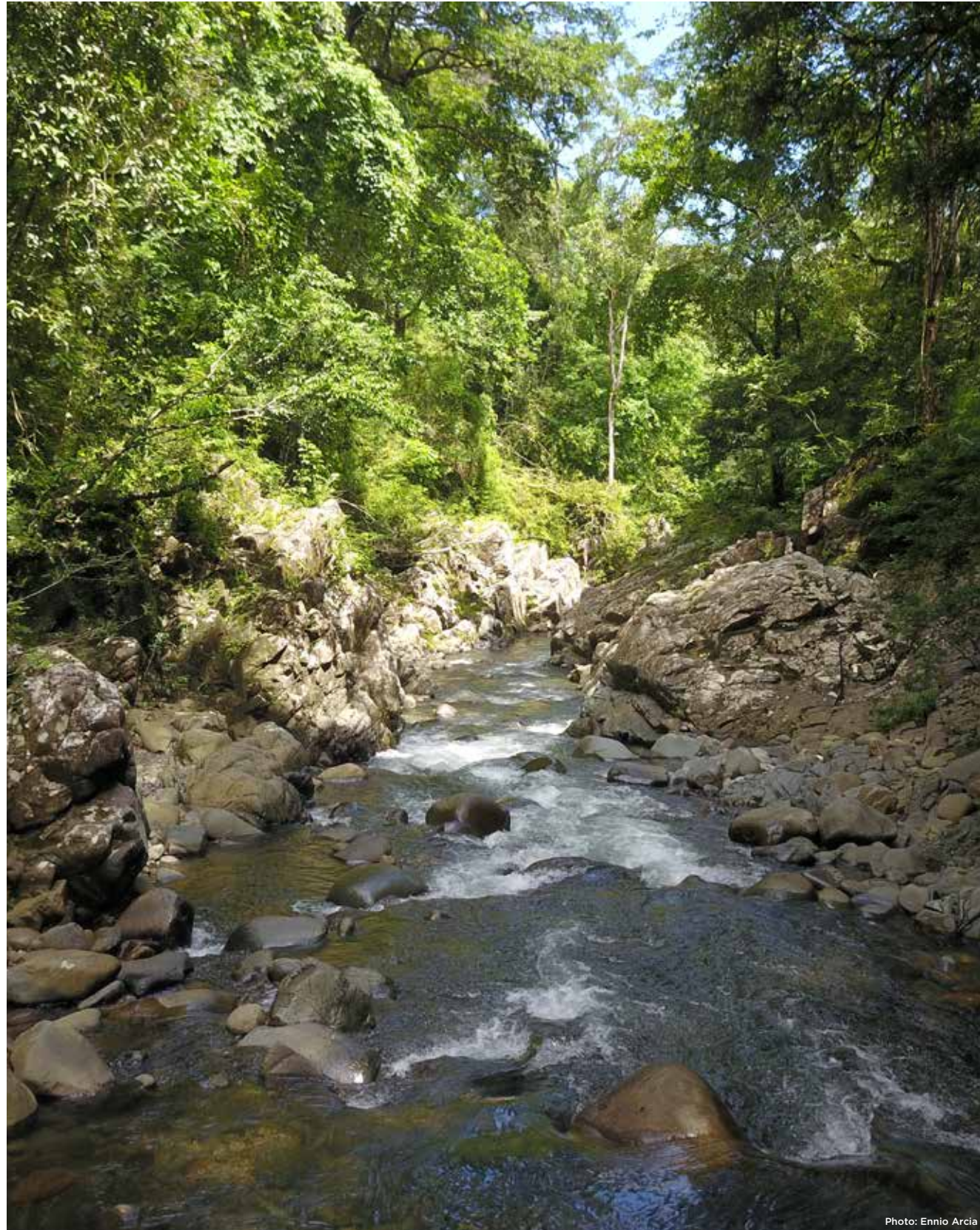


Photo: Ennio Arcia

3.2 To effectively communicate the value of water resource and that of the ecosystems protecting us

Not so long ago, the percentage of the world's population living in cities outnumbered those who live in rural areas: today we are an essentially urban species. Cities and their inhabitants vary but they are somehow similar in the fact that most of them are far away from nature: we live as if we were not an integral part of the natural world. The truth is that even under adverse conditions, nature tries to find its way, and citizens can be interested in knowing and protecting it a little bit more.

JORGE VENTOCILLA

—BIOLOGIST, NATURALIST AND WRITER

 ACTION 3.2.1.

CAMPAIGN, PLAN

Communication and education plan on water, ecosystems and biodiversity

Panama City requires a local communication and education strategy covering the engagement of experts and celebrities in awareness campaigns targeted at promoting sustainable management of water and ecosystems. This strategy will foster participation in social media activities and the creation of commemorative committees. Synergies will be sought among the Awareness, Skill Enhancement and Education Plan, within the framework of the Convention Ramsar (CeCop Plan, training courses of the Regional Center for the Western Hemisphere, (CREHO), and the programs of the Municipal Summit Park, the Metropolitan Park, the National Sovereignty Bar, National Park of Camino de Cruces, and the Recreational Omar Park, thereby promoting the District Biodiversity.

Awareness campaigns will be launched to promote the best use of potable water and conservation of wetlands. These campaigns will publicize municipal programs, like Zero Trash, and compliance of regulations, as is the prohibition of using plastic bags. The communication strategy will encompass and include some concepts about ecosystem services, valuation and adaptation to climate change, as well as good practices for management of the fishing resource and sustainable agriculture.



STATUS
In progress



TIMEFRAME
Medium term



- CONTRIBUTION TO THE CITY'S RESILIENCE**
- Communication and awareness spaces will create alliances for specific actions pursuing the benefit of natural resources.
 - The communication of the value of natural resources will foster a joint responsibility for the protection of water, ecosystems and resources arising from them.
 - Both training and education of the players involved in decision-making will lead to better assessments for the rational management and use of natural resources in the city.
 - The implementation of good practices for productive activities will encourage the sustainability of food resources for citizens and the sustainability of the resource for its suppliers, thus improving their quality of life.



RESPONSIBLE AUTHORITY
Resilience Division (MUPA) and Communications Division (MUPA).



PARTNERS

Environmental Management Division (MUPA), Urban Planning Division (MUPA), Culture and Education Division (MUPA), Citizenship Participation Division, Ministry of Environment (Mi Ambiente), Water Resources Authority (ARAP), Authority of the Panama Canal (ACP), Ministry of Health (MINSa), Ministry of Agricultural and Livestock Development, (MIDA), National Secretariat of Science, Technology and Innovation (SENACYT) Tourism Authority (ATP), International Union for the Conservation of Nature (UICN), Panamanglar Network, Committee of the Month of the Oceans (CMDO), National Committee of Wetlands of Panama (CNHP), National Professional Association of Biologists of Panama (COBIOPA), Council of University Presidents (CONARE), Smithsonian Institute of Tropical Investigations (STRI), City of Knowledge, Sumarse (Join) - Corporate Social Responsibility.



NETWORK OF CITIES
Quito, Wellington.



- INDICATORS**
- Number of promotion campaigns on social media over the year.
 - Number of participants in activities and events.
 - Number of training courses and seminars per year.
 - Number of players from government, civil society and private sector who participate in the training and awareness programs.



RESILIENCE QUALITIES

 Reflective  Resourceful  Inclusive



Photo: MUPA



Photo: MUPA

3.3 Integrating and modernizing water coordination and management instruments and ecosystems

We envisage a city projecting health for both people and ecosystems, that shouldn't get flooded as a result of litter around the streets, sewers, and rivers, where its inhabitants feel at ease because they are not surrounded by litter, and garbage, instead of being a problem, could be turned into a raw material that could aid small businesses in fostering green economies. What is garbage nowadays could yield economic resources for communities.

ALIDA SPADAFORA

—ZERO TRASH PROGRAM MANAGER, MUNICIPALITY OF PANAMA

 ACTION 3.3.1.

PLAN, PUBLIC POLICY

Land Use Plan (POT) for the District of Panama

Growth is estimated to go on and Panama City will, in the next few years, be undergoing an economic and demographic development process its infrastructure is not ready for. Likewise, new challenges will crop up, including a new stage in the development of Panamanian logistics. In this context, it is vital to put forward an instrument able to channel this growth in an orderly and balanced fashion so as to reach a competitive, inclusive, and sustainable city. This action is centered on the development of the District Land Use Plan (POT), which will be accompanied by a proposal of Municipal Agreement for legal support, a portfolio of projects and a schedule encompassing the respective performance of training and publicity activities. 2018 set the beginning of the initiative that vest the Municipality of Panama with jurisdictional authority over local urban matters and the development of such initiative is expected to end by 2019. The POT has simultaneously begun with the development of this resilience strategy. Within this framework, the necessary synergies will be built in order to implement both instruments, with the aim to make sure that resilience should be the core transversal guideline of the POT. We will also foster integration of the Code for the Use of Soil in Flood Areas and the Green Code, as well as the ecosystem valuation within zoning schemes. Queries and meetings will be held on a regular basis with the consulting team, the Resilience Division, and other players, with the respective aim to procure funding for projects deriving from the strategy, while underpinning the POT at the same time.



STATUS
In progress



TIMEFRAME
Short term



CONTRIBUTION TO THE CITY'S RESILIENCE

The District Ordering Plan is the key tool for ordering of the territory and uses of soil. This shall reduce social and environmental risks.

It will lead to collaborative schemes among institutions.

Adequate urban planning will promote a city better prepared to face risks.

Panama may be an example for cities belonging to the network.



RESPONSIBLE AUTHORITY
Urban Planning Division (MUPA).



NETWORK OF CITIES
Amman, Tel Aviv-Yafo, Glasgow.



RESILIENCE QUALITIES

 Reflective  Inclusive  Integrated



PARTNERS

All the Divisions of the MUPA, Community Boards of the 23 Neighborhoods, Ministry of Housing and Territorial Ordering (MIVI), Ministry of Public Works (MOP), Ministry of Environment (Mi Ambiente), National Aqueducts and Sewage Systems Institute (IDAAAN), Traffic and Ground Transportation Authority (ATTT), Panama Metro, MiBus Company, Public Utility Services Authority (ASEP), National Civil Protection System (SINAPROC), University of Panama (Institute of Geosciences), Authority of the Panama Canal (ACP), Ministry of Health (MINSa), Panamanian Society of Engineers and Architects (SPIA), Panamanian Chamber of Construction (CAPAC), Urban Citizenship Network, Sponsoring Office of Panama Viejo, Historical Center Office, Chamber of Commerce, National Association of Business Executives (APEDE), IDOM Consultancy.



INDICATORS

Percentage of progress in POT's execution.

Number of integrated initiatives of the POT's Resilience Strategy.

Number of citizens who participate and engage in the construction of the POT.

