NATIONAL ACTION PLAN FOR HEALTH SECURITY OF CABO VERDE

2022 – 2026

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PREFACE

The global health context of recent decades, characterized by successive epidemic outbreaks of which the pandemic of COVID-19 stands out most recently, highlights the urgency for nations to make efforts to prepare for public health threats. Recognizing this need, and as a signatory of the International Health Regulations (IHR, 2005) that requires countries to strengthen their capacities with regard to health security, Cabo Verde conducted in 2019 the Joint External Evaluation (JEE) of IHR Capacities. This assessment identified priority areas for action to improve the country's capacity to prepare for, detect in a timely manner, and respond to public health events.

Cabo Verde's National Action Plan for Health Security (NAPHS) was based primarily on the recommendations of the JEE. However, recognizing the indispensability of the "One Health" approach in achieving health goals, it took into account other assessments of the country, including the Public Health Risk Assessment, the State Party Self-Assessment Annual Report (SPAR), the Health Status of the National Livestock, the Environmental White Paper, among others.

I would like to acknowledge and thank the valuable collaboration of all sectors and partners involved in the elaboration of this important document. In particular, I thank the World Health Organization, which through the Regional Office in Cabo Verde and AFRO supported this project both technically and financially.

The NAPHS aims to serve as a framework for multi-sectoral and intersectoral coordination and collaboration for strengthening the basic capacities of the International Health Regulations (IHR, 2005). The Ministry of Health, through the National Coordinating Instance, will supervise its implementation. However, for its success, it is indispensable that the multisectoral and partner collaboration, observed so far, remains constant. In this sense, I appeal to other sectors of government, the private sector, development partners, and civil society to embrace this cause by joining us in the implementation of the Cabo Verde National Action Plan for Health Security.

I emphasize the living nature of this plan that will be kept open to additions or updates as needs or new epidemiological situations demand.

I am sure that with the NAPHS we are taking another right step in our goal of improving national health security, in particular, and contributing to global health security as a result.

Arlindo do Rosário

Health Minister of Cabo Verde

ACKNOWLEDGEMENTS

The preparation of the National Action Plan for Health Security of Cabo Verde began in 2021 with the establishment of a multisectoral technical group coordinated by the National Institute of Public Health. This, with the technical and financial support of the World Health Organization Office in Cabo Verde, worked hard in the research, review and compilation of documents and data that served as a basis for this plan.

I would like to extend a sincere thank you to all the partner organizations and institutions, namely the Ministry of Health, Ministry of Agriculture and Environment, Ministry of Internal Administration, Ministry of Defense, Ministry of Finance, Civil Aviation Agency, Airports and Air Safety, Maritime Port Institute, Cabo Verde Red Cross, United Nations Office in Cabo Verde, and particularly the World Health Organization Office in Cabo Verde for their tireless dedication in the development of this plan.

We acknowledge your work along this path and count on your continued support in the mobilization of resources and execution of the programmed activities.

A warm thank you to everyone.

Maria da Luz Lima

President of the National Institute of Public Health

See Annex II for the complete list of collaborators in the development of the NAPHS.

EXECUTIVE SUMMARY

In recent years Cabo Verde has experienced several epidemic outbreaks, including rubella, pandemic influenza - H1N1, dengue, viral meningitis by enterovirus ECHO-4, Zika virus, Cocksakie virus, malaria and, more recently, COVID-19. This, coupled with the archipelago's fragility as a small island state and tourist route, reinforces the need for the country to prepare for potential public health events.

The Joint External Evaluation (JEE) of the capacities of the International Health Regulations (IHR, 2005) identified the country's main gaps in preventing, detecting and responding to health threats. Following the 2019 JEE, a technical working group, coordinated by the National Institute of Public Health and with the support of the World Health Organization Office in Cabo Verde, was formed to draft Cabo Verde's National Health Security Plan (NAPHS). This group identified and reviewed key documents that served as a basis for the strategic planning process.

On October 15, 2021, the first coordination workshop for drafting the NAPHS was held, during which experts from different sectors outlined the strategic objectives and activities of the plan, based on the priorities identified in the JEE and other country assessments. Following this, a second workshop including the first group of experts and other budgeting specialists to determine the costs of the plan was held in April 2022. During this meeting, experts from the different areas reviewed and discussed the relevance of each intervention in each technical area, and calculated the cost of all the activities considered in the plan.

The NAPHS is, therefore, a 5-year strategic plan, with objectives and activities developed through multisectoral collaboration. It presents the strategic activities and actions detailed in each of the 19 technical areas of the JEE. It also aggregates the cost and timing of the activities.

The estimated cost for the execution of the planned activities is 2,783,928,058 CVE, corresponding to 26,263,472 USD. The proportion of costs by the four thematic groups of the JEE – Prevention, Detection, Response and Other IHR areas – is respectively 10.8%, 65.9%, 8.2% and 15.1%. More than half of the NAPHS budget (52.9%) is scheduled for the first two years. The top three cost derivatives of NAPHS are the following technical areas: National Laboratory System (42.5%), Human Resources (14.1%) and Points of Entry (10.1%).

So far, only 17% of the planned activities have funding. The mapping of potential internal and external funding sources will be carried out in order to identify and mobilize resources for the execution of the planned activities.

The monitoring and evaluation of the NAPHS will be carried out by a multi-sectoral nucleus for monitoring the NAPHS, supervised by the National Coordination Instance; it will follow a logical model based on the indicators established for each activity.

Through proper implementation of the NAPHS, it is expected to reduce morbidity, mortality and the socio-economic consequences derived from adverse public health events in Cabo Verde.

LIST OF ACRONYMS

AAC – Civil Aviation Agency (*Agência de Aviação Civil*)

AAR – After Action Review

AMR – Antimicrobial Resistance

ANAS – DGRHS – Joint External Evaluation (*Agência Nacional De Águas e do Saneamento – Departamento de Gestão de Recursos Hídricos e Saneamento*)

ASA – Airports and Air Safety (*Aeroportos e Segurança Aérea*)

AU – African Union

BO – Official Bulletin (*Boletim Oficial*)

CNOESP – National Center for Public Health Emergencies (*Centro Nacional de Emergências de Saúde Pública*)

COSMAR – Maritime Security Operations Center (*Centro de Operações de Segurança Marítima*)

COVID-19 – Coronavirus Disease 2019

CPCIRCS – Commission for the Prevention and Control of Healthcare-Related Infections (*Comissão de Prevenção e Controlo de Infeções Relacionadas aos Cuidados de Saúde*)

CPLP – Community of Portuguese Language Countries (*Comunidade dos Países de Língua Portuguesa*)

CV – Cabo Verde

CVE – Cabo Verdean Escudos

DGASP – Directorate-General of Agriculture, Forestry and Livestock (*Direção Geral de Agricultura, Silvicultura e Pecuária*)

DGPOG – Directorate-General of Planning, Total Budget (ECV) and Management (*Direção Geral do Planeamento, Total Budget (ECV) e Gestão*)

DNA – National Directorate of the Environment (*Direção Nacional do Ambiente*)

DNS – National Directorate of Health (*Direção Nacional de Saúde*)

ECHO-4 – Enteric Cytopathic Human Orphan Vírus

ECOWAS - Economic Community of West African States

ENAPOR – Ports of Cabo Verde (Portos de Cabo Verde)

EOC – Emergency Operations Center

EPICV – Cabo Verde Field Epidemiology Training Program

ERIS – Independent Health Regulatory Entity (*Entidade Reguladora Independente da Saúde*)

ETMGESP – Multisectoral Technical Team for the Management of Public Health Emergencies (*Equipa Técnica Multissetorial para a Gestão de Emergências em Saúde Pública*)

ETNIR – Rapid Intervention Technical Team (*Equipa Técnica de Intervenção Rápida*)

FAO – Food and Agriculture Organization of the United Nations (*Organização das Nações Unidas para Alimentação e Agricultura*)

FETP - Field Epidemiology Training Program

GAF – Gabinete de Assuntos Farmacêuticos (*Pharmaceutical Affairs Bureau*)

GBV – Gender-based violence

GDP – Gross Domestic Product

H1N1 – Influenza A virus subtype H1N1

HBS – Batista de Sousa Hospital

HPAI – Highly Pathogenic Avian Influenza

HRJM – João Morais Regional Hospital

HRRAF – Ramiro Alves Figueira Regional Hospital

HRSFA – São Francisco de Assis Regional Hospital

HRSRV – Santa Rita Vieira Regional Hospital

IHR - International Health Regulation

IMP – Maritime Port Institute

INE – National Institute of Statistics (*Instituto Nacional de Estatística*)

INSP – National Institute of Public Health (*Instituto Nacional de Saúde Pública*)

JEE – Joint External Evaluation

LAL – Anti larvae fight

MAA – Ministry of Agriculture and Environment (*Ministério da Agricultura e Ambiente*)

MAI – Ministry of Internal Administration (*Ministério da Administração Interna*)

ME – Ministry of Education (Ministério da Educação)

MeA – Monitoring and Evaluation

MERS – Middle East Respiratory Syndrome

MF – Ministry of Finance (Ministério das Finanças)

MS – Ministry of Health (*Ministério da Saúde*)

NAPHS – National Action Plan for Health Security

NU – United Nations

OIE – World Organisation for Animal Health

ONS – National Health Observatory (*Observatório Nacional de Saúde*)

PAN-RAM – National Plan for the Fight against Antimicrobial Resistance (*Plano de Ação Nacional de Luta Contra a Resistência Antimicrobiana*)

PECS-CPLP – CPLP Strategic Health Cooperation Plan (*Plano Estratégico de Cooperação em Saúde da CPLP*)

PEDS – Strategic Plan for Sustainable Development (*Plano Estratégico de Desenvolvimento Sustentável*)

PM10 – Particulate matter between 2.5 and 10 micrometers in diameter (µm)

PM2.5 – Particulate matter with a diameter of less than 2.5 micrometers (µm)

PVS – Performance of Veterinary Services

RGPH – General Census of Population and Housing (*Recenseamento Geral da População e Habitação*)

RSFB – Sanitary Region of Fogo and Brava (*Região Sanitária Fogo e Brava*)

RSSA – Sanitary Region of Santo Antão (*Região Sanitária de Santo Antão*)

RSSN – Sanitary Region of Northern Santiago (*Região Sanitária Santiago Norte*)

RSSS – Sanitary Region of Southern Santiago (*Região Sanitária Santiago Sul*)

SARS – Severe Acute Respiratory Syndrome

SARS-CoV-2 – Severe Acute Respiratory Syndrome Coronavirus 2

SDG – Sustainable Development Goals

SIS – Health Information System

SNPCB – National Civil Protection and Firefighting Service (*Serviço Nacional de Proteção Civil e Bombeiros*)

SNSAN – National Secretariat of Food and Nutritional Security – Ministry of Health (*Secretariado Nacional de Segurança Alimentar e Nutricional – Ministério da Saúde*)

SOP – Standard Operating Procedure

SPAR – State Party Self-Assessment Annual Report

STAR – Strategic Tool for Assessing Risks

SVIR – Integrated Surveillance and Response Service

TIC – Information and Communication Technologies

UNFPA – United Nations Population Fund

USD – United States dollar(s)

WAHO - West African Health Organization

WHO – World Health Organization

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1. INTRODUCTION

According to the IHR (2005), a public health emergency of international concern is defined as "an extraordinary event which is determined, as provided in these regulations; to constitute a public health risk to other States through the international spread of disease; and to potentially require a coordinated international response"[1]. The events that may constitute emergencies are not restricted to infectious diseases (and may include events of a chemical, radionuclear, or disaster nature), nor are they limited to the occurrence of damage to the health of the population including, therefore, other determinants of health and risk factors for their occurrence [2].

Public health emergencies represent an important cause of morbidity and mortality worldwide and especially in small island countries, as is the case of Cabo Verde, where the phenomenon of globalization associated with climate change is gradually changing the health panorama. Cabo Verde has a strong mobility of people and goods with third countries, and this represents a major threat to the entry of emerging and re-emerging diseases.

In Cabo Verde, considering the impact of emergencies in public health, several aspects affect human, animal and environmental health: waterborne diseases, including diarrhea, related to the quality and quantity of water for consumption and sanitation, the latest epidemics including Dengue, Zika, Malaria and COVID-19.

From 2008 to 2019 the country faced several epidemic outbreaks, most notably rubella (2008-2009); pandemic influenza - H1N1 (2009); dengue type 3 (2009-2010 and 2016); viral meningitis caused by enterovirus ECHO-4, (2015); Zika virus (2015-2016); Cocksakie virus – hand-foot-mouth syndrome (2017); malaria (2017) and COVID-19 (2020-2022). Of these epidemics that occurred in the country, three of them (Rubella, Dengue and Zika), were the most important recorded in the African region.

In addition to risks directly related to health, the country's vulnerabilities also stand out, such as its volcanic origin and nature, the drought phenomena that frequently plague the country and, because Cabo Verde is an island country, its susceptibility to risks related to climate change.

Because of the diversity of risks to which the country is exposed to and recognizing the need for greater intersectoral and multidisciplinary coordination in managing public health threats, the National Coordination Instance [3] was established in January 2019. The National Coordination Instance (INC) provides a coordination platform to operationalize the One Health strategy in the country. Through the INC, it aims to improve the capacity to respond to epidemics and epizootics, health threats and risks that the country faces, through integration between the areas of human health, animal health and environmental health.

The Joint External Evaluation conducted in Cabo Verde in November 2019 revealed a number of gaps in preparedness and response to public health emergencies that can be addressed by developing standard operating procedures and improving articulation and cooperation between human, animal, and environmental health, based on the "One Health" approach [4]. Public health emergencies require the creation of strategies to improve epidemic preparedness and response capabilities.

In this sense, and after the Joint External Evaluation, it was felt the need to develop a national action plan for health security, provided by a comprehensive and cross-sectional approach.

2. GENERAL BACKGROUND

2.1.Geographic and environmental characterization of Cabo Verde

Cabo Verde is an archipelago consisting of ten islands, nine of which are inhabited, occupying an area of 4,033km^2 and an exclusive economic zone that extends over about 734,000 km^2. It is located 455 km off the West African coast, formed by the accumulation of rocks resulting from eruptions on submarine platforms. With the exception of the islands of Sal, Boavista and Maio, the relief of the archipelago is rugged, with altitudes exceeding 1,000 meters in some islands, reaching 2,882 meters on the island of Fogo, the highest point in the whole country [5].

The islands are divided into two groups, Windward and Leeward according to their positions in relation to the prevailing winds. Thus, the Windward group includes Santo Antão, São Vicente, Santa Luzia, São Nicolau, Sal and Boa Vista, while Maio, Santiago, Fogo and Brava are in the Leeward group.

The climate is temperate due to the moderating action that the ocean and the trade winds exert on the temperature, and the annual averages rarely rise above 25ºC, never falling below 20ºC. Seawater temperature varies between 21ºC in February and March, and 25ºC in September and October. The climatic stability of Cabo Verde guarantees the possibility of tourism all year round [5].

2.2. Political characterization of Cabo Verde

Cabo Verde is characterized by a democratic rule of law, and is internationally held up as an example of democracy in Africa, in large part due to its political stability. Electoral processes take place without disturbance, regularly, and are classified as free and legitimate. The first multiparty elections took place thirty years ago, in 1991. Since then, the country has seen enormous progress in the consolidation of democracy, with alternations taking place every ten years. Local government is a reality and is being consolidated, political and associative freedoms are respected, as are freedom of expression and of the press, and fundamental human rights (of women, children, and protection of the most vulnerable social classes).

