



OAS|CICTE

# BIOSECURITY IN THE AMERICAS

A REGIONAL THREAT ASSESSMENT



CASE OF: PANAMA



UNIVERSITY OF  
MARYLAND

**START**   
NATIONAL CONSORTIUM FOR THE  
STUDY OF TERRORISM AND RESPONSES TO TERRORISM

**UWT**   
UNCONVENTIONAL WEAPONS AND TECHNOLOGY



Funded by  
the European Union



# BIOSECURITY IN THE AMERICAS

REGIONAL THREAT ASSESSMENT

Case of: PANAMA



**OAS CATALOGING-IN-PUBLICATION DATA**  
**Inter-America Committee against Terrorism.**

Biosecurity Threat Assessment: Republic of Panama [Prepared by the Inter-American Committee against Terrorism, Secretariat for Multidimensional Security, Organization of American States].

p. ; cm. (OAS. Official records; OEA/Ser.L/X.6.4)

[ISBN 978-0-8270-7707-2](#)

1. Biosecurity--Panama. 2. Bioterrorism--Prevention--Panama. 3. Security, International--Law and legislation. I. Title. II. Sin, Dr. Steven S. III. Binder, Markus K. IV. Williams, Alexandra M. V. Organization of American States. Secretariat for Multidimensional Security. Inter-American Committee Against Terrorism VI. Series.

OEA/Ser.L/X.6.4

## ABOUT THIS REPORT

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This report is part of the National Consortium for the Study of Terrorism and Responses to Terrorism (START) project, “Biosecurity in the Americas: Research, Practitioner Education/Training and Transition,” led by Dr. Steve S. Sin.

This research was sponsored by the UNSCR 1540 Implementation Program of the Inter-American Committee against Terrorism (CICTE) of the Organization of American States (OAS) through Award Number: 21041983. Additionally, this research has been made possible thanks to the financial support of the European Union (EU).

The conclusions of this research and the contents of this publication are those of the authors’ presented exclusively for informational purposes and do not represent the official position of the OAS, its General Secretariat, its Member States, CICTE, the EU, the University of Maryland, or START.

## ABOUT CICTE

CICTE is the Inter-American Committee against Terrorism. It is the only regional entity whose purpose is to prevent and combat terrorism in the Americas.

CICTE promotes cooperation and dialogue among member states to counteract terrorism, in accordance with the principles of the OAS Charter, with the Inter-American Convention against Terrorism, and with full respect for the sovereignty of countries, the rule of law and international law.

## ABOUT UNSCR 1540 IMPLEMENTATION PROGRAM

CICTE’s 1540 Implementation program provides assistance to countries in the Hemisphere that request it, to comply with their obligations under Resolution 1540 (2004) of the United Nations Security Council (UNSC) on the non-proliferation of weapons of mass destruction to non-state agents.

The goals of the program are: Support member states to comply with and enforce Resolution 1540; Promote a regional framework for the implementation of Resolution 1540 (2004) in the Hemisphere; and Strengthen the network of contact points on Resolution 1540 (2004) in the region.

## ABOUT START

The National Consortium for the Study of Terrorism and Responses to Terrorism (START) is a university-based research, education and training center comprised of an international network of scholars committed to the scientific study of terrorism, responses to terrorism and related phenomena. Led by the University of Maryland, START is a Department of Homeland Security Emeritus Center of Excellence that is supported by multiple federal agencies and departments. START uses state-of-the-art theories, methods and data from the social and behavioral sciences to improve understanding of the origins, dynamics and effects of terrorism; the effectiveness and impacts of counterterrorism and CVE; and other matters of global and national security. For more information, visit [www.start.umd.edu](http://www.start.umd.edu) or contact START at [infostart@umd.edu](mailto:infostart@umd.edu).

## CITATIONS

To cite this report, please use this format:

Binder, Markus K., Alexandra M. Williams, and Steve S. Sin. "Biosecurity Threat Assessment: Republic of Panama". Washington, D.C.: UNSCR 1540 Implementation Program of the Inter-American Committee against Terrorism, Organization of American States, 2023.

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# PROLOGUE

As we have seen in recent years, the world is vulnerable to biological threats. In the case of the Americas, the H1N1 epidemic of 2009 and, more recently, the COVID-19 pandemic have demonstrated, as reflected by World Health Organization figures, a disproportionately high number of deaths in the region compared to other parts of the globe. These statistics confirm a pressing need to strengthen the region's prevention, detection and response capabilities.

Fortunately, the level of terrorist threats to biosecurity in Latin America is relatively low; in fact, the region's threats typically take the form of crimes, which are more difficult to predict but easier to prevent. Implementation of internal measures and national biosafety and biosecurity regulations in laboratories and research centers is an essential step to prevent biological accidents (whether intentional or unintentional), to mitigate risks and to prepare adequate responses in the unfortunate event of any accident.

To address these needs, the Inter-American Committee against Terrorism of the Organization of American States (CICTE/OAS) has carried out in recent years a project entitled "Strengthening biosafety and biosecurity in Latin America in line with Resolution 1540", generously funded and supported by the European Union.

Thanks to the collaboration between CICTE/OAS and the National Consortium for the Study of Terrorism and Responses to Terrorism (START) of the University of Maryland, in the context of this project we have already launched two free online courses on biosafety and biosecurity in Spanish for laboratory personnel, scientists and decision makers. Through these courses we intend to contribute to lay the foundations of a biosafety culture, create a Latin American network of expertise and strengthen biosafety and biosecurity standards and measures throughout our continent.

As part of these collaborative efforts, START shares in this publication the findings and results of an excellent investigation of potential biosecurity threats in Panama. In recent years, Panama has demonstrated an unwavering commitment to biorisk reduction, demonstrating a marked interest, at all levels of the public and private sector, in consolidating safer environments.

Precisely to this end, Panama has identified its priorities in this area and CICTE/OAS has facilitated its cooperation within the framework of various funded programs. This has included, for example, a peer review exercise with the Dominican Republic, through which both countries have shared their experiences and practices in this area. Panama is one of the eight beneficiary countries of the project supported by the European Union and, in that sense, this report seeks to contribute to its efforts to further strengthen its controls and develop safer activities regarding the handling of biological agents.

We hope that this work will prove to be an effective tool so that Panama, and other countries in the region that are moving in this direction, can continue to consolidate their regulatory and control mechanisms in this area in accordance with established international standards.

I want to thank the experts who have participated in this project, sharing their knowledge and experiences. Undoubtedly, their ideas and proposals allow us to move forward in the right direction. I also would like to thank all the Colombian authorities for their trust, their solid commitment and their ongoing work in pursuit of compliance with their international obligations.

With this publication, CICTE/OAS reiterates to the government of Panama and to all the countries of the Americas its traditional institutional support for the international disarmament and non-proliferation regime and expresses, once again, its willingness to collaborate in these efforts aimed at ensuring, from multiple perspectives, a greater regional security for all.

A handwritten signature in blue ink, appearing to read 'Alison August Treppel', is positioned above the printed name.

**Alison August Treppel**  
Executive Secretary of the Inter-American  
Inter-American Committee against Terrorism

## Introduction

Utilizing funds provided by the European Union (EU), the Organization of American States (OAS), through the Secretariat of the Inter-American Committee against Terrorism (CICTE), and in conjunction with the University of Maryland (UMD), the National Consortium for the Study of Terrorism and Responses to Terrorism (START) has undertaken a two-pronged effort to enhance biosecurity in Central and South American countries. This two-pronged effort comprised a comprehensive biosecurity threat assessment of the Central and South American region and a set of four country-level threat assessments.

This report provides a biosecurity threat assessment of the Republic of Panama for policy-focused individuals and those responsible for working in or managing the activities of laboratories. For policy makers it is important that they have, at a minimum, a broad understanding of the basic requirements and practices of biosecurity. Although there is no expectation that they will be provided with an in-depth understanding of biosecurity principles, practices, or measures, they should take away a core understanding that can be a sufficient basis for decision-making or interaction with officials from different branches or divisions of government, as well as an awareness of the need to seek clarification or explanation when meeting with others who may have much more detailed responsibilities in these matters.

For laboratory personnel, who as a rule have a need for, and typically receive, much more detail-oriented training in the specific application of biosecurity principles to their day-to-day work, this report is intended to provide a holistic overview that will contextualize and reinforce specific requirements.

For both audiences the report also aims to highlight the existence and nature of various active biosecurity threats and illustrate how these can be mitigated or eliminated through rigorous and diligent application of their training.

In this report “biosecurity” is understood as encapsulating the combination of protocols, policies, procedures, methods, equipment, and measures taken to protect biomaterials from unauthorized access, unintentional loss, theft, or misuse by outside actors or personnel exploiting their access to such materials.

It should be noted and understood that this report is not intended to operate as a needs assessment. Nor does this report represent an assessment of risk at any individual facility. Individual facilities should always conduct their own independent biosecurity risk assessments as part of their overall biosecurity risk mitigation effort.

## What is Biosecurity?

Biosecurity is a term with potentially broad application and definitions that can vary significantly depending on the particular agency, industry or context in which the topic is being discussed. This has the potential to lead to misunderstanding, particularly when laboratory personnel, or those whose primary work is tied to the laboratory/scientific enterprise, interact with other fields that must also practice biosecurity such as food and agriculture research or production. In addition, there is potential for complexities to be introduced by something as simple as differences in the translation of the concept from one language to another.<sup>1</sup> A further complexity is introduced by the unfortunate tendency to use the term “biosecurity” inappropriately to describe two separate, though inter-related, concepts—specifically, biosafety and biosecurity.<sup>2</sup> Failure to adequately differentiate these two concepts can greatly complicate efforts to train and prepare personnel, or set appropriate expectations or priorities.<sup>3</sup> Finally, definitions and understanding of the implications of those definitions, change over time. This chapter of the report discusses the different ways in which the term is used internationally and across different sectors to highlight the existence of differences that may be encountered by officials and practitioners, and which introduce the potential for miscommunication; introduces the basic definition of biosecurity that will be used throughout the overall project; and provides an explanation for the particular definition chosen.

### Biosecurity defined

This section presents the specific definitions of biosecurity and biosafety used in this document and for all subsequent related analyses.

#### *Biosecurity*

This is a term used to encapsulate the combination of protocols, policies, procedures, methods, equipment, and measures taken to protect biomaterials from unauthorized access, unintentional **loss, theft, or misuse** by outside actors or personnel exploiting their access to such materials. Various approaches are adopted to discussions of biosecurity. As

<sup>1</sup> Example: Spanish language terms *bioseguridad* and *bioproteccion* may both be translated into English as “biosecurity,” greatly complicating discussions.

<sup>2</sup> Biosafety is a narrower concept than biosecurity, but the two concepts are occasionally conflated. This is discussed in more detail below.

<sup>3</sup> An example of this phenomenon can be seen in an article discussing biosecurity in the context of workplace culture. In this article, the authors conflate “biosafety, laboratory biosecurity, and responsible conduct in the life sciences” and fail to discuss the individual concepts separately. The implication is that there is no significant difference in terms of implementation or practice between them. Perkins, D., Danskin, A., Rowe, E., and Alicia A. Livinski. 2019. “The Culture of Biosafety, Biosecurity, and Responsible Conduct in the Life Sciences: A Comprehensive Literature Review.” *Applied Biosafety*. 24(1). March. <https://www.liebertpub.com/doi/full/10.1177/1535676018778538>

nonexclusive examples there are the Three Biosecurity Elements (physical security, personnel reliability, and information security),<sup>4</sup> or the Five Pillars of Biosecurity (inventory process, physical security, a personal reliability program, transport programs, and information security processes).<sup>5</sup> Both of these examples include common elements, which will be discussed in greater detail below. These include, but are not limited to, **physical security** (e.g., physical barriers such as fences for facility-wide security of buildings and equipment, and key code locks on laboratory doors, refrigerators, etc. to where biological material or samples are kept); **information security** measures to prevent unauthorized access to facilities and data (e.g., technologies to protect access to information, etc.), accountability measures to monitor stocks of materials and track consumption or access (e.g., biological sample inventory logs, personnel logs, etc.), and **personnel reliability** (e.g., personnel screening and security training, personnel trustworthiness, etc.).<sup>6</sup>

The fundamental element is prevention of improper access to and security of biological materials.

### ***Biosafety***

This is a term used to encapsulate the combination of codified principles, technologies and practices that ensure safe handling of, and protect laboratory workers, the public, and the environment from **unintended exposure** to the infectious agents and toxins used in the laboratory. Examples, which will be discussed in greater detail below, include good laboratory practices (GLP)<sup>7</sup> and good microbiological practice and procedure (GMPP);<sup>8</sup> proper use and ample supply of personal protective equipment (PPE); mitigation and response measures if accidental release, exposure, laboratory-acquired infection (LAI) occur; and laboratory design, equipment, and maintenance appropriate to a facility's assigned biosafety level (BSL). The fundamental element is prevention of unintentional exposure to, or release of, biological materials.

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<sup>4</sup> U.S. Department of Health and Human Services. 2015. "Biosecurity." <https://www.phe.gov/s3/BioriskManagement/biosecurity/Pages/default.aspx>

<sup>5</sup> "Biosecurity." Office of Environmental Health and Radiation Safety (EHRS). University of Pennsylvania. <https://ehrs.upenn.edu/health-safety/biosafety/research-compliance/biosecurity>

<sup>6</sup> In addition, biosecurity includes such matters as management practices, transport security, risk assessments, biorisk assessments, threat assessments, response and mitigation plans, and biosecurity training and awareness.

<sup>7</sup> This refers to typical best practices such as wearing closed-toe shoes and not bringing food or drink into the laboratory workspace. The World Health Organization (WHO) expands on this in section 3.1.1 "Best Practice" in WHO's *Laboratory Biosafety Manual*, 4<sup>th</sup> edition. 2020.

<sup>8</sup> GMPP are best practices that go hand-in-hand with good laboratory practices and are meant to keep laboratory personnel safe while handling biological materials and agents, as well as the environment, and can be seen as forming the basis of biosafety practices. See section 3.1 "Good microbiological practice and procedure" in WHO's *Laboratory Biosafety Manual*, 4<sup>th</sup> edition. 2020. p. 27.

Note that biosafety is not the primary focus of this report, but it will occasionally be mentioned or discussed in the context of discussions of biosecurity.

### **Terminology differences: Biosecurity vs. Biosafety**

Although specialists may be familiar with the nuances of language used by the wide range of global and national organizations interested in or engaging with the field of biosecurity and biosafety, this may not be the case for all potential audiences. An unfortunate truth is that there is some overlap between biosecurity and biosafety that can complicate understanding and variations in definitions or specific language used can complicate understanding. These differences can become more impactful, especially when biosecurity or biosafety are being discussed in the context of specific applications. As an example, for policymakers, in terms of understanding basic principles, the differences in detail between research laboratories working with human and animal pathogens may be less important than understanding common underlying principles and practices. However, it is important to note that the application of biosecurity principles and measures are not exclusively limited to laboratories. Certainly, policymakers need to have an appreciation that use of terminology such as “biosecurity” may extend into fields other than the laboratory without being explicitly defined as doing so. It is important that they be able to recognize this breadth of application even if their responsibilities and concerns are narrower in focus.

### ***International Organizations***

At the international level, definitions of biosecurity and biosafety can differ depending on the mission and focus of the institution or non-governmental organization (NGO). The differences in definition and application can range from subtle shifts in terminology use from how we have defined them above, moderate to significant terminology overlap or fusion that can lead to concept conflation, or stark contrast. The starkest differences are typically seen around the agricultural and veterinary or animal health application of biosecurity and biosafety concepts. The following discussion will highlight key world organizations and institutions’ use of biosecurity and biosafety concepts, to help navigate the similarities and differences.

#### World Health Organization (WHO)

The WHO is the leading international institution that produces standards and recommendations of best practices for biosecurity and biosafety for the health sector.<sup>9</sup> Its

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<sup>9</sup> “Health” in this context is meaning animal and human health, particularly as it relates to communicable and non-communicable diseases. It is not serving as a comprehensive definition of all aspects of health that are also of importance to the international community (such as poverty, food insecurity, etc.).



subsidiary and Regional Office to the Americas, the Pan American Health Organization (PAHO),<sup>10</sup> follows suit. WHO – and by extension PAHO – define and frame the concept of biosecurity as a narrow and complementary subset of “biosafety.” While WHO/PAHO maintains the fundamental distinction between biosecurity and biosafety that we adhere to in this report, the implementation of their standards and guidance can result in the two terms overlapping, potentially subsuming Biosecurity.

The clearest example of this concept overlap is encapsulated in their main publication of standards and best practice guidance, the *Laboratory Biosafety Manual*, now in its 4<sup>th</sup> edition, released in June 2020.<sup>11</sup> This manual, per its title, primarily includes standards for good laboratory practices, containment and biosafety measures, and designations that are core to biosafety specifically. However, their specific inclusion of biosecurity as a separate, important concept, only began with the 3<sup>rd</sup> edition (2004) with the understanding that global events had necessitated a dedicated focus on biosecurity as well as biosafety, and that biosafety was a core foundation for biosecurity.<sup>12</sup> Biosecurity, as they define it, is congruent with how we define the term in this report, yet their definition specifically emphasizes laboratory applications of biosecurity.

#### Centers for Disease Control and Prevention

Within the United States, the U.S. Centers for Disease Control and Prevention (CDC) and the National Institutes of Health (NIH) play a central role in public health response and research and maintain a mirror biosafety and biosecurity advisory manual to the WHO’s *Laboratory Biosafety Manual*. This joint CDC/NIH publication is the “*Biosafety in Microbiological and Biomedical Laboratories*” (BMBL), currently in its 6<sup>th</sup> edition (2020). The BMBL categorizes biosecurity in line with the definition employed in this report and also recognizes that although biosafety and biosecurity are inter-related, complementary concepts, they nevertheless remain distinct. It also reiterates that a key component or foundation of biosecurity is to have robust and rigorous biosafety measures and protocols in place.<sup>13</sup>

In their efforts the CDC/NIH, via the BMBL, also briefly highlight terminology differences

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<sup>10</sup> PAHO serves both as the WHO’s Regional Office of the Americas, as well as their health agency to the Inter-Americas System. See: Pan American Health Organization (PAHO). “Who We Are.” <https://www.paho.org/en/who-we-are>.

<sup>11</sup> *Laboratory Biosafety Manual*. (4th ed.). 2020. WHO. <https://www.who.int/publications/i/item/9789240011311>

<sup>12</sup> *Laboratory Biosafety Manual*. (3rd ed.). 2004. WHO, pg. 47.

<sup>13</sup> The BMBL adds that “laboratories with good biosafety programs already fulfill many of the basic requirements needed to secure biological materials.” See. 2020. BMBL, 6<sup>th</sup> edition. p. 119. Measures, protocols, etc. specific to biosecurity as we have defined are indeed needed (physical security, information security, personnel reliability), but as noted, good biosafety programs will set a good foundation.

between different fields such as agriculture and veterinary practice, where biosecurity focuses on the impacts on and risks to animal populations, food supply, and environment.<sup>14</sup>

### European Union

The European Union (EU) employs a wide range of use for the terms biosecurity and biosafety, through their extensive interlocking network of national and regional legislation and associated regulations enacted since the late 1980s. Much of the EU's application of the term biosecurity focuses on international norms and treaties such as the Biological and Toxin Weapons Convention (BWC). Consequently "biosecurity" is mostly used in regulations and legislation intended for the control of imports, exports, customs, transnational shipment (to include mandating and defining secure packaging and transport), interdicting illicit use of pathogenic materials, and finally addressing worker protection.<sup>15</sup> The various translations of the term "Biosecurity" are of course also used in the context of regulation of laboratories and the various other institutions or industries that regularly work with microorganisms. In a much starker contrast, the EU also employs "biosecurity" to address plant and animal health, particularly around reducing the risk of unintentional introduction of invasive species or infectious diseases.<sup>16</sup> While an issue of critical importance in its own right, this use of "biosecurity" is quite expansive and has the potential to confuse those readers or listeners unfamiliar with the particular context of a discussion by conflating this issue with the narrower definitions that are the focus of this report. "Biosafety" is also expanded and conflated as well, additionally referring to food safety.<sup>17</sup> Due to the EU's extensive and interconnected regulation and legislation networks and the importance that trade plays, it is unsurprising that the focus on biosecurity would be conflated to include these areas. To further complicate the matter, they do incorporate WHO definition and guidance on biosecurity and biosafety as described here into subsequent EU regulations and legislation.