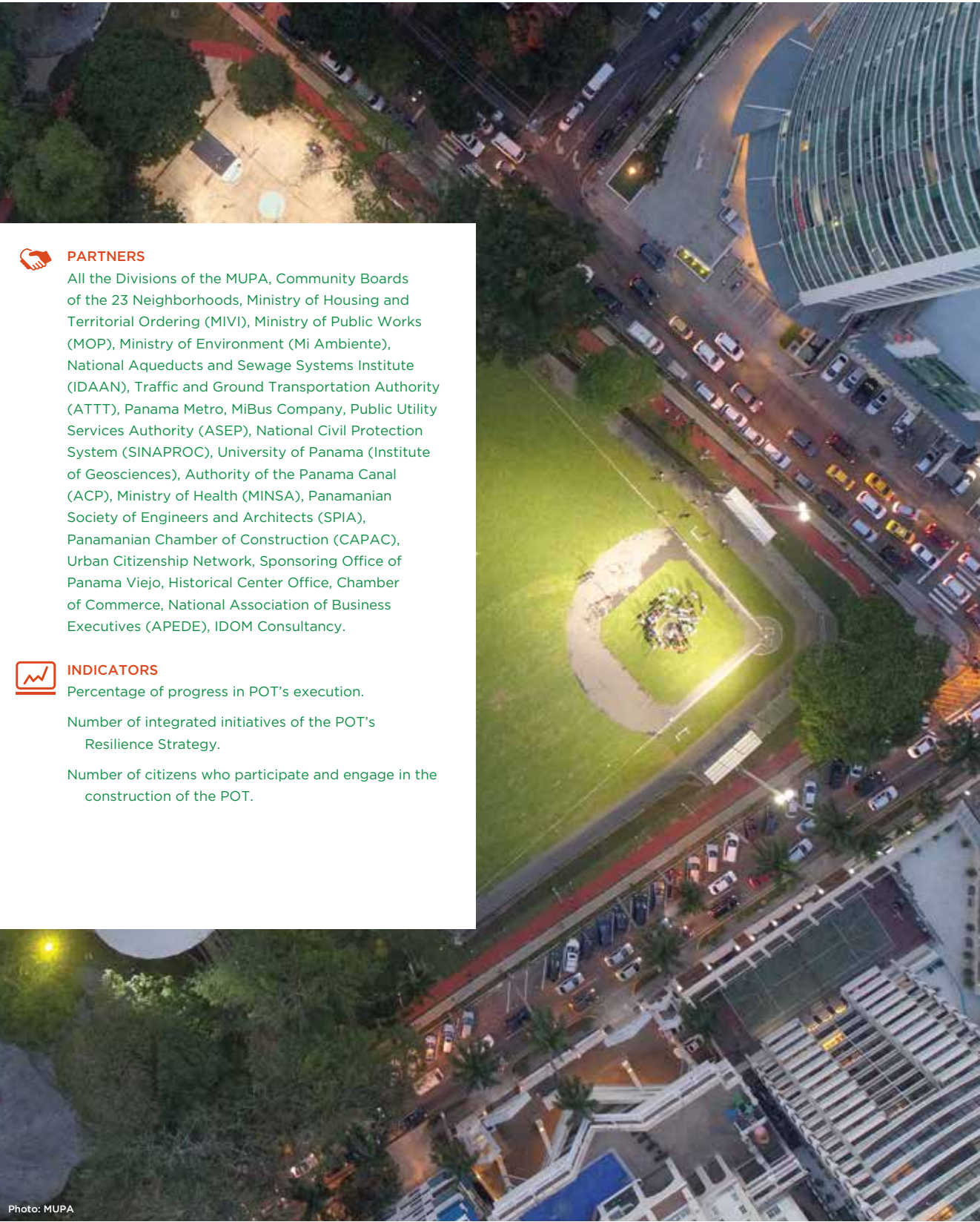


Photo: MUPA

 ACTION 3.3.2.

RESEARCH

Comprehensive cost-benefit analysis (CBA) of development options around wetlands

Traditional CBAs usually have a limited scope and only include such elements as the construction costs of the project, selling prices, fiscal revenues, and other common measurements of the project. This study proposes a comprehensive CBA to capture a wider variety of benefits of the wetlands in the project areas where it is sought to build constructions; i.e. to make private uses of the soil, thus promoting the non-intervention of ecosystems by considering the valuation of natural capital.

Ecosystem services will be contemplated, such as the reduction of rain and the runoff by contamination, or the enhancement of benefits for human health. These may integrate the ecosystem value in the decision-making process, since these values of natural capital and knock-on effects of the loss of resources due to the development of infrastructure must be taken into account as a decrease in the population’s benefits. For example, in regards to this setting, the approval of blueprints by the Urban Planning Division would be considered, as well as construction permits by the Works and Constructions Division (MUPA), and the assessment criteria for environmental impact in order to promote their integration in the Interinstitutional Evaluation System.

The results of the CBA will be a key input for the land use plan within the framework of the Land Use Plan (POT), as per its official acronym in Spanish).



STATUS

Planning underway



TIMEFRAME

Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE

The local authorities and communities may understand and have valuation concepts of the natural capital and a supporting ground for the protection of natural resources as a clear understanding by both developers and the private sector.

An adequate valuation scheme will lead to the review of projects so that these can reconsider the need for intervention of basins and ecosystems of wetlands.

It will promote the conservations and restoration of ecosystems in wetlands, thus enhancing the presence, permanence, and protection of services they provide people with in the face of the poundings of climate change.

It will assure the safety of the food resource by protecting fishing resource recruitment zones.

It will enhance the carbon sequestration potential of the ecosystems of urban wetlands, thus reducing the impact of polluting gases on the atmosphere.



RESPONSIBLE AUTHORITY

Urban Planning Division (MUPA).



PARTNERS

Resilience Division (MUPA), Works and Constructions Division (MUPA), Environmental Management Division (MUPA), Municipality of San Miguelito, Ministry of Environment (Mi Ambiente), Water Resources Authority (ARAP), Authority of the Panama Canal (ACP), Wetlands International, Regional Center for the Western Hemisphere (CREHO), International Conservation, Natura Foundation, City of Knowledge, University of Panama (UP), International Maritime University of Panama (UMIP), PNUD, IDB.



NETWORK OF CITIES

Rotterdam.



INDICATORS

Percentage of progress in the CBA study.

Number of management instruments integrating the results of the CBA in their schemes for the approval and use of soil.

Number of initiatives in the POT integrating the results of the CBA for land use plans.



RESILIENCE QUALITIES

 Reflective  Integrated



Photo: Karl Kaufmann

ACTION 3.3.3.

PLAN

Monitoring of the status of ecosystems in wetlands and the quality of water in the basins of the metropolitan area



Photo: Karl Kaufmann

Projects of monitoring programs that in turn propose investments for the conservation and restoration of degraded wetlands within the district. An initial baseline will be established for the status of ecosystems in order to create indicators aimed at verifying habitat conditions on a year-time scale. Furthermore, the monitoring of biological indicators (e.g. fish and invertebrates) will be taken into account to compare them with the status of the ecosystems and the tolerance limits of biological indicators to the city's water variation. Physical-chemical indicators will also be pondered with the aim to determine any variations in the concentration of chemicals, organic and inorganic compounds, metals, among others, as elements serving to check the quality of water in the urban basins.

The monitoring will include an early alerting evaluation system intended to take action in case of any hazard signals concerning both the quality of water and the components of biodiversity and structure of ecosystems.



STATUS
Proposal



TIMEFRAME
Long term



CONTRIBUTION TO THE CITY'S RESILIENCE
A tool will be made available in order to measure the effectiveness of urban interventions.

The results of the monitoring procedures will be a piece of scientific evidence to direct decision-making processes.

It will enable strengthening of the decentralization process by redesigning the technical capacity of the institution to lead technical assessment systems jointly with other institutions.

The engagement of communities in the monitoring procedures and restoration programs will allow for greater acknowledgment of the value of natural resources and promotion of their conservation in order to bolster the city's resilience and visualize healthy basins to have and use the respective water resource.



RESPONSIBLE AUTHORITY
Environmental Management Division (MUPA) / Resilience Division (MUPA).



PARTNERS
Urban Planning Division (MUPA), Works and Constructions Division (MUPA), Municipality of San Miguelito, Community Boards, Ministry of Environment (Mi Ambiente), Water Resources Authority (ARAP), National Secretariat of Science, Technology and Innovation (SENACYT), Commemorative Gorgas Institute, PNUD, Regional Center for the Western Hemisphere (CREHO), CATHALAC, International Maritime University of Panama (UMIP), University of Panama (UP), Florida State University (FSU), Wetlands International Panamal, National Committee of Wetlands of Panama (CNHP), and community leaders.



NETWORK OF CITIES
Surat.



INDICATORS
Area of recovered wetlands.

Variations in densities and frequency of species indicating the status of ecosystems (flora and fauna associated with ecosystems).

Variations of the hydrological flow in the ecosystems of wetlands.

Variations in the Biological Integrity Index of Basins (IBI).

Variations in the number of species indicating the quality of water for invertebrate species and fish.

Variations in the tolerance levels of species indicating the quality of water for fish and invertebrates.

Variations in the water quality index.



RESILIENCE QUALITIES
Reflective Inclusive Integrated

Instruments such as the Panama's swamp restoration guide, drafted by the Ministry of Environment jointly with the PNUD, as well as the wetland restoration handbooks issued by the Convention Ramsar, will be taken into account and integrated as useful tools for the project for the programs consisting of restoration of wetlands and follow-up of habitat conditions. The monitoring of water quality will consider the findings and methodologies posed in recent research studies on the basins of Panama, as well as any diagnoses of the environmental conditions of the ground tributary rivers (Cornejo et al, 2017), and the work of organizations experienced in the field. It will be sought to engage community leaders by means of training courses based on the use of easy and simple indicators, such as the experience of the centers CATHALAC and Regional Center for the Western Hemisphere CREHO in the river La Villa, province of Los Santos.

Municipal Waste Management Plan



The Municipality of Panama will undertake the management of garbage within its own jurisdiction in 2019. For such purpose, it must elaborate a Municipal Waste Management Plan. Hence, the necessary procedures must be guaranteed (by means of actions ordained within the framework of the existing municipal efforts, as is the case of the Zero Trash program) so as to undertake this duty.

These actions will include the establishment of a citizenship surveillance program for the disposal of liquid and solid waste, recycling of solid waste, use of organic waste for compost, energy, collection and disposal of waste. This action seeks to provide comprehensive management of waste for Panama City.



STATUS
Planning underway



TIMEFRAME
Short term



CONTRIBUTION TO THE CITY'S RESILIENCE

- It will bring about improvements in the population's health.
- It will reduce the incidence of diseases such as cancer (from burns), allergies and infections.
- It will preserve maritime environment, ecosystems, and their biodiversity.
- It will mitigate the impact of floods by preventing the blockage of sewage and drainage systems.
- It will reduce the percentage of greenhouse gases, such as methane.
- It will control fires by preventing any burning of garbage.
- It will lower soil contamination and, therefore, the impact on agricultural resources.
- It will reduce the contamination of fishing resources, especially from microplastics.
- It will reduce the impact on the city's landscape resource and will promote tourism, as well as yield greater economic revenues for the city.
- The garbage issue is a transversal problem, so its disposal will entail various benefits in various social, economic, and environmental aspects.