The National Parliament and other national institutions mandated for this purpose, provide reliable mechanisms for controlling the exercise of power in the country. Cabo Verde is a sovereign, unitary and democratic Republic, governed by internal laws that

safeguard the respect for human rights, peace and justice. However, its legal system is also bound by international conventions and treaties on human rights and the sovereignty of peoples.

Administratively, the country is divided into twenty-two municipalities; the Municipal Council (executive body) and the Municipal Assembly (deliberative body) head each municipality. These two municipal bodies are elected by their respective populations.

2.3. Cabo Verde's Socio-Economic Context

Cabo Verde is currently undergoing a demographic transition, with social and economic implications that will define its development path for the future. Concomitantly, there has been a significant drop in fertility and mortality rates, which contributes to the pattern of population growth observed recently.

According to data from the 2021 General Census of Population and Housing, the resident population of Cabo Verde is 491,233 inhabitants, of which 50.2% are male [6].

Table 1. Resident population in Cabo Verde by sex, according to 2010 and 2021 RGPH

	Population living in Cabo Verde			
	2010		**2021**	
Male	243 589	49.5%	246 363	50.2%
Female	248 286	50.5%	244 870	49.8%
Total	**491 875**	**100%**	**491 233**	**100%**

The majority of the population is young. Individuals over 65 years old represent only 6.7% of the total population.

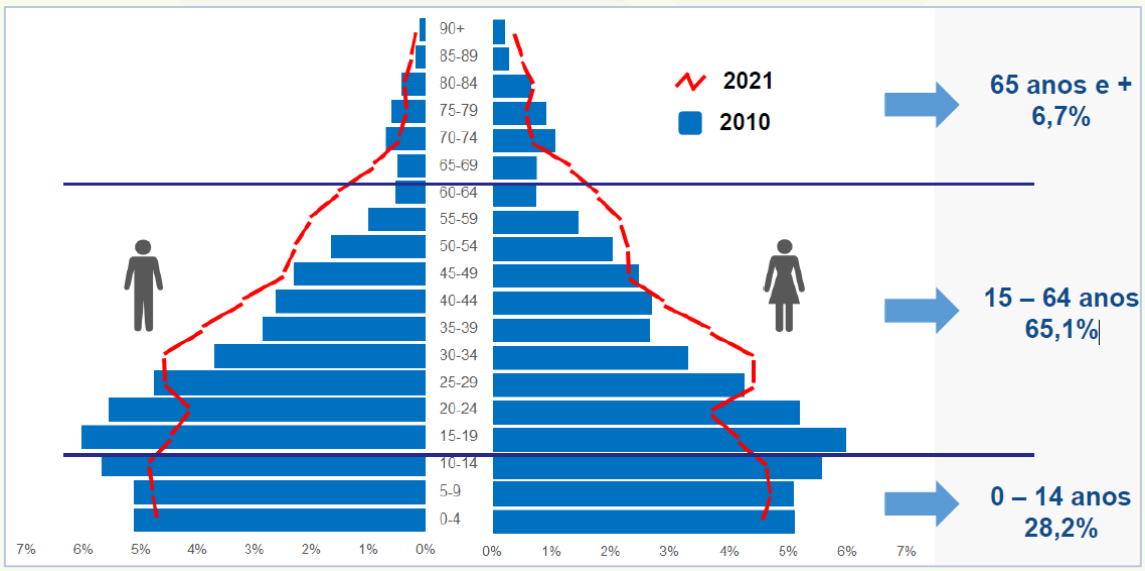


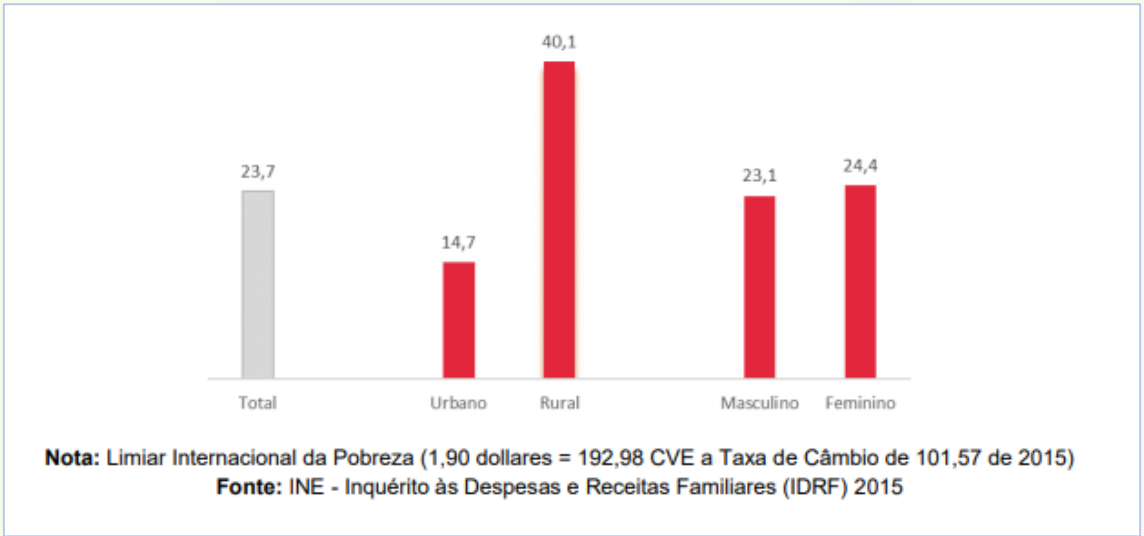
Figure 1. Age pyramid Cabo Verde 2010 and 2021 (RGPH, 2021)

It is noteworthy that a considerable proportion of the population (74.1%) resides in urban centers (Instituto Nacional de Estatística, 2021).

Table 2. Distribution of the Cabo Verdean population according to means of residence (RGPH, 2021).

	Cabo Verde	Urbano		Rural	
	Nº	Nº	%	Nº	%
Total	**491 233**	**364 106**	**74,1**	**127 127**	**25,9**
Ribeira Grande	15 128	6 322	41,8	8 806	58,2
Paul	5 770	1 445	25,0	4 325	75,0
Porto Novo	16 052	11 241	70,0	4 811	30,0
São Vicente	75 845	70 743	93,3	5 102	6,7
Ribeira Brava	6 996	2 863	40,9	4 133	59,1
Tarrafal São Nicolau	5 310	4 420	83,2	890	16,8
Sal	33 615	32 144	95,6	1 471	4,4
Boavista	12 798	11 049	86,3	1 749	13,7
Maio	6 330	4 504	71,2	1 826	28,8
Tarrafal	16 892	13 714	81,2	3 178	18,8
Santa Catarina	37 982	21 662	57,0	16 320	43,0
Santa Cruz	25 152	10 136	40,3	15 016	59,7
Praia	145 378	141 219	97,1	4 159	2,9
São Domingos	14 051	2 963	21,1	11 088	78,9
São Miguel	12 966	6 349	49,0	6 617	51,0
São Salvador do Mundo	7 482	2 066	27,6	5 416	72,4
São Lourenço dos Órgãos	6 328	630	10,0	5 698	90,0
Ribeira Grande Santiago	7 757	3 326	42,9	4 431	57,1
Mosteiros	8 084	4 096	50,7	3 988	49,3
São Filipe	20 927	10 239	48,9	10 688	51,1
Santa Catarina Fogo	4 743	724	15,3	4 019	84,7
Brava	5 647	2 251	39,9	3 396	60,1

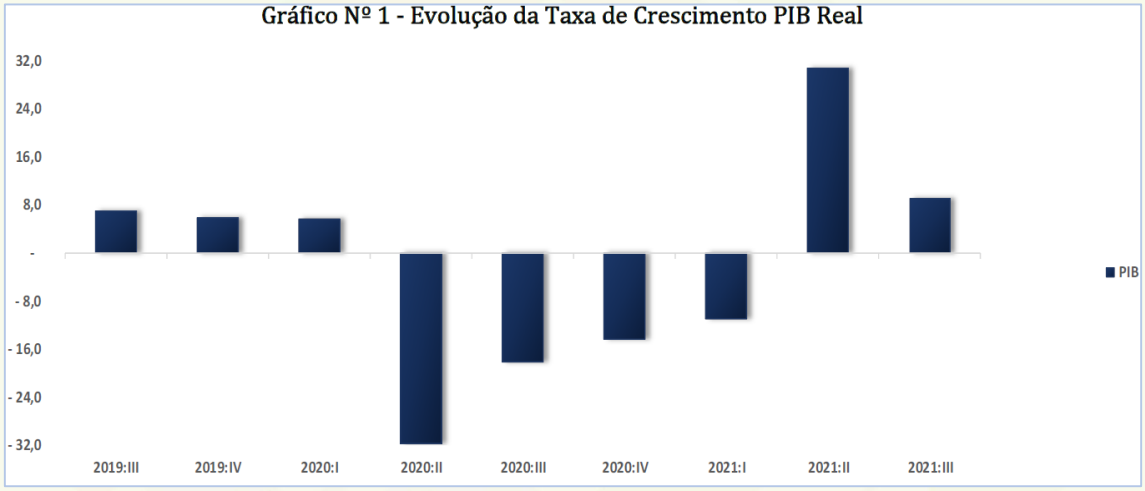
Data from the latest Family Expenditure and Income Survey (2015) reveal that 35% of the Cabo Verdean population was considered poor. Of these, 23.7% lived in extreme poverty on less than $1.90 per day. Extreme poverty is more pronounced in rural areas (40.1% of the population) compared to urban areas (14.7%), and in the under-15 age group (30.4%) compared to the 25-65 age groups (18.6%) and the over-65 age groups (18.8%) [7].



Graph 1. Proportion of population below the international poverty line (US$1.90) by means of residence and sex (2015)

With regard to the economy, the real GDP per capita in dollars from 2014 to 2018 showed an average annual variation rate of -0.6%. In relation to the real GDP per capita in escudos, an average annual variation of 2.4% was recorded for the same period under analysis. Gross Value Added (GVA) for the year 2017-2018 grew by 5.3% in value and 3.7% in volume. The sector that contributed most to this evolution was services, which, with a weight of around 61.0% in the GDP structure, grew 5.5% in value and 4.7% in volume [8].

In the following years, however, the country's economy was severely affected by the COVID-19 pandemic, mainly because of the virus' impact on the tourism sector, an important engine of the national economy. Gradually, and as a result of COVID-19 control measures such as vaccination, the economy is showing signs of recovery [9].



Graph 2. Evolution of Cabo Verde's real GDP growth rate, 2019 to 2021

Source: Provisional Accounts Report 4th Quarter 2021, Ministry of Finance and Business Development

3. PROGRESS TOWARDS INTERNATIONAL AND NATIONAL TARGETS

Cabo Verde is a small African, insular and Atlantic state, socially stable, culturally homogeneous and dynamic, with a vast diaspora in several countries, strategically located at the crossroads of the mid-Atlantic routes between Europe, Africa, and the Americas. The archipelago counts more than five hundred and fifty years of history, has its own identity and shared values that unite its people as a nation, trustworthy and with external credibility.

The international community sees Cabo Verde as a success story in sub-Saharan Africa, largely due to the country's socio-economic and political stability [10].

In the field of education, which is the fourth sustainable development goal (SDG), Cabo Verde has achieved significant gains. In 2018, the literacy rate of the population aged 15 or older was 87.7%, reflecting an increase of 1.2% compared to the year 2014 (86.5%). The literacy rate is higher in men (92.6%) than in women (83%). In 2018 only 7.7% of the population stated that they had never attended school [8].

With regard to SDG 3, Good health and well-being, the number of deaths of children between 0 and 27 days per 1,000 live births has been decreasing over the years. Since 2015, it has been below the target set for 2030 (of 12 per 1,000 live births). In 2017, there was a neonatal mortality rate of 10.9 per 1,000 live births. The under-5 mortality rate has also been declining, and is below the target set for 2030 (at least 25 cases per 1,000 live births). In 2019, this rate was 15.6 cases per 1,000 live births.

The maternal mortality rate has been fluctuating. In 2019, this rate was 105.1 per 100,000 live births, the highest value in the last decade [11].

Table 3. Evolution of Mortality Rates, 2010 to 2019

Taxas	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Mortalidade Infantil (*)	22,9	23,0	22,3	21,4	20,3	15,3	15,4	15,8	13,0	15,6
Mortalidade Neonatal Precoce (0 a 6 dias)	11,2	14,1	11,7	13,4	10,8	8,1	7,6	8,3	6,3	7,2
Mort. Neonatal Tardia (7 a 27 dias)	3,1	2,3	3,7	2,7	4,4	2,0	2,5	2,6	2,3	3,4
Mortalidade Neonatal (0 a 27 dias)	14,3	16,4	15,4	16,0	15,3	10,1	10,2	10,9	8,5	10,6
Mortalidade Pós-Neonatal (28 a 364 dias) *	8,5	6,6	7,0	5,4	5,0	5,3	5,3	4,8	4,5	5,0
Mortalidade Perinatal *	26,5	26,3	27,9	25,5	25,0	17,9	19,0	15,8	19,1	17,1
Mortalidade Juvenil (1 a 4 A)	0,9	0,8	1,1	0,6	0,6	0,6	0,4	0,3	0,4	0,5
Mortalidade < de 5 Anos *	26,3	26,2	26,3	23,6	22,5	17,5	17,0	17,0	14,6	17,8
Mort. Materna por 100.000 n. vivos	49,1	48,4	9,6	37,9	9,4	47,0	18,8	47,2	37,9	105,1
Taxa Bruta de Mortalidade (Mortalidade Geral)	4,8	5,1	5,2	4,9	4,9	5,2	4,8	4,6	5,2	5,0

Fonte: SVIR/DNS/MSSS (*) por mil nascidos vivos segundo projeções demográficas INE

Source: Statistical Report of the Ministry of Health of Cabo Verde (2019)

According to the Strategic Plan for Sustainable Development, one of the greatest challenges facing the archipelago is to value the islands and endogenous resources. Establish public policies that favor decentralization and a bet on the territorialization of development management instruments. Give local government more resources and new mechanisms for the better exercise of already decentralized attributions, as well as a new wave of decentralization in order to valorize endogenous potential and to accelerate local and national economic growth, which will greatly contribute to the reduction of regional asymmetries and promote regional balance. The local government development plans in their implementation will strengthen resources and response capacity, as well as serve to signal business opportunities and to realize the shared vision of the central and local government for each island [12].

As a small middle-income island country, Cabo Verde's greatest challenge is to build an economy with a high level of sustainable and inclusive growth, thus overcoming key constraints such as structural vulnerability, external dependence, unemployment, poverty,

inequalities in income distribution, reduced opportunities for emigration and consequent drop in remittances.

4. INTERNATIONAL HEALTH REGULATIONS, JOINT EXTERNAL EVALUATION AND COMPLEMENTARY EVALUATIONS

4.1. International Health Regulations (IHR, 2005)

Due to the globalized context of the contemporary world, the risk of epidemics and other public health threats has increased considerably in recent decades. Concomitantly, several epidemics have ravaged territories globally, including the Severe Acute Respiratory Syndrome (SARS) epidemics in 2003, the Middle East Respiratory Syndrome (MERS) in 2012, Ebola since 2014, and currently the COVID-19.

In addition to epidemics associated with infectious diseases, other events can jeopardize the health of populations. These include natural disasters (oceanographic, geological, meteorological), technological hazards (radiative, hazardous material spills, etc.), and mixed hazards (fires).