### World Organization for Animal Health

The World Organization for Animal Health (WOAH, founded as OIE) presents two prevailing approaches to how they define biosecurity and biosafety. The first is congruent to how we

<sup>14</sup> *Biosafety in Microbiological and Biomedical Laboratories*. (6<sup>th</sup> ed.). 2020. CDC/NIH, p. 119.

<sup>15</sup> Although not an exhaustive list, these export-control-related regulations and legislation can be found in Table 1 and 2 of Bielecka and Mohammadi's "State-of-the-Art in Biosafety and Biosecurity in European Countries" article, where Table 2 focuses more on international norms and guidance that the EU follows and implements, including regulation from INTERPOL. See: Bielecka, Anna and Ali Akbar Mohammadi. 2014. "State-of-the-Art in biosafety and biosecurity in European countries." *Archivum Immunologiae et Therapiae Experimentalis* (Warsz) 62: 171-174. DOI: 10.1007/s00005-014-0290-1.

<sup>16</sup> See: European Commission. "Plant health and biosecurity." [https://ec.europa.eu/food/plants/plant-health-and-biosecurity\\_en#international-cooperation](https://ec.europa.eu/food/plants/plant-health-and-biosecurity_en#international-cooperation).

<sup>17</sup> See: European Commission. "Biological safety." [https://ec.europa.eu/food/safety/biological-safety\\_en](https://ec.europa.eu/food/safety/biological-safety_en)

have defined and identified specific distinction between biosecurity and biosafety within this report. The second, particularly as it applied to their international guidance on animal health, significantly blends the two concepts of biosecurity and biosafety together under the umbrella of “biosecurity” but defined as management to prevent exposure of animals and the environment to harmful biological materials (or pathogens) and vice versa.<sup>18</sup>

### ***Industry differences?***

Internationally, the view of day-to-day lab work, like public health monitoring, is that it represents a low risk; thus, most of this work will only need to meet standard good laboratory safety practices (GP), and not fall within the need of high levels of risk assessment and mitigation that other work – such as research that requires the use of biological material with higher biosafety level designation – would necessitate.<sup>19</sup> In this context, biosecurity refers to the securing of biological materials from loss of control due to theft or unauthorized and/or accidental release of biological materials.

Agricultural sectors and industries tend to define biosecurity as protecting animal populations, colonies, or livestock of contamination by namely disease-causing microorganisms (pathogens), or from contamination in general.<sup>20</sup> This focus leads to such implementation as feed and water security measures, animal quarantine and isolation measures and veterinary treatments when sick, preventative vaccinations, etc.

These differences in the use and understanding of the concept biosecurity is crucial as countries develop and implement biosecurity legislations intended to address issues such as bioterrorism and biocrime.

### ***Language differences***

Language translation of words and terms plays a critical role in the understanding and conceptualization of any topic and is critical to be aware of when discussing and advancing biosafety and biosecurity globally. The nuance of languages, and the cultures behind those

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<sup>18</sup> The World Organisation for Animal Health (WOAH, founded as OIE) definition maps with the definition of “biosafety” as described in this report, rather than aligning with the definition of “biosecurity” herein. This also highlights the potential conflation problem as noted previously in the report, as well as highlighting a key difference in application of the definition of “biosecurity” across different industries (this case being animal health versus medical or human health). The WOAH’s definition of “biosecurity” described here can be found in their *Terrestrial Animal Health Code*, “Glossary” section: <https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/?id=169&L=1&htmlfile=glossaire.htm>.

<sup>19</sup> In comparison to lab work, or research whose design or subject biological material poses a significant risk (i.e. Biosafety Level (BSL) designation). The World Health Organization (WHO)’s *Laboratory Biosafety Manual, 3<sup>rd</sup> Edition* presents this comparison; see figure 2.2 of that manual.

<sup>20</sup> CDC/NIH. *Biosafety in Microbiological and Biomedical Laboratories*. 6<sup>th</sup> edition. June 2020. P. 119

nuances, are powerful and important, and in cases, there just are not ways to map one-to-one- word translation between languages to match those nuances. Examples of where this phenomenon plays a central role in conceptualization of biosecurity and biosafety can be found in Argentina’s Asociación Argentina de Microbiología (AAM) or Argentina Association of Microbiology and the Organization of American States (OAS) publications.

The terms “*bioseguridad*” and “*bioprotección*” are Spanish-language terms used by both institutions to denote “biosafety” and “biosecurity,” in that order. However, “*bioseguridad*” has been a widely used Spanish-language term to mean both biosafety and biosecurity. Another Spanish-language term used to mean biosecurity is “*biocustodia*,” introduced by the Spanish government in 2008.

### **Risk, Threat, and Vulnerability**

Throughout this report, reference will be made to the terms risk, threat, and vulnerability. At times these terms will be used in a more specific way as biorisk and biothreat.

**Threat:** A natural or man-made occurrence, individual, entity, or action that has or indicates the potential to harm life, information, operations, the environment and/or property. When applied to facilities or processes, threats are frequently, and erroneously, understood as having an external origination. In truth, threats can be both external and internal in nature with the latter often described as an “insider threat.” Threats may also include protected items themselves, depending on their intrinsic qualities. Threats, whatever their nature, exploit vulnerabilities to cause harm.

**Vulnerability:** A physical feature or operational attribute that renders an entity open to exploitation or susceptible to a given hazard. As such, a vulnerability represents a potential source of harm, failure or loss. In the absence of threats, vulnerabilities remain but have no current effect. They are nascent.

**Risk:** The potential for an unwanted outcome resulting from an incident, event, or occurrence, as determined by its likelihood and the associated consequences. As such, risk is a product of the dynamic interaction of threats, vulnerabilities, and consequences. Determination of the level of risk associated with a given facility or activity does not require that threats be active – they may simply be potential – or that vulnerabilities are being actively exploited.

Application of the concepts of threat, vulnerability, and risk to the biosecurity field remain

under-developed.<sup>21</sup> Discussion is complicated by the use of terms such as bioterror or biorisk, which are not consistently defined or applied in literature or regulations, nationally or globally. In addition, usage of these terms frequently does not fully align with common understanding of the usage of concepts such as threat, vulnerability, and risk as detailed above.

**Biorisk:** This concept is widely used but not consistently defined, even in WHO usage. There are several basic definitions of “biorisk” in use. A 2006 definition refers to “[t]he probability or chance that a particular adverse event [...], possibly leading to harm, will occur.”<sup>22</sup> A 2022 definition describes “biorisk” as “[t]he risk that a biological event [...] will adversely affect the health of humans, nonhuman animals and the environment.”<sup>23</sup>

As a first observation, it is clear that these two definitions are measuring different phenomena. The first is concerned with the probability of an “adverse event” occurring. The second is concerned with the probability of an adverse event causing harm.

It should be noted that the concept of “biorisk” requires that multiple assessments (threat, vulnerability, and risk) have been undertaken as a first step to determining the actual level of biorisk.<sup>24</sup> Vulnerabilities and threats will have been clearly identified as part of the process of assessing a level of biorisk for a facility. This document will minimize use of the term biorisk, limiting it to circumstances in which it is clearly intended to describe the final product of an assessment process to determine risk in line with the 2022 WHO usage.

**Biosecurity Threat:** The term biosecurity threat is used to discuss potential deliberate acts that could exploit biosecurity or biosafety gaps and/or failures. An example might be the theft of active biological materials from a vaccine production facility with the intent of using those materials to mount a bioterrorist attack.

In the context of this report, it should be noted that discussions of threat or risk are not focused on the intrinsic qualities of specific pathogens and their capacity to cause harm if

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<sup>21</sup> Burnette, Ryan N. and Chuck Tobin. 2021. *The Biothreat Assessment as a Foundation for Biosecurity*. In . *Applied Biosecurity: Global Health, Biodefense and Developing Technologies*, edited by Ryan N. Burnette, 13-35. Switzerland: Springer.

<sup>22</sup> “Biorisk Management: Laboratory biosecurity guidance.” WHO/CDS/EPR/2006.6. World Health Organization. 2006. p. iii.

<sup>23</sup> “Towards a global guidance framework for the responsible use of life sciences: summary report of consultations on the principles, gaps and challenges of biorisk management.” WHO/SCI/RFH /2022.01World Health Organization. 2022. <https://apps.who.int/iris/bitstream/handle/10665/354600/WHO-SCI-RFH-2022.01-eng.pdf>

<sup>24</sup> Assessments are discussed in more detail below.

deliberately or accidentally released. Although this is an important aspect of understanding the level of risk posed by any given facility, this element is most appropriately addressed as one component of the overall risk, or biorisk, assessment process discussed below.

### **Risk and Threat Assessment**

Although WHO and other international bodies have developed concepts such as biorisk assessments, the focus of these assessments is heavily influenced by the needs and requirements of biosafety. Most significantly, the emphasis is on determining the potential for harm inherent to a particular biological agent, after which the potential for release of that agent in the course of storage, transportation or handling is assessed, and appropriate mitigation strategies identified, mandated, and implemented.<sup>25</sup> At no point does the WHO biosafety manual mandate or encourage consideration of external threats or assessment of that might be exploited by external (for example, terrorists) and internal (for example, malicious insiders) threat actors. A key feature is the definition of hazard “as biological agents which have the potential to cause adverse effects to personnel and/or humans, animals, and the wider community and environment.”<sup>26</sup> Although this approach is appropriate to efforts to prevent the unintentional release of a bioagent, the core focus of biosafety, it is fundamentally inadequate for assessments of vulnerabilities or risks associated with biosecurity threats.

**Biorisk assessment:** This is a well-developed field of practice and is widely applied for the purposes of laboratory biosafety management. Regular biorisk assessments are an important element of overall laboratory management and contribute to effective biosecurity.

**Biothreat Assessment:** This is a developing field that seeks to address gaps in traditional biorisk assessment practices by combining traditional approaches of agent-focused biosafety or biosecurity risk assessment with a process focusing on threats directed at facilities in order to arrive at a holistic determination of overall risk. This approach is discussed in more detail in the *What Does Biosecurity Entail?* section of this report.

## **Methodology**

This study was divided into two phases: data collection and country risk analysis. Collected data was analyzed by the research team to produce an overall risk assessment for the

<sup>25</sup> *Laboratory Biosafety Manual*. (4th ed.). 2020. WHO. “Risk Assessment.” <https://www.who.int/publications/i/item/9789240011311>

<sup>26</sup> WHO. 2020. *Laboratory Biosafety Manual*. 4<sup>th</sup> edition. p. x. Presented in their Manual’s “Glossary of Terms” section.

country based on infrastructure and environmental factors at the country level and the country's capabilities. The following sections describe in more detail the methodologies utilized for each phase of the study.

### **Data Collection**

Data used in this country report were collected between June 30, 2021, and June 30, 2022. During this period, START collected data on each country for the date range of January 1, 2015 until June 30, 2022. The readers of this report, therefore, should consider the information and assessment “as of date” of this country report to be June 30, 2022.

The first step in data collection consisted of extensive open-source research that included querying electronic databases and using a variety of online search tools. Sources identified included academic articles, government and international agency reports, news stories, and industry publications and websites. Throughout the research and assessment effort the research team made a point of utilizing a mix of Spanish and English-language source materials. This stage of the data collection also entailed use of geographic information systems (GIS) and satellite imagery analysis. During this stage, researchers used multiple sources to corroborate the information, where possible.

As a rule, data collection emphasized contemporary materials or records addressing activities or events over the preceding 10 years (2012-2022). However, where necessary, for instance assessment of terrorist capabilities or identification of national biological warfare activities, data was gathered for longer periods reaching back as far as the 1990s.

### **Threat Assessment Process**

The threat assessment process employed for the generation of the country reports was purely qualitative in nature due to the fact that no relevant events of a biosecurity nature, such as biological warfare, biological weapons, or biological terrorism are known to have occurred in Panama.

Accordingly, an approach was adopted whereby data was gathered on facilities or activities within Panama with relevance to biosecurity as potential targets of biosecurity threats or present potential biosecurity vulnerabilities. It should be noted that this assessment does not address specific risk for individual facilities in Panama.

In addition, we assessed factors such as internal conflict, external threat actors (state and non-state), particularly considering any indication of past or present engagement in activities that might indicate potential for interest in biological threat activities within

Panama's borders. Furthermore, we also examined factors such as organized and general criminal activity.

Additionally, we evaluated Panama's legislative frameworks, biological incident response capabilities, and plans for introduction of new facilities – whether through government or commercial investment – in the context of current or potential threats.

Finally, we generated an overall country assessment for Panama by taking all of the factors mentioned above into consideration.

## Country Overview

### Sociocultural Environment

#### *Geography and Demographics*

Panama is the narrow, isthmus nation that connects Central and North America with the continent of South America. Panama is bordered by Costa Rica to the west and Colombia to the east. The Atlantic and Pacific Oceans—along with the Gulf of Panama—form Panama's northern and southern coastline borders, respectively, that span 2,490 kilometers. Originally a part of the Republic of Colombia until its independence in 1903, Panama was effectively a United States protectorate until 1999, when simultaneously the United States fully transitioned control of the Panama Canal to Panama. Panama has a humid, tropical climate, with 2433 millimeters (2.43 meters) of rainfall per year.<sup>27</sup> As such, several vector-borne diseases thrive and circulate that pose a constant challenge to the population and Panama's public health system. Panama also features predominately a tropical, forest terrain, with hundreds of low-laying rivers and two immense lakes—Gatun Lake that dams the waters of the Chagas River and feeds the locks of the Panama Canal, and the saltwater Laguna de Chiriqui. Panama also boasts of high elevation and varied topographic features, such as the Tabasará Mountains (Cordillera Central) and Cordillera de San Blas interior mountain ranges and Volcano Baru's highest peak at 3,475 meters.

The 2022 estimate of Panama's population is 4,337,768 people, where close to half of the population (1.9 million) live and are concentrated within the Panama City capital

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<sup>27</sup> World Bank. 2020. "Climate Change Knowledge Portal Country Profile: Panama." <https://climateknowledgeportal.worldbank.org/country/panama/climate-data-historical>. This interactive database shows historical changes in precipitation and temperature from 1901 to 2020.



metropolitan area and around the Canal. Additional high-density areas include the western city, David, in the Chiriqui province.<sup>28</sup>

The population is also highly diverse in both language and ethnic background, particularly in Panama City and surrounding areas around the Canal. Per 2010 estimates, around 65 percent of the population is Mestizo, or mixed Amerindian and White, with various Native American tribes accounting for 12.3 percent, including the Ngabe (7.6%), Kuna (2.4%), Embera (0.9%), Bugle (0.8%) and other unspecified tribes (0.6%). People of Black or African descent account for 9.2 percent of the population, while the remaining groups include Mulatto and White, accounting for 6.8 and 6.7 percent, respectively.<sup>29</sup> Panamanians are also mostly bilingual, speaking a wide variety of languages to include Spanish, the official language, Native American tribal dialects (Ngabe, Buglere, Kuna, Embera, Wounaan, and others), Panamanian English Creole, English, Korean, Yiddish, Chinese and Arabic. This level of ethnic and subsequent language diversity is largely due to the influx of Chinese, Jewish, Caribbean and regional peoples in the building of the Panama Canal Railroad and the Canal itself.<sup>30</sup> More recently, displaced populations primarily from Venezuela are increasingly concentrating in Panama.<sup>31</sup> Panama's fertility and population growth rates have been declining for several decades resulting in an aging population. As of 2020 the median age is 28.7 and is expected to continue to increase over time. As the proportion of the population ages, Panama's public health needs are likely to change to reflect the demands of an aging population.<sup>32</sup>

<sup>28</sup> 2022. CIA World Fact Book. "Panama." <https://www.cia.gov/the-world-factbook/countries/panama/>; 2021. "World Population Review: Panama, Population Density Map." World Population Review. <https://worldpopulationreview.com/countries/panama-population>.

<sup>29</sup> These percentages are also 2010 estimates. 2022. CIA World Fact Book. "Panama." <https://www.cia.gov/the-world-factbook/countries/panama/#people-and-society>. The 2020 census was delayed due to COVID-19.

<sup>30</sup> In particular, Chinese indentured servants were brought to construct the Panama Canal railroad in the 1840s, along with workers from across the region as well as immigrants to build the Canal from the early 1900s. Subsequent generations expanded enclaves in Panama when these workers settled in the country and Canal area. Authors Falcoff and Keller separately present accounts of the diverse peoples and the effects pay structure had on the inclusivity and wealth distribution (and lack thereof) during this period in the Canal Zone. See: Falcoff, Mark. 1998. *Panama's Canal*. Washington, D.C.: American Enterprise Institute Press. 24. See: Keller, Ulrich. 1983. *The Building of the Panama Canal in Historic Photographs*. New York: Dover Publications, Inc. 51. Also, the Panama Canal Authority also presents annual reports of its workforce and status of the Canal, to include employee diversity. For their 2021 annual report, see: Panama Canal Authority. 2021. "Canal de Panamá: Annual Report 2021." p. 16. <https://pancanal.com/wp-content/uploads/2021/08/2021-AnnualReport.pdf>.

<sup>31</sup> United Nations Human Rights Commission (UNHRC). 2021. "Factsheet, Panama 2021." <https://reporting.unhcr.org/sites/default/files/Panama%20fact%20sheet%20June%202021.pdf>.

<sup>32</sup> Analysis of the current population pyramid provided in the 2020 CIA World Factbook Panama country profile. 2022. CIA World Factbook. "Panama." <https://www.cia.gov/the-world-factbook/countries/panama/#people-and-society>.

## *Religion*

Panama recognizes Roman Catholicism as the predominant religion in the country, accounting for 48.6 percent of the population, and through the country's constitution requires Catholic teachings to be provided in schools, although parents can opt out of on behalf of their students. Evangelical Christian groups account for 30.2 percent. The remaining portion of the population identified as other (4.7%), none (12.3%), unspecified (3.7%), agnostic (0.2%) and atheist (0.2%).<sup>33</sup> The 2020 Latinobarómetro survey for Panama reports very similar statistics that are based on percentages of survey response rather than percentage of population. Alternatively, respondents for this survey reported a lower percentage for Evangelism, totaling 25.4 percent, and a 1 percent additional of identified subsets of Evangelism (Baptist, Methodist and Pentecostal).<sup>34</sup> There is also a religious diversity in Panama that includes numerous indigenous religious groups whose presence appear and correspond with the groups' homelands, as well as smaller Jewish, Baha'i and Muslim segments that are primarily present in Panama City.<sup>35</sup>

Despite constitutional guarantees for religious freedom and restrictions against religious discrimination, there is higher deference paid to Roman Catholicism in country policy. There have been noted cases of legal friction between Panamanian administrative authorities and members of the Baha'i faith. Incidents of friction include stricter visa requirements for Baha'i missionaries in the country, and inaction at the hands of administrative staff to address illegal activity (vending) outside of Baha'i temples.<sup>36</sup> There is little public indication that discrimination or similar cases of friction toward other religious denominations are occurring with equal frequency.

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<sup>33</sup> These are 2018 estimates provided in the CIA World Factbook. 2022. CIA World Factbook. "Panama" <https://www.cia.gov/the-world-factbook/countries/panama/#people-and-society>.

<sup>34</sup> Survey question "S10: What is Your Religion?" page 217. 2020. "2020 Country Report: Panama." Latinobarometro. Accessed via their website, in: <DOCUMENTS>, <RESULT DOCUMENTS>, <PANAMA.> and selecting 2020 as the report year. Spanish and English versions are both offered. See: <https://www.latinobarometro.org/latContents.jsp>.

<sup>35</sup> The size of the Jewish community in Panama City is estimated at 15,000 members. The combined Shia and Sunni Muslim communities are estimated at 14,000 members, spread between Panama City, Colon and Penonome. The Shia and Sunni Muslim communities are primarily from Lebanon and Pakistan, respectively. United States Department of State, Office of International Religious Freedom. 2022. "2021 Report on International Religious Freedom: Panama." June 2. p. 2-3. <https://www.state.gov/reports/2021-report-on-international-religious-freedom/panama/>.