RESPONSIBLE AUTHORITY
Environmental Management Division (MUPA).



PARTNERS
Resilience Division (MUPA), Urban Planning Division (MUPA), Social Management Division (MUPA), Culture and Education Division (MUPA), Urban and Household Cleaning Authority (AAUD), Ministry of Health (MINSa), National Aqueducts and Sewage Systems Institute (IDAAN), MarViva, Foundation for the Protection of the Sea (PROMAR), National Association of Business Executives (APEDE), Chamber of Commerce and Industries and Agriculture (CCIP), University of Panama (UP), Technological University of Panama (UTP), National Committee of Wetlands of Panama (CNHP), Committee of the Month of Oceans (CMDO), PNUD, IDB, Interamerican Development Bank (IDB).



NETWORK OF CITIES
Santiago de Chile.



INDICATORS
Percentage of progress in the making of the Municipal Integral Waste Disposal Plan.

Percentage of execution of the Zero Trash Program.

Percentage of progress in the implementation of the local plan.

Number of regulations bound to reduce waste in final disposal.



RESILIENCE QUALITIES
Reflective Integrated



4 Comprehensive risk management: Building and communicating for a safer city

Goals

- 4.1 Local leadership of risk management in the city.
- 4.2 To create safety for residents upon understanding of their vulnerabilities.

Problem Statement

Historically in Panama, the duties concerning risk management have been centralized in national institutions; however, it is high time we increased engagement of local governments in the reduction of vulnerabilities through actions intended to face and address both threats and disasters. This proposal is to build better coordination in the face of the frequent impact caused by climate change, as well as to diminish the uncertainty arising from the lack of information about potential threats.

For the Municipality, the Public Management Decentralization Act represents a unique opportunity to create local leadership in risk management. The National Civil Protection System (SINAPROC), an entity focused on responding to disasters of any origin, is a valuable ally. The understanding of threats and vulnerabilities in the territory, based on scientific evidence, is a key element of the actions taken by

municipalities in regard to risk management. This will be written down as the new Land Use Plan (POT) for District of Panama. An effective collaboration with institutions of the national government, academia, and community and civil society organizations, is going to be a fundamental factor for the operation of the existing planning instruments, thus playing an effective role for the Municipality in the reduction of risks for disasters (100 Resilient Cities, 2018b).

The Municipality will obtain instruments through which it can socialize technical territorial information (whether seismic, hydrological or infrastructural), currently generated by specialized academic and professional organizations, but with the consequential problem of being piecemeal and drafted in highly specialized languages. The communication of risk factors will play a key role in the effective action taken by municipalities.



4.1 Local leadership of risk management in the City

If we start from the fact that human settlements are the result of a transformation from the natural environment to the man-built environment, in the case of our city, the little integration of the former to the processes concerned with the use and occupation of the soil becomes crystal-clear. The city's limited capacity to recover from the shocks and stresses is often subject to warns us that we should be more resilient. Hence, we are liable for implementing better territory planning instruments whose design should recognize and integrate the risk of and vulnerability to the effects of climate change.

MANUEL TRUTE

—DIRECTOR OF URBAN PLANNING, MUNICIPALITY OF PANAMA

ACTION 4.1.1.

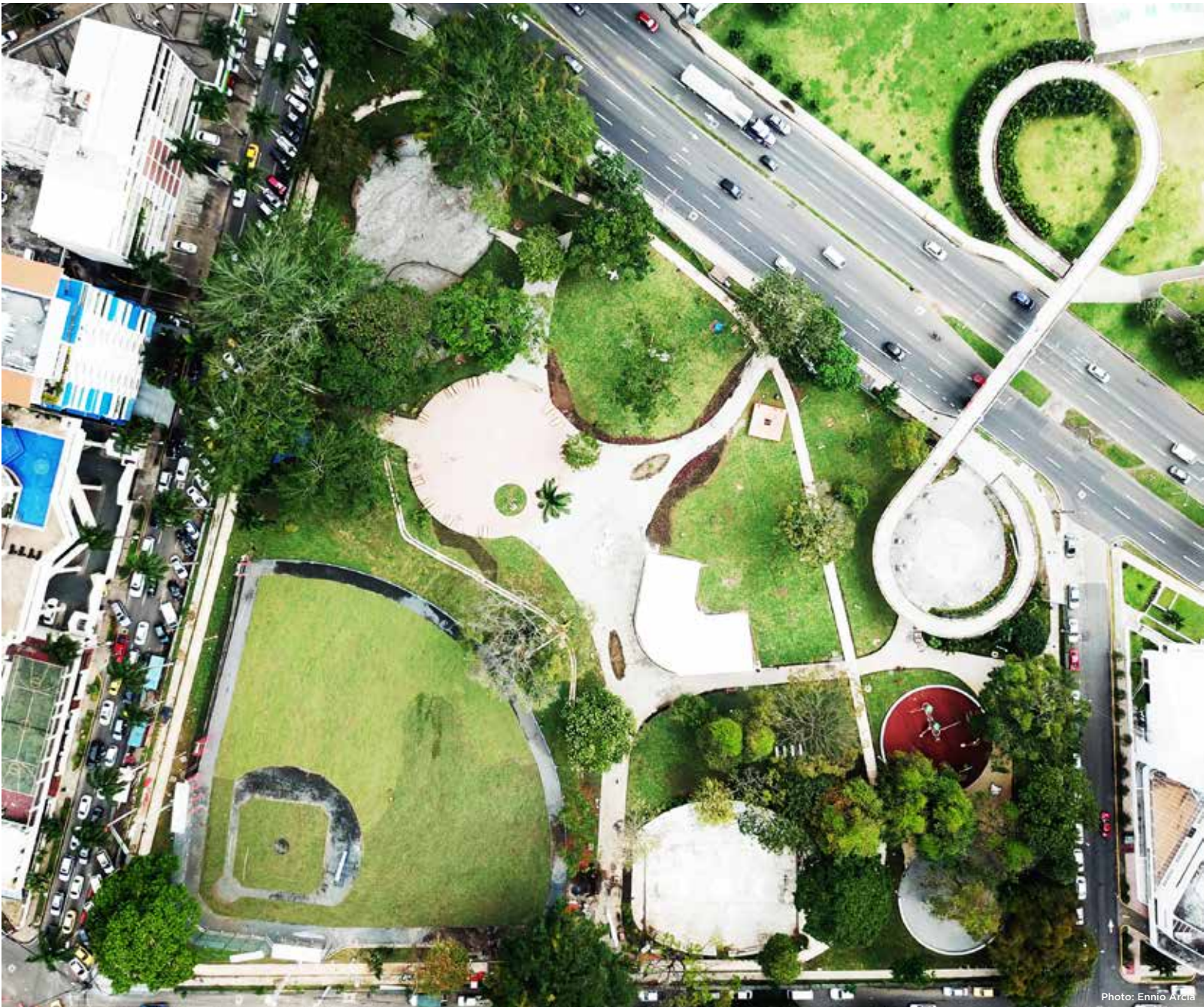
PROJECT

Municipal multi-department system of geographic information

Accelerated growth in Panama City has led to a significant number of buildings situated in danger zones. Rapid development also poses an important challenge to make decisions on the territory, for there is a shortage of updated information. Within the Municipality of Panama, there are various sectors used as sources of geographical information that have the potential to be coordinated and unified to offer a more integrated, useful, and thorough system for identifying risks.

The initiative focuses on the integration of geospatial data in a unique geographic data system (SIG) for District of Panama. This will allow a larger amount of information to be made available to public officials and citizens upon making their decisions. Some of these tools are already in progress and are driven by the Environmental Management Division and the Urban Planning Division.

The SIG platform will have free access and contain layers with cadastral information (road and premises management), risk information (types of soils and flood areas) and, in the future, dynamic information about the vulnerabilities existing in the city (water-table level, river flows and levels, rain meters, among others). This information will be made available to any user of the system in real time and it will provide access to historical data stored for sensitivity analyses and monitoring of changes, as well as inputs from local academic and scientific organizations will be found.



 **STATUS**
Planning underway

 **TIMEFRAME**
Medium term

-  **CONTRIBUTION TO THE CITY'S RESILIENCE**
- It will maximize both public resources and management know-how to reduce risk.

It will create the tools to analyze the various risks posed by a city whose urban pattern is expanding hand in hand with rapid economic development.

With decentralization, the Municipality of Panama will undertake the duties concerned with risk management, thereby showing technical capabilities by integrating new tools for risk management.

It will be a proposal of paradigm change for the benefit of all the sectors involved, which will result in greater and better options for decision making, while being a valuable support, with robust technical foundations, for the Central Government.
-  **RESPONSIBLE AUTHORITY**

Higher Office (MUPA) and Urban Planning Division (MUPA).
-  **PARTNERS**

Resilience Division (MUPA), Works and Constructions Division (MUPA), Environmental Management Division (Sub-Division of Climate Change and Vulnerability MUPA), and Social Management Division (MUPA).
-  **NETWORK OF CITIES**

Quito, Santiago de Chile and .Thessaloniki
-  **INDICATORS**

Percentage of progress in the development of the platform.

Percentage of progress in the feasibility study and opportunities to apply the system.

SIG territory coverage percentage of District of Panama
-  **RESILIENCE QUALITIES**

 Reflective  Robust  Integrated
- 138
- 139

Certificate of Prior Disclosures



Panama City has a dynamic real estate industry that is attractive for investing; however, a portion of such investments are usually made in danger zones due to unawareness of existing natural threats, as well as regulatory restrictions. In order to promote proactive use of information, this action focuses on the implementation of a system allowing the real estate owners to have clear collection of the permitted uses, urban conditions, and risk circumstances concerning them. This report shall be used as a starting point in the planning processes of projects consisting in the new development, densification or refurbishment of properties. This will allow investors and property owners to understand the potential for developing a site and its restrictions before conducting any surveys and investments.

As a result, the local authority may apply its ordering

schemes more effectively, in its capacity as planning entity, whilst promoting safer real estate developments. This system will articulate on the basis of key tools, such as the Land Use Plan (POT), danger zone maps and the constant updating of the databases of a Municipal Geographic Information System.

In practice, residents, land owners and interested developers are believed to have access to this information at any time. The Certificate of Prior Disclosures shall be attached to every municipal submission of paperwork associated with any given property, together with the project scheme proposal, its locations and both technical and SIG-related information from the very beginning of the whole process. This system is going to be made official by means of a Municipal decree.



STATUS
Planning underway



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE
A system that will prevent the creation of new risks and reduce environmental decline.

It will prevent social problems and contribute to the development of a more cost-effective and efficiently running city both for the local and central governments and investments as well.

It will maximize both public resources and management know-how to reduce risk, thereby preventing redundant processes.

It will help to guarantee sustainable investments.

It will boost civilian confidence in institutions.



RESPONSIBLE AUTHORITY
Urban Planning Division (MUPA) and Works and Constructions Division (MUPA).