Considering the increasingly frequent and recurrent health risks to the population in recent decades, the World Health Assembly at its 58th meeting in May 2005 revised the 1969 edition of the International Health Regulations. The then updated regulation (International Health Regulations [2005]) entered into force in 2007, binding 196 States Parties, including Cabo Verde [1].

The IHR has as its main objective, as stated in Article 2, "(...) to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade" [1]. Because the agreement is binding, member states must develop and implement a set of requirements laid out in the agreement. These include developing and maintaining minimum basic capacities for surveillance and response, including at points of entry, in order to detect, assess, notify and respond to any potential public health event of international concern.

At the 69th World Health Assembly, the IHR review committee recommended options for evaluating IHR implementation by states parties that would encompass, in addition to self-assessments (e.g., the after-action reviews), other forms of monitoring such as peer reviews and voluntary external evaluations [13]. In this regard, WHO developed the "IHR Monitoring and Evaluation Framework", which includes four essential components: the Joint External Evaluation, a mandatory annual report, after-action reviews, and voluntary exercises. In addition to being ways to assess a country's progress in implementing IHR requirements, these tools should serve primarily as a starting point for defining plans and strategies to improve national and, consequently, international health security.

At the Cabo Verde level, the Joint External Evaluation was conducted in 2019. Annual IHR implementation reports are prepared and sent to WHO and two after-action reviews were conducted in the context of the Zika virus (2015) and malaria (2017) epidemics.

4.2. Joint External Evaluation

The Joint External Evaluation (JEE) is a voluntary, collaborative, multi-sectoral process to assess a country's capacity to prevent, detect, and rapidly respond to naturally occurring, deliberate, or accidental public health risks.

In Cabo Verde, the JEE took place from November 4-8, 2019, and involved, in addition to the national technical team, an external assessment team of 13 experts. The conclusion was that in some areas, the country is endowed with a higher level of capacity than the score may reflect; however, often the standards and procedures are not materialized in documentation. It is therefore very important that the procedures and practices in place can be formalized or promulgated, so that the scores can describe more realistically, what is happening in the country.

Overall, the external evaluation found that in most technical areas the country still has no or limited capacity. The tables below summarize the country's scores by indicator in the JEE [4].

1- No capability: the attributes of a given capability do not exist.	P.1.2- Financing is available for the implementation of IHR capacities
	P.3.3- Infection prevention and control
	P.3.4- Optimize use of antimicrobial medicines in human and animal health and agriculture
	P.5.1- Surveillance systems in place for the detection and monitoring of foodborne diseases and food contamination
	P.5.2- Mechanisms are established and functioning for the response and management of food security emergencies
	P.6.1- Whole-of-government biosafety and biosecurity system in place for all sectors
	D.4.4- FETP or other applied epidemiology training programme in place
	R.4.1- System in place for activating and coordinating medical countermeasures during a public health emergency
	R.4.2- System in place for activating and coordinating health

	personnel during a public health emergency
	R.4.3- Case management procedures implemented for IHR relevant hazards
	R.5.1- Risk communication systems for unusual/ unexpected events and emergencies
	PoE.2- Effective public health response at points of entry
	RE.1- Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies
	RE.2- Enabling environment in place for management of radiological and nuclear emergencies

2- Limited capacity: the attributes of a given capability are under development in the development phase (implementation has begun and some attributes attributes have been achieved and others started).	P.1.1- National Legislation and Policies for IHR implementation
	P.2.1- Coordination and integration of relevant sectors in the implementation of IHR
	P.3.1- Effective multisectoral coordination on AMR
	P.3.2- Surveillance of AMR
	P.4.1- Surveillance systems in place for priority zoonotic diseases/pathogens
	P.4.2- Mechanisms for responding to infectious and potential zoonotic diseases established and functional
	P.6.2- Biosafety and biosecurity training and practices in all relevant sectors
	D.2.1- Surveillance Systems
	D.2.2- Use of electronic tools
	D.4.1- An updated workforce strategy is in place
	D.4.2- Human resources are available to effectively implement IHR

	D.4.3- In-service trainings are available
	R.1.1- Strategic emergency risk assessments conducted and emergency resources identified and mapped
	R.1.2- National multisectoral multihazard emergency preparedness measures, including emergency response plans, are developed, implemented and tested
	R.2.2- Emergency operations center (EOC) capacities, procedures, and plans
	R.2.3- Emergency exercise management programme
	R.3.1- Public health and security authorities linked during a suspect or confirmed biological, chemical or radiological event
	R.5.2- Internal and partner communication and coordination for emergency risk communication
	PoE.1- Routine capacities established at points of entry
	CE.1- Mechanisms established and functioning for detecting and responding to chemical events or emergencies
	CE.2- Enabling environment in place for management of chemical events

3- Developed capacity: the attributes of a given capacity exist, but its sustainability is not yet assured (including through inclusion in the operational plan in the national health sector plan with a secure source of	P.1.3- Financing mechanism and funds are available for timely response to public health emergencies
	D.1.1- Laboratory testing for detection of priority diseases
	D.1.2- Specimen referral and transport system
	D.1.3- Effective national diagnostic network
	D.1.4- Laboratory Quality System
	D.2.3- Analysis of surveillance data

funding secure funding).	D.3.1- System for efficient reporting to FAO, OIE and WHO
	D.3.2- Reporting network and protocols in country
	R.2.1- Emergency Response Coordination
	R.5.3- Public communication for emergencies
	R.5.4- Communication engagement with affected communities
	R.5.5- Addressing perceptions, risky behaviors and misinformation

4. Demonstrated capacity	No indicator with this score

5. Sustainable capacity: all attributes are operational and sustainable, and the country is providing support to one or more countries in their implementation.	P.7.1- Vaccine coverage (measles) as part of the national program
	P.7.2- National vaccine access and delivery

4.3. Public Health Risk Assessments

Cabo Verde has so far conducted two exercises to identify and map the main public health risks for the archipelago, in 2017 and in 2021. The risk mapping aims to enable the identification of priorities for the development of a national plan for public health emergency preparedness and response and the elaboration of specific contingency plans.

Both exercises were facilitated by WHO technical consultancy in Cabo Verde and were based on interactions with stakeholders from different relevant sectors. This was done using the STAR (Strategic Tool for Assessing Risks) tool developed by WHO, which

generates a risk analysis based on impact and likelihood. The results of the assessment and the country risk matrix at the time of the exercise are described below.

4.3.1. Risk Assessment Results – 2021

The 2021 risk assessment was based on a workshop with working groups from different relevant sectors and listed the following risks according to priority.

Very high

(42) Drought

(23) COVID-19

(2) Urban violence (vandalism); youth violence

(17) Influenza epidemic caused by a new subtype (e.g. SARS, MERS, etc.)

(1) Sexual violence to vulnerable groups (gender-based violence, elderly, children,…)

High

(50) Highly Pathogenic Avian Flu

(48) Rise of the average sea level

(47) Intrusion of marine waters into freshwater reservoirs

(46) Loss of forest areas

(45) Erosion

(44) Dry Mist

(43) Forest Fires

(40) Cyclones/ Convective Storms

(4) Economic instability commodity prices

(35) Falling rocks

(34) Landslides

(31) Antimicrobial resistance

(30) Acute Hemorrhagic Fever Syndrome

(25) Diarrheas (Bacterial Dysentery, Viruses...)

(22) Severe pneumonia in children under 5 years

(21) Severe Acute Respiratory Infections (ARI) - other ARIs

(19) Measles

(16). Bacterial meningitis

Moderate

(9) Traffic Accident

(51) Rabies

(49) Anthropogenic aerosols (quarry dust)

(41) Heat waves

(39) Sedimentary movement

(38) Floods (rains)

(37) Flooding of streams

(36) Volcanic activity (eruption)

(33) Flooding of coastal areas (geophysical)

(29) Malaria

(28) Arboviroses (*Dengue, Zika, Chikungunya*)

(27) Amoebiasis

(26) Cholera

(24). Viral conjunctivitis

(20) Poliomyelitis

(13) Cyber Attacks

4. Low

(6) Building collapse

(5) Fuel spill at sea

(32) Earthquakes

(3) Tumults and protests

(18) Chickenpox

(15) Terrorist financing

(14) Money Laundering

(12) Interruption of telecommunication services

(11) Wildfires

1. Very low level

(07) Dam breakage

(08) Aircraft Accident

(10) Shipwreck

4.3.2. Risk map 2021

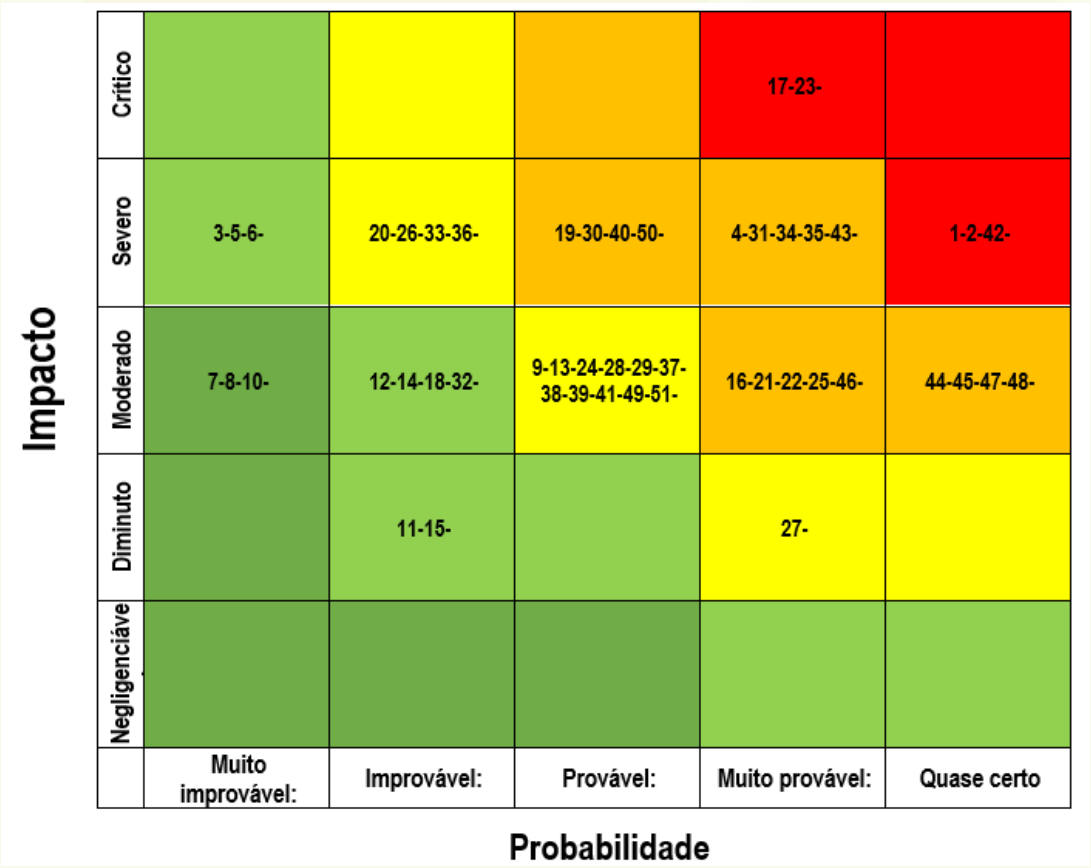


Figure 2. Matrix of public health risks, STAR workshop, Cabo Verde, 2021

Source: Cabo Verde Public Health Risk Assessment, 2021

After mapping the main risks, a recommendation **plan was outlined for the high and very high risks.** In addition, the following activities were oriented as a general recommendation for the next steps:

- A further analysis of the country's vulnerability and capacity in relation to these risks, and then;
- The development of an integrated multi-risk preparedness and response plan that incorporates the common elements of coordination, chains of command, communication, etc. And finally;
- The development and monitoring of the implementation of contingency plans for very high risk (ranked in red) and high risk (ranked in orange).

4.4. State Party Self-Assessment Annual Report (SPAR) – Cabo Verde, 2020

Under article 54 of the IHR (2005), member states must report on the status of implementation of the requirements using the self-assessment monitoring questionnaire for the 13 core capabilities [1]. One or more indicators assess each of the capabilities. Each indicator, in turn, is ranked into five performance levels (from 1 to 5): being: 1- no capabilities; 2- no capabilities, 3- limited capabilities; 4- demonstrated capabilities; and 5- demonstrated capabilities.

Based on these reports, member states must develop action plans for implementing the required capacities according to the IHR. The findings of the annual reports help to clearly identify strengths, weaknesses, opportunities and threats, and should be part of the situation analysis. The figure below illustrates Cabo Verde's latest SPAR, in 2020.

Table 4. Summary of the State Party Self-Assessment Annual Report (SPAR) - Cabo Verde, 2020

ESSENTIAL CAPACITY	INDICATOR 1	INDICATOR 2	INDICATOR 3
C1. Legislation and Financing	3	3	4
C2. IHR Coordination and Functions of the National IHR Focal Point	2	3	
C3. Zoonotic events and the human-animal interface	2		
C4. Food security	4		
C5. Laboratory	4	2	5
C6. Surveillance	4	3	
C7. Human Resources	2		

C8. National Health Emergency Board	2	2	3
C9. Healthcare Services	2	2	4
C10. Risk Communication	2		
C11. Points of Entry - Section 1. Information by type of Points of Entry - Section 2. Overall national profile of implementation of basic capacities at Points of Entry	3	3	
C12. Chemical events 27	2		
C13. Radiological emergencies	1		

4.5. After-action review

An after-action review (AAR) is a qualitative review of the actions taken to respond to an emergency or public health event, as a means of identifying best practices, challenges and areas for improvement identified during the response, and will inform the development of capacity to prepare for, detect and respond to potential future events [14]. It provides a tool for holistic review of the response with stakeholders, strengthens understanding of the response processes, and harmonizes coordination and collaboration mechanisms among partners.

In Cabo Verde, two AARs have been held so far after the Zika and Malaria epidemics.

4.5.1. Zika virus after-action review

Cabo Verde was the first African country to officially declare an epidemic by Zika virus, on November 2, 2015. A total of 7613 confirmed and suspected cases were reported, with transmission occurring on the islands of Santiago, Fogo, Maio and Boa Vista. Also, following the epidemic, 16 children were identified with microcephaly and probable connection to the Zika virus in the year 2016. The end of the epidemic was declared in October 2016, after two weeks without the notification of suspected cases of Zika (Ministry of Health and Social Security, 2019).

An after-action review of the response to the Zika virus epidemic was organized in February 2019 in Praia, Cabo Verde, with support from WHO and partners. About 70 people attended the workshop and a qualitative and participatory approach was adopted with the use of WHO standardized tools. Five key pillars were analyzed: Coordination, Surveillance and Laboratory, Case Management, Anti-Vectorial Control, and

Communication, Social Mobilization and Community Engagement [15]. The results of the discussions led to the recommendations summarized in the following table.

Coordination
1. Provide opportunities for specialization of professionals in specific areas such as Epidemiology, Entomology, Public Health, Infectious Diseases, Neonatology, Speech Therapy, Physiotherapy;
2. Elaborate a manual of best practices and guidelines for the follow-up of patients with microcephaly by Zika.

Surveillance and laboratory
3. Provide conditions for the proper functioning of the Virology Laboratory;
4. Establish protocols with airlines for sample transportation.

Cases Management
5. Guarantee multidisciplinary assistance once a month in each county/island;
6. Development of a training plan for healthcare professionals regarding the detection of abnormal situations and communication.

Antivectorial Fight
7. Strengthen and train antivectorial agents;
8. Strengthen and supervise the anti-larvae fighting (LAL) conditions.