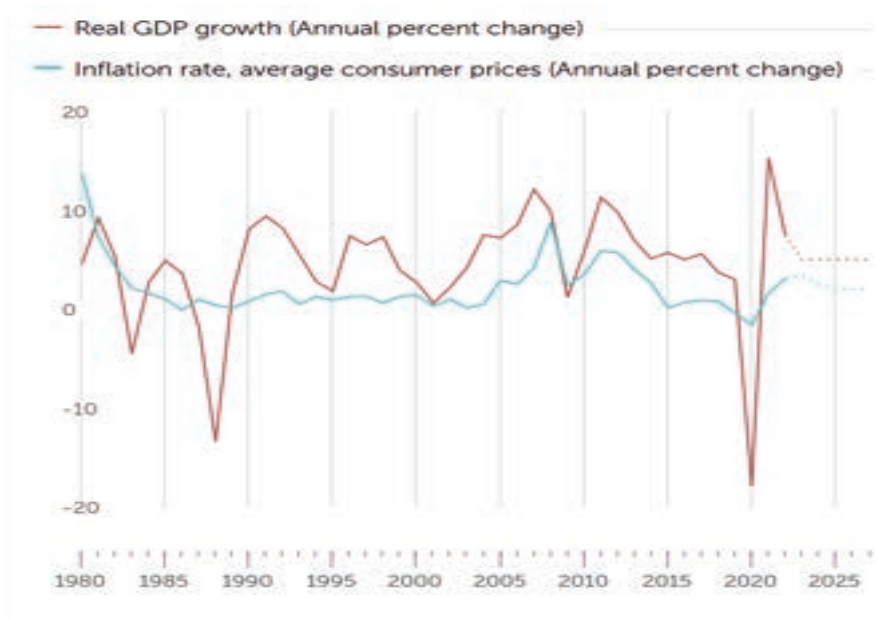
<sup>36</sup> United States Department of State, Office of International Religious Freedom. 2022. "2021 Report on International Religious Freedom: Panama." June 2. p. 4-5. <https://www.state.gov/reports/2021-report-on-international-religious-freedom/panama/>.

## Socioeconomic Environment

### *Economic Conditions*

Panama has been ranked as an upper income country by the World Bank since 2017 and is the only Central American country to achieve this level as of 2022.<sup>37</sup>

Panama’s economy is strongly intertwined with global trade. The Panama Canal’s central role as a trade route brings in direct fee-income from ships transiting the canal, while supporting a significant industrial and service sector supporting international trade such as through the provision of banking, logistics, and ship registration. Beyond the Panama Canal, industry, tourism, mining, and agriculture are important components of the Panamanian economy.



**Figure 1: Panamanian GDP Growth 1980-2025<sup>38</sup>**

Like many countries, Panama suffered significant economic losses due to the 2020-2022 ongoing COVID-19 pandemic. Due to its heavy reliance on global trade volume, and the importance of international tourism, Panama suffered a 17.9 percent drop in GDP in 2020 with significant impact on government revenues. As illustrated in figure 1, the Panamanian economy rebounded strongly in 2021 with 15.3 percent growth, and this improvement has

<sup>37</sup> World Bank. 2021. “The World by Income and Region.” <https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html>

<sup>38</sup> International Monetary Fund (IMF). 2022. “IMF DataMapper: Panama Country Data.” <https://www.imf.org/en/Countries/PAN#countrydata>.

continued into 2022.<sup>39</sup> The pandemic also saw a large increase in Panama's national debt as a share of GDP partly due to the drop in GDP and partly as a result of the combination of lost revenues and new spending in order to fund COVID-19 response.<sup>40</sup> Panamanian youth (15 to 24 years old) unemployment rates are 40.1 percent and constitute a drag on the economy in addition to complicating efforts to fulfill social development goals.<sup>41</sup>

Panama continues to suffer from the effects of uneven distribution of wealth, both regionally and within the population, which contribute to social tensions. Although the economy has recovered somewhat from the 2020 shock, it remains fragile, and domestic demand will likely continue to be impacted by external factors and continuing COVID-19 outbreaks.

### ***Industry, Trade, Commercial Flows***

The Panama Canal provides the predominant source of trade, industry and commercial flow in Panama, and is a critical transshipment hub for global trade, providing routes for 5 percent of global trade, as illustrated in figure 2 below.<sup>42</sup> The opening of the Panama Canal expansion in 2016 went some way towards arresting a long-term decline in the importance of the Canal due to the growing size of vessel resulting in a smaller proportion of overall shipping being able to transit the isthmus. With high maritime and shipping volume traveling through it daily, the Canal will likely continue to be the primary route for new natural or unintentional man-made threats to Panama's agricultural and marine sectors.

Another important contributor to Panama's economy is copper mining and export.<sup>43</sup> China, South Korea, Japan, and Spain are the main importers of Panama's copper export. Panama is

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<sup>39</sup> International Monetary Fund (IMF). 2022. "IMF DataMapper: Panama Country Data." <https://www.imf.org/en/Countries/PAN#countrydata>.

<sup>40</sup> World Bank. 2022. "The World Bank in Panama, Overview." <https://www.worldbank.org/en/country/panama/overview>. World Bank. 2022. "Macro Poverty Outlook for Panama: April 2022 - Datasheet." <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099122104282217141/idu0abea5b6e08d9c04f04be0aa9f040b6ecc0a3c1>.

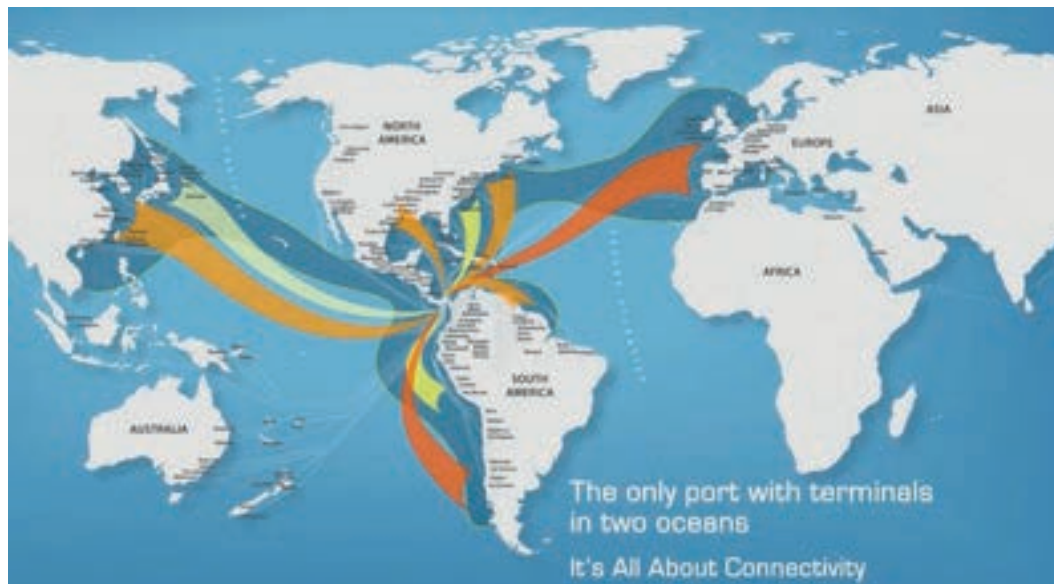
<sup>41</sup> 2022. CIA World Factbook. "Panama." <https://www.cia.gov/the-world-factbook/countries/panama/#economy>. Also: "Cortizo Bets on Vaccines, Infrastructure for Panama's Economic Recovery." 2021. The Dialogue, Leadership for the Americas, May 14. <https://www.thedialogue.org/blogs/2021/05/cortizo-bets-on-vaccines-infrastructure-for-panamas-economic-recovery/>.

<sup>42</sup> Panama Canal Authority (ACP). 2022. "Trade Routes." <https://pancanal.com/en/maritime-services/trade-routes/>.

<sup>43</sup> Statista. 2020. "Main Exported Products in Panama in 2020, by Value (in millions U.S. dollars)." <https://www.statista.com/statistics/1191215/products-exported-from-panama/>. For additional material on Panama's copper mining, read: "Canada's First Quantum Agrees to Higher Payments at Panama Copper Mine." 2022. Reuters, January 18. <https://www.reuters.com/business/energy/canadas-first-quantum-agrees-higher-payments-panama-copper-mine-2022-01-18/>, and International Trade Administration (ITA). 2022. "Market Intelligence: Panama Mining." <https://www.trade.gov/market-intelligence/panama-mining>.

also the seventh largest exporter of bananas globally, which are often destined for Europe (Netherlands, Finland, Switzerland and the United Kingdom).<sup>44</sup> Regionally, Panama also serves as a main exporter of packaged medical materials either for retail sale, or components to be filled and finished elsewhere.<sup>45</sup> Main trade partners are the United States, Japan, China, Asia, Colombia. The United States maintains its strong and central trade and diplomatic relationship with Panama and is Panama’s main export market. The United States-Panama Trade Promotion Agreement, a comprehensive free trade agreement, was signed in 2007 and entered into force in October 2012.<sup>46</sup>

**Figure 2: Global Commercial Trade Routes Serviced by the Panama Canal<sup>47</sup>**



Panama has been the highest recipient of foreign direct investment in its region, with inflows of \$5.27 billion USD in 2019.<sup>48</sup>

<sup>44</sup> Observatory of Economic Complexity (OEC). 2020. “Profile: Bananas in Panama.”

<https://oec.world/en/profile/bilateral-product/bananas/reporter/pan>

<sup>45</sup> Observatory of Economic Complexity (OEC). 2020. “Profile: Packaged Medicaments in Panama.”

<https://oec.world/en/profile/bilateral-product/packaged-medicaments/reporter/pan>

<sup>46</sup> United States, Office of the United States Trade Representative (USTR). 2020. “Panama.”

<https://ustr.gov/countries-regions/western-hemisphere/panama>. Text of the U.S.-Panama Trade Promotion Agreement: United States, Office of the United States Trade Representative (USTR). 2012. “U.S.-Panama Trade Promotion Agreement.” <https://ustr.gov/trade-agreements/free-trade-agreements/panama-tpa>.

<sup>47</sup> Panama Canal Authority (ACP). 2022. “Trade Routes.” <https://pancanal.com/en/maritime-services/trade-routes/>.

<sup>48</sup> World Bank. “Foreign Direct Investment, Net Inflows (BoP, Current US\$) – Panama.”

<https://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD?locations=PA>; Lloyds Bank. 2023. “Foreign Direct Investment (FDI) in Panama.” Last modified January. <https://www.lloydsbanktrade.com/en/market-potential/panama/investment>.

### ***Infrastructure***

Panama possesses the highest density and connectivity of infrastructure in the entire Latin American region, adding to the country's logistical capacity and regional importance. Consequently, and as already discussed with regard to the Canal and its central role, Panama's infrastructure is colloquially deemed the connector of the Americas and functions as such.<sup>49</sup>

The Panama Canal is the heart of Panama's transportation infrastructure. The Canal spans 52 miles (82km), from the Atlantic to the Pacific Oceans, and subsequently provides the substantial national naval and port infrastructure in Panama. This includes six main ports and an extensive system of docks, including the key ports in the Panama City metropolitan area: Port of Balboa and the Fiscal Pier.<sup>50</sup>

The long-planned expansion of the Canal to add a third set of significantly larger locks, along with associated deepening of the Lake Gatun shipping channel, was undertaken from 2009 to 2016. Completion of the expansion allowed the canal to accommodate significantly larger cargo vessels (to include oil and natural gas tankers), removing the cap on vessel size (the increasingly outdated Panamax size) imposed by the dimensions of the original Miraflores, Pedro Miguel and Gatun locks.<sup>51</sup> While expansion of the Canal provided Panama and the world with increased capacity for commercial, cargo, and fuel transport, there were additional concerns of the impact the construction and subsequent shipping traffic would have on marine environment.<sup>52</sup> To provide sustainability and lower environmental impact, the third shipping lane and additional locks employ technology that recycle 60 percent of water utilized. Additionally, extensive long-term studies have been conducted to understand

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<sup>49</sup> Panamá Pacífico. "This is Panama's Main Logistics Infrastructure."

<https://www.panamapacifico.com/en/this-is-panamas-main-logistics-infrastructure/>.

<sup>50</sup> Ports in Panama are: Port Balboa, Port Manzanillo International Terminal (MIT), PSA Panama International Terminal, Cristobal-Panama Ports Company (PPC), Colon Container Terminal and Colon Port Terminal. Panamá Pacífico. "This is Panama's Main Logistics Infrastructure." <https://www.panamapacifico.com/en/this-is-panamas-main-logistics-infrastructure/>; Panamanian Ministry of Public Health (MINSAL). 2022. "Region metropolitana de salud." <https://www.minsa.gob.pa/region-de-salud/region-metropolitana-de-salud>.

<sup>51</sup> The larger NeoPANAMAX vessels can carry up to 14,000 TEU versus the previous 5,000 TEU limit. The new NeoPANAMAX locks are: Cocolí and Agua Clara. Panama Canal Authority (ACP). 2022. "Discover the Expanded Canal." <https://pancanal.com/en/discover-the-expanded-canal/>.

<sup>52</sup> Muirhead, Jim R., Mark S. Minton, Whitman A. Miller and Gregory M. Ruiz. 2015. "Projected Effects of the Panama Canal Expansion on Shipping Traffic and Biological Invasion." *Diversity and Distributions* 21: 75-87. Also see: Salgado, Jorge et al. 2020. "A Century of Limnological Evolution and Interactive Threats in the Panama Canal: Long-Term Assessments from a Shallow Basin." *Science of the Total Environment*, 729: 10. <https://doi.org/10.1016/j.scitotenv.2020.138444>.

the ecological impacts of the Canal, and how the ecosystems and environment have adjusted.<sup>53</sup>

Panama's airports are ranked highest in the region both for the connectivity and ease of travel they provide, as well as the secondary backbone they provide for cargo shipment next to the Canal. Panama hosts six airports, with the heaviest travel percentage concentrated at two international airports in the metropolitan region: Tocumen International Airport and the Marcos A. Gelabert Airport in Albrook.<sup>54</sup> Tocumen is particularly important to Panama's commercial and international business market and offers the country's national and commercial trade partners an ideal location to build their shipping, business and distribution warehouses, increasing business connectivity to Panama and Central and South America.<sup>55</sup> Air cargo shipments through Panama increased to over 200,000 tons in 2021, substantially exceeding the annual average movement of 160,000 tons for the period 2013 to 2019.<sup>56</sup>

Rail and road transportation infrastructure is also extensive in Panama, although highly concentrated in urban areas. This includes the Pan-American (or Inter-American) Highway, stretching from Canada, the United States, Mexico, Central America, through Panama and into Colombia, Ecuador, Peru, Chile and Argentina. The primary role of Panama's rail system is to support the Canal and cargo container shipment between port terminals. The railroad was initially completed in 1855 to facilitate movement across the isthmus as demand for movement increased dramatically in the wake of the U.S. acquisition of California. The railroad, which has had its route modified somewhat as a result of the construction of the Panama Canal, enables movement of passengers and shipping containers between Atlantic and Pacific port terminals, as shown in figure 3 below.<sup>57</sup> Currently, Panama is investing in projects to expand its light metro rail system to increase range of service.<sup>58</sup>

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<sup>53</sup> Several studies include: Salgado, Jorge et al. 2019. "The Panama Canal After a Century of Human Impacts." Pre-print. <https://www.biorxiv.org/content/10.1101/777938v1>; Carman, Mary R. et al. 2011. "Ascidians at the Pacific and Atlantic Entrances to the Panama Canal." Proceedings of the 3rd International Invasive Sea Squirt Conference, Woods Hole, USA, 26-28 April 2010. doi: 10.3391/ai.2011.6.4.

<sup>54</sup> Panamanian Ministry of Public Health (MINSAL). "Region metropolitana de salud." <https://www.minsa.gob.pa/region-de-salud/region-metropolitana-de-salud>.

<sup>55</sup> 2021. "Tocumen International Airport." Georgia Tech Panama Logistics Innovation and Research Center. <https://logistics.gatech.pa/en/assets/airports/tocumen>.

<sup>56</sup> This is based of assessments of the reported cargo shipping records by the Georgia Tech Panama Logistics Innovation and Research Center. See their "Cargo Movement Statistics" graph here: 2022. "Tocumen International Airport: Statistics." <https://logistics.gatech.pa/en/assets/airports/tocumen#statistics>.

<sup>57</sup> Descriptions of the Panama Canal Railroad Company capacity and logistics can be found here: Georgia Tech Panama Logistics Innovation and Research Center. 2022. "Panama Canal Railroad Company." Last modified 2023. <https://logistics.gatech.pa/en/assets/railroad/panama-canal-railway#description>.

<sup>58</sup> 2019. "Five Panama Infrastructure Projects to Keep an Eye on in 2020." Bnamericas, December 21. <https://www.bnamericas.com/en/news/five-panama-infrastructure-projects-to-keep-an-eye-on-in-2020>.

Figure 3: Panama Canal Railroad Company Route Map<sup>59</sup>



### Public Health

Panama’s national public health governance is centrally structured and governed by the **Ministry of Health (Ministerio de Salud – MINSA)**. MINSA approves and promotes national health policies, as well as compliance to these policies, particularly in areas of development, protection, and health improvement efforts across the country. MINSA oversees the **Gorgas Institute for Health Research (Instituto Conmemorativo Gorgas de Estudios de la Salud – ICGES)**, which is the premiere research and reference laboratory of Panama.<sup>60</sup> Additionally, ICGES provides central public health laboratory and sanitation services for

<sup>59</sup> Georgia Tech Panama Logistics Innovation and Research Center. 2022. “Panama Canal Railroad Company.” Last modified 2023. <https://logistics.gatech.pa/en/assets/railroad/panama-canal-railway#description>. Also see: Panama Canal Railroad Company. “Route of the Railway.” <http://panarail.com/en/rute/index.html>

<sup>60</sup> Instituto Conmemorativo Gorgas de Estudios de la Salud (ICGES). <http://www.gorgas.gob.pa/>. ICGES was organized as a leading national research entity following the passing and implementation of Law 78 of December 17, 2003. For information on the facilities at ICGES, see: Instituto Conmemorativo Gorgas de Estudios de la Salud (ICGES). “Proyecto Campus Gorgas: Perfil del Proyecto.” <http://www.gorgas.gob.pa/campus-gorgas/>. For additional background and history, see: Zaldívar Ábrego, Yamitzel. 2020. “Historia y Desarrollo del Sistema de Salud y Salud Pública en Panamá.” July 12.



Panama's health districts. MINSA also coordinates and approves ICGES' scientific health investigations via MINSA's Executive Body of the Ministry of Health. One of ICGES' three operative bodies is the **Central Reference Laboratory in Public Health (LCRSP)**. The remaining two operative bodies of ICGES that provide national public health services and research are: **Research and Technological Development Directorate (DIDT)**, and the **Reference Laboratory for Food and Water Directorate (LRAA)**. These Institutes and reference laboratories are discussed in more detail in the "civilian biological infrastructure" section of this report.<sup>61</sup>

Additional public health resources and laboratories exist across Panama's localities and regions. This umbrella network is connected through the LCSRSP, under direction of ICGES, and functions within and across each of the 14 health districts of Panama and is responsible for six (6) additional specialized laboratory networks in each health region that focus on: Human Immunodeficiency Virus (HIV), Clinical Microbiology, Clinical Chemistry, Tuberculosis, Parasitology and Malaria, and Dengue. Each of these specialized networks are in turn connected to dozens of both national and private laboratories at the local and regional level.<sup>62</sup>

Panama has a centralized and institutional public health system that maintains a network of hospitals and local health clinics.<sup>63</sup> In addition, there is a set of dedicated bodies addressing and coordinating responses to infectious diseases such as tuberculosis, malaria, etc. There is considerable urban/rural variation in the provision of resources and health outcomes, likely reflecting the availability of resources and services. The Panamanian government has continued to make investments to expand the quality and reach of healthcare including the construction of new regional hospitals and health care centers.<sup>64</sup> Also, given geographic and climate differences across health regions of Panama, each region will have differing needs and focuses, such as the regions that have more tropical, humid climates have higher cases

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<sup>61</sup> Instituto Conmemorativo Gorgas de Estudios de la Salud (ICGES). "Organigrama Instituto Conmemorativo Gorgas de Estudios de la Salud." Also, an extensive, detailed history and discussion of these 14 health regions is provided by the Panamanian Ministry of Public Health (MINSAL): <https://www.minsa.gob.pa/regiones-de-salud>. For additional background and history, see: Zaldívar Ábrego, Yamitzel. 2020. "Historia y Desarrollo del Sistema de Salud y Salud Pública en Panamá." July 12.