PARTNERS
Resilience Division (MUPA), and Environmental Management Division (Sub-Division of Climate Change and Vulnerability MUPA).



NETWORK OF CITIES
Santiago de Chile.



INDICATORS
Percentage of progress in development and approval of the procedure and guideline to obtain the certificate of prior disclosures.

Number of applications for certificate that were responded to.

Number of applications for construction permits supported by a certificate of prior disclosures.



RESILIENCE QUALITIES
 Inclusive  Integrated  Robust

 ACTION 4.1.3.

PROGRAM

Structural assessment: TRAINING AND CONSTRUCTION FOR VULNERABLE AREAS

In Panama City, the houses most vulnerable to floods are located in the east zone. Given its geography and plain topography, very close to sea level, these shocks have been exacerbated with the advent of climate change and even increased in some other areas of the city. On the other hand, in the northern and central areas, many edifices are vulnerable to landslides, mudslides and strong winds. These risks are localized in the most elevated areas of San Miguelito and neighborhoods such as Ernesto Cordoba, Las Cumbres and Alcalde Diaz.

This initiative seeks to carry out training programs of trades related to construction and technical support in the building of works for inhabitants of informal slums. The program will be centered on creating a tool, as well as in training people, for rapid structural characterization of buildings. The rapid evaluation tool would consider a checklist to determine if it is necessary or not to conduct a structural evaluation of the houses and/or a structural reinforcement thereof. Such evaluation will be used as an initial instrument.

The program will teach how to use the evaluation tool and thus give relevant skills to the local population involved in this type of construction. The training of people in construction-related trades helps to create future job opportunities and thus enhance the knowledge of the people who are currently performing this task. Evaluators are expected to identify the structural system of the houses visited, categorize them, identify and document their vulnerabilities in terms of resistance to earthquakes and floods and direct the need for a more detailed investigation.

The program will carry out training workshops in the most vulnerable communities and the long-term goal is to improve the building capacity of the city's lower-income communities, so they can improve the construction quality of the houses and thus make them more resilient to the shocks and physical stresses they may experience in the future.



Photo: MUPA

In order to ensure this program's sustainability, training courses "to instruct instructors" will be held, so that their participants could then become instructors who can replicate these workshops in other communities.



STATUS
Proposal



TIMEFRAME
Short term



CONTRIBUTION TO THE CITY'S RESILIENCE

The graduates from this program will act as a multiplying entity for the strengthening of risk management capabilities at neighborhood level, while promoting the implementation of both ordering plans and contingency plans.

It will engage people from the community in order to establish the necessary priorities for the infrastructure to be the most appropriate one to face the present challenges.

It will strengthen the vision regarding how the city is to continue its growth.

It will foster citizenship participation and offer opportunities for sustainable and human development, which will in turn have a knock-on effect on the city's increased resilience.



RESPONSIBLE AUTHORITY

Resilience Division (MUPA) and Municipality of San Miguelito (MUPA).



PARTNERS

Works and Constructions Division (MUPA), Urban Planning Division (MUPA), Citizenship Participation and Transparency Division (MUPA), Environmental Management Division (Sub-Division of Climate Change and Vulnerability MUPA), Social Management Division (MUPA), National Civil Protection System (SINAPROC), Panamanian Chamber of Construction (CAPAC), Panamanian Society of Engineers and Architects (SPIA).



NETWORK OF CITIES

Quito, Medellin and Mexico City.



INDICATORS

Number of workshops organized for builders.

Number of workshops organized for instructors.

Number of households whose infrastructure has been evaluated.

Number of inhabitants of the communities participating in the training programs.



RESILIENCE QUALITIES

 Reflective  Robust  Inclusive



Credit: BuildChange



INSPIRATION FROM
Medellin, Colombia

In Colombia, the city of Medellin is collaborating with the residents of informal slums in regard to house refurbishment, with the aim to improve their living conditions,

besides incorporating their houses into the rest of the city and thus mitigating the risk of mudslides or earthquakes. Together with Build Change, a Partner of the 100RC Platform, an organization that endorses the efforts made by cities to improve the safety of buildings by means of seismic adaptations, Medellin's Resilience Office created a handbook establishing the technical procedures and guidelines for the adaptation of houses to seismic resistance in Colombia. The national government approved these guidelines and provided funding to update pilot programs in 50 households. Nowadays, the city is working with the World Bank to obtain funds and expand the pilot program to thousands of informal households for the next years to come. Build Change is also training builders from different communities in construction techniques and methods, since these are necessary to evaluate and modernize houses. Therefore, this initiative will boost the local economy, raise awareness and improve risk management across the community, while underpinning the investment capacity of residents in their own communities.

ACTION 4.1.4.

PLAN

Municipal Comprehensive Contingency Plan

The Municipal Guide to Risks of Disasters in Panama for 2016 is a document that has just been published to support the work of local governments on the area of disaster response and recovery. It is a methodological proposal presented by the SINAPROC, with the endorsement of CEPREDENAC, with the aim to provide municipal governments with a tool that facilitates the analysis of risk conditions in their own territories and the identification of actions oriented towards the mitigation of risks of disasters. The Municipal Guide promotes municipalities’ active role in preparedness and response to disasters.

This action proposes an integral management of risk based on a plan to be implemented at local level. The Contingency Plan will be designed within the framework of the recommendations provided by the Municipal Guide to Risks of Disasters in Panama and will include the actions to take, the tasks to perform, the necessary resources and indications for the population to prevent any known threats.

The goal is to have a local plan in accordance with the new guidelines given by the Sendai Framework for the Reduction of Risk of Disasters 2015-2030, with special emphasis on awareness and training in prevention to be conducted jointly with the relevant communities.



STATUS
Planning underway



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY’S RESILIENCE

It will reaffirm the local authority’s commitment to facing the existing risks and effects of climate change.

It will serve, besides the players involved, citizens and their own property.

An orderly management of risks in the city will thus help: to make better use of resources, to prevent any duplicity of efforts and to streamline interactions upon serving citizens in case of any threatening event.

A city surrounded by wetlands, located on a coastline area and with potential risks for its infrastructure, does require its local authority to make the most of the opportunities given by decentralization in order to guarantee the safety of its residents. This will be accomplished by means of robust support positioning the entity as a leader of local risk management and as a governmental entity with wide availability to endorse management conducted by the SINAPROC.

A city with all the considerations and variables thus studied and applied in a single instrument will boost its resilience to short-, medium- and long-term shocks.



RESPONSIBLE AUTHORITY

Higher Office (MUPA), Environmental Management Division (Sub-Division of Climate Change and Vulnerability MUPA) and Resilience Division (MUPA).



PARTNERS

Social Management Division (MUPA), Works and Constructions Division (MUPA), Urban Planning Division (MUPA), National Civil Protection System (SINAPROC), Authority of the Panama Canal (ACP), Coordination for the Prevention of Natural Disasters in Central America (CEPREDENAC), Panamanian Red Cross, Japan’s International Cooperation Agency (JICA), and the U.N. International Strategy for Disaster Reduction (UNISDR).



NETWORK OF CITIES

Santa Fe.



INDICATORS

Percentage of progress in the making of TDRs for the Plan.

Percentage of progress in the making of the Plan.

Number of actions implemented and derived from the Plan.

Percentage of progress in establishing a reporting system of weather and climate conditions for citizens.



RESILIENCE QUALITIES

Robust Inclusive Integrated

 ACTION 4.1.5.

PROGRAM

Comprehensive Disaster Risk Reduction Program



As a result of the city’s rapid growth and lack of integrated planning, families in the municipalities of Panama and San Miguelito have been settling down in danger zones in the last few decades. Every year, many of these communities undergo a significant number of drawbacks due to floods, landslides and highly strong winds. So far, there is no adequate information available to understand the scale of these drawbacks, or any coordination scheme for the control of such shocks.

Guided by the best resilience practices in communities promoted by the International Federation of the Red Cross, the U.N. International Strategy for Disaster Re-

duction (UNISDR), and the Rockefeller Foundation, this action seeks to maximize the role of communities and their citizens in the development of resilience at the local level. Community work will not only focus on improving services and infrastructures locally, but also on strengthening some other ‘soft’ aspects targeted at empowered individuals and families in the lowest-income communities. This includes aspects such as: understanding of citizens’ rights and duties, health and self-care and understanding of the setting.

Within this context, the program will focus on three major components:



STATUS
Planning underway



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY’S RESILIENCE
It will make it possible to initiate an intermunicipal coordination process to take actions to face these threats posing a risk for a significant portion of the citizenship.

It will boost collaboration between local authorities with the technical support of both their operating divisions and international experiences.

It will involve and train civilians in risk management.

A roadmap involving communities that will enable the city to be better prepared for any risks related to climate change, as these recent events show an increase in the incidence of these impacts.



RESPONSIBLE AUTHORITY
Higher Office (MUPA), Higher Office of the Municipality of San Miguelito, Resilience Division (MUPA), and Environmental Management Division (Sub-Division of Climate Change and Vulnerability MUPA).



PARTNERS
Social Management Division (MUPA), Urban Planning Division (MUPA), Citizenship Participation and Transparency Division (MUPA), Urban Planning and Risk Management Division of the Municipality of San Miguelito, Community Boards, National Civil Protection System (SINAPROC), Technological University of Panama (UTP), University of Panama (Institute of Geosciences), Florida State University (Urban Risk Center), the U.N. International Strategy for Disaster Reduction (UNISDR), Coordination for the Prevention of Natural Disasters in Central America (CEPRENAC).



NETWORK OF CITIES
Los Angeles, Rio de Janeiro, Santiago de Chile.



INDICATORS
Percentage of progress in pilot programs and making of the Action Plan.

Number of meetings of the intermunicipal work round table.

Number of people participating in training and awareness programs on the risks of mudslides and other vulnerabilities.



RESILIENCE QUALITIES
 Reflective  Robust  Inclusive
 Integrated



Credit: MUPA

1. Learning with the communities

Community workshops and campaigns to identify risks, necessary capabilities and existing skills to offer a timely and effective action for risky situations. Community mapping methods will be used for residents to identify danger zones and the factors contributing to determine them. Likewise, we will explore which practices, assets, and infrastructures actually make the community safer, and we will try to identify the needs for information and training in ‘soft’ issues, such as legal aid, self-care in community health and organization.

Technical support for an evaluation of the critical infrastructure present in the community, especially that which can play a key role during emergencies, such as healthcare workstations, schools, kindergartens, and potable water and cleanup systems.

2. Technical learning and governance

A survey requested by the municipalities to synthesize the existing technical knowledge required in respect to soil conditions, construction typologies, and forms of settlement that exacerbate the vulnerabilities of houses and infrastructure in the districts of Panama and San Miguelito.

Intermunicipal coordination board to define a roadmap designed to implement medium- and long-term actions, especially for any actions targeted at strengthening community organizations and implementing risk mitigation works.