Communication and awareness actions
9. Develop a general risk communication plan;
10. Develop a human resource management plan for social mobilization and communication activities.

4.5.2. Malaria after-action review

In 2017, Cabo Verde was plagued by a Malaria epidemic of unprecedented magnitude in the country. From January 1, 2017 to January 31, 2018, 450 cases were reported, 423 of which were autochthonous. The epidemic was confined to the city of Praia [16].

The end of the epidemic was declared on January 31, 2018. In October of the same year, an after-action review was conducted with the participation of 38 national experts representing the central, intermediate, operational, technical and financial levels and the other relevant sectors. The multisectoral group identified the following priority recommendations:

1. Perform 4 meetings of the Technical Team for Rapid Intervention (ETNIR) during 2019;
2. Develop a malaria epidemic contingency plan;
3. Training and updating of laboratory technicians in microscopy;
4. Training of epidemiological investigation technicians for individual case investigation and follow-up up to 28 days;
5. Two trainings/retraining sessions of 2 days each, the first for 10 physicians, 20 nurses and 5 pharmacists, and the second for 15 laboratory technicians;
6. Elaboration of a hospital contingency plan for the malaria epidemic and its annual review;
7. Carry out two spraying campaigns at the most critical points;
8. Developing and adapting an antivectorial control center with appropriate conditions;
9. Broadcasting TV spots and microprograms;
10. Door-to-door awareness in a phased manner.

4.6. Evaluation of Veterinary Services

Veterinary services are fundamental in food safety, animal health and welfare, poverty reduction, international trade security, protection of wildlife health and the environment, considered as a global public good. To achieve these objectives, veterinary services need good governance as well as effective policy and management, human and financial resources and technical aspects focusing on animal health, medical-veterinary products, laboratories, animal welfare and international trade.

The exercise of the profession is governed by the following principles:

1- **Technical and scientific competence and experience -** Professionals must have the technical and scientific competence and experience required to make valid professional judgments;

2- **Independence and Objectivity -** Professionals should not be under any commercial, financial and/or political pressure that could condition their decisions and actions;

3- **Impartiality -** They must be impartial, meaning that the services must be provided under reasonable and non-discriminatory conditions;

4- **Transparency -** All governance, disease reporting, and decision-making must be transparent and science-based;

5- **Partnerships with various Institutions -** The Services should work in multi-sectoral collaboration through the "One Health" approach.

The World Organisation for Animal Health (OIE) evaluates the performance of the veterinary services (PVS) of the countries that request it and is carried out by the best specialists worldwide, recruited for this purpose. This evaluation has a duration of 5 years. After this period, it must be renewed. The objective of this evaluation is to ensure that veterinary services are aligned with national, regional and international standards/laws in order to ensure animal health and welfare, food security and safe international trade, as well as the capacity for early detection and adequate and timely response to health emergencies.

The assessment is done in the following areas: human, physical and financial resources; technical and operational capacity; interaction and certification capacity for access to international markets, effective surveillance for early detection, follow-up and prompt and transparent reporting of registered and emerging diseases, including wildlife through the epidemiological surveillance network, using laboratory confirmation and epidemiological research, information technology and analysis, and public-private partnerships.

After the PVS assessment, the Gap Analysis is carried out, whose objective is to elaborate projects according to the national priorities and objectives that aim at solving the constraints, deficiencies and challenges registered during the PVS assessment.

The Cabo Verde Veterinary Services were evaluated in July 2014 and in 2020, the Gap Analyses were requested but did not materialize due to the pandemic resulting from COVID-19.

4.6.1. Sanitary Situation of the National Cattle

The health situation in Cabo Verde enjoys a certain privilege since the country has never had confirmed cases of Rinderpest, Peste des Petits Ruminants, Swine Erysipelas, Contagious Bovine Pneumonia, Trypanosomiasis, Rabies, and Foot and Mouth Disease.

The main diseases that affect livestock and cause economic losses include African and Classical Swine Fever, Newcastle Disease, Typhoid/ Pullorum, Gumboro, Infectious Bronchitis, Laryngotracheitis, Avian Mycoplasmosis and some internal parasitoses (Fascioliasis, Cysticercosis, Hydatidosis/Echinococcosis etc.).

4.6.2. Operation of the MAA's Epidemiological Surveillance Network

The Directorate of the Livestock Service has a central cell responsible for epidemiological surveillance at national level. This unit receives, processes and disseminates field information from the focal points of the decentralized Delegations/Departments of the Ministry of Agriculture and Environment (MAA). It also has a Veterinary Laboratory that performs laboratory diagnosis and works in liaison with the central cell, with the Delegations of the MAA/livestock sector and with operators.

In the MAA Delegations, there are Livestock Services and Border Inspection Services departments where the focal points operate and whose activity consists of collecting and sending information to the central cell.

At the community level, the information is provided by the farmers themselves and other partners from Public and Private Institutions and received by the focal points of each Delegation/ MAA Decentralized Service.

At the central level, after verification and analysis of the information received from the field, the National, Regional and International organizations are immediately notified.

4.6.3. Sanitary legislation (animal and environmental health)

The Pecuary Sector relies on the following laws:

Zoo Sanitary Law No. 30 of May 13, 2013 that establishes the rules for the sanitary safety of animals, animal health, the salubrity of their environment, products of animal origin and veterinary public health;

Decree-Law No. 45/2018- creates the national animal identification and registration system and establishes the rules for the identification, registration and movement of animals of the bovine, ovine, caprine and porcine species;

Decree/Regulation. No. 10/2020 establishing the procedures and conditions for the slaughter of domestic animals;

Decree/Regulation. No. 11/2020 that defines the list of highly contagious diseases and others considered serious, as well as control and fight measures;

Decree/Regulation. No.12/2020 that establishes the rules applicable to the animal production sector and the entire food chain, with regard to the hygiene of animals, and products of animal origin intended for human consumption and international trade.

Although these regulations are in force, the Sector still lacks several regulations as stated in the Animal Health Law No. 30.

4.6.4. Inspection Services

Inspection is guaranteed at the border, at the four points of entry (ports and airports) namely: Praia, São Vicente, Boa Vista and Sal. The limited number of inspectors has hindered the inspection of inter-island transit of animals, products and their derivatives. The inspection of cabotage is carried out only in Porto Novo, Brava and São Vicente. On the other islands, animals, products and their derivatives have circulated without inspection to date.

Considering that African swine fever is an endemic disease that has caused significant economic losses to producers and is confined to the islands of Santiago, Fogo, Maio and

Boavista, there is an urgent need to strengthen inspection services in order to prevent its spread / propagation.

Still at the level of these services, in addition to the lack of inspectors, there is also a lack of materials and equipment necessary for the effectiveness of the inspection service. It is noteworthy the lack of coordination and cooperation between the different institutions involved.

There is an absence of a plant and animal quarantine center and an incinerator for the destruction of seized and non-compliant products.

The slaughter of animals is predominantly done clandestinely and many of the existing slaughterhouses and/or places of slaughter are no longer in operation or operate under poor hygienic conditions.

4.7. National Contingency Plan – Highly Pathogenic Avian Influenza

Given the current evolution of Highly Pathogenic Avian Influenza (HPAI) in the world and in the West African region, and recommendations of international organizations related to animal health, countries are called to prepare to face a possible outbreak of HPAI and Cabo Verde responds with the update of the National Contingency Plan, which aims to be a guiding document for disease prevention and control actions [17]. The plan is national in scope, and aims to protect the population and the poultry population from Highly Pathogenic Avian Influenza. The process of updating it had the collaboration of national and international partners, including FAO, WHO and other residents.

The plan contextualizes the disease, makes reference to the Poultry Sector in Cabo Verde, the health situation of the national livestock in general and in particular Avian Influenza in the country, points out the risk factors, describes the current situation of the Veterinary Services in combating the disease, outlines the actions to be taken during the prevention and alert phase and during the control and fight phase, presents the operational plan with the responsibilities at the central and decentralized levels and of all the actors involved, as well as the organization of the response, in a multi-sectoral and multidisciplinary perspective. Additionally, it presupposes intense training and awareness-raising activities for professionals and all the living forces, for the confrontation of the disease. As part of the "One Health" approach, it emphasizes the commitments and responsibilities of the Ministries of Agriculture and Environment and Health, including all stakeholders in the process of early detection of the disease entering the country, monitoring of migratory birds, strengthening of border inspection and risk analysis on imports, as well as implementation of Information and Communication Technology (ICT).

4.8. Review of Cabo Verde's environmental data

4.8.1. Environmental White Book – 2020

Despite the small land area, the geological and geomorphological characteristics of the archipelago are diverse among the islands. The mountainous islands are characterized by rugged relief, reaching maximum altitudes of 2,829 meters on the island of Fogo and 1,979 meters on the island of Santo Antão. In contrast, the islands further east exhibit a flat relief and a more arid climate.

The archipelago has a dry subtropical climate, with an average annual temperature of 24.5° C, with little temperature variation. There are two seasons during the year: the rainy season or "the waters", from July to October approximately, and the dry season or "time of the breezes", from November to June. The east wind, coming from the Sahara, causes a high dryness of the air, which can bring the dry haze that occurs in the archipelago most frequently from December to March. Air quality in general is good, except during periods of "dry haze" when the average concentration of PM10 and PM2.5 particles can be higher than 300 mg/m^3 and 100 mg/m^3, respectively [18].

Water resources, in general, are scarce, which is a major limitation for economic development. Rainfall is erratic and occasionally torrential, with the average annual rainfall being 250 mm to 300 mm. Increasingly frequent droughts have aggravated the situation because of the negative implications for recharging water points. The water deficit has affected the yields and productions of the farming system and the quality of life of the populations [18].

As for the land resource, the soils are mostly skeletal, poorly differentiated, and poor in organic matter. Only 10% of the emersed land is potentially arable, approximately 40,000 hectares. Of these, 25,828 are used for rainfed agriculture, 3,350 for irrigated systems and approximately 9,791 for grazing [18].

The vegetation cover is predominantly open, Sahelian steppe-like, with some differentiation in bioclimatic floors resulting from the altitude gradient. Human action has resulted in significant alteration in the vegetation, as a consequence of the detour of water courses, the installation of cattle, the creation of crop fields, and the cutting of trees and shrubs without allowing enough time for regeneration of the vegetation [18].

The fauna and flora of Cabo Verde include specific species, which make them globally significant. They have been preserved by the various nature reserves and parks that exist in the country.

Terrestrial biodiversity comprises approximately 3,265 species [18]. Among the main species of fauna, birds are of particular importance, namely the passerine, the crow and the raven. The dragon tree is particularly important because it is a tree whose presence predates the discovery of the archipelago itself. The marine biodiversity is very diverse,

but still little known, with about 2,900 marine species recorded in the exclusive economic zone of Cabo Verde [18].

The country's potentials

Tourism represents one of the main potentialities of Cabo Verde, due to insularity and specific natural features such as climate and landscape diversity. Additionally, the presence of geological / rocky materials constitutes a source of resources in the country's infrastructure.

Wind and solar resources represent an enormous potential for the exploitation of renewable energy sources. The presence of arable soils, although limited, enables Cabo Verdean agriculture, supported by the floristic heritage imported throughout the country's history [18].

The insularity and dispersion among the islands also result in the multiplication of the coastline and a vast exclusive economic zone, relevant for the fishing industry, even if on a small scale. Still, the strategic location on the circulation route between three continents represents an added value for the country.

Vulnerabilities

The characteristics of the archipelago, including its location, climate, relief, insularity, among others, are a double-edged sword, in that they can translate into both potential and important vulnerability factors.

Cabo Verde is vulnerable to natural phenomena such as droughts, torrential rains and floods, volcanic eruptions, among others. Some human actions also result in desertification and alteration of microclimates. The volcanic character and relief of the islands contribute to the scarcity of arable land. The irregularity of the rains greatly conditions the biodiversity and the agricultural activities, considerably affecting the mainly rural populations that depend on the rains for the production and commercialization of products.

Increasingly frequent and prolonged droughts also lead to the reduction of water sources (dams, springs, wells, etc.).

The dispersion of the islands and the territorial discontinuity hinder the connections between islands and the expansion of infrastructure to the various territories. Isolation from the mainland hampers access to neighboring markets in specific and to the African community in general [18].

Challenges

Despite the vulnerabilities of the islands, several strategies have contributed to the settlement of populations. These include desalination of seawater, exploitation of surface

waters for agriculture, increasing use of clean energy sources (solar and wind), expansion of the road network, and boosting tourism.

However, some challenges are still pressing, namely that of ensuring the survival of the resident population considering the limited internal resources, and that of self-sustained and accelerated development in order to meet the growing needs and demands of the communities [18].

4.9. Operational framework for public health adaptation to climate change – Cabo Verde, 2012

Climate plays a determining role in the health status of populations. Indeed, climate change represents a major health threat as it largely affects several social and environmental determinants of health: clean air, clean water, sufficient food resources, and safe shelter [19].

Data from the Intergovernmental Panel on Climate Change (IPCC) indicate that global warming may have effects on body physiology and human well-being as a result of rising temperatures [20]. However, the effects of climate change on health also result from other factors extrinsic to the human body. These include the effect of climate change on the ecology and distribution of some diseases (such as those transmitted by mosquitoes and those resulting from contaminated food or water), on agricultural and hydrological ecosystems, and on socioeconomic and demographic patterns (Fig.3).

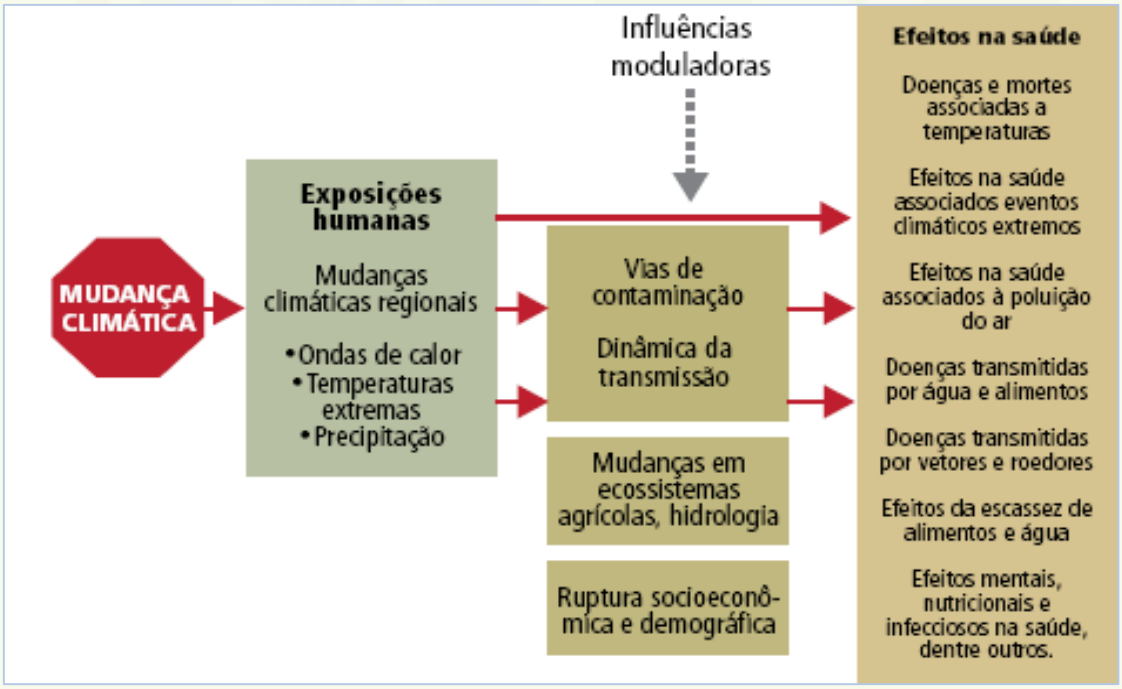


Figure 3. Effect of climate change on health

Source: Operational Framework for Public Health Adaptation to Climate Change - Cabo Verde [21]..