<sup>62</sup> For a detailed discussion of the overall national laboratory network connected to LCSRSP, and the subsequent specialized networks, their duties and jurisdictions, and location, please see: Instituto Conmemorativo Gorgas Estudios de la Salud (ICGES). 2022. "RED NACIONAL DE LABORATORIOS." <http://www.gorgas.gob.pa/red-nacional-de-laboratorios/>.

<sup>63</sup> Zaldívar Ábrego, Yamitzel. 2020. "Historia y Desarrollo del Sistema de Salud y Salud Pública en Panamá." July 12.

<sup>64</sup> *Panama Improves Access to Health Care System*, In *Panama 2015*. Oxford Business Group. <https://oxfordbusinessgroup.com/overview/towards-universal-coverage-improving-access-further-integration-health-care-system>

of, or emphasis on, addressing vector-borne disease (such as Darién y la Comarca Emberá Waunán y Wargandís, Kupa and the canal zone).

The Panamanian public health system has a longstanding awareness of the importance of robust response and prevention capabilities for addressing infectious disease threats. Yellow fever and malaria, two endemic vector-borne diseases, ravaged the initial efforts of constructing the Panama Canal, and the discovery, and subsequent adoption of effective control measures were crucial to the success of the Canal construction effort and the subsequent social and economic development of the country. The Panamanian public health system also has been aware of preventing invasive species introduction, whether marine introduced via ballast water, or non-native animals and plants introduced via traded goods shipped through the Canal.

## Governing Environment

### *Government*

Panama is a Presidential Republic, with Laurentino “Nito” Cortizo elected to a five-year term as President in 2019.<sup>65</sup> Panama’s government maintains a multiparty system with three branches of government: Executive, wherein the President functions as both Head of Government and Head of State; Legislature, consisting of one house, the National Assembly, and the Judiciary.

### *Law*

Corruption in the public sector is perceived as a considerable problem in Panama.<sup>66</sup> Corruption appears to extend from the political sector, with both of the last two former Presidents accused of embezzlement, money-laundering, and other crimes,<sup>67</sup> deeply into law enforcement and the penal system.<sup>68</sup>

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<sup>65</sup> United States Department of State, Bureau of Counterterrorism. 2019. “Country Reports on Terrorism 2019: Panama.” <https://www.state.gov/reports/country-reports-on-terrorism-2019/panama/>.

<sup>66</sup> For example, Panama currently ranks “low” in public perception due to high inference of corruption, and thus is scored at 35 out of 100 by Transparency International. Transparency International. 2021. “Corruption Perceptions Index: Panama.” <https://www.transparency.org/en/cpi/2020/index/pan>.

<sup>67</sup> For reports of former President Martinelli (2009-2014) see: United States Department of Justice. 2018. “US Extradites Former President of Panama to Face Illegal Wiretapping and Embezzlement Charges.” June 11. <https://www.justice.gov/opa/pr/us-extradites-former-president-panama-face-illegal-wiretapping-and-embezzlement-charges>. For reports stating both former President Martinelli and former President Varela, see: “Panama Charges Two Former Presidents Over Corruption Scandal.” Tico Times, October 11. <https://ticotimes.net/2022/10/11/panama-charges-two-former-presidents-over-corruption-scandal>

<sup>68</sup> See section 1.c of the following for discussion of corruption within the penal system: United States Department of State, Bureau of Democracy, Human Rights, and Labor. 2021. “2020 Country Reports on Human Rights Practices: Panama.” <https://www.state.gov/reports/2020-country-reports-on-human-rights-practices/panama/>

### ***Foreign Policy***

Central to Panama's foreign policy is the maintenance of the high volume of trade and shipment output, and subsequent services the Canal and ports provide through the Panama Canal. As such, Panama appears to approach much of its foreign policy on the foundation of global cooperation in bilateral, multilateral and regional collaborations. In addition to trade, it appears that Panama utilizes these forms of collaborations and cooperation in areas of scientific innovation and exchange, environment sustainability, governance and justice, and economic growth.<sup>69</sup> For the expanse of trade and import/export services Panama provides through the Canal, Panama's diplomatic presence is less broad, though still global. Panama maintains embassies in most continents but prioritizes Europe, the Americas, and East Asia with representation being maintained in half of Europe. In contrast, there are only three embassies in Africa (Morocco, Egypt, and South Africa), two embassies in the Middle East (Jordan and United Arab Emirates).<sup>70</sup>

### ***Military***

Panama does not have a dedicated, national military force, and is only the second country in the world to entirely disestablish its national military.<sup>71</sup> Panama's military, the Panama Defense Force, was disbanded in 1990 following the December 1989 U.S. invasion that overthrew the Noriega government.

A new civilian body, the Panamanian Public Forces was established in the 1990s. In addition to various national police functions there are several other roles performed such as border and maritime security. The National Border Service's BATCOA, 5<sup>th</sup> Special Forces Brigade plays a leading role in the nations CBRN defense readiness in addition to providing various anti-terrorism functions.

### ***Instability/Cleavages***

Although Panama faces continued economic equality, whose divide split further due to the pandemic, Panama appears to be fairly stable and lacks any significant cleavages.<sup>72</sup>

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<sup>69</sup> Panama's Ministry of Foreign Affairs highlights these levels of cooperation and service interests. Republic de Panama, Ministerio de Relaciones Exteriores. 2022. "Panama como pais cooperante." <https://mire.gob.pa/panama-como-pais-cooperante/>.

<sup>70</sup> Interactive map of locations of diplomatic embassies is provided by Panama's Ministry of Foreign Affairs: Republic de Panama, Ministerio de Relaciones Exteriores. 2022. "Mapa Interactivo de Embajadas." <https://mire.gob.pa/mapa-ubicacion-embajadas/>.

<sup>71</sup> Costa Rica is the other country that also does not maintain a standing military.

<sup>72</sup> "Bertelsmann Stiftung Transformation Index: Panama Country Report 2022." 2022. Bertelsmann Stiftung. Accessed June 15, 2022.

[https://bti-project.org/fileadmin/api/content/en/downloads/reports/country\\_report\\_2022\\_PAN.pdf](https://bti-project.org/fileadmin/api/content/en/downloads/reports/country_report_2022_PAN.pdf)

### ***Criminality***

Mexican and Colombian cartels maintain a significant and highly visible presence in Panama. Transnational organized crime includes illicit drug trafficking and extensive money-laundering, with considerable light being thrown upon the latter issue with the April 2016 release of the Panama Papers. Homicide rates have increased since 2017. See the sections of this report addressing organized and non-organized crime for further discussion of crime in Panama.

### **Assessment**

Differing geographic and climatic features across the country contribute to differences in distribution of, and access to, health resources. Panama's climate and ecology results in relatively high prevalence of vector-borne diseases. Panama's significant transportation infrastructure enables high volumes of cargo and commercial trade as well as tourism and passenger travel, raises the potential for introduction of novel threats to human health, as well as the agricultural and maritime resource sectors of the economy.

## **Terrorist/Insurgent Threat**

### **Overview**

The terrorist threat in Panama is generally assessed as low with no major terrorist incidents occurring since 2000—except three isolated incidents in 2009, 2016 and 2017—and no known active domestic terrorist groups operating in the country. Panama's 21st century experience of terrorism is entirely external in nature. This experience includes an attempted assassination by a U.S.-based Cuban exile group in 2000, and allegations of surveillance of the Panama Canal and other sites by Hizb'allah operatives in 2017. There are no indications that any of the groups engaged in ideologically motivated violence in Panama have, or are likely to develop, any interest in the use of biological materials.

### **Terrorist/Insurgent Groups**

#### ***Foreign***

A group of Cuban exiles travelled to Panama in 2000 with the objective of mounting attacks aimed at assassinating the Cuban leader, Fidel Castro. The operatives appear not to have had a sustained presence in Panama and were swiftly arrested in the wake of their failed assassination attempt.<sup>73</sup> There are no indications of subsequent ongoing operations by this group or associated actors.

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<sup>73</sup> "Panama: Police Arrests 4 Cuban Exiles." 2000. Associated Press. November 18.

The now defunct Revolutionary Armed Forces of Colombia (FARC) maintained a significant presence in the Darien region on the Colombia-Panama border in the decades leading up to the 2016 peace agreement ending the Colombian civil war. Activities to support FARC military activities appear to have been intertwined with efforts to enable and facilitate the movement of illicit drugs out of Colombia through Panama.

Hizb’allah operatives were arrested in 2017 in Panama for attempting to analyze and locate vulnerabilities of the Panama Canal as well as U.S. and Israeli embassies in Panama as targets for attack.<sup>74</sup> Panama works closely with the United States in monitoring and interdicting persons traveling to, from, and within, Panama who are affiliated with Hizb’allah and al Qa’ida, even as recently as 2021 where 52 people were interdicted in Panama with intent to travel to the United States.<sup>75</sup>

**Table 1: List of Active Foreign Terror/Insurgent Groups**

Group	Activity	Incident	Still Active	Biosecurity Relevant
FARC	Terrorism	Armed assault of civilian (2009) <sup>76</sup>	No	No
FARC	Terrorism	Armed assault of National Border Service (SENAFRONT) post (2016) <sup>77</sup>	No	No
Hizb’allah	Surveillance	Arrested in U.S. and resulting investigation suggests surveying	Maybe?	No

<http://www.aparchive.com/metadata/youtube/3e342d58c6c88bf6ea34e30304d5de06>

<sup>74</sup> United States Department of Justice. 2017. “Two Men Arrested for Terrorist Activities on Behalf of Hizb’allah’s Islamic Jihad Organization.” June 8. <https://www.justice.gov/opa/pr/two-men-arrested-terrorist-activities-behalf-hizballahs-islamic-jihad-organization>.

<sup>75</sup> Dinan, Stephen. 2021. “52 Terrorists Heading Toward U.S. Blocked by Panama, Congressman Says.” The Washington Times, October 18. <https://www.washingtontimes.com/news/2021/oct/18/tony-gonzales-terrorists-heading-us-blocked-panama/>.

<sup>76</sup> This incident is recorded in the Global Terrorism Database (GTD) of the National Consortium for the Study of Terrorism and Responses to Terrorism (START) at the University of Maryland (UMD), and is identified in the GTD as follows: GTD Incident ID: 200902180022 (2009 incident). See: [START \(National Consortium for the Study of Terrorism and Responses to Terrorism\). \(2022\). Global Terrorism Database 1970 - 2020 \[data file\]. https://www.start.umd.edu/gtd](https://www.start.umd.edu/gtd). Disclaimer: there may be other sources or databases that include additional incidents as “terrorism”; these incidents listed and spoken of here are subject to the GTD’s inclusion criteria. The GTD inclusion criteria and codebook can be found here: <https://www.start.umd.edu/gtd/>.

<sup>77</sup> This incident is recorded in the Global Terrorism Database (GTD) of the National Consortium for the Study of Terrorism and Responses to Terrorism (START) at the University of Maryland (UMD), and is identified in the GTD as follows: GTD Incident ID: 201603310037 (2016 incident). See: [START \(National Consortium for the Study of Terrorism and Responses to Terrorism\). \(2022\). Global Terrorism Database 1970 - 2020 \[data file\]. https://www.start.umd.edu/gtd](https://www.start.umd.edu/gtd). Disclaimer: there may be other sources or databases that include additional incidents as “terrorism”; these incidents listed and spoken of here are subject to the GTD’s inclusion criteria. The GTD inclusion criteria and codebook can be found here: <https://www.start.umd.edu/gtd/>.

Group	Activity	Incident	Still Active	Biosecurity Relevant
		Canal and embassy for vulnerabilities (2017) <sup>78</sup>		

**Domestic**

There is no indication that domestic terrorist or insurgent groups are currently operating within Panama. Throughout the 1990s, Panama experienced numerous terrorist attacks that were limited in scope and mostly without specific attribution to an internal group.<sup>79</sup> A major 1990s actor was the December 20<sup>th</sup> Movement, which was active in the immediate wake of the 1989 U.S. invasion of Panama. The group appears to have ceased activity after 1992, and there does not appear to be any domestic terrorist or insurgent activity in Panama as of 2022.

**Terrorist/Insurgent Incidents Since 2010**

**Conventional**

With the singular exception of a FARC attack against a border post in 2016, Panama has not experienced any terrorist attacks since 2010. FARC is suspected of responsibility for a March 2016 incident in which an explosive device was thrown at a Panamanian National Border Service (SENAFRONT) post in Limon, Darien, Panama.<sup>80</sup>

Several Hizb'allah operatives were arrested by Panamanian authorities in 2017. The arrested individuals were allegedly reconnoitering multiple locations such as the Panama Canal, the embassy of the United States, and the embassy of Israel.<sup>81</sup>

As of mid-2022 there have been no further indications of terrorist or insurgent activities.

<sup>78</sup> United States Department of Justice. 2017. "Two Men Arrested for Terrorist Activities on Behalf of Hizb'allah's Islamic Jihad Organization." June 8. <https://www.justice.gov/opa/pr/two-men-arrested-terrorist-activities-behalf-hizballahs-islamic-jihad-organization>

<sup>79</sup> This conclusion is based off of analyzing all the terrorism incidents listed from 1970-2020 that occurred in Panama, where either event information is blank or event group type is unknown for a majority of the events, from the 2019 edition of the Global Terrorism Database (GTD), National Consortium of the Study of Terrorism and Responses to Terrorism (START), University of Maryland. It is possible that other incidents have occurred that are noted in other databases. The results of this database are subject to the GTD established inclusion criteria. Access to the database can be found here: <https://www.start.umd.edu/gtd/>.

<sup>80</sup> START (National Consortium for the Study of Terrorism and Responses to Terrorism). (2022). Global Terrorism Database 1970 - 2020 [data file]. <https://www.start.umd.edu/gtd>. Each incident is enumerated in the GTD by their Event ID numbers: 200902180022 (2009) and 201603310037 (2016).

<sup>81</sup> United States Department of Justice. 2017. "Two Men Arrested for Terrorist Activities on Behalf of Hizb'allah's Islamic Jihad Organization." June 8. <https://www.justice.gov/opa/pr/two-men-arrested-terrorist-activities-behalf-hizballahs-islamic-jihad-organization>.

**Table 2: Incidents of Domestic Terror / Insurgency**

Group	Activity	Incident	Biosecurity Relevant
2016-03-31	Bomb	Explosive device thrown at Panamanian border control post	No

**Support**

None observed.

**Biological or other WMD**

There is no history of terrorist or insurgent attacks involving biological agents within Panama, nor is there indication that any terrorist or insurgent group that has operated within Panama has expressed interest in, or pursued, biological agents as weapons.

**Assessment**

Terrorism in Panama is entirely the product of activities by foreign groups. As of mid-2022 the threat of terrorism in Panama is assessed to be limited and low. The strategic significance of the Panama Canal and the associated large volumes of international trade passing through the country along with the presence of a range of foreign institutions raise the possibility that Panama might be viewed as a suitable venue for a foreign terror group to mount attacks on another country’s interests. This suggests a need for Panamanian authorities to remain vigilant in identifying and interdicting foreign terrorist groups and individuals seeking to establish a presence in the country.

**Organized Crime**

**Overview**

Panama is considered a key interest in international organizations to combat organized crime due to Panama’s centrality to global trading through its Canal to the United States, Europe, Asia, and the world. Given the country’s open and free trade policies through the Canal and the Colón Free Trade Zone, organized crime—both domestic and transnational—exploit these policies to illegally traffic humans, drugs, and plant and animal species through these ports. As such, Panama has become the largest shipper of cocaine and marijuana to Europe.<sup>82</sup> Panama also serves as a destination point for human trafficking victims, although Panama is also a staging ground for victims to be trafficked throughout the region as well.

<sup>82</sup> Wilson, Mark. 2021. “Panama Serves as Largest Gateway for Drugs to Europe.” InSight Crime, December 3. <https://insightcrime.org/news/panama-serves-as-latest-gateway-for-drugs-to-europe/>.

There is significant presence in Panama of Mexican and Colombian transnational criminal organizations such as the Sinaloa Cartel and the Zetas (Mexico), and BACRIM and Urabeños (Colombia) that are major players in the illicit drug trade, human trafficking throughout the country, and the illegal logging trade of Panama's sparsely populated forests of Darien Gap in the east.<sup>83</sup> Illegal logging is a serious issue, wherein sparse population, corruption and little oversight have allowed the illicit activity to continue, contributing to 20 percent of the Darien Gap's deforestation, or 21,000 hectares in the last seven years, and millions of dollars to illicit trade recipients, predominantly China.<sup>84</sup>

A unique concern in Panama is the increasing use of drones to transport contraband substances such as drugs and gun parts to inmates in Panama's prisons. On the other hand, drones have also been used for interdiction purposes, among other methods, by indigenous populations, in the Darien Gap to combat and monitor illegal logging activity.<sup>85</sup> It is unclear if drone use is a growing trend, but nevertheless, it is a trend that should continue to be monitored.

### Transnational Criminal Organizations

Numerous transnational criminal organizations have a significant, continual presence within Panama, primarily surrounding illicit drug trade and human trafficking. Key in the drug trade and illicit transport of drugs through Panama are Mexico's Sinaloa Cartel and the Zetas, and Colombia's BACRIM, Urabeños and the 57<sup>th</sup> Front.<sup>86</sup> A domestic group that also functions as

<sup>83</sup> Cardenas, Juan Diego. 2022. "Panama Struggles to Fight Timber Trafficking in Forests and Ports." InSight Crime, April 4. <https://insightcrime.org/news/panama-struggles-fight-timber-trafficking-in-forests-and-ports/>.

<sup>84</sup> China also does constitute a legal logging trade partner with Panama; however, there are consistent reports of intercepted illegal log shipments with China as their destination. Numerous articles speak to this problem: Cardenas, Juan Diego. 2022. "Panama Struggles to Fight Timber Trafficking in Forests and Ports." InSight Crime, April 4. <https://insightcrime.org/news/panama-struggles-fight-timber-trafficking-in-forests-and-ports/>; 2022. "Fiscalía de Panamá investiga venta ilegal de madera a China." Critica, March 31. <https://www.critica.com.pa/nacional/fiscalia-de-panama-investiga-venta-ilegal-de-madera-china-626196>; 2021. "Interceptan tráfico ilegal de tucas de cocobolo extraída del Parque Camino de Cruces." Metro Libre, June 15. <https://www.metrolibre.com/nacionales/207548-interceptan-tr%C3%A1fico-ilegal-de-tucas-de-cocobolo-extra%C3%ADda-del-parque-camino-de-cruces.html>; Bilbao, Guido. 2019. "La estrategia de los indígenas panameños para proteger los bosques del Tapón del Darién | VIDEO." Mongabay periodico. <https://es.mongabay.com/2019/06/indigenas-panama-darien-video/>.

<sup>85</sup> Bilbao, Guido. 2019. "La estrategia de los indígenas panameños para proteger los bosques del Tapón del Darién | VIDEO." Mongabay periodico. <https://es.mongabay.com/2019/06/indigenas-panama-darien-video/>. Also referenced in: Cardenas, Juan Diego. 2022. "Panama Struggles to Fight Timber Trafficking in Forests and Ports." InSight Crime, April 4. <https://insightcrime.org/news/panama-struggles-fight-timber-trafficking-in-forests-and-ports/>.

<sup>86</sup> The 57<sup>th</sup> Front members are mostly from the demobilized Revolutionary Armed Forces of Colombia (FARC). The Urabeños group appears to have taken control of the 57<sup>th</sup> Front's activity in drug trafficking in Darien Gap, Panama, a dense portion of jungle near Colombia. Global Initiative Against Transnational Organized Crime.



a transnational criminal organization is CalorCalor, a drug gang federation of 30-40 domestic Panamanian gangs that support human trafficking and illicit drug trade logistics throughout Panama, Colombia and Mexico.