Credit: Resilient Da Nang



INSPIRATION FROM
Da Nang, Vietnam

In Vietnam, the city of Da Nang is facing a substantial risk of typhoons and severe storms, which typically cause strong winds and floods that damage communities, especially the homes of people living in poverty conditions. In its resilience strategy, Da Nang is pursuing a series of complementary initiatives that will address the needs of such neighborhoods. These will map and assess the exposure of houses to storms, with the aim to produce disaster adaptation plans for the highest-risk vicinities. In order to put the information to work, training courses will be developed in the community concerning the recommended construction materials and the best building practices for resistant houses. Afterwards, efforts will be made to guarantee that residents could make use of these practices by expanding the funding available for loans. Finally, Da Nang will promote the scope, awareness and education intended to augment the community’s resilience and social cohesion, especially in regard to climate change and risk mitigation in case of natural disasters.

3. Action plans

The communities will make a Local Action Plan, so as to spot shelters, escape routes, early alerting systems and measures to reinforce community networks. The communication of this plan will be a component of utmost importance for the benefit citizens may reap from this initiative, so that they can adopt this learning in their daily life.

The Action Plan will also identify public spaces and priority infrastructures for the community and the necessary supports for the formalization and consolidation of the community in the medium term. The themes to be explored and articulated will include, but not be limited to, landholding, accesses to potable water and sewage systems.

On the other hand, the municipalities of Panama and San Miguelito will, in collaboration with the participants of the 100 Resilient Cities network, provide support and monitoring aimed at implementing major works where foreign funding and support are required as mitigation measures; for instance: legalization processes for landholding or installation of aqueducts.

Given the complexity of the work required and the scales of needs existing in informal neighborhoods within the city of Panama, the work will start by carrying out a small number of pilot programs. Once these methods, required alliances and community support processes have been tested and streamlined, the program will be replicated in a larger number of communities.

Multi-Department Technical Board of Works & Infrastructures

The planning system in Panama is characterized by participation of various entities, both national and municipal. Given the diversity of these entities and the limited role of municipalities, much of the insight into risks within the territory generated locally is not integrated into the project development and approval process.

This action focuses on the creation and implementation of a municipal scheme providing technical contribution, and with a multidisciplinary perspective, to the development and evaluation of projects in District of Panama. A multi-sector group will be created and formalized by way of a Technical Board, which will generate both contents and ideas for the review of projects. The objective of this effort will be to minimize risks in the implementation of the project, by encouraging good environmental design and collaboration practices, as well as creation of technical dialogue spaces with the private sector and organizations from the civil society.

This process has already started with meetings between the various divisions to review specific projects in flood zones with the support of an online platform. In the future, the work of such board is expected to mean a proactive contribution to participate in the development of relevant projects for the city. By implementing a multidisciplinary team, approval authority levels may also integrate information from organizations of the civil society, the private sector and academic and/or scientific knowledge. Thus, the Municipality will not only play an approval role, but also take part in the improvement of the quality of the proposals made for the city. This work will be supported by the SIG platform of the Municipality of Panama.

The monitoring of evaluations will include real estate and mining projects, as well as applications for landslides, blueprints and permits granted or sought to be granted, and any other analysis requested, including environmental impact assessments.



STATUS
Planning underway



TIMEFRAME
Short term



CONTRIBUTION TO THE CITY'S RESILIENCE
It will maximize both public resources and management know-how to reduce risk.

It will provide the necessary tools to consider risks at a multidimensional level in a city whose infrastructure moves forward driven by rapid economic development.

It will prevent risks for projects, which will in turn benefit both for the public sector and the field of business, for it guarantees sustainable investments.

The Municipality of Panama will undertake the duties concerned with risk management, thereby showing technical capability by integrating new tools for risk management.



RESPONSIBLE AUTHORITY
Higher Officer (MUPA).



PARTNERS
Works and Constructions Division (MUPA), Urban Planning Division (MUPA), Resilience Division (MUPA), Environmental Management Division, Social Management Division (MUPA) and Legal and Justice Division (MUPA).



NETWORK OF CITIES
Quito, Santiago de Chile and Thessaloniki.



INDICATORS
Number of construction permits evaluated by the system.

Number of construction permits granted.

Number of Environmental Impact Assessments for review.



RESILIENCE QUALITIES
Reflective Robust Integrated



Photo: Ennio Arcia



Photo: MUPA

4.2 To create safety for residents upon understanding of their vulnerabilities.

To develop a resilient Panama City is not only a long building process, but also a democratic exercise, where citizens stop playing a walk-on part and become a protagonist in the design of their own capacity to resist, recover, and adapt to the threats posed by their own setting.

ENRIQUE VARGAS

—SUB-DIRECTOR OF CLIMATE CHANGE AND VULNERABILITY, MUNICIPALITY OF PANAMA

Communication and Education Program for Disaster Risk Reduction



At this moment, the Local Government’s communication of risk to civilians is carried out in an incidental manner. Nevertheless, municipal actions to support civilians have an impact and are recognized by communities, this brings a valuable opportunity to connect municipal authorities with their residents, thus empowering the latter to be better prepared for facing risks.

This action proposes establishing a risk communication and education campaign enabling citizens to have a better understanding of the existing vulnerabilities and natural threats.

The main components of this plan will include:

- school programs for an education integrated to the general schooling curricula,
 - annual campaign for the prevention of disasters, in coordination with the authorities of the central government,
 - online communications plan to boost community participation in risk management,
 - media campaign (TV, radio, social networks) for a safer city
 - and articles on local magazines and newspapers.
- A coordination will be established with the educational programs of academic entities, programs and networks of the City of Knowledge and other interinstitutional educational programs, especially with NGOs.

**STATUS**
Proposal

**TIMEFRAME**
Medium term

**CONTRIBUTION TO THE CITY’S RESILIENCE**
It will allow for an alignment of all the players with respect to a common goal for the preparedness of the city in the face of risks. It will augment the joint responsibility of civilians and authorities, with a maximization of resources in case of any threat.

It will strengthen awareness of risks since childhood, in order to bolster and inform future leaders in risk management.

A city well informed about risks prepares its citizens to be rapidly and effectively responsive to any threat.

**RESPONSIBLE AUTHORITY**
Resilience Division (MUPA), Communications Division (MUPA) and Environmental Management Division (Sub-Division of Climate Change and Vulnerability MUPA).

**NETWORK OF CITIES**
Bangkok, Santiago de Chile and Surat.

**PARTNERS**
Culture and Education Division (MUPA), Citizenship Participation and Transparency Division (MUPA), Social Management Division (MUPA), Ministry of Education (MEDUCA), National Civil Protection System (SINAPROC), United Nations (UNISRD), Urban Citizenship Network, CATHALAC, Red Cross, Japan’s International Cooperation Agency (JICA), ICLEI, and the City of Knowledge.

**INDICATORS**
Percentage of progress in designing the communications and education plan.

Percentage of progress in the implementation of the communications and education plan.

Number of people participating in awareness activities.

Number of schools and educational centers incorporating risk management in their curricula.

**RESILIENCE QUALITIES**
 Reflective  Resourceful  Inclusive

Early Alert Program for the boroughs of the Metropolitan Area

This initiative proposes creating a community program intended to assure the effective functioning and use of early alert systems (SATs). SINAPROC has already started its efforts to implement early alert tools for floods in rivers located to the east of the city, as is the case of Juan Diaz River, with training given to the nearby communities. These should be extended to more zones in Panama City and San Miguelito.

This action seeks to enhance the work undertaken by SINAPROC, by establishing a local joint responsibility for the early alert tools. The municipalities of Panama and San Miguelito, in collaboration with the competent national authorities, will cooperate to review, understand, improve, and expand the alert systems to other areas of the city.

In line with the studies derived from SATs and performed earlier, we will include systems associated with three key threats for Panama City: landslides, tsunamis, and floods.

On a complementary basis, it is proposed that quarterly training courses be offered to the public at the municipal seats of Panama, San Miguelito and allied institutions. The program schedule will be publicized on the websites of each municipality.

 **STATUS**
Planning underway

 **TIMEFRAME**
Medium term

 **CONTRIBUTION TO THE CITY'S RESILIENCE**
It will make it possible to initiate a joint intermunicipal coordination process to take actions to face these threats.

It will boost collaboration between local authorities with the technical support of both their operating divisions and that derived from leveraging international experiences.

It will involve and train residents in risk management in a direct and tangible manner.

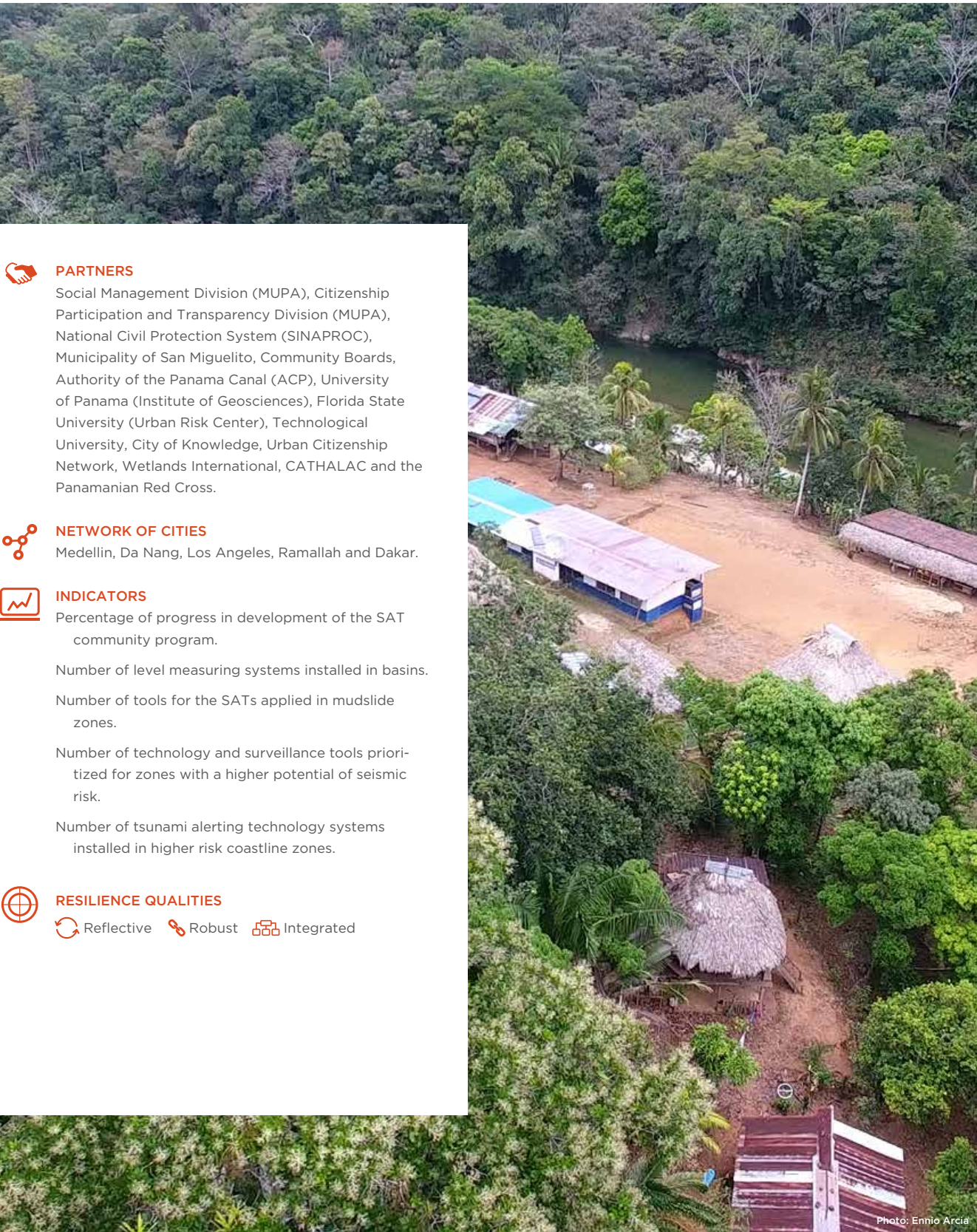
An Early Alert System involving communities that will enable the city to be better prepared for risks.