Cabo Verde has characteristics that can be considered of great vulnerability, namely insularity and geographic location in the Sahelian belt.

According to the National Institute of Meteorology and Geophysics (INMG), the average temperature in Cabo Verde in 2080 will be approximately 28°C, which represents a significant increase from the current average of 25.1°C. The increase in atmospheric and oceanic temperature will change the pattern of evaporation and humidity in the air. Such changes will not only impair human comfort, especially for the elderly and children, especially in the summer season, but also increase the number of diseases such as those associated with vectors and waterborne diseases [21].

The operational framework for public health adaptation to climate change – Cabo Verde, 2012, is based on the following components and expected results:

Component	**Expected Result(s)**
1: Risk and Capacity Assessment	- Identification of climatic factors of risk to human health and determination of risk levels - Definition of the situation regarding national capacities for the proper management of the risks identified - Address gaps in core capacities.
2: Strengthening capacities	- Providing the national capacities essential for the proper management of public health risks linked to climate change.
3: Integrated environment and health surveillance	- Timely decision making based on reliable data for sound management of public health risks linked to climate change.
4: Response	- Reducing the impact of climate change on public health
5: Investigation	- Registration and dissemination of local knowledge about climate health risk factors and how to manage them, as well as local adaptation strategies.
6: Monitoring and Evaluation	- Effective and timely implementation of the Program - Evaluation, monitoring and dissemination of program process, outcome and impact indicators - Annual status reports
7: Program Coordination and Management	- Achievement of all the Program's expected results

4.10. Antimicrobial Resistance

Antimicrobial resistance (AMR) is defined as "the presence of antimicrobial drug resistance in infectious agents, such as bacteria, viruses, fungi, and parasites, and can be inherent or acquired by inappropriate use of drugs" [22]. AMR currently constitutes one of the greatest threats to Public Health, representing a concern for sustainable development. Its impact is transversal to all areas of the One Health approach, so tackling it requires cross-sectoral engagement.

In Cabo Verde (CV), a retrospective study of antimicrobial susceptibility in the pathogens most frequently isolated in the two central hospitals of Cabo Verde (*Escherichia coli and Staphylococcus aureus*) showed a significant increase in antimicrobial resistance of these bacteria. This and other scenarios highlight the need to create and implement effective mechanisms to control AMR in the archipelago [23].

With the main purpose of establishing actions to prevent and control antimicrobial resistance in CV, the first National Action Plan to Combat Antimicrobial Resistance (PAN-RAM) was drawn up in 2018. Running until 2022, this plan was drawn up based on the strategic axes of the World Health Organization's (WHO) Global Action Plan (GAP). It comprises ten objectives with specific action plans for different technical areas [24].

Four years after the elaboration of the PAN-RAM, most of the proposed activities have not been implemented, starting with the publication of the plan in the Official Bulletin. In this sense, an evaluation of the progress of this plan is currently taking place, aiming at identifying areas for improvement and making recommendations for such, with the involvement of all stakeholders and under the leadership of the National Coordinating Instance within the "One Health" approach.

II. SECTION II. NATIONAL ACTION PLAN FOR HEALTH SECURITY OF CABO VERDE

1. THE PATH FROM JOINT EXTERNAL ASSESSMENT TO PLANNING FOR HEALTH SECURITY

The recent epidemics that have ravaged the Cabo Verdean territory have highlighted the need to identify the critical points regarding the country's ability to respond to health emergencies, in order to strengthen the country's internal capacity. To this end, the country voluntarily adhered to the Joint External Evaluation (JEE) in 2019 [4].

This exercise has guided the country regarding the steps needed to improve the country's health security. More specifically, the JEE has led to the drafting of Cabo Verde's National Action Plan for Health Security (NAPHS). The first coordination meeting for the elaboration of the NAPHS took place during the week of October 11 to 15, 2021, in Cidade Velha. During the workshop, experts from different sectors outlined the strategic objectives and activities of the plan, based on the priorities identified in the JEE. Urgent activities or those for which a budget was already available were prioritized for the first years of the plan.

Next, a secretariat group met to develop the plan's narrative. Following this, a second workshop including the first group of experts and other budgeting specialists to determine the costs of the plan was held from April 18-22, 2022, in Praia City.

In order to identify resources to finance the plan, a resource mapping workshop will be held, including stakeholders from different sectors such as the government and development partners.

Finally, the plan will be officially launched for endorsement by the government and inclusion in the national fiscal planning.

2. NAPHS' VISION, MISSION, OBJECTIVES, GUIDING PRINCIPLES AND CORE VALUES

2.1. Vision

Building a healthy and resilient nation capable of preventing, detecting, and responding effectively to public health threats under the "One Health" approach.

2.2. Mission

To contribute to the protection and resilience of the Cabo Verdean population against risks and threats to Public Health, ensuring a high level of Health Security in accordance with the International Health Regulations (2005).

2.3. Objectives

2.3.1. General Objective

Reduce morbidity, mortality and negative socio-economic consequences resulting from public health threats.

2.3.2. Specific objectives

a. Strengthen and maintain the country's capacity to prevent and detect public health threats in a timely manner.

b. Strengthen and maintain national capacity to respond rapidly to public health threats.

c. To provide adjusted responses to crisis situations related to public health emergencies caused by epidemic outbreaks and natural disasters, in order to restore normality.

d. Align all activities with the "One Health" approach in order to strengthen the health system at all levels.

e. Strengthen and maintain intersectoral collaboration and coordination mechanisms for NAPHS implementation by applying multisectoral approaches.

f. To map existing funding sources and potential partners to support the implementation of the national action plan.

g. Strengthen the institutional and regulatory framework to support the implementation of the NAPHS.

2.4. Guiding principles and core values

- The "One Health" approach: most emerging and re-emerging infections are zoonoses. Increasing human-animal interactions are an important factor in the emergence of zoonotic diseases and antimicrobial resistance. In addition, the interface of human, environmental and animal interactions can lead to other public health events that require multidisciplinary collaboration of human, animal and environmental health specialists to prevent and control such diseases or events.
- Multisectoral approach: building the core capacities of the IHR requires collaboration and communication for shared responsibility across multiple sectors. Effective partnerships and cooperation among different stakeholders will be encouraged throughout the implementation of the NAPHS.
- Collective responsibility: The response to public health threats must be based on values of solidarity, humanity, and sustainable development. Health security is a collective responsibility of all stakeholders, including government, civil society, the private sector, and the general population.
- Country responsibility in strengthening the core capacities of the International Health Regulations (IHR), as an international legal instrument binding on all

World Health Organization (WHO) Member States, which aims to help the international community prevent and respond to public health risks that have the potential to spread across borders and threaten the health and well-being of people around the world.

- Alignment with the PEDS2017-2021, the UN SDGs Agenda 2030 and the AU Agenda 2063.

3. METHODOLOGY FOR THE ELABORATION OF THE NAPHS

3.1. Preparatory Phase

Following the recommendations of the 69th General Health Assembly [25] that direct member states to develop their national action plan for health security following the Joint External Evaluation, the Ministry of Health, through the National Institute of Public Health of Cabo Verde, began the process of developing the NAPHS. This process was guided by the WHO guideline for developing health security plans [26].

In multisectoral collaboration with other spheres of the One Health platform, the following activities were carried out:

- Coordinating meetings.
- Mapping of partners, taking into account the One Health approach and the multisectoral scope of the plan.
- Constitution of technical working groups.
- Survey/review of relevant country documents.

3.2. Document review

A situation analysis was conducted by reviewing and analyzing documents including national assessments, plans and policies to ensure alignment of the NAPHS with other relevant country documents. This process also aimed to identify key stakeholders associated with the strategic areas, key inherent strengths, weaknesses, opportunities and threats, and how this could be incorporated into the NAPHS.

More specifically, the following documents were identified and considered:

- Joint External Evaluation (2019)
- State Party Self-Assessment Annual Report (SPAR) – Cabo Verde (2020)
- Zika virus after-action review (2019)
- Malaria after-action review (2018)
- COVID-19 Contingency Plan (2021)
- Risk cartography of Cabo Verde (2017)
- National Health Development Plan (2017-2021) Highly Pathogenic Avian Flu Contingency Plan (2021)

- National Food and Nutrition Plan (2021-2025)
- Environment White Book (2020)
- Operational framework for public health adaptation to climate change – Cabo Verde (2012)
- National Civil Protection Emergency Plan
- National Plan for the Fight against Antimicrobial Resistance (PAN-RAM) – Cabo Verde (2018-2022)
- Strategic Plan for Sustainable Development (PEDS) – Cabo Verde (2017-2021)

3.3. Prioritization of activities by thematic group

The 19 technical areas of the NAPHS follow the JEE categorization, being grouped into four thematic groups (figure 4).

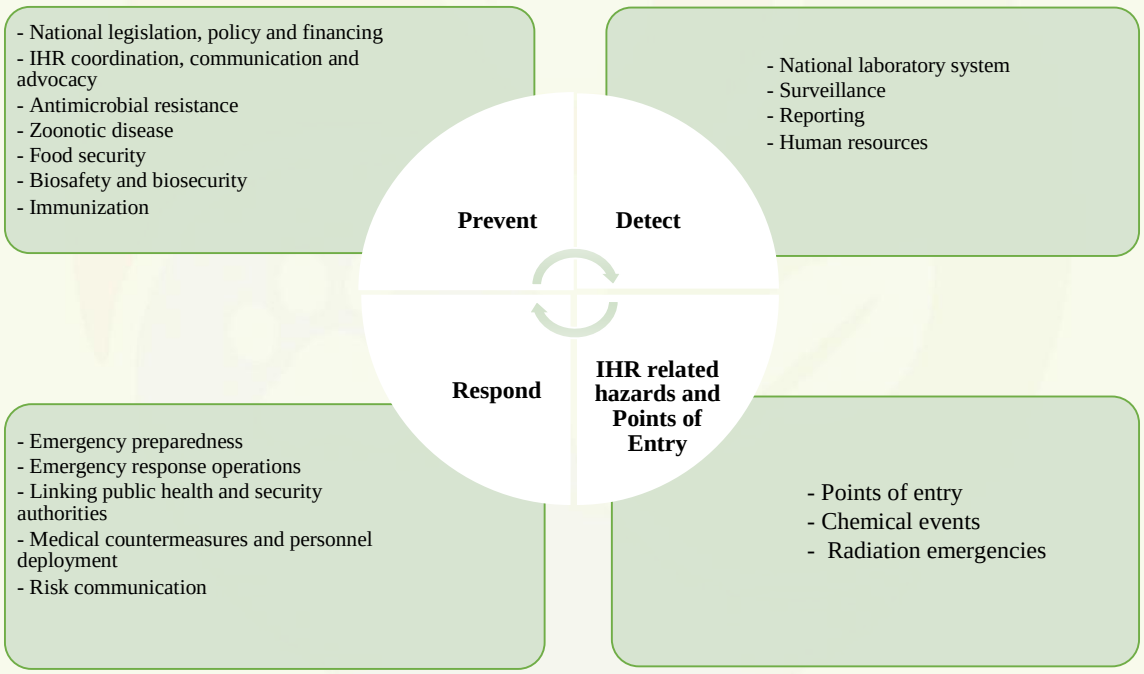


Figure 4. Technical areas of NAPHS by thematic group

Based on the situation analysis, thematic working groups were formed to address the 19 technical areas of the plan. To this end, 25 technicians and leaders from various relevant sectors were identified and appointed. They came from the following spheres/institutions:

- National Institute of Public Health (INSP)
- Integrated Surveillance and Response Service (SVIR) – National Directorate of Health (DNS)
- Directorate General of Agriculture, Forestry and Livestock (DGASP)
- National Directorate of Environment (DNA)

- General Directorate of Planning, Budget and Management of the Ministry of Finance (DGPOG-MF)
- General Directorate of Planning, Budget and Management of the Ministry of Health (DGPOG-MS)
- Santiago Norte Sanitary Region (RSSN)
- Public Health Laboratory
- Health Independent Regulatory Authority (ERIS) – Directorate of Food Regulation and Directorate of Health Regulation
- Maritime Port Institute (IMP)
- National Water and Sanitation Agency – Department of Water Resource Management and Sanitation (ANAS – DGRHS)
- Airports and Aviation Safety (ASA)
- Civil Aviation Agency (AAC)
- Representatives of Health delegations municipalities with designated points of entry (Sal Health Delegation, São Vicente Health Delegation)
- Representatives of Health delegations municipalities with points of entry (Sal Health Delegation, São Vicente Health Delegation)

The first workshop for the development of the NAPHS took place from October 11 to 15 in Cidade Velha, Santiago. This first stage was attended by the 25 designated technicians and multisectoral leaders, and was facilitated by three international consultants with expertise in the development of the document. The WHO guideline for developing national plans for health security was followed [26].

Following a logical model, experts from the different areas reviewed the recommendations of the JEE report and the WHO benchmark for IHR capacities [27], and identified strategic activities in each of the 19 technical areas, taking into account the national context. Each strategic activity was operationalized through the development of guiding objectives, priority activities, and detailed assumptions for achieving each activity. In addition, the main responsible person, process and result indicators, and a proposed timeline for execution were identified for each activity. This aims to facilitate the periodic follow-up and monitoring of the plan's implementation, and to inform necessary adjustments along the way.

3.4. Connection with other plans/programs

The document review conducted during the inception phase aimed to identify other national plans and programs in place in order to align the NAPHS accordingly.

The working group engaged in ensuring that the proposed activities are articulated with other national and international plans, programs, and documents. Such coordination aims to avoid duplication or competition with other activities, and to facilitate efficient allocation of resources, advocacy, and accountability during implementation. Additionally, the NAPHS seeks to align with the SDG 2030 agenda, the African Union

2063 agenda, the Strategic Plan for Sustainable Development and the Cabo Verde government program.

3.5. NAPHS' multisectoral and intersectoral approach

Given that health security requires the articulation of several sectors both directly related to health (human, animal and environmental health) and other areas (security, Points of entry, etc.), the development and implementation of the NAPHS intends to follow a sector-wide approach. The sector wide approach (SWAP) is a model under international development that brings together governments, donors and other stakeholders from various sectors, collectively contributing to sustainable health sector development [14], [28].

During the development of the NAPHS, relevant government sectors and potential development partners in implementing activities associated with health security were mapped. This approach is expected to facilitate government and partner support for strengthening the country's health security in a manner aligned with the country's other priority needs. Strategic partnerships for planning.

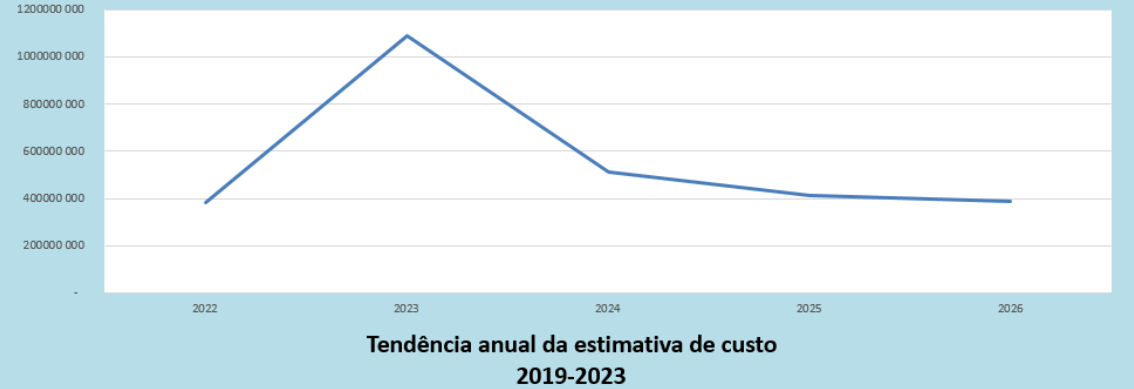
Given the importance of multisectorality in planning for health security, key stakeholders were briefed on preparations and progress during the development of the NAPHS. The multidisciplinarity of experts and the incorporation of the One Health approach in the development of the plan sought to make the plan more robust.