**Table 3: List of Active Transnational Criminal Organizations**

Group Name	Country of Origin	Area of Activity
CalorCalor <sup>87</sup>	Panama	Panama Oeste, Panama; Colombia; Mexico
Sinaloa Cartel	Mexico	Panama
Zetas	Mexico	Panama
BACRIM	Colombia	Panama
The 57 <sup>th</sup> Front	Colombia	Darien Gap, Panama
Urabeños	Colombia	Darien Gap, Panama; Colombia; Venezuela
Humildad y Pureza (HP) <sup>88</sup>	Colombia, Panama	Panama

### Domestic Criminal Organizations

There appear to be hundreds of mafia-style gangs and domestic criminal organizations in Panama, with the two largest being Bagdad and CalorCalor, both of which are gang federations, each comprised of anywhere between 30 and 40 gangs under their respective names. These federations aggressively compete with each other for territorial control and the capacity to profit as an intermediary in the movement of illicit drugs through Panama.

**Table 4: List of Active Domestic Organized Criminal Groups**

Group Name	Area of Activity
Bagdad <sup>89</sup>	Panama Oeste, Panama

2021. “Global Organized Crime Index: Panama.” <https://ocindex.net/country/panama>. Another alias for the Urabeños is: Gulf Clan (Clan del Golfo). Shuldiner, Henry. 2022. “Panama, Costa Rica: Major Waypoints for Cocaine to Europe.” InSight Crime, February 3. <https://insightcrime.org/news/panama-costa-rica-major-waypoints-cocaine-to-europe/>.

<sup>87</sup> Dalby, Chris. 2022. “Safehouses, Bodyguards and Fake ID – Panama’s Top Drug Trafficker on the Run.” InSight Crime, February 5. <https://insightcrime.org/news/safehouses-bodyguards-and-fake-id-panamas-top-drug-trafficker-on-the-run/>. Also see: Dalby, Chris. 2021. “Panama’s Gangs Growing Worryingly Vicious.” InSight Crime, November 3. <https://insightcrime.org/news/panamas-gang-wars-growing-worryingly-vicious/>.

<sup>88</sup> Translated to English, it is: Humility and Purity (HP). Loaiza, Lara. 2021. “Raids Reveal Urabeños’ Grasp Reaches Panama.” InSight Crime, December 6. <https://insightcrime.org/news/raids-uncover-urabenos-grasp-spread-panama/>. Also see: “¿Quién es Victoriano ‘Chichi’ Aguilar Becerra, por el cual se ofrecía una jugosa recompensa?” 2021. Panama America, 12 March. <https://www.panamaamerica.com.pa/judicial/quien-es-victoriano-chichi-aguilar-becerra-por-el-cual-se-ofrecia-una-jugosa-recompensa>.

<sup>89</sup> Dalby, Chris. 2022. “Safehouses, Bodyguards and Fake ID – Panama’s Top Drug Trafficker on the Run.” InSight Crime, February 5. <https://insightcrime.org/news/safehouses-bodyguards-and-fake-id-panamas-top-drug-trafficker-on-the-run/>. Also see: Dalby, Chris. 2021. “Panama’s Gangs Growing Worryingly Vicious.” InSight Crime, November 3. <https://insightcrime.org/news/panamas-gang-wars-growing-worryingly-vicious/>.

Group Name	Area of Activity
CalorCalor <sup>90</sup>	Panama Oeste, Panama; Colombia; Mexico
Galácticos <sup>91</sup>	Juan Díaz, Panama City, Panama

A unique concern of growing frequency in Panama’s largest prisons, La Joya and La Joyita (Nueva Joya), is drones used to smuggle contraband substances, whether drugs, gun parts, cellphones or other supplies, to jail inmates, particularly in 2019 and 2020.<sup>92</sup>

### Assessment

Panama faces a significant transnational and domestic criminal organization presence and operation in their country that exploits the critical economic nature and openness of the Panama Canal and Colón Free Trade Zones to maintain the high frequency of illicit drug transport and human trafficking throughout Panama. This places Panamanian authorities in difficult policy and implementation positions to combat both crime and illicit transport and trade through their ports while maintaining safe, accessible and affordable options for international trade through their ports.

Additional challenges are the apparent propensity of organized crime organizations and individuals associated with them to innovate and explore asymmetric avenues and means to either skirt law enforcement and support their organizations. A key example of this propensity to innovate is the use of drones to smuggle contraband, drugs, gun parts and other materials to inmates in Panama’s largest prisons. Innovation of this sort adds additional layers of complexity to law enforcement response and interdiction and could potentially speak to a future pattern of behavior (although thus far inconclusive) for domestic or transnational criminal organizations that should be watched.

## Non-organized Crime

### Overview

Seventy percent of Panama’s reported homicides and burglaries are results of drug and revenge-related killings between top Panamanian national and transnational organized

<sup>90</sup> Dalby, Chris. 2022. “Safehouses, Bodyguards and Fake ID – Panama’s Top Drug Trafficker on the Run.” InSight Crime, February 5. <https://insightcrime.org/news/safehouses-bodyguards-and-fake-id-panamas-top-drug-trafficker-on-the-run/>. Also see: Dalby, Chris. 2021. “Panama’s Gangs Growing Worryingly Vicious.” InSight Crime, November 3. <https://insightcrime.org/news/panamas-gang-wars-growing-worryingly-vicious/>.

<sup>91</sup> Microtrafficker gang. Dalby, Chris. 2021. “Panama’s Gangs Growing Worryingly Vicious.” InSight Crime, November 3. <https://insightcrime.org/news/panamas-gang-wars-growing-worryingly-vicious/>.

<sup>92</sup> Ford, Alessandro. 2020. “Drones Rain Contraband on Panama Prison.” InSight Crime, November 26. <https://insightcrime.org/news/brief/drones-contraband-panama-prison/>.

crime groups. Although among the safer countries in the region, Panama is experiencing a steady increase in homicide rates between 2017 and 2021, from 9 per 100,000 to 12.8 per 100,000.<sup>93</sup> This includes such cases as the high profile homicide of five people at a night club in Panama City in October 2021 over a drug trade dispute, where three of the deceased were members of Los Galácticos.<sup>94</sup> It has also expanded into Panama's largest prisons—La Joya and La Joyita (La Nueva Joya)—where, as discussed above in the section addressing domestic organized crime, lack of personnel and resources to combat these killings, along with increased incidents of contraband shipment to inmates, have continued to provide fertile environment for homicide rates to climb. The pandemic also provided an avenue that emboldened gangs to target and kill opponents in their homes.<sup>95</sup>

Non-organized crime in terms of industrial espionage and biocrimes in Panama are harder to determine due to no apparent publicly available information on these specific types of cases. Of note, it is likely that biocrimes in Panama are not reported—if they occur—due to high incentive to not disclose such incidents.

### Industrial Espionage

While there are no publicly accessible reports pointing to significant industrial espionage cases, let alone cases directly tied to biosecurity, it should be clearly understood that companies will frequently seek to conceal such developments.

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<sup>93</sup> World Bank. 2021. "Intentional Homicides (per 100,000 People) - Panama." <https://data.worldbank.org/indicator/VC.IHR.PSRC.P5?locations=PA>. In comparison to the region, Panama's homicide rates are on the low to middle range (Chile at 4.8 per 100,000 and Jamaica at 45 per 100,000). 2022. "Intentional Homicide Rates in Selected Countries in Latin America and the Caribbean in 2020 (in Number of Homicides per 100,000 Inhabitants)." Statista. <https://www.statista.com/statistics/715019/homicide-rates-in-latin-america/>.

<sup>94</sup> This incident is reported in the two following sources: 2022. "Insight Crime's 2021 Homicide Round-up." InSight Crime, February 1. <https://insightcrime.org/news/insight-crimes-2021-homicide-round-up/>; Dalby, Chris. 2021. "Panama's gang wars growing worryingly vicious." InSight Crime, November 3. <https://insightcrime.org/news/panamas-gang-wars-growing-worryingly-vicious/>. Additional sources citing the current climate of crime in Panama, see: EFE. 2021. "Gobierno de Panamá garantiza la seguridad del país." SwissInfo, EFE, July 23. [https://www.swissinfo.ch/spa/panam%C3%A1-seguridad\\_gobierno-de-panam%C3%A1-garantiza-la-seguridad-del-pa%C3%ADs/46812892](https://www.swissinfo.ch/spa/panam%C3%A1-seguridad_gobierno-de-panam%C3%A1-garantiza-la-seguridad-del-pa%C3%ADs/46812892); Diaz, Juan Manuel. "Asesinan al subdirector del Registro Público en San Miguelito." Prensa, November 14. <https://www.prensa.com/judiciales/asesinan-al-subdirector-del-registro-publico-en-san-miguelito/>; 2020. "Guerra de narcos y pandillas provoca escalada de crímenes en Panamá Oeste." Critica, May 18. <https://www.critica.com.pa/sucesos/guerra-de-narcos-y-pandillas-provoca-escalada-de-crímenes-en-panama-oeste-579284>.

<sup>95</sup> Austin, Anastasia. 2020. "Rift in Bagdad Crime Syndicate Fueling Violence in Panama." InSight Crime, June 8. <https://insightcrime.org/news/analysis/bagdad-rift-violence-panama/>.

The extensive allegations of public corruption raise the possibility that industrial espionage may occur, but the limited nature of the Panamanian biosector means that this does not represent a significant threat at this time. However, examples of corrupt practices are sufficiently frequent that relevant authorities should at all times consider the possibility that this may introduce vulnerabilities.

As an examples, a Panamanian law firm Alemán, Cordero, Galindo & Lee, known as Alcogal, appears to have been connected to the recent Odebrecht case—the high-profile corruption case involving the Brazilian construction company Odebrecht contracted for work in Panama, that had suspected ties or kickbacks provided to two Panamanian Presidents, Varela and Martinelli. Also in this case, Alcogal is mentioned to have established two shell companies for Odebrecht “to funnel \$30 million in bribes to win public works contracts in Panama.”<sup>96</sup>

### **Biocrime**

None identified.

### **Assessment**

Industrial espionage (e.g., personnel stealing company secrets or products, bribery to sell secrets, etc.) and biocrimes are difficult to identify in Panama through public sources, and this could be the result of high disincentive for companies to disclose the occurrence of such incidents. Alleged public corruption highlighted in the Odebrecht case is concerning, exposing the potential entrenchment of such activities in Panamanian construction industry in particular—which is a key subsector in Panama’s economy. Additional suspected incidents of foreign pressure in exchange for trade investment is also concerning, and both forms of potential corruption present a potential vulnerability to industrial espionage that would otherwise be dissuaded from disclosure.

## **Biological Programs and Infrastructure**

### **Overview**

Panama has no history of an offensive nor defensive biological weapons program.

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<sup>96</sup> Medina, Brenda, Jesus Escudero and Emilia Diaz-Struck. 2021. “When Latin America’s Elite Wanted to Hide Their Wealth, They Turned to this Panama Firm.” International Consortium of Investigative Journalists. <https://www.icij.org/investigations/pandora-papers/alcogal-panama-latin-america-politicians/>. This article is part of the ICIJ’s online library of articles on the Panama Papers. Books on the Odebrecht case can be found here: Wahrman, Connor. “Competing to be Corrupt,” in *Corruption and the Lava Jato Scandal in Latin America*. 2020. Routledge. <https://www.taylorfrancis.com/chapters/edit/10.4324/9781003024286-4/competing-corrupt-connor-wahrman>.

## **Military programs**

### ***Offensive BW***

Panama has no history of an offensive biological warfare program.

### ***Defensive BW***

Panama has no history of a defensive biological weapons program.

## **Military Biological Infrastructure**

### ***Research***

Although a notable segment of Panama's Public Service Forces engages with chemical, biological, radiological, nuclear and explosive (CBRNe) policy and response—the Battalion Against Threats and Terrorism (BATCOA) of the 5<sup>th</sup> Special Forces Brigade within Panama's National Border Service (SENAFRONT)—it is unclear if there are any dedicated research facilities owned or operated by this or related units. Details on BATCOA and their functions are discussed below in the section of this report addressing the biosecurity capabilities of national law enforcement agencies. It is likely that they rely on or defer heavily to the public health ministry and civilian sectors in this matter, but there is little open-source information to confirm this assumption.

### ***Training***

It is unclear if Panama's Public Service Forces overall operate dedicated training facilities for the specific education on biological defense concepts and practices. There is no explicit, public information indicating any such dedicated facilities; however, a facility of this sort may exist given that Panama's Public Service Forces do partner annually with the U.S. Department of Defense and U.S. Southern Command (USSOUTHCOM) for training on this matter (see the section of this report addressing the biosecurity capabilities of national law enforcement agencies for further discussion of these specific training engagements). USSOUTHCOM was also hosted in 2018 at Panama's New Horizons humanitarian training exercise titled, "Emerging Infectious Diseases Training Event," by Panama's Ministry of Health, the University of Panama, and the Gorgas Institute (ICGES) experts and personnel.<sup>97</sup>

There is evidence of one academic training school, the Technical National Intelligence and Security Academy (ATISEN), that provides training to members of Panama's Executive Secretariat of the National Security Council (CSN), along with public security agencies,

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<sup>97</sup> Senior Airman Dustin Mullen, 325<sup>th</sup> Fighter Wing Public Affairs. 2018. "Emerging Infectious Disease Training Event Bolsters Medical Readiness." U.S. Southern Command (USSOUTHCOM), June 11. <https://www.southcom.mil/MEDIA/NEWS-ARTICLES/Article/1547845/emerging-infectious-disease-training-event-bolsters-medical-readiness/>.

government, civil and international counterparts.<sup>98</sup> ATISEN also appears to be an official university program as well, so it is unclear if this academy is exclusive to intelligence and related agency personnel.<sup>99</sup>

## Civilian Biological Infrastructure

### *Research Facilities*

#### Official

Much of Panama's official, non-military biological research infrastructure is housed in two key public health reference laboratory agencies: Gorgas Institute for Health Research (Instituto Conmemorativo Gorgas de Estudios de la Salud) (ICGES) – and the Central Reference Laboratory in Public Health (LCRSP). Both were described previously in the infrastructure section of this report and are detailed in Table 5. The remaining umbrellas of biological research laboratories are regionally and locally based, within six (6) National Laboratory Networks that function around specific diseases or public health focuses, and across the 14 health districts of Panama. A few key facilities include the following:

- Centro de Diagnostico de Enfermedades Desatendidas de Meteti – regional ICGES in Darien, Panama to diagnose rare tropical diseases<sup>100</sup>
- Hospital Nacional - first ISO 15189-2012 accredited clinical laboratory in Panama<sup>101</sup>
- Hospital Regional Dr. Luis “Chicho” Fabrega<sup>102</sup>
- Centro de Investigacion de Enfermedades Emergentes y Zoonoticas de Divisa – entomology and vector-borne disease surveillance division of ICGES

An additional key facility run by ICGES is their Biosafety Level (BSL) 3 laboratory, which is managed by the *Department of Biological Risk investigation and Surveillance 3* (DIVRB3),

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<sup>98</sup> Established in Executive Decree No. 326 (2016). See: Gaceto Oficial No. 28079-A. Additional sources citing the establishment of this academy (ATISEN) in 2016: “Nuevos riesgos del terrorismo obligan a crear academia inteligencia en Panamá.” 2016. EcoTv Panama, July 22. [https://www.ecotvpanama.com/actualidad/nuevos-riesgos-del-terrorismo-obligan-a-crear-academia-inteligencia-en-panama\\_0\\_9956](https://www.ecotvpanama.com/actualidad/nuevos-riesgos-del-terrorismo-obligan-a-crear-academia-inteligencia-en-panama_0_9956); “Picuiro’ a cargo de academia de inteligencia y antiterrorismo.” 2016. Panamá América, July 21. <https://www.panamaamerica.com.pa/nacion/picuiro-cargo-de-academia-de-inteligencia-y-antiterrorismo-1035372>; “Gobierno crea academia para hacer frente al terrorismo.” 2016. La Estrella de Panamá, July 22. <https://www.laestrella.com.pa/nacional/160722/crea-frente-gobierno-academia>.

<sup>99</sup> “Nuevos riesgos del terrorismo obligan a crear academia inteligencia en Panamá.” 2016. EcoTv Panama, July 22. [https://www.ecotvpanama.com/actualidad/nuevos-riesgos-del-terrorismo-obligan-a-crear-academia-inteligencia-en-panama\\_0\\_9956](https://www.ecotvpanama.com/actualidad/nuevos-riesgos-del-terrorismo-obligan-a-crear-academia-inteligencia-en-panama_0_9956).

<sup>100</sup> Instituto Conmemorativo Gorgas de Estudios de la Salud (ICGES). 2016. “Gorgas, Inaugura el “Centro de Diagnóstico de Enfermedades Desatendidas, Instituto Gorgas, Metetí Darién.” April 11. <http://www.gorgas.gob.pa/gorgas-inaugura-el-centro-de-diagnostico-de-enfermedades-desatendidas-instituto-gorgas-meteti-darien/>.

<sup>101</sup> Hospital Nacional. 2019. “Laboratorio Clínico.” <https://www.hospitalnacional.com/servicios/laboratorio/>.

<sup>102</sup> Ciudad FCC. “Hospital Luis Chicho Fábrega – Panamá.” <https://www.ciudadfcc.com/-/hospital-luis-chicho-fabrega-panama>

described in Table 5 below. This BSL-3 laboratory is established for isolation and cultivation of risk group 3 pathogens and has the required safety infrastructure to be able to handle and deactivate risk group 3 and pathogens if required, as well as rapid diagnostics of certain pathogens of bioterrorism concern.

Outside of the ICGES, Panama's other major research agency that funds private and academic research is the National Secretariat of Science, Technology and Innovation (SENACYT). Institutes and laboratories funded under SENACYT is the Institute for Scientific Research and High Technology Services of Panama (INDICASAT), which conducts drug and vaccine research, and two laboratories at the Interamerican University of Panama are their Biomedical Laboratory (LIBM) and Pharmacology Laboratory

**Table 5: List of Official Civilian Research Facilities**

NAME	LOCATION	PURPOSE	AGENCY
Gorgas Institute for Health Research (Instituto Conmemorativo Gorgas de Estudios de la Salud - ICGES) <sup>103</sup>	Panama City, Panama	Main reference and research lab (national level)	ICGES
Central Reference Laboratory (LCRSP) <sup>104</sup>	Panama City, Panama	Serves as the central reference lab and regulating agency for all private, commercial and public health labs within Panama; Covers infectious disease (including tropical diseases), food, water, medicine, and cosmetic testing/regulation	ICGES
Department of Research-Surveillance and Biological Risk 3 (DIVRB3)	Panama City, Panama	Biosafety Level-3 (BSL-3) laboratory within ICGES to provide study, research, and diagnostic capability for human and animal infectious diseases. <sup>105</sup>	ICGES
Clinical Research Unit (Unidad de investigacion)	Panama City, Panama	Clinical research, teaching and training center of ICGES on infectious and tropical diseases	ICGES

<sup>103</sup> Instituto Conmemorativo Gorgas de Estudios de la Salud (ICGES). “¿Quiénes Somos?” <http://www.gorgas.gob.pa/>. ICGES was organized as a leading national research entity following the passing and implementation of Law 78 of December 17, 2003. For information on the facilities at ICGES, see: Instituto Conmemorativo Gorgas de Estudios de la Salud (ICGES). “Proyecto Campus Gorgas: Perfil del Proyecto.” <http://www.gorgas.gob.pa/campus-gorgas/>.

<sup>104</sup> Also found via the Gorgas lab website, here: Instituto Conmemorativo Gorgas de Estudios de la Salud (ICGES). “Dirección de Laboratorio Central de Referencia en Salud Pública.” <http://www.gorgas.gob.pa/laboratorio-central-de-referencia-en-salud-publica/#:~:text=El%20Laboratorio%20Central%20de%20Referencia,en%20la%20Rep%C3%ABblica%20de%20Panam%C3%A1.>

<sup>105</sup> In Spanish, translates to: Departamento de Investigación-Vigilancia y Riesgo Biológico 3 (DIVRB3). This unit was inaugurated in August 2010 as the Unidad de Investigación-Vigilancia y Riesgo Biológico 3 (UIVRB3) for the same function, being the first BSL-3 unit and laboratory within Central America, and in November 2016, under the Official Digital Gazette No. 28153-A, the name was changed to DIVRB3, as reflected above. 2022. “Departamento de Investigación, Vigilancia y Riesgo Biológico 3.” Instituto Conmemorativo Gorgas de Estudios de la Salud (ICGES). <http://www.gorgas.gob.pa/bsl-3/>. The ICGES campus also includes a BSL-2 laboratory within the same campus building (G1). Additional BSL-2 laboratories exist in additional campus buildings, for food and water (campus building G2) and animal facility, and tropical diseases (campus building G3). See: <http://www.gorgas.gob.pa/campus-gorgas/>.