It will augment joint responsibility levels between the government and residents for risk management.

It will also augment community empathy levels and the sense of connectivity and cohesion among citizens for everyone's safety.

To know of risks in time will entail immediate actions resulting in a maximization of resources and a reduction of casualties and property damages.

 **RESPONSIBLE AUTHORITY**
Higher Office (MUPA), Higher Office of the Municipality of San Miguelito, Environmental Management Division (Sub-Division of Climate Change and Vulnerability MUPA), Resilience Division (MUPA), and Risk Management Division of the Municipality of San Miguelito.



 **PARTNERS**
Social Management Division (MUPA), Citizenship Participation and Transparency Division (MUPA), National Civil Protection System (SINAPROC), Municipality of San Miguelito, Community Boards, Authority of the Panama Canal (ACP), University of Panama (Institute of Geosciences), Florida State University (Urban Risk Center), Technological University, City of Knowledge, Urban Citizenship Network, Wetlands International, CATHALAC and the Panamanian Red Cross.

 **NETWORK OF CITIES**
Medellin, Da Nang, Los Angeles, Ramallah and Dakar.

 **INDICATORS**
Percentage of progress in development of the SAT community program.

Number of level measuring systems installed in basins.

Number of tools for the SATs applied in mudslide zones.

Number of technology and surveillance tools prioritized for zones with a higher potential of seismic risk.

Number of tsunami alerting technology systems installed in higher risk coastline zones.

 **RESILIENCE QUALITIES**
 Reflective  Robust  Integrated

Photo: Ennio Arcia



5 Joint responsibility when building the city

Empowering local management and its administration

Goals

- 5.1 To strengthen management by streamlining both processes and resources.
- 5.2 To foster participation in order to build more co-responsible residents.

Problem Statement

The public administration decentralization process (as established by Law No. 66 of October 29, 2015, as amended by Law No. 37 of 2009), promotes local development, enhances transparency, transfers administrative and fiscal jurisdictional competencies, and strengthens governance on the part of local institutions. This change places Panama City at a moment of structural and budgetary transition. This means that the city has the chance to lay the foundations and establish processes potentially leading to a more empowered, efficient, organized, and result-driven management.

The Municipality has the potential to grow as a governmental entity and conduct a modern public administration, based on evidence and functioning transparently and accessible for everyone. This new decentralization stage is going to make it possible to create processes that will make a long-term mark on local administration with significant engagement of the civil society.

The Municipality does not have a robust project monitoring and evaluation system. Projects do not include results or impact indicators, which makes it harder to perform a real assessment that may help us

highlight the advance of projects, create greater transparency and/or seek funding. Likewise, it is necessary to elaborate a plan oriented towards a multi-year development where resources should be allocated and evaluated in accordance with a plan.

A sustainable development leverages the importance of community engagement. This entails understanding of topics concerning human rights which involve all citizens, regardless of their ethnic group of origin, sex, sexual orientation, nationality and social condition (CEASPA, 2018c). In order to address these issues and be able to evaluate what may happen in the future, a proposal of social cohesion indicators has been made (CEASPA, 2018a). Facing these challenges, strengthening the linkage between the various levels of Central and Local Governments becomes the key to promoting positive shared management and build a city for everyone.

When inclusive management is boosted by efficiently leveraging resources, it thus strengthens its capacity to measure impacts and improvements of its institutional capacity. Thus, the municipality becomes an organization of greater relevance and highlights the need for more autonomous local governments.



5.1 To strengthen management by streamlining both processes and resources

It is of utmost importance that at management level, especially the municipal one, budgets prioritize resources for actions targeted at helping to mitigate and prevent any social or natural disaster. The vision lies in the fact that we should keep supporting both divisions and their own departments for the execution of risk management projects and the necessary resources to tell the whole community about the goals and achievements reached by said projects, as I consider that budget priority for resilience is an issue that goes beyond administrations, as it is a governance issue that deserved to be trusted by the various sectors of municipal management.

VERUSCHKA RAMOS

—DIRECTOR OF STRATEGIC PLANNING AND BUDGET

 ACTION 5.1.1.

PROGRAM

How are we doing, Panama?

Since April 2018, the Municipality, jointly with the National Competitiveness Center (CNC), have coordinated a program attended by presidents of organizations from the business field and representatives of the labor and governmental sectors. The program is aimed at fostering actions leading the entities to a better and greater production, within a suitable atmosphere for local and foreign investments, thus promoting the population’s welfare.

As a part of this program, a civic monitoring system is being developed, the goals of which seek to foster informed, responsible, and participative residents through monitoring and evaluation of the city’s quality of life. Through the creation of a citizenship observatory, a monitoring and follow-up exercise through development indicators will be conducted on a regular basis.

An evaluation of indicators by sectors is being proposed, with the respective making of opinion surveys, preparation of advance and systemic follow-up reports on the current condition of the city, including social cohesion and equity indicators. The follow-up of indicators will promote informed decisions and an accountability process from the municipal government to the citizen.

**STATUS**
In progress

**TIMEFRAME**
Medium term

**CONTRIBUTION TO THE CITY'S RESILIENCE**
This will enhance transparency by informing and engaging citizens in the issues having an impact on the sustainable development of the city.

It will provide data and strengthen decision-making processes in the city.

It will enhance resources by complementing know-how and underpinning the capabilities of the institution in its various fields of work.

**RESPONSIBLE AUTHORITY**
National Competitiveness Center (CNC).

**PARTNERS**
Higher Office (MUPA), Citizenship Participation and Transparency Division (MUPA) and Resilience Division (MUPA).

**NETWORK OF CITIES**
Mexico City.

**INDICATORS**
Number of management reports made and shared.

Number of opinion surveys conducted.

**RESILIENCE QUALITIES**
 Reflective  Inclusive



Photo: MUPA

Bidding processes based on more and better opportunities

Panama City wishes to obtain better solutions and options to the bidding processes it launches. The goal of this program consists of increasing the number of participating companies, regaining trust in the idea that the city is a good business partner, implementing innovation to achieve better results, and making the whole process fair.

We are working on a platform intended to help the municipal government officials to offer better services, by connecting them to solutions, projects, departments, and cities across the world.

In this new model, the bidding process starts with a declaration of opportunity, which generates an overview of any given project to be shared with the working teams. Then, we seek to enhance the engagement of new groups of supplies and thus multiply the results of the bidding process. The municipal Zero Trash Program, jointly with the Sub-Division of Public Procurement, are working on a pilot project of innovative bidding processes with the endorsement of CityMart, which supports the making of the project and the bidding process for the solid waste disposal program. We have made the proposal of the project based on an initial problem, a transparent communication strategy in the bidding process, and methodologies to maximize suppliers' bids for this type of service.



STATUS
In progress



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE
This is a model that will strengthen municipal management by providing more opportunities to maximize resources.

It will boost better outlined and founded projects.

It will promote a wider and more diverse variety of choices for projects to be executed with greater speed and effectiveness in the case of the urgencies facing the city in the execution of works.



RESPONSIBLE AUTHORITY
Secretary General's Office (Sub-Division of Public Procurement, MUPA), Environmental Management Division (Zero Trash Program, MUPA), Resilience Division (MUPA).



PARTNERS
Higher Office (North Park Office, MUPA), and Citymart.



INDICATORS
Percentage of progress in the pilot bidding process.

Number of interested suppliers.

Number of new projects joining the bidding system based on opportunities.



RESILIENCE QUALITIES
Reflective Integrated

Collecting 110% for Panama



The goal of this initiative is to create and underpin incentives for a better tax collection. This action would have three components:

- Creation of the “110% for Panama” communication campaign, promoting the idea that public revenues are useful for public welfare and encouraging taxpayers to pay at will an additional 10% over their tax assessments.
- Implementation of an accountability and transparency system to connect the taxes paid by people with improvements in services.
- Generation of a comparison of tax payment and collection data where these are triangulated with other means to spot cases of delinquency and thus being able to trace and investigate any reasons for such arrears.



STATUS
Planning underway



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE
A better management of revenues will increase the availability of resources for the city.

An increase in the city's own revenues will reduce its dependence on other funding sources.

Due to the increase in funds available for investing, the Municipality will be capable of improving the infrastructure of highways, education, healthcare and recreational facilities.



RESPONSIBLE AUTHORITY
Municipal Treasury (MUPA).



PARTNERS
Strategic and Budget Planning Division (MUPA), Community Services Division (MUPA), Communications Division (MUPA), Citizenship Participation and Transparency Division (MUPA), Legal and Justice Division (MUPA), Works and Constructions Division (MUPA), and Urban Planning Division (MUPA).



INDICATORS
Number of cases of tax delinquency.

Number of communication campaigns implemented.

Percentage of increase in tax collection.



RESILIENCE QUALITIES
Integrated

 ACTION 5.1.4.

PROGRAM

Strengthening our capabilities to implement a better management

This initiative seeks to bolster municipal careers, underpin the knowledge and awareness of municipal and decentralization laws and requirements, while improving administrative processes, with the aim to empower the Municipality to start up new office duties. This action consists of three components:

- To develop tools and drafting of handbooks of processes and procedures for the Procurement, Acquisition, Strategic Planning and Budget Divisions.
- To provide knowledge and develop skills for the performance of specific positions, with new tools that will help the personnel to use them, thus promoting the continuance of administrations, through the establishment of expected timeframes for preparedness, strengthening of socialization processes, execution of processes and standardization of the presentation of project profiles.
- Based on the tools and training, one of the priorities would be the creation of a multi-year result-based budget establishing goals with indicators of results and impacts. This will be accompanied by a program of performance incentives based on the achievement of the goals of the Municipal Plan.



STATUS
Proposal



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE

Thus, we will manage to streamline processes, prioritize needs and approaches for sustainable investments.

Both a planning and budget based on results and evidence will be developed with a holistic vision with the aim to make a better implementation and monitoring of the plans. Accomplishing the monitoring and follow-up of projects and programs will result in a leadership of trust in the actions being implemented.