The Ministry of Health will maintain intersectorality and multidisciplinarity with key stakeholders to ensure and accelerate the implementation of the plan in a transparent and accountable manner. The monitoring and evaluation framework embedded in the plan will allow for its follow-up by the different stakeholders.

4. COMPONENTS OF THE ACTION PLAN

4.1. Summary of Costs by Thematic Area of the Joint External Evaluation

The total estimated cost for the NAPHS activities is 2,783,928,058 ECV, corresponding to 26,263,472 USD. Most of the amount is related to the activities in the first and second year of the plan.



Graph 3. Annual trend of estimated costs of NAPHS activities

The activities listed in the NAPHS prioritized the most deficient indicators according to the JEE. Their execution will enable the country to improve its capacity to respond to public health threats and, consequently, to improve the assessment of the implementation of the IHR (2005) requirements.

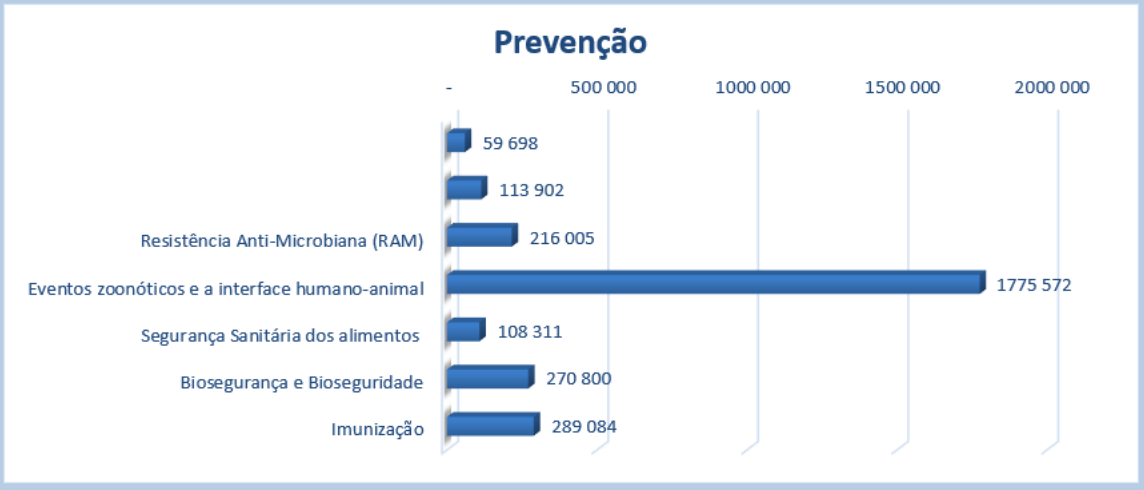
The activities that were budgeted for in this plan were those that were considered to be realistic, measurable, and to have an impact on the achievement of the stated objectives. Below is a summary of budgeting by JEE thematic group.

Table 5. Distribution of costs by JEE theme group and year

	2022	2023	2024	2025	2026	TOTAL (EVC)	TOTAL (USD)	%
Prevent	18 949 526	92 679 493	89 153 406	55 920 941	43 634 246	300 337 612	2 833 374	10,8
Detect	257 942 505	790 171 741	301 561 004	226 523 922	259 491 915	1 835 691 087	17 317 840	65,9
Respond	46 066 829	81 185 251	24 158 160	48 144 540	27 408 191	226 962 971	2 141 160	8,2
Others	60 019 282	125 207 527	98 131 396	80 359 223	57 218 960	420 936 388	3 971 098	15,1
Total (ECV)	382 978 142	1 089 244 012	513 003 966	410 948 626	387 753 312	2 783 928 058	26 263 472	100%

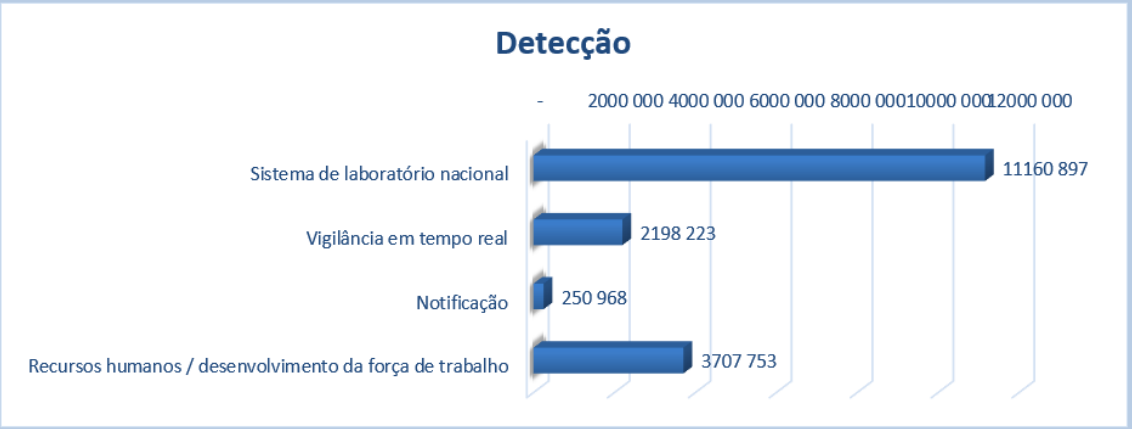
The detailed costs per technical area in each thematic group are represented in the following graphics.

Prevenção	
Legislação Nacional e Financiamento	59 698
Coordenação do RSI e Funções do Ponto Focal Na	113 902
Resistência Anti-Microbiana (RAM)	216 005
Eventos zoonóticos e a interface humano-animal	1 775 572
Segurança Sanitária dos alimentos	108 311
Biosegurança e Bioseguridade	270 800
Imunização	289 084
Total	2 833 374



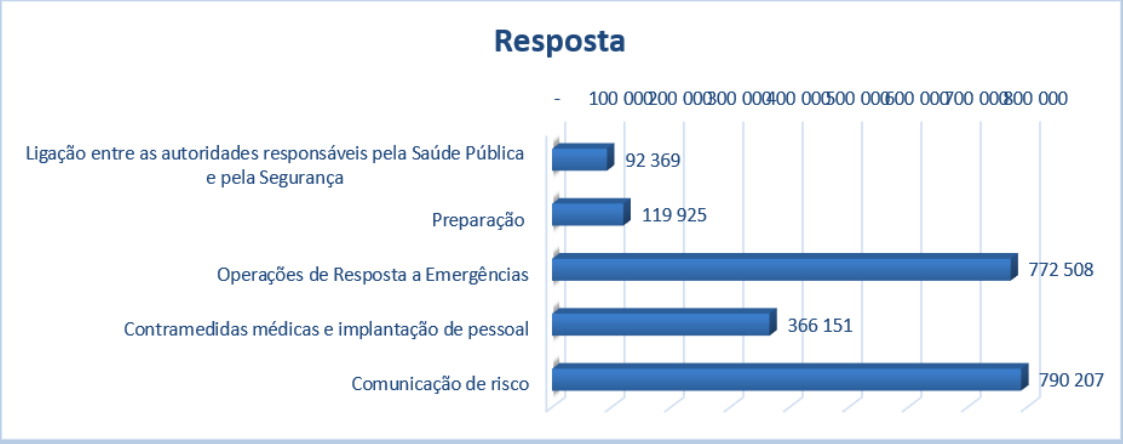
Graph 4. Cost distribution by technical areas of the Prevent thematic group

Detecção	
Sistema de laboratório nacional	11 160 897
Vigilância em tempo real	2 198 223
Notificação	250 968
Recursos humanos / desenvolvimento da força	3 707 753
Total	17 317 840



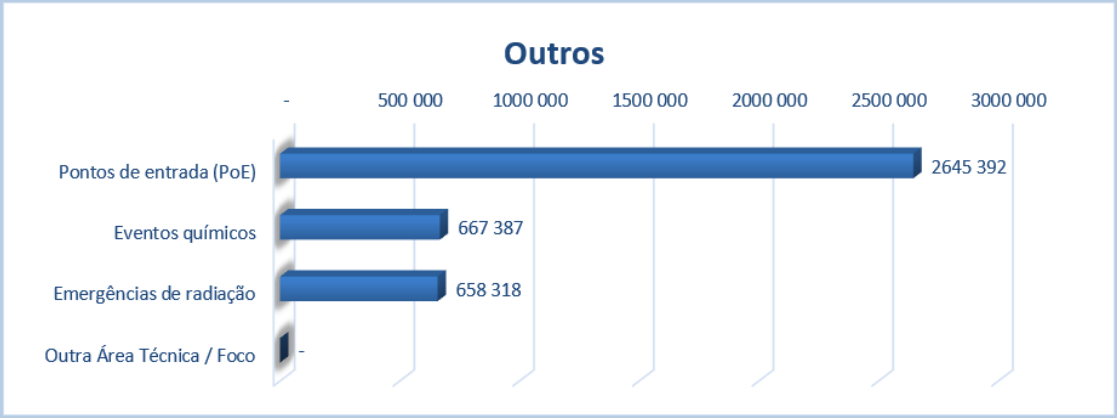
Graph 5. Cost distribution by technical areas of the thematic group Detect

Resposta	
Ligação entre as autoridades responsáveis pela	92 369
Preparação	119 925
Operações de Resposta a Emergências	772 508
Contramedidas médicas e implantação de pess	366 151
Comunicação de risco	790 207
Total	2 141 160



Graph 6. Cost distribution by technical areas of the thematic group Respond

Outros	
Pontos de entrada (PoE)	2 645 392
Eventos químicos	667 387
Emergências de radiação	658 318
Outra Área Técnica / Foco	-
Total	3 971 098



Graph 7. Distribution of costs by technical areas of the thematic Group Other IHR areas

4.2. Summary of costs by technical area of the Joint External Evaluation

The JEE thematic groups are subdivided into 19 technical areas.

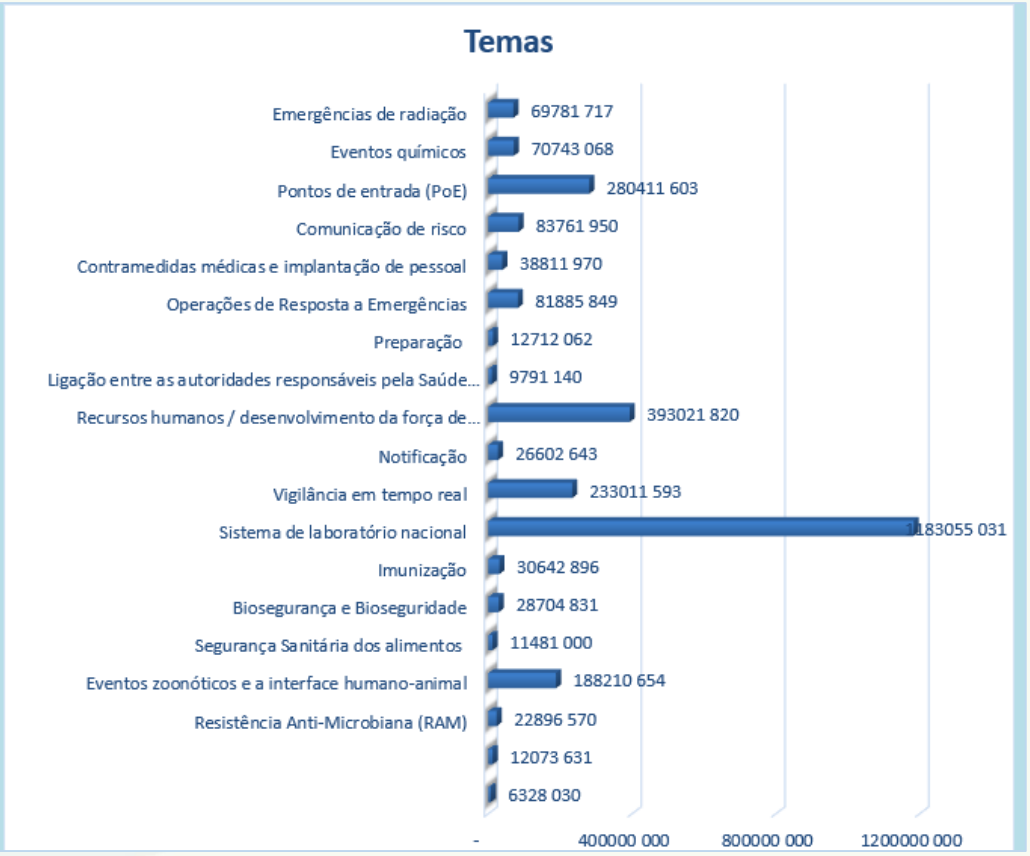
Table 6. Distribution of costs by JEE technical area and year

Technical Area	2022	2023	2024	2025	2026	TOTAL CVE	TOTAL (USD)	% total
National Legislation and Financing	-	5 702 380	182 550	260 550	182 550	6 328 030	59 698	0,2
IHR Coordination	495 200	5 183 081	6 242 600	152 750	-	12 073 631	113 902	0,4
Antimicrobial Resistance (RAM)	4 285 770	8 266 300	4 770 550	2 505 600	3 068 350	22 896 570	216 005	0,8