NAME	LOCATION	PURPOSE	AGENCY
Clinica Y Medicina Tropical – UIC) <sup>106</sup>			
Centro de Investigación de Enfermedades Emergentes y Zoonóticas (CIEEZ –Divisa) <sup>107</sup>	Panama City, Panama	Division in ICGES that focuses on biosurveillance of vector-borne diseases and entomology research	ICGES
Institute of Agricultural Innovation of Panama (IDIAP)	Clayton, Panama	Agricultural research and innovation (agriculture, agri-food chains, livestock, genetic and biodiversity, technology, etc.)	IDIAP
HIV Serology National Reference Laboratory <sup>108</sup>			
National Secretariat of Science, Technology and Innovation (SENACYT) <sup>109</sup>	Ciudad del Saber, Clayton, Panama	Directing, strengthening and promoting national science, technology and innovation development for private, academic, and public sectors	SENACYT
Institute for Scientific Research and High Technology Services of Panama (INDICASAT) <sup>110</sup>	Ciudad del Saber, Clayton, Panama	Research in investigative new drugs, vaccines and clinical research; teaching/academic programs	
Pathology Laboratory, The Panama Clinic <sup>111</sup>	Panama City, Panama	Immunology research and diagnostics laboratory	

<sup>106</sup> Instituto Conmemorativo Gorgas de Estudios de la Salud (ICGES). “Unidad de Diagnóstico, Investigación Clínica y Medicina Tropical.” <http://www.gorgas.gob.pa/unidad-de-medicina-tropical/>.

<sup>107</sup> Instituto Conmemorativo Gorgas de Estudios de la Salud (ICGES). 2021. “El Centro de Investigación de Enfermedades Emergentes y Zoonóticas (CIEEZ –Divisa) del Instituto Gorgas, realiza la Primera capacitación práctica “Demostraciones sobre Vigilancia Entomológica en Panamá.” October 5. <http://www.gorgas.gob.pa/el-centro-de-investigacion-de-enfermedades-emergentes-y-zoonoticas-cieez-divisa-del-instituto-gorgas-realiza-la-primera-capacitacion-practica-demostraciones-sobre-vigilancia-ento/>.

<sup>108</sup> Mentioned in CDC “SLMTA” Accredited Labs lists. See: Strengthening Laboratory Management Toward Accreditation (SLMTA). 2022. “SLMTA Laboratories that have Achieved Accreditation.” <https://slmta.org/accredited-labs/>.

<sup>109</sup> In Spanish, translated to: Secretaría Nacional de Ciencia, Tecnología e Innovación (SENACYT). SENACYT was established and provided authority by Law 13 (April 15, 1997), updated most recently by Law 55 (December 14, 2007). Secretaría Nacional de Ciencia, Tecnología e Innovación (SENACYT). 2019. “About Us.” <https://www.senacyt.gob.pa/en/about-us/>.

<sup>110</sup> INDICAST. 2020. “Center for Clinical Research and Translational Medicine.” <https://indicat.org.pa/center-for-clinical-research-and-translational-medicine/?lang=en>. Also referenced here: International Trade Administration (ITA). 2021. Panama – Country Commercial Guide: Medical Equipment.” Last modified October 13. <https://www.trade.gov/country-commercial-guides/panama-medical-equipment>.

<sup>111</sup> The Panama Clinic. 2022. “Pathology.” <https://thepanamaclinic.com/en/pathology/>.

NAME	LOCATION	PURPOSE	AGENCY
Laboratorio Investigacion en Biomedicina (LIBM) <sup>112</sup>	Panama City, Panama	Research (basic and applied), academic, training,	Universidad Interamericana de Panamá (UIP)
Laboratorio de Farmacia, Universidad Interamericana de Panamá (UIP) <sup>113</sup>	Bethania, Panamá, Panama	Research (basic and applied), academic, training, production	Universidad Interamericana de Panamá (UIP)

### Commercial

Panama appears to have little of its commercial health space dedicated to research, for most of the identifiable commercial facilities appear to function as health and support clinics.<sup>114</sup> It appears that much of the biological research being conducted in Panama is housed within Panama’s universities or official governmental health, science and agriculture agencies, rather than in the commercial health space.<sup>115</sup> One commercial research entity of note is the Panama Institute for Biological Research (PIBR), which conducts a wide variety of basic and applied research ranging from neurology to immunology and cancer research. Separately, while not dedicated to research, it is important to note that many commercial clinics, facilities, and laboratories were temporarily certified and utilized by ICGES throughout Panama’s response to the COVID-19 pandemic as additional capacity to provide diagnostic services regionally and locally.<sup>116</sup>

<sup>112</sup> Translated to English, it is: Biomedicine Laboratory. Universidad Interamericana de Panamá (UIP). 2019. “UIP inaugura Laboratorio de Biomedicina.” <https://uip.edu.pa/uip-inaugura-laboratorio-de-biomedicina/>.

<sup>113</sup> Universidad Interamericana de Panamá (UIP). 2019. “Laboratorio de Farmacia.” January 19. <https://uip.edu.pa/laboratorio-de-farmacia/>.

<sup>114</sup> If these commercial research entities do conduct research, it is not explicitly publicly displayed in their published websites; only clinical support capabilities such as laboratory test services appears to be the most common capability highlighted in these facilities’ online websites.

<sup>115</sup> See Table 5 in the “Official Research Facilities.” section above for more detail.

<sup>116</sup> The extensive list of both public (government) and commercial entities, laboratories, and clinics that have received certification by ICGES to support COVID-19 diagnostic testing capacity is described above in the section addressing “Official Research Facilities.” Additional details can be found here: 2022. “Comunicado.” Instituto Conmemorativo Gorgas de Estudios de la Salud, April 8. <http://www.gorgas.gob.pa/wp-content/uploads/2022/04/COMUNICADO-8-ABRIL.pdf>. A similar list was also distributed by Panama’s Ministry of Health (MINSA) earlier, in March 2022, see: Technical Council of Public Health, MINSA. 2022. “Listazo Actualizado al mes de Marzo de 2022 de Los Laboratorios Clinicos Privados Con Permiso del Consejo Tecnico de Salud Publica MINSA.” [https://www.minsa.gob.pa/sites/default/files/general/lista\\_actualizada\\_de\\_laboratorios\\_clinicos\\_marzo\\_de\\_2022.pdf](https://www.minsa.gob.pa/sites/default/files/general/lista_actualizada_de_laboratorios_clinicos_marzo_de_2022.pdf).

**Table 6: List of Known Commercial Research Facilities**

NAME	LOCATION	PURPOSE
Panamanian Institute of Biological Research (PIBR) <sup>117</sup>	Panama City, Panama	Research (basic and applied) in various fields (neuroscience, immunology, microbiology, genetics, cancer, antibody production, etc.)

**Production Facilities**

Panama lacks domestic vaccine and biological production facilities, despite both having a highly effective immunization program and high rate of vaccination across their population.<sup>118</sup> The Panamanian Institute for Biological Research (PIBR)—mentioned in Table 6 above—however, does also appear to be conducting applied research toward development of new antibody treatment options. It is unclear if this project has progressed beyond the research stage toward active development processes.<sup>119</sup> Overall, Panama addresses its immunization requirements by importing vaccines and has a long-standing relationship with global vaccine production companies, such as Sanofi, which is Panama’s largest vaccine producer partner.<sup>120</sup> Panamanian vaccine export capacity appears to be a pass-through or distribution agreement rather than the product of a fill-and-finish facility. For example, Panama serves as the Latin American regional logistics hub and vaccine distributor for Sanofi-produced vaccines but does not appear to be involved in any fill-and-finish or production of said vaccines.<sup>121</sup>

Additionally, the market for medical device production in Panama also appears to be entirely reliant on imports, indicating no domestic production. Panama’s primarily imports medical devices from Asian partners (Republic of Korea, Japan, China, Singapore), European partners (Sweden, Germany, Holland, Spain) and the United States. This includes commercial medical

<sup>117</sup> Panamanian Institute of Biological Research (PIBR). “Homepage.” <https://www.pibr.org.pa/>. Per their webpage, this research institute has many collaboration partners, including the Gorgas Institute (ICGES), the University of Panama, the Interamerican University of Panama (UIP) and the University of Oxford.

<sup>118</sup> There is mention in one scholarly article of Panama producing one vaccine domestically, but there is no additional detail available in public sources to determine which vaccine, nor if this capability still exists. See Table 7: “List of countries in the Americas and their vaccine production capabilities as well as their share in the exportation market,” page 15 of: Ortiz-Prado, Esteban et al. 2021. “Vaccine Market and Production Capabilities in the Americas.” *Tropical Medicine and Vaccines*, 7. <https://doi.org/10.1186/s40794-021-00135-5>.

<sup>119</sup> Panamanian Institute of Biological Research (PIBR). “Projects.” <https://www.pibr.org.pa/projects/>.

<sup>120</sup> See section “Vaccines in Panama”, page 6, of: Ortiz-Prado, Esteban et al. 2021. “Vaccine Market and Production Capabilities in the Americas.” *Tropical Medicine and Vaccines*, 7. <https://doi.org/10.1186/s40794-021-00135-5>.

<sup>121</sup> Sanofi. 2022. “Nuestros Países: Panama.” <https://www.sanofi-pacifico-caribe.com/es/sobre-nosotros/nuestros-paises>.

companies such as Welch Allyn, Braun, and Purple Surgical (single-use medical supplies) selling products to the government of Panama or other Panamanian companies.<sup>122</sup>

### ***International Research Partnerships***

Panama leverages international cooperation to bolster research and domestic public health response capability. Panama has partnered with the Japan International Cooperation Agency (JICA) to expand Panama's ICGES genomic testing and surveillance capability in response to the SARS-CoV-2 pandemic. This agreement also supplies Panama with reagents and additional equipment to support their capacity expansion.<sup>123</sup>

As noted in the "Official Research Facilities" section above, the Institute for Scientific Research and High Technology Services of Panama (INDICASAT) is collaborating with the Gorgas Memorial Institute of Health Services (ICGES) and international partners in medical research and in developing medical devices.<sup>124</sup>

### **Animal**

Panama maintains a critical research partnership on animal ecology and zoonotic infectious diseases through the Smithsonian Tropical Research Institute. Recently, one project being conducted by this partnership was able to identify a significant correlation between increases in human incidents of malaria with the decrease of amphibian populations in Panama and Costa Rica, highlighting the importance of biodiversity.<sup>125</sup>

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<sup>122</sup> International Trade Administration (ITA). 2021. "Panama – Country Commercial Guide: Medical Equipment." <https://www.trade.gov/country-commercial-guides/panama-medical-equipment>. Also see their "Disposable Medical Supplies", also part of their "Panama Country Commercial Guide": <https://www.trade.gov/country-commercial-guides/panama-disposable-medical-supplies>. Also see: Welch Allyn. 2009. "Welch Allyn Acquires MD International." March 19. [https://www.pharmaceutical-business-review.com/news/2b4bfwelch\\_allyn\\_acquires\\_md\\_internat/](https://www.pharmaceutical-business-review.com/news/2b4bfwelch_allyn_acquires_md_internat/).

<sup>123</sup> Instituto Conmemorativo Gorgas de Estudios de la Salud (ICGES). 2022. "La Agencia de Cooperación Internacional del Japón (JICA), Dona Equipo al Instituto Conmemorativo Gorgas de Estudios de la Salud (ICGES)." May 5. <http://www.gorgas.gob.pa/la-agencia-de-cooperacion-internacional-del-japon-jica-dona-equipo-al-instituto-conmemorativo-gorgas-de-estudios-de-la-salud-icges/>.

<sup>124</sup> International Trade Administration (ITA). 2021. "Panama – Country Commercial Guide: Medical Equipment." <https://www.trade.gov/country-commercial-guides/panama-medical-equipment>.

<sup>125</sup> This research project was a collaboration between the Smithsonian Tropical Research Institute, University of California, Davis, United States, Kenya's Alliance of Bioersivity International and CIAT Regional Office for Africa, University of Maryland and the Federal Reserve Board, United States. Springborn, Michael R., Joakin A. Weill, Karen R. Lips and Aniruddha Ghosh. 2022. "Amphibian Collapses Increase Malaria Incidents in Central America." *Environmental Research Letters*, 17. <https://iopscience.iop.org/article/10.1088/1748-9326/ac8e1d>.

**Table 7: List of International Research Partnerships**

NAME	Foreign Partner Org	PURPOSE	Foreign Partner Country
Gamboa Laboratories <sup>126</sup>	Smithsonian Institute	Tropical ecosystem research	USA
The Achotines Laboratory <sup>127</sup>	Inter-American Tropical Tuna Commission (IATTC)	Research for sustainment and conservation of yellowfin tuna and related fish species	International
Glaxo Smith Kline (GSK) <sup>128</sup>	GSK	Pharmaceutical and healthcare research and production	UK

### Future Development Plans

Panama appears to have development plans to expand the country’s medical facilities, particularly within indigenous communities. To support this, there is increasing interest in long-term private sector investment in medical treatments and facilities, in part spurred by desire to increase medical tourism. There is greater ability and faster implementation time in the private sector than for similar health investments in the public sector given extensive requirements for licensure and certification to acquire necessary medical equipment to advance medical services.<sup>129</sup>

### Assessment

Panama possesses a strong central health research infrastructure at the national level, and a wide commercial private base, although more limited to supporting healthcare and laboratory services, which are otherwise critical to a country’s healthcare system. The commercial health space’s temporary approval and utilization as additional testing capacity in Panama’s COVID-19 response also have proved critical, where they often served in capacities beyond their day-to-day operations. This also raises the importance of expanding and ensuring implementation of biosecurity within the commercial health space as some clinics may not have had prior infrastructure or training to support additional capacities to

<sup>126</sup> This and numerous other laboratories in Panama are part of the Smithsonian Tropical Research Institute (STRI). 2022. “Gamboa.” <https://stri.si.edu/facility/gamboa>. For the list of their additional facilities, please see their webpage “Facilities” accessed here: <https://stri.si.edu/facilities/>

<sup>127</sup> Scholey, Vernon, Daniel Margulies, Robert Olson, Jeanne Wexler, Jenny Suter and Sharon Hunt. 2020. “Lab Culture and Reproduction of Yellowfin Tuna in Panama.” *Global Aquaculture Advocate*, April 1. <https://www.globalseafood.org/advocate/lab-culture-and-reproduction-of-yellowfin-tuna-in-panama/>.

<sup>128</sup> Glaxo Smith Kline (GSK). 2021. “Panama.” <https://www.gsk.com/en-gb/contact-us/worldwide/panama/>.

<sup>129</sup> International Trade Administration (ITA). 2021. “Panama – Country Commercial Guide: Medical Equipment.” <https://www.trade.gov/country-commercial-guides/panama-medical-equipment>.

handle pathogens or samples they are not used to handling in their normal operations. There is potential to expand the depth of commercial production, research and strategic international collaborations Panama already leverages to further the country's health capacities. Additionally, current interests to provide long term private commercial investment will be key. Lack of domestic production of medical products and vaccines will continue to leave Panama vulnerable to market availability and variability, as well as potential supply chain issues since Panama requires whole products due to no apparent fill-and-finish capabilities. Both these issues have been highlighted globally throughout the COVID-19 pandemic, where Panama is not alone. Building domestic production in the near and long term will ensure Panama's ability to respond to and mitigate effects of future infectious disease outbreaks as well as expand its capacity to support the overall health of its population.

## Legal Framework

### Overview:

Panama's national legal framework relating to biosecurity focuses on activities within and operations of and around the Panama Canal, to include customs and trade controls, port security, regulations and legislation to combat illicit trade and money laundering, and detection of CBRNE materials and agents via their border security. Panama is party to all major international treaties that support biosecurity, and leverages collaboration and cooperation with important international organizations in biosecurity as well as unique concerns pertaining to ecology and environmental health of the Panama Canal waterways.

### International Law relevant to Biosecurity.

#### *Treaties, Conventions and Agreements:*

Panama is a member of all major international treaties, conventions and agreements that relate or are relevant to biosecurity, including the Biological Weapons Convention (BWC) and the Geneva Protocol of 1925. Although Panama is a member state party to the BWC, they have submitted only one BWC Confidence Building Measure (CBM) report over 30 years ago, in 1991.<sup>130</sup> Panama is actively engaged with the Chemical Weapons Convention (CWC),

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<sup>130</sup> The United Nations Office at Geneva (UNOG) hosts a BWC Electronic Confidence Building Measures Portal, wherein BWC member state parties submit their CBMs. Per the public-facing portion of this portal, it shows Panama's only CBM submission in 1991. CBM submissions are listed, but not accessible by the public. BWC Electronic Confidence Building Measures Portal. United Nations Office at Geneva (UNOG). "Available Confidence Building Measures Reports – Panama." Copyright 2018. <https://bwc-ecbm.unog.ch/state/panama>. Additionally, the UNOG Financial Resources Management Service reported in their 2019 "Closing 2019 BWC Accounts" report of what appeared to be that Panama still owed for 2019, which appears to carry over into

wherein Panama has engaged with the Organisation for the Prohibition of Chemical Weapons (OPCW) for delivery of healthcare worker chemical incident care and response training and contributes to advancements in defense against chemical threats.<sup>131</sup> Likely a reason for more public sources highlighting work with the OPCW versus the BWC is the standing agreement between Panama and the United States to remove the last eight (8) chemical munitions left in Panama.<sup>132</sup>

A unique convention Panama is an active member to is the International Maritime Organization (IMO) Ballast Water Management Convention (BWM). Panama ratified the BWM in 2016 and has since conducted several trainings and program projects with the IMO in this capacity.<sup>133</sup> The centrality of the Panama Canal in international trade makes the BWM especially relevant to Panama’s biosecurity as ballast water discharged from shipping can be a conduit for the introduction of invasive species into maritime ecosystems.

**Table 8: List of Relevant Treaties, Conventions and Agreements**

NAME	Signature	Ratification
Biological Weapons Convention (BWC)		20 March 1974

2020 as well. See: “United Nations Secretariat. 2020. “Status of Contributions of BWC, CCW, CCM, APLC, as at 29 February 2020.” [https://geneva-s3.unoda.org/static-unoda-site/pages/templates/the-biological-weapons-](https://geneva-s3.unoda.org/static-unoda-site/pages/templates/the-biological-weapons-convention/topics/Disarmament%2BReceivables%2BFor%2BWebsite%2B29%2BFebruary%2B2020%2BAnnexes.pdf)

[convention/topics/Disarmament%2BReceivables%2BFor%2BWebsite%2B29%2BFebruary%2B2020%2BAnnexes.pdf](https://www.un.org/disarmament/biological-weapons/about/latest-information/news-from-2020/). Access via: United Nations, Office of Disarmament Affairs. “News from 2020.” <https://www.un.org/disarmament/biological-weapons/about/latest-information/news-from-2020/>.

<sup>131</sup> For information on nurses’ training, see: Organisation for the Prohibition of Chemical Weapons (OPCW). 2022. “Nurses in Panama Increase Capacity to Treat Victims Exposed to Chemical Substances.” April 6. <https://www.opcw.org/media-centre/news/2022/04/nurses-panama-increase-capacity-treat-victims-exposed-chemical-substances>. For information on first responder training, see: Organisation for the Prohibition of Chemical Weapons (OPCW). 2022. “Assistance and Protection Training Organised for First Responders from Latin America and the Caribbean.” April 26. <https://www.opcw.org/media-centre/news/2022/04/assistance-and-protection-training-organised-first-responders-latin>.