There will be a reduction of administrative timeframes, thus enhancing accountability processes and creating more transparency.

It will keep public officials updated with technological advances, thus boosting their initiative and creativity.

It will underpin municipal careers and allow for the continuity of both administrative and technical staff in case of political changes. Having well-trained officials makes it possible to streamline and modernize processes, which then influences efficiency when executing multidisciplinary projects.



RESPONSIBLE AUTHORITY

Strategic and Budget Planning Division (MUPA), Secretary General's Office (Sub-Division of Public Procurement, MUPA) and Municipal Treasury (MUPA), and Strategic and Budget Planning Division (MUPA).



PARTNERS

Human Resources Division (MUPA), Resilience Division (MUPA).



INDICATORS

Number and quality of process handbooks made.

Number of officials trained in processes.

Percentage of progress in the making of theme modules for training courses.

Number of officials trained.

Percentage of progress in the making of a modernized multi-year budget.



RESILIENCE QUALITIES



Reflective



Flexible



Integrated



Photo: MUPA

ACTION 5.1.5.

Plan for the joint management of projects with the Central Government

The Municipality of Panama is taking part in a decentralization process requiring coordination and communication with the Central Government. It is key to keep open and fluent communication to avoid the lack of coordination, for this impacts the efficacy and efficiency in the making and implementation of public policies. Coordination and communication are based on the need to present projects by the local Government, including Community Boards, to various governmental agencies. At present, there is a liaison at municipal level for decentralization issues, but there is no formal structure of coordination for these schemes.

In order to complete the various decentralization phases and be able to establish better synergies to undertake duties at the local level, a program and project-based management will be established with the Central Government, as well as interinstitutional planning processes. This initiative proposes:

- A procedure to create a specific department for interinstitutional planning processes, encompassing an adequate organizational chart, duties, and direct needs to proceed with its operation.
- A guide to technical and administrative processes for the making and planning of projects, maximization of resources and bidding processes, among others.

PLAN



STATUS
In progress



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE

The generation of opportunities for projects regarding the resilience issue will be maximized.

There will be an opportunity for a prioritization of impact projects to improve risk management.

Processes will be facilitated by means of a roadmap established in order to cater for the specific needs of the population and their continuity over time. This procedure will not only help to bolster processes and fund management by the Central Government with the Municipality in relation to the decentralization process, but it may also lay the foundations of how to define joint work when it comes to programs executed by entities of the Central Government or external bodies that administer or execute financial resources with the endorsement and monitoring of the Central or Local Government.



RESPONSIBLE AUTHORITY

Higher Officer (MUPA) and Executive Secretariat (MUPA).



PARTNERS

Secretary General's Office (MUPA), Strategic and Budget Planning Division (MUPA), Human Resources Division (MUPA), Citizenship Participation Division (MUPA), Resilience Division (MUPA), National Secretariat of Decentralization and Institutions of the Central Government.



INDICATORS

Percentage of progress in the TDRs for the creation of a new department.

Percentage of progress in the drafting of the joint management guide between the Central and Local Governments with an analysis of present instruments and gaps.

Number of projects jointly made and executed by the Local Government with the accompaniment of the Central Government and vice versa.

Number of projects made by the Local Government with funding provided by the authorities of the Central Government.



RESILIENCE QUALITIES

 Reflective  Integrated

ACTION 5.1.6.

Municipal Property Registry Office



Photo: Steven Paton

The goal is to consolidate the geo-referenced information about each property, storm-water infrastructure, and other city assets, in order to know the location thereof and be able to foresee their development chances and the feasibility to build in those areas.

The Municipal Property Registry Office will be connected to a platform of the Geographic Information System (SIG), which will make it possible to generate a risk factbook or vulnerable areas and updated documents about the various buildings within the municipality.

This office will facilitate urban planning and risk management, while integrating a joint work with other divisions related to the social and environmental setting. This office will work in coordination with the Central Government and other key institutions in dealing with information making it possible to demarcate and geo-reference both premises and danger zones.



STATUS
Proposal



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE

It will drive an administrative streamlining with a unified and updated cartography that will make it possible to measure the incidence of the municipality in the development of social actions and the appraisal of the value of soil.

It will provide capability to diversify the types of taxes based on each zone and type of population.

An adequate mapping of the properties in the city will allow us to target city planning so as to guarantee the population's safety.

A department that will provide supplies to different divisions within the municipality and will even enable the institution to project its own planning of municipal infrastructure.



RESPONSIBLE AUTHORITY

Works and Constructions Division (MUPA) and Urban Planning Division (MUPA).



PARTNERS

Environmental Management Division (MUPA), Resilience Division (MUPA), National Civil Protection System (SINAPROC), Ministry of Environment (Mi Ambiente), Institute of Geosciences, National Lands Authority (ANATI), Ministry of Housing (MIVIOT).



NETWORK OF CITIES

Santiago de Chile, Santa Fe.



INDICATORS

Office created and running with a staff already established.

Number of properties and premises recorded on cadastral registers.

Number of SIG maps made with the updating derived from the Property Registry.



United Boroughs



This action focuses on defining opportunities to increase the resilience of the Metropolitan Area of Panama by creating a medium- and long-term roadmap that will facilitate the resolution of priority problems affecting the boroughs of the Metropolitan Area. These may include the mobility issue, water management, ecosystems and natural resources, among others. These are shared topics that consider biophysical connectivity between the basins associated with the Panama Canal and social connectivity due to the large number of citizens normally commuting between these cities.

The Resilience Division of the MUPA will serve as an advisor for the other boroughs so as to share the lessons learned from the construction of a Resilience Strategy, as well as to promote the creation of resilience offices in the rest of the municipalities and their respective instruments.



STATUS
Planning underway



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE

- It will promote the strengthening of alliances for a better quality of life for citizens.
- It will foster the knowledge of the current situation at a macro level and the measurement of changes after the implementation of intermunicipal projects.
- It will guarantee the transfer of know-how and a resilience vision for both the interconnected municipalities and the rest of boroughs nationwide.



RESPONSIBLE AUTHORITY
Higher Office (MUPA) and Resilience Division (MUPA).



PARTNERS
Urban Planning Division (MUPA), Social Management Division (MUPA), Environmental Management Division (MUPA), Municipality of San Miguelito, Municipality of Arraijan, Municipality of Chorrera, Municipality of Colon, Association of Boroughs of Panama (AMUPA), National Decentralization Secretariat, Traffic and Ground Transportation Authority (ATTT), Ministry of Environment (Mi Ambiente), Authority of Panama Canal (ACP), Chamber of Commerce, National Association of Business Executives (APEDE), Sumarse (Join) Business Network SUMARSE, Panama Metro, MiBus.



NETWORK OF CITIES
Mexico City.



INDICATORS
Number of collaboration agreements between municipalities.
Percentage of execution of the annual work plans.
Number of municipalities creating offices with a resilience approach.



RESILIENCE QUALITIES
Integrated

5.2 To foster participation in order to build more co-responsible citizens

Citizenship participation is a key factor for the making of a resilience strategy, since it is the essence and material reality of the populations and communities living within them, so it is in their own people. The engagement dimension in public policymaking extending beyond administrations is of utmost importance through democratic, open, accessible, and adaptable methodologies so as to achieve a genuine joint social responsibility and the strengthening of social fabric, in search for societies that can proactively develop innovation capabilities and fair, integral and sustainable solutions.

LIZVEIKA LEZCANO

—DIRECTOR OF CITIZENSHIP PARTICIPATION AND TRANSPARENCY

ACTION 5.2.1.

Alliance for resident security



This proposes enhancing the programs executed with the Municipal Security Division and the Sub-Division of Citizenship Security so as to coordinate joint actions taking into account various groups of citizens within the different security schemes, by developing actions intended to encourage leadership and development of individuals’ capabilities, both for public officials and the civil society.

Participatory workshops discussing the protection and equality of all persons, both nationals and foreigners, will be implemented.

The point is to update and provide the programs currently implemented with new ideas concerning equality, cultural coexistence between all the citizens residing in the district and a no violence approach. The strengthening of monitoring and surveillance systems in zones identified as highly prone to violence will be coordinated with agencies of the Central Government and civil society. Community networks will be taken into account for surveillance around neighborhoods and technological resources of the Municipal Surveillance System will be used.

PROGRAM



STATUS
In progress



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE

It will strengthen residents’ security in the most vulnerable communities and facilitate better integration of the community whilst boosting social resilience.

It will develop leadership capacity among individuals.

It will develop dynamics for the promotion of human rights, higher percentages of access to justice, better service and follow-up for victims.

It will promote creation of regulations for enhancement actions and eradication of violence.

It will increase joint responsibility for a safer and more resilient city.



RESPONSIBLE AUTHORITY

Higher Office (MUPA) and Municipal Security Division (MUPA).



PARTNERS

Citizenship Participation and Transparency Division (MUPA), Resilience Division (MUPA), Ministry of Public Security, Public Prosecution Service, National Police, Watchful Neighbors Program, Association of Criminology and Victimology of Panama, Pro-Equality Alliance, National Women’s Institute (INAMU), Urban Citizenship Network of Panama, National Migration Service, Panamanian Center of Studies and Human Services (CEASPA).



NETWORK OF CITIES

Medellin.



INDICATORS

Percentage of communities involved in surveillance programs in neighborhoods.

Number of surveillance devices and systems installed.

Number of new initiatives with exclusive methodologies that foster peace and a no violence approach.

Number of incidents resolved.

Number of successful cases of collaboration between the central government, local government and the civilians.



RESILIENCE QUALITIES



Reflective



Inclusive



Integrated

ACTION 5.2.2.

Let’s watch out for human rights

The Municipality of Panama is making progress in human rights issues by endorsing and sponsoring events where there is strong promotion of respect for the different groups making up its population.

This initiative seeks to implement a Citizenship Security Plan that will boost efforts to communicate and raise awareness about human rights and equality. All the sectors and communities will be taken into account, while fostering security and peaceful coexistence within the district, regardless of race, sexual orientation, physical condition, gender or nationality.

The Plan focuses on strengthening the compliance of the Mayor’s Decree Number 28 of 2015 whereby measures to prevent discrimination in the District of Panama have been adopted.

The Citizenship Security Plan covers gender equality issues with training courses, in alliance with the Culture and Education Division and the development of programs such as the Safe Women one. Synergies will be established with other programs, such as the so-called Together for a Community Free of Violence of the United Nations (U.N. Citizenship Security Program - SECOPA).

The creation of the Plan includes coordination of workshops, seminars, conferences, forums, discussions, and films to promote human rights.

Also, the need to create local public policies will be evaluated, as well as a series of guidelines to foster non-discrimination of the most vulnerable and segregated groups in the city.

PLAN



STATUS
In progress



TIMEFRAME
Medium term



CONTRIBUTION TO THE CITY'S RESILIENCE

It will promote community integration and participation.

It will foster the exchange of know-how and learning from different perspectives in order to create a more democratic and inclusive city.