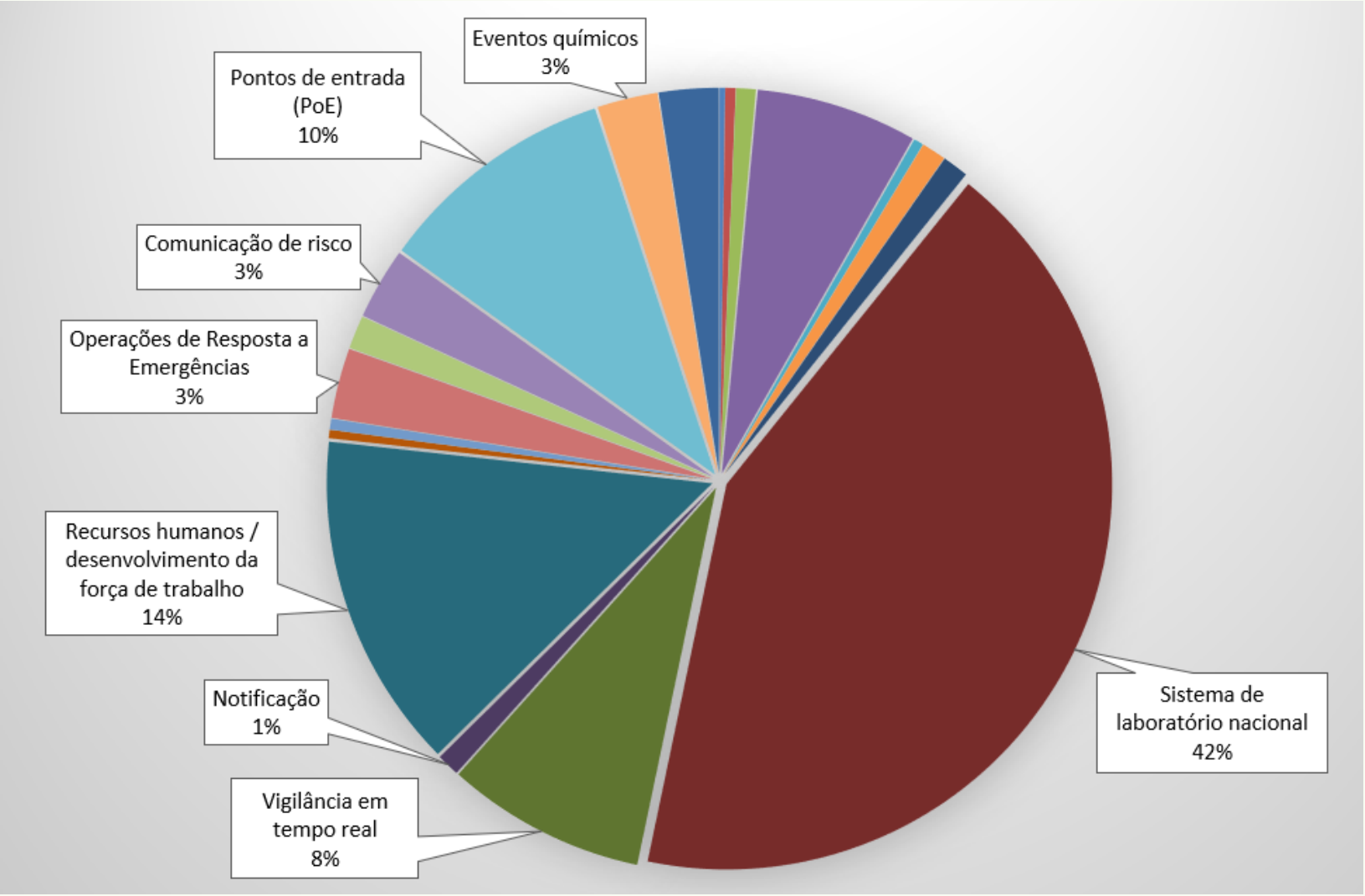
Zoonotic events and the human-animal interface	3 863 230	39 657 731	72 563 231	36 063 231	36 063 231	188 210 654	1 775 572	6,8
Food security	-	4 318 000	2 891 000	2 136 000	2 136 000	11 481 000	108 311	0,4
Biosafety and biosecurity	8 131 576	12 125 245	329 725	7 788 560	329 725	28 704 831	270 800	1,0
Immunization	2 173 750	17 426 756	2 173 750	7 014 250	1 854 390	30 642 896	289 084	1,1
National laboratory system	130 101 413	625 787 545	142 388 691	142 388 691	142 388 691	1 183 055 031	11 160 897	42,5
Real-time surveillance	59 483 647	68 258 422	27 920 540	25 280 240	52 068 744	233 011 593	2 198 223	8,4
Notification	16 801 931	3 463 481	803 100	3 463 481	2 070 650	26 602 643	250 968	1,0
Human resources / workforce development	51 555 514	92 662 293	130 448 673	55 391 510	62 963 830	393 021 820	3 707 753	14,1
Liaison between Public Health and Security authorities	3 463 190	6 327 950	-	-	-	9 791 140	92 369	0,4
Preparedness	3 636 331	2 549 050	371 300	2 534 050	3 621 331	12 712 062	119 925	0,5
Emergency Response Operations	20 276 148	22 505 001	13 034 900	13 034 900	13 034 900	81 885 849	772 508	2,9
Medical countermeasures and personnel mobilization	-	26 985 540	-	11 826 430	-	38 811 970	366 151	1,4
Risk communication	18 691 160	22 817 710	10 751 960	20 749 160	10 751 960	83 761 950	790 207	3,0
Points of entry (PoE)	60 019 282	57 088 041	54 434 760	54 434 760	54 434 760	280 411 603	2 645 392	10,1
Chemical events	-	35 007 743	13 370 512	22 364 813	-	70 743 068	667 387	2,5
Radiation emergencies	-	33 111 743	30 326 124	3 559 650	2 784 200	69 781 717	658 318	2,5
Other Technical Area / Focus	-	-	-	-	-	-	-	0,0
Total	**382 978 142**	**1 089 244 012**	**513 003 966**	**410 948 626**	**387 753 312**	**2 783 928 058**	**26 263 472**	**100**

The main technical areas deriving costs are: National Laboratory System, Human Resources, and Points of Entry.

	Área Técnica	5 estimativa de custo total do ano
1	Legislação Nacional e Financiamento	6 328 030
2	Coordenação do RSI e Funções do Ponto Focal N	12 073 631
3	Resistência Anti-Microbiana (RAM)	22 896 570
4	Eventos zoonóticos e a interface humano-anim	188 210 654
5	Segurança Sanitária dos alimentos	11 481 000
6	Biosegurança e Bioseguridade	28 704 831
7	Imunização	30 642 896
8	Sistema de laboratório nacional	1 183 055 031
9	Vigilância em tempo real	233 011 593
10	Notificação	26 602 643
11	Recursos humanos / desenvolvimento da força	393 021 820
12	Ligação entre as autoridades responsáveis pela	9 791 140
13	Preparação	12 712 062
14	Operações de Resposta a Emergências	81 885 849
15	Contramedidas médicas e implantação de pess	38 811 970
16	Comunicação de risco	83 761 950
17	Pontos de entrada (PoE)	280 411 603
18	Eventos químicos	70 743 068
19	Emergências de radiação	69 781 717
	Total	2 783 928 058



Graph 8. Distribution of costs by JEE technical area and year



Graph 9. Proportion of costs by JEE technical area

4.3. Budget summarized by strategic activity

The strategic activities of the NAPHS were derived from the recommendations of the JEE, following the guidelines of the WHO benchmark for IHR capacities. Within each strategic activity, priority actions for its implementation were also identified. This was followed by the budgeting and scheduling of the actions.

The following section describes the strategic activities for each CSF indicator and the guiding objectives.

4.3.1. Prevent

4.3.1.1.National legislation, policies and financing

JEE Indicator(s)		JEE Score
P.1.1	The State has assessed, adjusted and aligned its domestic legislation, policies and administrative arrangements in all relevant sectors to enable compliance with the IHR	2
P.1.2	Financing is available for the implementation of IHR capacities	1
P.1.3	A financing mechanism and funds are available for timely response to public health emergencies	3

Objective(s):

- Standardize national legislation, laws, regulations, policies and administrative requirements across all relevant sectors to enable IHR compliance, by December 2026.
- Ensure the availability of funding for the implementation of the IHR capacities.

Strategic activity(ies)	Responsible Authority(ies)	Budget Total (CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Carry out a proposal for harmonization of legislation, regulations, policies and administrative requirements in relation to IHR.	INC	3.455.280					
Develop a mechanism to implement legislation, laws, regulations, policies, and administrative requirements regarding IHR.	INC	1.648.750					
Convene key stakeholders related to the review of funding for IHR capacity implementation, including budget allocation and external contribution to IHR capacity implementation.	INC	125.200					
Review cost estimates and funds currently available for implementing IHR capabilities.	INC	938.500					
Allocate budget, both internal and external, to the relevant sectors and their respective ministries to support the implementation of IHR capabilities.	INC	90.100					
Implement available funding and evaluate its implementation.	INC	70.200					
Total costs	**6.328.030 CVE**						

4.3.1.2.IHR Coordination, Communication and Advocacy

JEE Indicator(s)		JEE Score
P.2.1	A functional mechanism created for the coordination and integration of the relevant sectors in the IHR implementation	2

Goal(s):

- Establish a fully functional IHR national focal point.

Strategic activity(ies)	Responsible Authority(ies)	Total Budget (CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Carry out capacity building actions for the national IHR focal points	DNS INC	2.721.000					
Establish SOPs for communication and coordination with WHO, including the trigger and notification and reporting process.	DNS INC	3.448.950					
Develop action plans for multi-sector/multidisciplinary coordination and communication mechanisms	DNS INC	2.946.400					
Establish a plan to conduct exercises/simulations	DNS INC	2.957.281					
Total costs	**12.073.631 CVE**						

4.3.1.3.Antimicrobial resistance

JEE Indicator(s)		JEE Score
P.3.1	Effective multisectoral coordination on AMR	2
P.3.2	AMR Surveillance	2
P.3.3	Infection prevention and control	1
P.3.4	Optimal use of antimicrobial drugs in human and animal health and agriculture	1

Goal(s):

- Implement a multi-sectorial national action plan on the AMR.

- Develop a national surveillance system for AMR that integrates surveillance of pathogens of interest to human and animal health and agriculture.
- Develop a functional infection prevention and control system in health care facilities and on farms.
- Ensuring appropriate use of all antimicrobial agents in human and animal health and agriculture.

Strategic activity(ies)	Responsible authority (ies)	Total Budget (CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Submit the plan against the AMR for approval through relevant governance mechanisms	INC DNS	10.000					
Define terms of reference for a multisectoral governance mechanism on the AMR	INC	851.000					
Organize coordination of the PAN-RAM through regular meetings	INC	1.802.000					
Develop and implement a framework of priority actions from the national action plan and monitoring of the AMR national action plan (based on risk and feasibility)	INC	170.200					
Review plans and progress through regular meetings of the AMR governance committee.	INC	90.100					
Identify and map the sustained funding for the activities planned in the AMR 's national action plan.	INC	90.100					
Designate coordination structure for the AMR's monitoring	INC	0					
Preparation and approval of the regulation of the coordination structure for the monitoring of AMR.	INSP	200.300					
Appointment of focal points in each sector that will liaise with the National Coordination Instance for surveillance of the AMR.	INC	0					
Disclosure of the focal points of each sector that will liaise with the National Coordination Instance for surveillance of the AMR.	INC	10.000					

Evaluate the existing surveillance activities related to AMR to support improvements in the surveillance of AMR.	INC	410.500					
Designate 2 national reference laboratories and 1 research laboratory capable of implementing methods to confirm and characterize specific pathogens for surveillance of AMR.	INC	678.620					
Establish standards for all healthcare facilities to have a Healthcare-Related Infection Prevention and Control Committee (CPCIRCS).	ERIS	90.100					
Conduct an assessment of responsible management policies and activities using a multisectoral approach (including the regulatory framework and the management of the antimicrobial supply chain).	DGASP DNS INSP ERIS	12.945.400					
Update the list of essential drugs and clinical guidelines that promote appropriate use.	GAF	5.548.250					
Total costs	**22.896.570 CVE**						

4.3.1.4.Zoonoses

JEE Indicator(s)		JEE Score
P.4.1	Coordinated surveillance systems in place in the animal health and public health sectors for zoonotic/pathogenic diseases identified as joint priorities	2
P.4.2	Mechanisms for responding to infectious and potential zoonotic diseases established and functional	2

Goal(s):

- Strengthen coordinated surveillance systems for priority zoonotic diseases or pathogens.

Strategic activity(ies)	Responsible authority (ies)	Total Budget (CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Develop a list of priority zoonotic diseases establishing standardized procedures and ensure its use for the exchange of information on zoonotic disease surveillance between relevant sectors.	INSP DGASP INC	2.940.000					
Train staff responsible for specific aspects of surveillance and management of priority zoonotic diseases at national and sub-national level.	INC	3.726.390					
Extend coordinated laboratory-enhanced surveillance to all zoonotic diseases or pathogens.	DGASP INC	48.301.140					
Allocate resources for the prevention and detection of zoonotic public health priority diseases at the national level.	DGAPS	133.243.124					
Total Cost	**188.210.654 CVE**						

4.3.1.5.Food Security

JEE Indicator(s)		JEE Score
P.5.1	Surveillance systems in place for the detection and monitoring of foodborne diseases and food contamination	1
P.5.2	Mechanisms are established and functioning for the response and management of food security emergencies	1

Goal(s):

- Strengthen surveillance systems for foodborne diseases and food contamination.
- Strengthen the response and management mechanisms for food security emergencies.

Strategic activity(ies)	Responsible Authority(ies)	Total Budget (CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Review foodborne disease surveillance capacity and food contamination monitoring capacity.	ERIS DGASP	2.182.000					
Develop mechanisms for the response and management of food security emergencies.	MAA INC SNSAN SVIR DGASP	9.299.000					
Develop mechanisms for food security emergency response and management (not budgeted in this plan).	INC	0					
Total Cost	**11.481.000 CVE**						

4.3.1.6.Biosafety and Biosecurity

JEE Indicator(s)		JEE Score
P.6.1	Whole-of-government biosafety and biosecurity system in place for all sectors (including human, animal and agriculture facilities)	1
P.6.2	Biosafety and biosecurity training and practices in all relevant sectors (including human, animal and agriculture)	2

Goal(s):

- Implement a biosafety and biosecurity system for all sectors to minimize the risk of infection from dangerous pathogens.
- Develop a public health workforce that is available and trained to enable early detection, prevention, preparedness and responses to potential events of international concern at all levels of health systems to effectively implement the IHR.

Strategic activity (ies)	Responsible Authority(ies)	Total Budget (CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Identify and document human and animal health facilities that store/keep dangerous pathogens and toxins in relevant sectors and responsible health professionals.	INC	1.490.000					
Review and update national legislation and regulations on biosafety and biosecurity.	INC	2.930.000					
Establish a mechanism for licensing Animal Health Service Delivery Units.	DGASP	395.670					
Conduct assessments of current biosafety and biosecurity practices, procedures and controls at the national level.	INC	753.900					
Develop pathogen control measures, including containment standards, operational handling, and failure reporting systems.	INC	7.785.400					
Develop a national biosafety and biosecurity framework, including guidelines and record-keeping obligations for all laboratories working with hazardous agents (publication of the biosafety manual).	INC	10.000					
Develop and maintain a national inventory of dangerous pathogens.	INC	1.465.000					
Store dangerous pathogens and toxins in a minimum number of national laboratories.	INC INSP	7.458.835					
Implement biosafety and biosecurity best practices in all national, intermediate, and local laboratories.	INSP	1.318.900					
Implement national biosafety and biosecurity regulations and guidelines with all relevant sectors.	IGQPI	395.670					
Develop an action plan to replace dangerous pathogenic cultures with safer research methods.	INSP	1.490.000					
Developing incident and emergency response programs in facilities that store dangerous pathogens.	INSP	2.212.281					
Adapt in-service and continuing education curricula, SOPs, toolkits, best practices, and microbiological procedures to comply with	ME DNS	395.670					

biosafety and biosecurity rules and regulations following international best practices.							
Train professionals working with dangerous pathogens and toxins to comply with biosafety and biosecurity rules and regulations.	DNS	65.945					
Supervise professionals working with dangerous pathogens and toxins in complying with biosafety and biosecurity rules and regulations.	INSP	263.780					
Develop a national academic biosafety and biosecurity training program following international best practices.	INSP	263.780					
Create a National Biosafety and Biosecurity Commission (to publish in the Official Bulletin)	INC	10.000					
Total Cost	**28.704.831 CVE**						

4.3.1.7.Immunization

JEE Indicator(s)		JEE Score
P.7.1	Vaccine coverage (measles) as part of the national program.	5
P.7.2	National vaccine access and delivery.	5

Goal(s):

- Increase vaccination coverage for priority vaccine-preventable diseases in the country.
- Strengthening the capacity to access and distribute vaccines to the target population.