<sup>132</sup> Panama also supplied with the OPCW in February 2022 with 5000 Euros for the building of OPCW Centre for Chemistry and Technology to strengthen implementation of the CWC. See: Organisation for the Prohibition of Chemical Weapons (OPCW). 2022. “Panama Contributes €5,000 to Future OPCW Centre for Chemistry and Technology.” February 21. <https://www.opcw.org/media-centre/news/2022/02/panama-contributes-eu5000-future-opcw-centre-chemistry-and-technology>. For information on the U.S.-Panama Standing Agreement, please see: Chuen, Christina. 2005. “Global CW Assistance.” Nuclear Threat Initiative (NTI), May 31. <https://www.nti.org/analysis/articles/global-cw-assistance/>; United States Department of State. 2017. “Treaties and Other International Acts, Series 17-516: Agreement Between the United States of America and Panama, Effected by Exchange of Notes at Panama January 5 and April 21, 2017, with Annex.” <https://www.state.gov/wp-content/uploads/2019/02/17-516-Panama-Weapons-Destruc-Notes.pdf>; Trager, Rebecca. 2017. “US to Clean-Up Race Test Chemicals on Panama island.” Royal Society of Chemistry. Chemistry World, July 26. <https://www.chemistryworld.com/news/us-to-clean-up-race-test-chemical-weapon-relics-on-panama-island/3007758.article>.

<sup>133</sup> For Panama’s engagement and country profile with IMO’s BWM, please see: “Panama.” Last modified 2017. <https://archive.iwlearn.net/globallast.imo.org/wcar/panama/index.html>.

Geneva Protocol of 1925	4 December 1974	
International Maritime Organization (IMO) Ballast Water Management Convention (BWM)		19 October 2016

### **Organizations**

Panama regularly participates with the World Health Organization (WHO), the World Organisation for Animal Health (WOAH, founded as OIE), and the Organization of American States, same as their fellow regional Central and South American partner countries. Although not seen as a biosecurity organization, the International Criminal Police Organization’s (INTERPOL) Bioterrorism Prevention Unit assists countries in preparedness and response trainings.<sup>134</sup> Although it is not clear if Panama interacts with INTERPOL in this fashion, they do have a working relationship around countering organized crime, and are fellow members along with Argentina, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Guatemala, Mexico, Uruguay, and Venezuela.<sup>135</sup>

Given the Panama Canal’s large volumes of globally routed maritime traffic, the International Maritime Organization’s (IMO) GloBallast Programme represents a critical component of Panama’s biosecurity efforts to prevent or mitigate the introduction of invasive species.<sup>136</sup>

**Table 9: List of Relevant International Organization Memberships**

NAME
World Health Organization (WHO)
World Organisation for Animal Health (WOAH, founded as OIE)
Organization of American States (OAS)
INTERPOL – Bioterrorism Unit
GloBallast - IMO

<sup>134</sup> INTERPOL. 2022. “Bioterrorism.” <https://www.interpol.int/Crimes/Terrorism/Bioterrorism>.

<sup>135</sup> INTERPOL. 2022. “Membership of INTERPOL.” <https://www.interpol.int/Who-we-are/Legal-framework/Membership-of-INTERPOL>. Also see: INTERPOL. 2019. “Addressing Latin American Organized Crime and the Global Drug Trade.” <https://www.interpol.int/News-and-Events/News/2019/Addressing-Latin-American-organized-crime-and-the-global-drug-trade>.

<sup>136</sup> For additional information on IMO’s BWM work and why ballast water is a major concern for spread of invasive species, please see the three following publications from IMO: International Maritime Organization (IMO). 2017. “Invasive Aquatic Species (IAS).” <https://archive.iwlearn.net/globallast.imo.org/the-invasive-aquatic-species-2/index.html>; “Ballast Water as a Vector.” <https://archive.iwlearn.net/globallast.imo.org/ballast-water-as-a-vector/index.html>; and “Examples of IAS.” <https://archive.iwlearn.net/globallast.imo.org/examples-of-ias/index.html>.



## Domestic Legislation/Regulation

Panama's national legal framework extensively covers customs and port security, combatting illicit trade and money laundering, mitigation of pollution and environmental effects of significant trade and traffic through the Panama Canal. This is expected given the vital nature of the Canal. Present but with less frequency is legislation addressing CBRNE proliferation issues and control lists for such materials and agents, and laboratory research and conduct legislation.

### *Biosecurity in Law: General*

Panama's legal framework relating to biosecurity deals mostly with imports, customs and security of trade. This includes security of transporting materials on roadways (Law No. 51 of 28 June 2017) (see Table 10 below). One piece of legislation that directly applies to laboratory work—and is actually biosafety focused but important to biosecurity nonetheless—is Law No. 35-05 of May 2009 (also listed in Table 10 below), which guides laboratories in the use and care of animals, to also be in compliance and congruent with international standards on the matter.

### *Proliferation restrictions*

Panama possesses an extensive list of national legislation and regulation that help to restrict proliferation. Most of these laws, as detailed in Table 10 below, focus on customs, import, and security of trade and Panama's national border, given that a vital component of Panama's economy, security—and essential to global trade—is the Panama Canal.

Aside from customs, trade and transport, key biosecurity regulation and legislation listed below also focus on:

- CBRNE preparedness, response and containment of biological materials (Executive Decree No. 129 of 5 April 2017);
- Managing transport and security of dual-use goods (Executive Decree No. 81 of 25 May 2017);
- Non-intrusive verification of CBRNE by border security (Cabinet Decree No. 49 of 6 December 2006); and
- Adopting the European Union (EU)'s "Dual Use Items Control List" (Resolution No. 1 of 22 June 2018).

Executive Decree No. 129 of 5 April 2017 is particularly important because it establishes Panama's National Interinstitutional CBRNE Plan and responsibility for various national agencies to mitigate and respond to CBRNE threats and incidents. Table 10 below provides a summary of these and other laws and regulations as provided by the Permanent Mission

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of Panama to the United Nations by way of national reporting compiled in their latest Approved 1540 Committee Matrix, published 9 December 2020. This summarization also makes note of what general matrix topic the given law, regulation, decree, etc. responds to.

**Table 10: List of Applicable Domestic Legislation**

Legislative Category	Relevant Legislations (Text)	Level of Coverage	Provides For Enforcement
National	Penal Code <sup>137</sup>	Penal Code of Panama; Articles 44-46, 82 (accomplice to crime), 293, 294, 295 (terrorism), 445 (prohibits transport of biological and chemical materials/agents)	Yes Article 293 and 294 provide enforcement for terrorism-related crimes and actions
National	Law No. 14 of 6 November 1990 <sup>138</sup>	Export zones and controls; Article 7 establishes the National Commission of Export Processing Zones	Yes Article 7 and 8 establish functions and enforcement authority of this Commission
National	Law No. 31-05 of May 16, 2009 <sup>139</sup>	Establishes the Institutional Committee for the Good Use and Care of Animals (CUICAL) of ICGES to ensure compliance with international standards of use and care of laboratory animals	Yes
National	Law No. 57 on Firearms, munitions and related Materials (27 May 2011) <sup>140</sup>	Regulations on firearms, munitions, related materials (including possession, use, transport); Articles 1; 3; 11 (subparagraph 9 and 10) (chemical, biological, or weapons of mass destruction); 14	Yes Articles 88 (subparagraph 14); 89 (subparagraph 4); 91 provide for enforcement

<sup>137</sup> The Penal Code also appears to be referred to as Ley No. 14 de 2007, as amended up to 2015. Accessed via Verification Research, Training and Information Centre (VERTIC), BWC Legislation Database: [https://www.vertic.org/media/National%20Legislation/Panama/PA\\_Codigo\\_Penal\\_2007\(act%202015\).pdf](https://www.vertic.org/media/National%20Legislation/Panama/PA_Codigo_Penal_2007(act%202015).pdf).

<sup>138</sup> Gaceta Oficial 21662 (6 November 1990). [https://www.gacetaoficial.gob.pa/gacetas/21662\\_1990.pdf](https://www.gacetaoficial.gob.pa/gacetas/21662_1990.pdf). Also see: Gaceta Oficial 21659. [https://www.gacetaoficial.gob.pa/gacetas/21659\\_1990.pdf](https://www.gacetaoficial.gob.pa/gacetas/21659_1990.pdf). For laws that are older than 2007, inclusive, the Gaceta Oficial of Panama offers an archive webpage of legal texts from 1903-2007. See: República de Panamá. “Gaceta Oficial: Archivo de Gacetas Oficial.” [https://www.gacetaoficial.gob.pa/Archivo\\_de\\_Gacetas\\_Oficial](https://www.gacetaoficial.gob.pa/Archivo_de_Gacetas_Oficial).

<sup>139</sup> Instituto Conmemorativo Gorgas de Estudios de la Salud (ICGES). 2022. “Comité Institucional para el Buen Uso y Cuidado de los Animales (CIUCAL-ICGES).” <http://www.gorgas.gob.pa/programas-y-proyectos/ciucal-icges/>.

<sup>140</sup> Verification Research, Training and Information Centre (VERTIC), BWC Legislation Database. 2020. “Panama.” [https://www.vertic.org/media/National%20Legislation/Panama/PA\\_General\\_de\\_Armas\\_de\\_Fuego\\_Municiones\\_y\\_Materiales\\_%20Relacionados\\_Ley\\_no.57\\_2011.pdf](https://www.vertic.org/media/National%20Legislation/Panama/PA_General_de_Armas_de_Fuego_Municiones_y_Materiales_%20Relacionados_Ley_no.57_2011.pdf).

Legislative Category	Relevant Legislations (Text)	Level of Coverage	Provides For Enforcement
		(subparagraphs 2 and 3); 15; 88 (subparagraph 11)	
National	Law No. 19 of June 1997 Organic Law of Panama Canal Authority (11 Jun 1997)	Panama Canal Authority; Article 57	Yes Article 127
National	Law 78 of 15 November 2010 <sup>141</sup>	Approves the 2005 Protocol to the Convention for the suppression of unlawful acts against the safety of maritime navigation; Also, the 2005 Protocol to the Protocol of the Convention for the suppression of acts against the safety of fixed platforms located on the continental shelf, Article 4	Yes Article 4 provides for enforcement
National	Law No. 50 of 2 July 2003	Amendment to the Criminal Code, Article 264 A (terrorism)	Yes
National	Law No. 23 of 27 April 2015	Money laundering, financing of terrorism and WMDs proliferation financing; Article 44	Yes Executive Decree No. 363 of 13 August 2015 governs this law and provides for enforcement of this law (see next entry). Articles 59-61
National	Executive Decree No. 363 of 13 August 2015	Governs above Law No. 23 of 27 April 2015; Articles 22-25	Yes Articles 22-25
National	Executive Decree No. 587 of 4 August 2015	Freezing of assets pursuant to Title VI of Law No. 23 (2015), stated above	Yes Pursuant to Title of Law No. 23 (2015), stated above

<sup>141</sup> Gaceta Oficial No. 26663-B (15 November 2010).  
[https://www.gacetaoficial.gob.pa/pdfTemp/26663\\_B/30456.pdf](https://www.gacetaoficial.gob.pa/pdfTemp/26663_B/30456.pdf)

Legislative Category	Relevant Legislations (Text)	Level of Coverage	Provides For Enforcement
National	Executive Decree No. 947 of 5 December 2014	Creation of Finance Analysis Unit	Yes
National	Executive Decree 129 of 5 April 2017 <sup>142</sup>	Article 13; Directly applicable to UNSCR 1540; also applies to national and international plan for prevention and responding to CBRNE threats, accounting for storage of B (N and C); Article 29	Yes Article 13 onward identifies organizations and authorities to enforce and respond during events
National	Law No. 41 of 1 July 1998	On environmental waste management, Article 58	
National	Law No. 51 of 28 June 2017	On road transport, Articles 8-10	Yes Article 62 provides enforcement
International	International Ship and Port Facility Security Code (ISPS Code) <sup>143</sup>	Security in general terms	
National	Law No. 56 of 6 August 2008	On ports, enforcing the International Ship and Port Facility Security Code (ISPS Code); Articles of particular interest are 17 and 105	Yes Chapter XVI on sanctions
National	Resolution No. 140 (15 May 2003)	On directives for the implementation of ISPS Code	
National	Maritime Regulations for the Navigation through the Panama Canal (1999) <sup>144</sup>	Regulation of activities and navigation through the Panama Canal	Yes
National	Decree Law No.1 of 13 February 2008	Establishes the National Customs Authority and stipulating	Yes

<sup>142</sup> Gaceta Oficial 28253-A (2017).

[https://www.gacetaoficial.gob.pa/pdfTemp/28253\\_A/GacetaNo\\_28253a\\_20170406.pdf](https://www.gacetaoficial.gob.pa/pdfTemp/28253_A/GacetaNo_28253a_20170406.pdf). Also found here: Verification Research, Training and Information Centre (VERTIC). 2020. "Panama." [https://www.vertic.org/media/National%20Legislation/Panama/PA\\_decreto%20no%20129\\_2017.pdf](https://www.vertic.org/media/National%20Legislation/Panama/PA_decreto%20no%20129_2017.pdf).

<sup>143</sup> In short, referred to as the ISPS Code; also referred to as such in the remainder of this table.

<sup>144</sup> Agreement No. 13 (June 3, 1999). Verification Research, Training and Information Centre (VERTIC), BWC Legislation Database. 2020. "Panama." [https://www.vertic.org/media/National%20Legislation/Panama/PA\\_Regulacion\\_por\\_la\\_navigacion\\_no.13\\_1999.pdf](https://www.vertic.org/media/National%20Legislation/Panama/PA_Regulacion_por_la_navigacion_no.13_1999.pdf)

Legislative Category	Relevant Legislations (Text)	Level of Coverage	Provides For Enforcement
	(National Customs Authority)	provisions regarding the Customs regime; Article 19	National Customs Authority provided enforcement capability
National	Law No. 18 of 3 June 1997. Organic Law of the National Police (Border Police)	Establishes the National Police (Border Police)	Yes National Police (Border Police) provided enforcement capability; Container Technical Inspection Unit Risk Analysis Group
National	Decree Law No. 8 of 20 August 2008 National Border Service (Border Police – SENAFRONT)	Establishes the National Border Service (SENAFRONT)	Yes National Border Service (SENAFRONT) provided enforcement capability
National	Executive Decree No. 103 of 13 May 2009	SENAFRONT's mandate, and regulates Decree Law No. 8 of 20 August 2008 (above); Article 21	
National	Cabinet Decree No. 49 on non-intrusive verification (6 December 2006)	Non-intrusive verification measures (for C, B, R and N) to support border security. Includes use of X-ray inspection of containers Radiation portal monitors Portable spectrometers; Also participates in Megaport Initiative Container Security Initiative (CSI)	Yes
National	Executive Decree No 81 of 25 May 2017 <sup>145</sup>	On measures for the trade and secure transport of dual use	Yes

<sup>145</sup> Gaceta Oficial No. 28287-B. [https://www.gacetaoficial.gob.pa/pdfTemp/28287\\_B/61296.pdf](https://www.gacetaoficial.gob.pa/pdfTemp/28287_B/61296.pdf). Also found at: [http://www.vertic.org/media/National%20Legislation/Panama/PA\\_Decreto%2081\\_2017.pdf](http://www.vertic.org/media/National%20Legislation/Panama/PA_Decreto%2081_2017.pdf).

Legislative Category	Relevant Legislations (Text)	Level of Coverage	Provides For Enforcement
		goods. Arts. 1, 5 (paragraph 10) 6, 10	Articles 5 (paragraph 10), 6, 10 and 26
National	Resolution No. 1 of 22 June 2018	Adoption of the European Union dual use items control list of as the Harmonized National List of dual use commodities for the Republic of Panama.  Article 7 paragraph 10 (Regarding the capabilities of the National Council of Trade and Secure Transport on the National Risk Assessment, the Acceptable Risk Level of the Republic of Panama and the Diversion Index of dual-use merchandise)	Yes National Council of Trade and Secure Transport
National	Law 56 (6 August 2008) on the Ports of Panama	Art. 5 (definition)	
National	Executive Decree No. 947 (5 December 2014) FIU <sup>146</sup>	Reorganizes the Financial Analysis Unit for the Prevention of Money Laundering and the Financing of Terrorism	
National	Resolution No. 853 (3 September 2020) <sup>147</sup>	Modifies Article 2, paragraph 1 of Res. No. 766 (13 August 2020) establishing sanitary measures from passengers entering Panama during a National State of Emergency <sup>148</sup>	Yes Authority to require negative PCR tests for passengers, and Res. No. 853 expanded the time frame this test is needed
National	Resolution No. 505 (12 August 2020) <sup>149</sup>	Within the National Customs Authority, creates the unit that	Yes

<sup>146</sup> Gaceta Oficial No. 27676-C. [https://www.gacetaoficial.gob.pa/pdfTemp/27676\\_C/49146.pdf](https://www.gacetaoficial.gob.pa/pdfTemp/27676_C/49146.pdf)

<sup>147</sup> Gaceta Oficial No. 29106-B. [https://www.gacetaoficial.gob.pa/pdfTemp/29106\\_B/80735.pdf](https://www.gacetaoficial.gob.pa/pdfTemp/29106_B/80735.pdf)

<sup>148</sup> Res. No. 766 (13 August 2020), Gaceta Oficial No. 29091-B.

[https://www.gacetaoficial.gob.pa/pdfTemp/29091\\_B/GacetaNo\\_29091b\\_20200814.pdf](https://www.gacetaoficial.gob.pa/pdfTemp/29091_B/GacetaNo_29091b_20200814.pdf)

<sup>149</sup> Gaceta Oficial No. 29098 <https://www.gacetaoficial.gob.pa/pdfTemp/29098/80440.pdf>

Legislative Category	Relevant Legislations (Text)	Level of Coverage	Provides For Enforcement
		addresses regulatory compliance and prevention of money laundering and proliferation of weapons of mass destruction (WMD)	
National	Maritime Safety Standard for the Prevention of Pollution from Waste of ACP Floating Equipment – 2600SEG-330 (2019) <sup>150</sup>	Applies to all Panama Canal Authority (ACP), contractor and third party companies operating floating equipment in the Panama Canal area, and prescribes courses of action, responsibilities, and prohibitions regarding waste and pollution	Yes

<sup>150</sup> Panama Maritime Security Unit. 2019. “Maritime Safety Standard for the Prevention of Pollution from Waste of ACP Floating Equipment – 2600SEG-330.” <https://pancanal.com/wp-content/uploads/2022/03/2600SEG-330.pdf>.



## Assessment

With the background of significant international trade conducted through the Panama Canal, Panama remains vigilant in terms of biosecurity both in preventing proliferation and illegal activity exploiting trade and customs industry routes and ports, and in establishing key controls to monitor, respond, and safely secure materials in transport to prevent exposure and import or export of harmful materials. No publicly available sources on biosecurity measures for facilities, outside of guidance manuals for laboratories on animal use and care were identified.

## Law Enforcement & Intelligence

### National Law Enforcement Capabilities

#### *Relevant Biosecurity Capabilities*

Details about relevant biosecurity capabilities across Panama's law enforcement agencies are present but sparse in publicly available information, and thus less visible. There is, however, limited mention in domestic and international sources that at least establishes for public audiences the responsibilities across different Panamanian law enforcement units and agencies for detection and response to biological and biosecurity incidents.

First, it appears that the Battalion Against Threats and Terrorism (BATCOA) of the 5<sup>th</sup> Special Forces Brigade within Panama's National Border Service (SENAFRONT) is one unit responsible for developing and designing "the inter-institutional response plans in the national territory for chemical, biological, radiological, nuclear and explosive events," as well as "coordinate with the security forces, the Fire Department and others, in accordance with the National Interinstitutional CBRNE plan."<sup>151</sup> Panama's National Interinstitutional CBRNE plan does not appear to be publicly accessible, although it is regularly amended and maintained, per requirements maintained in law (Law No. 129 of July 19, 2017, mentioned in Table 10 in this report). BATCOA, 5<sup>th</sup> Special Forces Brigade also has three subunits, one of which is their CBRNE Immediate Response Unit. Mentions of an Immediate Response Unit (URI) appear in publication by the U.S. Department of Defense's Defense Threat Reduction Agency (DTRA) describing their annual CBRN trainings with Panama, known as the PANAMAX Alpha. This training exists between this unit of the National Border Security,

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<sup>151</sup> Gobierno de República de Panamá, SENAFRONT. 2020. "Brigada de Fuerzas Especiales: Batallón Contra Amenazas y Terrorismo BATCOA." <http://www.senafront.gob.pa/reclutamiento/brigada-de-fuerzas-especiales/>.