It will foster public communication of the situation and most pressing needs of the discriminated sectors, for the creation of public policies intended to respond to these issues.



RESPONSIBLE AUTHORITY

Municipal Security Division (MUPA), (Sub-Division of Citizenship Security, CEDIM MUPA), Culture and Education Division (MUPA).



PARTNERS

Resilience Division (MUPA), Communications Division (MUPA), Citizenship Participation (MUPA), Social Management Division (MUPA), Ombudsman’s Office, Ministry of Education (MEDUCA), Ministry of Social Development (MIDES), National Secretariat for the Development of Afro-Panamanians (SENADAP), Vice Ministry of Indigenous Affairs, Pro-Equality Alliance, National Women’s Institute (INAMU), National Secretariat for Disabled People (SENADIS), IDB, PNUD, U.N. High Commissioner’s Office for Human Rights (OACNUDH), Panamanian Center of Studies and Human Services (CEASPA).



NETWORK OF CITIES

Medellin.



INDICATORS

Percentage of progress in the making of the Municipal Action Plan for Human Rights.

Advance in the implementation of the Action Plan.

Number of training courses and seminars.

Number of events and activities promoting equality and non-discrimination.

Number of municipal public policies derived from action for human rights and no discrimination.

Number of publications and audiovisual material produced.



RESILIENCE QUALITIES



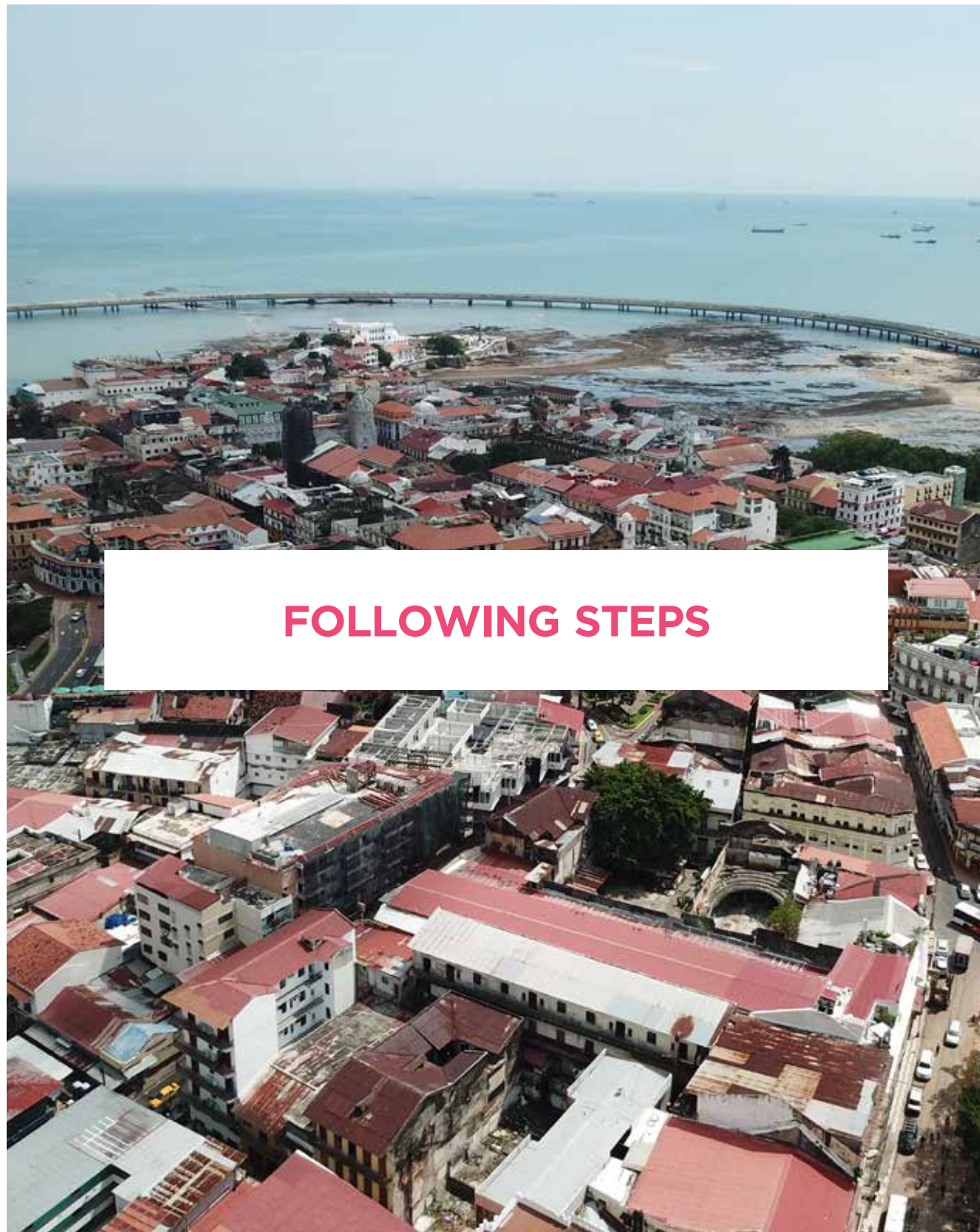
Reflective



Inclusive



Integrated



FOLLOWING STEPS

This is the first resilience strategy for District of Panama, in collaboration with the District of San Miguelito. This document helps to consolidate the proposal of a series of projects and initiatives that will enable us to focus on priorities and actions intended to achieve the change required for the city. Efforts will be made to undertake these responsibilities with leadership, thereby consolidating economic resources, overcoming political barriers and making full use of its new competences. This work will not be possible without the participation of the various sectors that have already consolidated a close collaboration with the local authority.

The vision for this strategy is that it should serve as an instrument to overcome the barriers posed by any change of governmental administration in the next ten years to come. A follow-up of the implementation of each and every one of these actions will be conducted. As a whole, these actions show that this city, in spite of being located in danger zones, can develop in a sustainable fashion, while preserving its natural resources and leveraging the goods and services that the ecosystems around it provide us.

Given this historic opportunity to decide on the ordering of our territory, the Resilience Strategy proposes a series of first steps to take for a change of paradigm in the way we are building our city. This will in turn produce a knock-on effect on the rest of the cities across our country in favor of a resilient nation.

ABBREVIATIONS AND ACRONYMS

100RC The 100 Resilient Cities	CEASPA Panamanian Center of Studies and Human Services	DGS Social Management Division - MUPA	MINSA Ministry of Health	SENADIS National Secretariat of Disabled People	Engineers and Architects	UMIP International Maritime University of Panama	for Disaster Reduction
AAUD Urban and Household Cleaning Authority of Panama	CEDIM Center for Entrepreneurship and Integral Development of Women	DO&C Works and Constructions Division - MUPA	MITRADEL Ministry of Labor	SIG Geographic Integration System	STRI Smithsonian Institute of Tropical Investigations	UNESCO United Nations Education, Science and Culture Organization	UP University of Panama
ACP Authority of the Panama Canal	CEPREDENAC Coordination for the Prevention of Natural Disasters in Central America	DPU Urban Planning Division - MUPA	MIVIOT Ministry of Housing	SINAPROC National Civil Protection System	Sumarse RSE Sumarse (Join) - Corporate Social Responsibility		UTP Technological University of Panama
ACNUR U.N.'s High Commissioner for Refugees	CI International Conservation	EY Ernst & Young	MOP Ministry of Public Works	SPIA Panamanian Society of			
ANATI National Lands Authority	CIAM Center of Environmental Incidence	FCDS City of Knowledge Foundation	MP Public Prosecution Service				
ANCON National Association for the Conservation of Nature	CIMUF International Coalition of Women and Families	FSU Florida State University	MUPA Municipality/Borough/City Hall of Panama				
APEDE National Association of Business Executives	CINAMU Comprehensive Service Center for Women	ICLEI Local Governments for Sustainability	NYC New York City				
APLAFA Panamanian Association for Family Planning	CMDO Committee of the Month of Oceans	IDAAN National Aqueducts and Sewage Systems Institute	OACNUDH U.N. High Commissioner's Office for Human Rights				
ARAP Water Resources Authority	CNC National Competitiveness Center	IDOM Professional Services Company	OCT Optical Character Recognition				
ASEP Public Utility Services Authority	CNHP National Committee of Wetlands of Panama	INAC National Institute of Culture	OIM International Organization for Migrations				
ATP Tourism Authority	COBIOPA National Professional Association of Biologists of Panama	INADEH National Institute of Professional Training for Human Development	NGOs Non-Governmental Organizations				
ATTT Traffic and Ground Transportation Authority	CONADES National Council for Sustainable Development	INAMU National Women's Institute	ORU Urban Resilience Office				
CBA Cost-Benefit Analysis	CONAGUA National Water Council	INDE National Institute of Sports	PNUD U.N. Development Program				
IDB Interamerican Development Bank	CONARE Council of University Presidents	IPDH Pro-Human Rights Independent Individuals	POT Land Use Plan				
WB World Bank	CONEP National Council of Private Companies	JICA Japan's International Cooperation Agency	PROMAR Foundation for the Protection of the Sea				
CAF Latin American Development Bank	CREHO Regional Center for the Western Hemisphere	MCCP Cyclists' Movement of Panama	RAMSAR CREHO Regional Center Ramsar for Training and Research on Wetlands in the Western Hemisphere				
CAPAC Panamanian Chamber of Construction	CSS Social Security Fund	MDA Ministry of Agricultural and Livestock Development	RCUP Urban Citizenship Network of Panama				
CATHALAC Humid Tropical Water Center for Latin America and the Caribbean	DGA Environmental Management Division - MUPA	MEDUCA Ministry of Education	SAP Audubon Society of Panama				
CCIP Chamber of Commerce and Industries and Agriculture		MEF Ministry of Economy and Finance	SECOPA U.N. Citizenship Security Program				
CDMX Mexico City		MI AMBIENTE Ministry of Environment	SENACYT National Secretariat of Science, Technology and Innovation				
		MIDES Ministry of Social Development	SENADAP National Secretariat for the Development of Afro-Panamanians				

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Drawing of Panama Cathedral

Unknown author. Published by Harper & Brothers. New York. Written by Thomas Wallace Know (1835-1896).
https://commons.wikimedia.org/wiki/File:Panama_Cathedral_Drawing.jpg

Photos of the construction of the Panama Canal

<https://www.panamaviejaescuela.com/historia-canal-panama/>

Photo by Omar Torrijos

Library of Congress Country Study for Panama.
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Photo of Jimmy Carter and General Omar Torrijos

ARC Identifier 176083; From collection JC-WHSP: Carter White House Photographs Collection, 01/20/1977 - 01/22/1981. President (1977-1981: Carter). White House Staff Photographers. https://commons.wikimedia.org/wiki/File:Jimmy_Carter_and_General_Omar_Torrijos_signing_the_Panama_Canal_Treaty.jpg

Photo of the Panama Canal

Karl Kaufmann

Icons

Mozquito: Alex Auda Samora; Stop: un-delivered, Noun Project

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