Panama's Fire Department HAZMAT Team, and National Crisis Coordination Council, and United States Southern Command (USSOUTHCOM).<sup>152</sup>

Second, the same publication mentions the Fire Department HAZMAT Team. It is assumed that both the Fire Department and BATCOA/URI have a least a moderately high level of proficiency given that they engage in annual trainings and exercises with USSOUTHCOM and DTRA.<sup>153</sup>

Beyond these references, it is unclear the extent of specific capabilities, resources, and overall biosecurity capacities within this subunit (Immediate Response Unit), BATCOA, and the HAZMAT Team, though some capability is clearly present.<sup>154</sup> It is also likely that additional capacity to respond and detect biological incidents are jointly held in or utilized from civilian health and emergency response agencies.

Without explicit public information on these organizations, or visibility into how they interoperate, coordinate, and respond—even theoretically through the established laws—it is difficult to fully assess biosecurity capability. There is clearly a structure and network involving several ministries and sectors, but in-depth detail is lacking in open-source material.

### *Areas of Weakness*

Significant corruption appears to exist across the ranks of Panama's law enforcement personnel and agencies, including money laundering concerns contributing to low overall public trust. For example, Panama currently ranks "low" in public perception surveys due to high inference of corruption, and thus is scored at 35 out of 100 by Transparency

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<sup>152</sup> It is assumed that this mention is stating the same CBRN Immediate Response Unit as discussed in this paragraph, given the same title and are part of the same organization, although additional confirmation of this assumption is required (limited public information hinders current understanding). Lewis, Jessica. 2021. "DTRA Partners in Panama to Counter-Weapons of Mass Destruction." Defense Visual Information Distribution Service.

<https://www.dvidshub.net/news/405777/dtra-partners-panama-counter-weapons-mass-destruction>.

<sup>153</sup> Additionally, upon researching the Fire Department's website for details on the HAZMAT team, there appears to be no mention of this unit. Thus, it is unclear the specific or general capabilities this unit has in detecting and responding to biological or biosecurity incidents, although there is some inherent capability given existence of such a team. Also see: Benemérito Cuerpo de Bomberos de la República de Panamá (BCBRP). 2021. "SERVICIO DE ATENCIÓN MÉDICA PRE-HOSPITALARIA, EMERGENCIAS Y RESCATE CELEBRA ANIVERSARIO N° 28." <https://www.bomberos.gob.pa/2021/06/25/servicio-de-atencion-medica-pre-hospitalaria-emergencias-y-rescate-celebra-aniversario-n-28/>.

<sup>154</sup> BCBRP. 2021. <https://www.bomberos.gob.pa/2021/06/25/servicio-de-atencion-medica-pre-hospitalaria-emergencias-y-rescate-celebra-aniversario-n-28/>. Also see: Gobierno de República de Panamá, SENAFRONT. 2020. "Brigada de Fuerzas Especiales: Batallón Contra Amenazas y Terrorismo BATCOA." <http://www.senafront.gob.pa/reclutamiento/brigada-de-fuerzas-especiales/>.

International.<sup>155</sup> These issues are also compounded by the lack of domestic legislation and regulation to combat and effectively combat financial support for terrorism and organized crime.<sup>156</sup> Lastly, lack of resources also negatively impacts Panama’s law enforcement agencies ability to respond to security issues appropriately. For example, there is reported lack of cargo scanners at ports, which reduces vigilance and ability to detect and interdict potentially illicit or proliferated materials in the heavy cargo traffic that transverses Panama’s ports and the Canal. Both the National Customs Authority and Ministry of Public Security have elicited bids for funding and company contracts to address this issue.<sup>157</sup>

### Border Security

Numerous border security, control and customs agencies exist within Panama. The National Border Service (SENAFRONT), mentioned above in the section addressing the biosecurity capabilities of national law enforcement agencies, also bears the overall responsibility to patrol, monitor and protect Panama’s border with Colombia. Panama’s National Customs Authority (ANA) is the main entity with responsibility and authority to inspect, verify and track imports and exports into and out of Panama.<sup>158</sup> Although not traditional law enforcement, the Executive Directorate of Agricultural Quarantine (DECA) of the Ministry of Agricultural Development (MIDA) also carries out surveillance and inspection specifically of import and export of agricultural products at all transits types (e.g., airports, border or land points of entry, seaports, and national internal control posts). They also conduct and manage agricultural quarantine when needed at ports, inspect cargo, and issue related import, transport and export licenses.<sup>159</sup>

Additional agencies with some overlapping responsibility in border security include:

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<sup>155</sup> Transparency International. 2021. “Corruption Perceptions Index: Panama.” <https://www.transparency.org/en/cpi/2020/index/pan>.

<sup>156</sup> United States Department of State, Bureau of Counterterrorism. 2019. “Country Reports on Terrorism 2019: Panama.” <https://www.state.gov/reports/country-reports-on-terrorism-2019/panama/>.

<sup>157</sup> United States Department of State, Bureau of Counterterrorism. 2019. “Country Reports on Terrorism 2019: Panama.” <https://www.state.gov/reports/country-reports-on-terrorism-2019/panama/>.

<sup>158</sup> Autoridad Nacional de Aduanas (ANA). 2021. “Historia.” [https://www.ana.gob.pa/w\\_ana/index.php/quienes-somos/historia?csr=8550952071649888965](https://www.ana.gob.pa/w_ana/index.php/quienes-somos/historia?csr=8550952071649888965). Also see: Autoridad Nacional de Aduanas. 2020. “National Customs Authority (ANA) – Panama, 3 April 2020: Measures Adopted in Response to COVID-19.” [http://www.wcoomd.org/-/media/wco/public/global/pdf/topics/facilitation/activities-and-programmes/natural-disaster/covid\\_19/panama\\_en.pdf?la=en](http://www.wcoomd.org/-/media/wco/public/global/pdf/topics/facilitation/activities-and-programmes/natural-disaster/covid_19/panama_en.pdf?la=en). Also see: United States Department of State, Bureau of Counterterrorism. 2019. “Country Reports on Terrorism 2019: Panama.” <https://www.state.gov/reports/country-reports-on-terrorism-2019/panama/>.

<sup>159</sup> Ministerio de Desarrollo Agropecuario (MIDA). 2023. “Dirección Ejecutiva de Cuarentena Agropecuaria: ¿Quiénes somos?” <https://mida.gob.pa/deca/>.

- National Migration Server (SNM)<sup>160</sup>
- National Police (PNP)<sup>161</sup>
- Panama Maritime Authority
- Directorate General of Ports and Maritime Ancillary Industries
- Directorate General of Merchant Marine<sup>162</sup>
- Panama's National Aeronaval Service (SENAN)<sup>163</sup>

### Intelligence Agencies

There is mention of a Panama Intelligence service, referred to as Consejo, but explicit details in open-source material are lacking.<sup>164</sup> Additionally, there is no indication in open-source reporting of the extent to which Panama's intelligence agencies' responsibilities toward counterterrorism and non-proliferation.

### International Law Enforcement Partnerships

Panama has significant global partnership in the areas of counterterrorism. In collaboration and coordination with the United States, Panama is member of the Special Interest Alien (SIA) Joint Task Force, Financial Action Task Force (FATF), and is the only Latin American member of the Defeat-ISIS Coalition, and works with the Coalitions Counter-Terrorism Finance Working Group.<sup>165</sup> Panama also participates and collaborates with the U.S. Drug Enforcement Agency (DEA), Homeland Security Investigations (HSI), and Customs and Border Protection (CBP) to detect, monitor and interdict illegal merchandise, narcotics and livestock/aquaculture trade through the Panama Canal. These collaborations are conducted under the Port Enforcement Task Force.<sup>166</sup> The United States Coast Guard provides support training and coastal patrol vessels for Panama's National Aeronaval Service (SENAN).

<sup>160</sup> Gobierno Nacional, República de Panamá, Migración. "RESEÑA INSTITUCIONAL." <https://www.migracion.gob.pa/inicio/nuestra-historia>.

<sup>161</sup> Policía Nacional. 2021. "Policía Nacional de Panamá y su Historia." [http://www.policia.gob.pa/Policia\\_Nacional.html?csrc=14723294779571999661](http://www.policia.gob.pa/Policia_Nacional.html?csrc=14723294779571999661).

<sup>162</sup> Regional Marine Pollution Emergency, Information and Training Centre – Caribe (RAC-REMPEITC). 2015. "Country Profile 2015, Panama." <https://new.racrempeitc.org/wp-content/uploads/2022/05/Panama-Country-Profile-2015.pdf>.

<sup>163</sup> U.S. Embassy in Panama. 2022. "U.S. Government Activities in the Eastern Tropical Pacific Seascape – Fact Sheet." March 22. <https://pa.usembassy.gov/u-s-government-activities-in-the-eastern-tropical-pacific-seascape/>.

<sup>164</sup> United States Department of State, Bureau of Counterterrorism. 2019. "Country Reports on Terrorism 2019: Panama." <https://www.state.gov/reports/country-reports-on-terrorism-2019/panama/>.

<sup>165</sup> United States Department of State, Bureau of Counterterrorism. 2019. "Country Reports on Terrorism 2019: Panama." <https://www.state.gov/reports/country-reports-on-terrorism-2019/panama/>.

<sup>166</sup> U.S. Embassy in Panama. 2022. "U.S. Government Activities in the Eastern Tropical Pacific Seascape – Fact Sheet." March 22. <https://pa.usembassy.gov/u-s-government-activities-in-the-eastern-tropical-pacific-seascape/>.

Internationally, Panama has a strong relationship with INTERPOL. Additionally, Panama works closely with the Organization of American States (OAS)'s Inter-American Committee Against Terrorism (OAS-CICTE)—not a law enforcement agency—in training capacities for several Panamanian government institutions regarding combatting financing for terrorism. In 2019, Panama hosted OAS-CICTE in their “Technical Assistance for Implementation of Financial Sanctions against Terrorism” workshop.

### **Training and Engagement**

In conjunction with much of its international law enforcement partnerships previously listed, Panama also has significant global partnerships in the areas of counterterrorism training across Panama's law enforcement agencies and personnel. Panama also engages extensively with the Organization of American States (OAS)'s CICTE office on interdiction training.<sup>167</sup>

As mentioned above in the section addressing the biosecurity capabilities of national law enforcement agencies, Panama engages with USSOUTHCOM and DTRA annually to participate in the PANAMAX Alpha training and exercises. Additionally, and although not law enforcement or in connection with domestic intelligence agencies, the Panama Canal Authority (ACP) conducts annual trainings and tabletop exercises with the United States Coast Guard, U.S. Environmental Protection Agency (EPA), and U.S. Department of State through the National Response Team (NRT) agreement between these U.S. agencies and the ACP. They conduct this annual training and tabletop in case of a hazardous oil spill or other significant pollution incident occurs in the Canal.<sup>168</sup>

The BATCOA, 5th Special Forces Brigade of Panama's National Border Service is identified as the unit that is engaged with trainings or expertise on chemical, biological, radiological and nuclear (CBRN) issues, although the extent to their level of expertise, resources, and capabilities are not publicly visible in open-source material.

The National Border Service conducts yearly training with the United States Army and United States Southern Command (US SOUTHCOM), along with other CBRN-focused agencies

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<sup>167</sup> United States Department of State, Bureau of Counterterrorism. 2019. “Country Reports on Terrorism 2019: Panama.” <https://www.state.gov/reports/country-reports-on-terrorism-2019/panama/>.

<sup>168</sup> Panama Canal Authority (Autoridad del Canal de Panamá, ACP). 2022. “Agreement Between the Autoridad del Canal de Panamá (Panama Canal Authority), United States Department of State, the United States Environmental Protection Agency, and the United States Coast Guard, Regarding Assistance with Respect to Certain Environmental Pollution Incidents in the Panama Canal Area.” <https://pancanal.com/wp-content/uploads/2022/03/nrt-agreement.pdf>. Accessed via ACP's “International Agreements” webpage, with the agreement titled “National Response Team (NRT)”: <https://pancanal.com/en/international-agreements/>.

within the United States government, including the Department of Defense's Defense Threat Reduction Agency (DTRA), and civilian defense contracting company, CRDF Global.<sup>169</sup>

Information on Panama's CBRN capabilities beyond these trainings and engagements is not publicly visible.

### Assessment

Panama's law enforcement apparatus has an apparent but not publicly detailed capability and capacity to detect and respond to biosecurity incidents. Panama levies and maintains significant international law enforcement partnerships and trainings that will continue to support and build upon the domestic capabilities in response to biological incidents, counterterrorism efforts and border security. Law enforcement agencies continue to have a high level of actual and perceived corruption, which is magnified by lack of resources in some cases to adequately and appropriately perform their duties. Lack of public trust and low perception of integrity vis-à-vis crime and corruption will continue to significantly hinder advances Panama's law enforcement agencies seek to make in the country.

## Biosecurity Country Level Risk Assessment

### Assessment of Infrastructure and Environmental Factors

Panama is a stable, upper income country with no apparent social cleavages or instability, despite increasing unemployment and wealth disparities widened by the COVID-19 pandemic. This stability both socially and economically makes Panama attractive to foreign investment and trade, along with the critical nature of the Panama Canal and support infrastructure to provide constant, high volume cargo transport worldwide. This investment also continues to bolster Panama's service-oriented economy. Panama leads the Latin American region in connectivity and integration of infrastructure, which predominately

<sup>169</sup> United States Southern Command (U.S. SOUTHCOM). Thomas, Leanne. 2021. "Army South CG Visits Panama to Strengthen Relationships." U.S. SOUTHCOM news. <https://www.southcom.mil/MEDIA/NEWS-ARTICLES/Article/2847890/army-south-cg-visits-panama-to-strengthen-relationships/>. Also see: "CRDF Global Experts Brief Panamanian Minister of Industry and Commerce on Managing Trade in Dual-Use Goods." 2020. CRDF Global. <https://www.crdfglobal.org/news/crdf-global-experts-brief-panamanian-minister-industry-and-commerce-managing-trade-dual-use/>; Mac Donald, Raquel. "CRDF Global Leads Capacity-Building Workshop for Port, Customs, and Coast Guard Officials to Interdict North Korean Shipping in Central and South America." <https://www.crdfglobal.org/insights/crdf-global-leads-capacity-building-workshop-for-port-customs-coast-guard-officials-to-interdict-north-korean-shipping-in-central-and-south-america/>; United States Mission Panama. 2022. "U.S> Government Activities in the Eastern Tropical Pacific Seascape." U.S. Embassy in Panama. <https://pa.usembassy.gov/u-s-government-activities-in-the-eastern-tropical-pacific-seascape/>.

supports Canal operations and shipment of cargo and trade goods both by air, land and sea. While critical to economic output and function, Panama's transportation infrastructure appears to be highly concentrated in urban areas, leaving rural populations with greater accessibility concerns and burdens. This also applies to their national and local healthcare systems; although well established, supported and adjusted, there is variance throughout the country's health districts' resources and capability that will make it harder to respond to health risks and concerns.

Additionally, the Panama Canal serves as a unique feature of the country, and with its high economic value and output, it also is the most likely route of biological threat introduction to agriculture, maritime ecosystems and subsequent human health. This is primarily the case via ballast water and improper biosecurity and biosafety measures taken by shipping vessels that transverse the Canal but could also be potentially introduced by illicit trade. The consistent and significant presence of transnational organized crime groups also make the Canal and the Free Trade Zone vulnerable to incidents of this nature, along with the drug and human trafficking trade these groups also engage in. Corruption in law enforcement and suspected corruption in the construction industry hinders the country's ability to respond to these threats, as well as non-violent crime and other societal safety concerns and needs.

### **Assessment of Country Capabilities**

Panama has extensive legal and government agency capability and frameworks in place to address port security, customs and export controls, and illicit trade. They leverage and maintain extensive international law enforcement collaborations with the United States and worldwide to monitor and interdict concerns both of illicit trade and potential persons of interest that might be involved in terroristic activities. Panama also appears to have an extensive government coordination effort to respond to CBRNE threats, established by Law No. 129 (2017), but it is not clear how well these agencies and established coordination function in their stated capacity. This is due to limited public information beyond the identification in law and in some public sources that such coordination exists, and that Panama maintains a National Interinstitutional CBRNE Plan—which does not appear to be publicly available.

Panama lacks domestic production of medical devices and countermeasures such as vaccines, which will be an important short- and long-term goal for the country to pursuit to build its capacity to respond to future health concerns and outbreaks, along with improving the health of its population.

## Overall Assessment

Panama possesses a solid foundation of infrastructure, legal and government support to address various concerns, including biosecurity, and can build upon this foundation to expand its capacity and capability to respond.

### *Identification of Gaps (Regulatory)*

Panama possesses some specific regulations to support biosecurity, such as laboratory regulation of animal care and use in research; CBRNE response and mitigation; and dual-use export controls. Although at least one identifiable control list legislation for CBRN materials and agents exists, there will need to be more legislation and regulation in this area to support implementation of the established CBRN control lists, as well as to remediate and process CBRN materials and agents in the event they are detected or interdicted in Panama's ports. Filling this regulatory gap supports both effective and safe trade, as well as preventing biosecurity threats from entering Panama. There will also need to be more investment in biosecurity to provide Panama with a capacity to respond to potential biological threats. One method of investment is through biosecurity training. Figure 4, below, provides an example of such biosecurity training and implementation of biosecurity principles applicable to laboratory settings, provided by the Gorgas Institute, Instituto Conmemorativo Gorgas de Estudios de Salud (ICGES).<sup>170</sup>

### *Level of threat*

The current level of threat to and within Panama is low, particularly for bioterrorism or bioterrorism. A point of vigilance that applies also to combatting illicit trade and drug trafficking is monitoring and interdicting persons of interest who may be transiting Panama to other countries with terrorist group connections. Additional vigilance will need to continually be paid to the Panama Canal, for potential introduction of invasive species through illicit trade or by ballast water or maritime sources.

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<sup>170</sup> Text in Figure (Box) 4 was provided through correspondence with Gorgas Institute (ICGES) officials authorized to speak on the matter.



**Figure 4 - Example of Biosecurity Training and Measures Implementation in Panama, Gorgas Institute (ICGES)**

The Instituto Conmemorativo Gorgas de Estudios de Salud (ICGES) has strengthened its biosafety and biosecurity measures. Particularly for biosecurity, the following measures have been implemented:

1. Training course on biosafety and biosecurity to all new personnel.
2. Dialogues (at least once a year) on the concept of biosecurity and cyberbiosafety.
3. Implementation of biometric devices (such as fingerprint) and access badge. The access to facilities will depend on the academic background and previous trainings. For example, the person in charge of biosafety management and the biosafety coordinator have access to almost all areas in order to perform supervisory tasks. Likewise, they are supervised by researchers and directors of the Institute. Administrative personnel have access only to the administrative areas.
4. Security personnel available 24/7. They are trained by the National Police and other law enforcement and security agencies on biosafety and biosecurity, first aid, fire, rescue, and evacuation, etc. These same officers are part of the first aid and response brigade in the Institute.
5. Courses to all researchers wanting to use the BSL3 Laboratory. A grade of 80% or higher is required.

Some weaknesses are:

- Institutional Biosafety Committee and supervisory board. Current efforts include drafting of bylaws and charters to submit to top management of the Institute for review and approval.
- Implementation of psychological and psychiatric evaluations to the officers that have access to bacterial strains or virus cultures, or for those handling infectious samples.
- Improved legislation on biosafety and biosecurity.

## About the authors

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Dr. Sin is the Director of the Unconventional Weapons and Technology Division (UWT) of the National Consortium for the Study of Terrorism and Responses to Terrorism (START), headquartered at the University of Maryland. He develops, leads, and manages interdisciplinary research projects spanning across a broad range of national and homeland security challenges. His expertise includes countering weapons of mass destruction; chemical, biological, radiological, and nuclear (CBRN) terrorism; adversary decision modeling; operations in the information environment; and Northeast Asia regional security. Dr. Sin’s extensive experience also includes a career as a U.S. Army Officer. He holds a Ph.D. in political science from the University at Albany, State University of New York, and is fluent in Korean, Mandarin Chinese, and Japanese.

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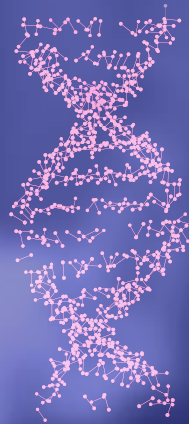


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