Strategic activity(ies)	Responsible Authority(ies)	Total Budget (CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Secure sustainable domestic funding for immunizations (not budgeted in this plan).	MF	0					
Integrate the national vaccine registry with the national health information system.	DNS	745.000					
Carry out measles vaccination activities, ensuring 95% coverage of the first dose for the 12-month-old population.	DNS	3.906.615					
Conduct Vaccine Survey to assess coverage rate in vulnerable populations.	DNS INSP	4.353.000					
Perform an assessment of surveillance data to ensure that the case-based surveillance system is sufficiently sensitive.	INSP	4.347.500					
Ensure sustainable financing for vaccine distribution systems, including the purchase and maintenance of cold chain equipment.	DNS INC	14.028.500					
Perform a functional exercise (either a vaccination campaign or a simulation) to test vaccine delivery systems in a mass campaign or public health emergency environment.	INC	3.262.281					
Total Cost	**30.642.896 CVE**						

4.3.2. Detect

4.3.2.1.National laboratory system

JEE Indicator(s)		JEE Score
D.1.1	Laboratory testing for the detection of priority diseases	3
D.1.2	Specimen referral and transport system	3
D.1.3	Effective national diagnostic network	3
D.1.4	Laboratory Quality Systems	3

Goal(s):

- Having 80% of laboratories with standardized and updated procedures and work instructions for the detection of priority diseases.
- Ensure minimum stock of material reagents and consumables for the detection of 10 priority diseases.
- Strengthen the system of shipping and transporting biological samples.
- Establishing an effective national diagnostic network in the context of One Health.
- Ensure 60% of laboratories with all quality procedures in place.

Strategic activity (ies)	Responsible Authority(ies)	Total Budget (CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Standardize procedures and work instructions for the diagnosis of priority diseases in national laboratories.	INC	511.956.842					
Implement inter-laboratory quality control in the context of One Health, three times a year for priority diseases in national laboratories.	INC INSP	56.186.180					
Establish a comprehensive quality management system in laboratories that perform essential tests for priority diseases.	INC	12.993.080					
Regularly train laboratory technicians on diagnostic techniques within the scope of priority diseases.	INC	8.552.050					
Develop procedures for the annual forecasting process of reagents, materials and consumables.	INC	430.400					
Designate the focal points of the biological sample shipping and transport system.	INC	0					
Socialize the transportation manual for biological samples with all the actors involved.	INC	0					

Provide all laboratories with the biological specimen transportation manual in paper format.	INC	350.000					
Hire a trainer to provide training regarding the certification of focal points of the infectious substance shipping and transport system.	INC	532.281					
Certify all focal points in each laboratory on the transportation of infectious substances according to current international standards.	INC	1.102.450					
Sign protocol with air and sea carriers, AAC and other relevant stakeholders.	INC	69.060					
Monitor the operation of the biological sample transport system.	INC	0					
Build the INSP laboratory building to ensure the response to epidemics and pandemics by 2026.	INSP	465.969.242					
Develop the strategic plan and respective SOPs for the National Laboratory Network.	INC	3.058.141					
Implement the strategic plan and respective procedures for the National Laboratory Network.	INC	31.780.000					
Reinforce the need to work together in a "One Health" approach.	INC	12.839.500					
Strengthening technical capacity and articulation between laboratories within the "One Health" approach.	DGPOG-MS	39.567.000					
Create and implement a system of infrastructure and equipment maintenance at the multisectoral level.	DGPOG-MS INC	37.668.805					
Total Cost	**1.183.055.031 CVE**						

4.3.2.2.Surveillance

JEE Indicator(s)		JEE Score
D.2.1	Surveillance Systems	2
D.2.2	Use of electronic tools	2
D.2.3	Analysis of surveillance data	3

Goal(s):

- Implement an event-based surveillance system and functional communities.
- Implement a functional multisectoral electronic surveillance system.
- Structure data analysis and alert mechanisms at Central and local levels for outbreak surveillance in the multisectoral context including the private sector.

Strategic activity (ies)	Responsible Authority(ies)	Total Budget(CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Adapt the WHO AFRO Technical Guidelines for Integrated Disease Surveillance and Response 3rd edition to the national context, structuring community surveillance, event-based surveillance for human, animal, environmental health, and the private sector.	DNS INC	202.182.210					
Institutionalize the DHIS2 platform as an electronic surveillance platform at the central and peripheral levels with One Health approach.	DNS INC	21.512.483					
Institutionalize the Field Epidemiology Training Program (FETP).	INSP INC	3.583.900					
Build capacity in surveillance data analysis and risk assessment in the multisectoral context, including the private sector, by 2026.	INSP	5.733.000					
Total Cost	**233.011.593 CVE**						

4.3.2.3. Notification

JEE Indicator(s)		JEE Score
D.3.1	System for efficient notification to FAO, OIE and WHO	3
D.3.2	Reporting network and protocols in country	3

Goal(s):

Implement an efficient intersectoral communication and reporting system to FAO, OIE and WHO.

Timely and accurate reporting of diseases according to WHO requirements and consistent transmission of information to FAO and OIE.

Strategic activity (ies)	Responsible Authority(ies)	Total Budget (CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Establish a multi-sectoral communication flow, including the National Coordination Instance	INC DNS SIS	17.941.181					
Development of communication standards and protocols for Human Health, Animal Health and Environmental Health	INC	1.421.200					
Create normative documents for notification of Public Health Emergencies of International Concern (PHEIC), including for zoonoses	INC	1.113.900					
Conduct simulation exercise to strengthen the country's capabilities in notifying PHEIC	INC	6.126.362					
Total Cost	**26.602.643 CVE**						

4.3.2.4.Human Resources

JEE Indicator(s)		JEE Score
D.4.1	An up-to-date multisectoral workforce strategy is in place	2
D.4.2	Human resources are available to effectively implement IHR	2
D.4.3	In-service trainings are available	2
D.4.4	ETP4 or other applied epidemiology training program is in place	1

Goal(s):

- Develop and implement an updated workforce strategy for a functional multi-sector workforce in the healthcare sector.
- Develop a public health workforce that is available and trained to prevent, detect, assess, notify, communicate and respond to public health risks, serious events of national and international concern and health service delivery at all levels of the health systems to effectively implement RSI.
- Develop a functioning and accredited continuing professional education program through in-service training at the national and regional levels.
- Establish a sustainable field epidemiology training program.

Strategic activity (ies)	Responsible Authority(ies)	Total Budget (CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Carry out Strategic Planning of Human Health Resources (human and animal) with emphasis on strengthening IHR's capacities.	INC DNS	9.453.361					
Identify staffing needs within the IHR to strengthen the National Center for Emergency Operations in Public Health (CNOESP).	DNS DGPOG INC	23.401.440					
Recruitment of technicians with the profile defined in the HR strategic plan, in order to strengthen the capacities of the SR.	INC	12.380.300					
Recruitment of technicians to meet current needs, with a view to strengthening the capacities of the IHR.	INC	134.193.840					
Improve staff retention instruments and update the existing incentive system.	INSP	1.753.000					
Ensure continuous and specialized training in health (human and animal) in the skills essential to strengthening health surveillance actions.	INSP INC	5.726.600					
Create epidemiology training programs at basic, intermediate and advanced levels.	INSP INC	206.113.279					
Total Cost	**393.021.820 CVE**						

4.3.3. Response

4.3.3.1.Emergency Preparedness

JEE Indicator(s)		JEE Score
R.1.1	Strategic emergency risk assessments conducted and emergency resources identified and mapped.	2
R.1.2	National multi-sectoral and multi-hazard emergency preparedness measures, including emergency response plans, are developed, implemented, and tested.	2

Goal(s):

- Assess risk priority based on analyses of hazard exposures, vulnerabilities and capabilities.
- Map current resources to support emergency response in relevant national sectors.
- Development and application of multi-sectoral and multi-hazard emergency preparedness measures, including emergency response plans.

Strategic activity (ies)	Responsible Authority(ies)	Total Budget (CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Update risk cartography of Cabo Verde.	INSP	6.500.062					
Identify human resources at the multisectoral level to respond to public health emergencies.	INSP DGPOG INC	1.871.500					
Establish a monitoring and evaluation framework for the emergency plan.	INC INSP	4.340.500					
Total Cost	**12.712.062 CVE**						

4.3.3.2.Emergency response operations

JEE Indicator(s)		JEE Score
R.2.1	Emergency response coordination	2
R.2.2	Emergency Operations Center (EOC) capacities, procedures, and plans	2
R.2.3	Emergency Exercise Management Program	2

Goal(s):

- Develop coordination mechanisms for emergency response.
- Develop emergency operational capabilities.
- Develop emergency exercise management program.

Strategic activity (ies)	Responsible Authority(ies)	Total Budget(CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Develop a Multi-Risk Plan for Operations in Public Health Emergencies based on the risk cartography.	INC	3.304.281					
Create the national team for management of Public Health emergencies.	INSP INC	3.859.381					
Operationalize the Cabo Verde EOC.	INSP DGPOG INC	28.024.037					
Build and update Contingency Plans for major events and create an information flow.	INC	29.350.350					
Conduct multi-sector simulation exercises to test essential capabilities based on priority risks/hazards.	INC MS	17.347.800					
Total Cost	**81.885.849 CVE**						

4.3.3.3.Links between public health and security authorities

JEE Indicator(s)		JEE Score
R.3.1	Public health and security authorities (e.g. law enforcement, border control, customs) linked during a suspect or confirmed biological, chemical or radiological event	2

Goal(s):

- Strengthen liaison between public health and security authorities during potential events of national interest.

Strategic activity (ies)	Responsible Authority(ies)	Total Budget (CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Establish permanent mechanisms for collaboration, formalized through protocols, Memorandum of Understanding or other instruments, between public health, animal health and security authorities.	INSP INC MS Legal Office	955.100					
Develop cross-sectoral logistics plans (including sample collection, transport, storage, security and testing requirements between relevant sectors e.g. public health, security authorities, agriculture).	INSP	2.125.870					
Develop a common information and communication platform between the different entities.	INSP DNS	5.542.450					
Strengthen common knowledge on types of risk and response according to public health threats.	INSP	945.600					
Total Cost	**9.791.140 CVE**						

4.3.3.4. Medical countermeasures and personnel mobilization

JEE Indicator(s)		JEE Score
R.4.1	System in place for activating and coordinating medical countermeasures during a public health emergency	1
R.4.2	System in place for activating and coordinating health personnel during a public health emergency	1
R.4.3	Case management procedures implemented for relevant IHR risks	1

Goal(s):

- Develop a functional system to activate and coordinate medical countermeasures during a public health emergency.
- Develop and implement case management procedures for all relevant IHR hazards.

Strategic activity (ies)	**Responsible Authority(ies)**	**Total Budget (CVE)**	**Execution Schedule**				
			2022	**2023**	**2024**	**2025**	**2026**
Develop a national plan of medical countermeasures for public health emergencies.	INC	2.633.000					
Develop a national mechanism for mobilizing human resources for response to public health events.	INC	33.331.750					
Develop standardized guidelines for case management of priority diseases and hazards relevant to IHR, including management and transport of potentially infectious patients.	INC	1.384.130					
Create protocols for sharing information on diseases, conditions and public health emergency events of international concern with relevant multisectoral agencies.	INC	1.463.090					
Total Cost	**38.811.970 CVE**						

4.3.3.5.Risk communication

JEE Indicator(s)		JEE Score
R.5.1	Risk communication systems for unusual/unexpected events and emergencies.	1
R.5.2	Internal and partner coordination for emergency risk communication.	2
R.5.3	Public communication for emergencies.	3
R.5.4	Communication engagement with affected communities	3
R.5.5	Addressing perceptions, risky behaviors, and misinformation.	3

Goal(s):

- Develop a risk communication system for unusual events and emergencies.
- Strengthen coordination for risk communication.
- Strengthen communication engagement with communities.

Strategic activity (ies)	Responsible Authority(ies)	Total Budget (CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Identify and train individuals or units responsible for risk communication within relevant sectors, with defined terms of reference for working together during a public health emergency.	INSP	7.682.500					
Develop a national multi-hazard and multi-sectoral emergency risk communication plan, including risk communication standards, procedures, priority tasks, and responsibilities.	INSP INC	1.323.550					
Assess existing capacities and needs in government ministries and key partner agencies, and develop training plans for the priority skills identified for conducting effective risk communication.	INSP	11.979.000					
Develop risk communication capabilities.	INSP INC	4.350.000					

Develop a mechanism to systematically collect feedback from the community (e.g., through hotlines, social media forums, direct engagement).	INSP	7.939.200					
Develop a mechanism to conduct baseline surveys on knowledge, attitudes, and practices about priority health threats and health practices.	INC	42.134.050					
Establish a mechanism for regular coordination and collaboration at the national and regional levels for risk communication.	INC	338.250					
Conduct regular outreach and mobilization of partners in the community on health risk communication.	INC	4.685.400					
Develop mechanisms to systematically integrate feedback on community concerns and issues of interest into community engagement activities.	INC	3.330.000					
Total Cost	**83.761.950 CVE**						

4.3.4. Other IHR areas

4.3.4.1.Points of entry

JEE Indicator(s)		JEE Score
PoE.1	Routine capacity established at points of entry	2
PoE.2	Effective public health response at points of entry	1

Goal(s):

Establish routine capacity at designated points of entry.

Strengthen effective public health response capacity at points of entry.

Strategic activity (ies)	Responsible Authority(ies)	Total Budget (CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Develop SOPs in accordance with Annex 1B.1 of the IHR.	DNS INC	5.334.581					
Train technicians at designated points of entry in the application of SOPs.	DNS INC	39.726.561					
Adequate the points of entry with the necessary resources for SOP application.	DNS INC	8.576.000					
Define supervision and control mechanisms for the PoEs.	DNS INC MS	51.036.521					
Designate Amilcar Cabral and Aristides Pereira International Airports, and Sal and Boavista Ports as PoE.	DNS INC	441.000					
Develop/update Contingency Plans for Public Health Emergencies, according to Annex 1B.2 at the Points of entry.	DNS INC	3.285.900					
Train staff at all points of entry in the guidelines and SOPs for responding to public health events.	DNS INSP	27.619.640					
Allocate resources, including funds, to all points of entry for implementation of the plan during events.	DNS INC	1.248.000					
Demonstrate capacity to implement measures to disinfect, dehydrate, decontaminate, or treat baggage, cargo, containers, means of transport, goods, and postal parcels.	SVIR	14.400.000					
Allocate resources, including funds, to all designated points of entry for the implementation of the plan during the event,	DNA INC	127.913.400					
including care of affected animals and referral mechanism to veterinary services.	DNS ENAPOR	830.000					
Total Cost	**280.411.603 CVE**						

4.3.4.2.Chemical occurrences

JEE Indicator(s)		JEE Score
CE.1	Mechanisms established and functioning for detecting and responding to chemical events or emergencies	2
CE.2	Enabling environment in place for management of chemical events	2

Goal(s):

- Establish national mechanism for detection and response to chemical emergencies or occurrences.
- Develop policies and legislation necessary for chemical event surveillance, alert and response.

Strategic activity (ies)	Responsible Authority(ies)	Total Budget (CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Establish a national surveillance and alert system for chemical emergencies or occurrences.	INC DNA	28.883.232					
Develop contingency and response plan for chemical events at all levels (national, regional, local).	INC	10.554.381					
Establish agreements with designated quality-assured laboratories (national or international) for the timely analysis of biological and environmental samples with suspected chemical exposure or contamination.	INC	4.448.581					
Develop national chemical management plan (which includes obsolete and waste chemicals).	DNA	6.216.381					
Conduct initial assessment of chemicals to define prevention and response actions.	DNA	9.981.181					
Create national list of chemicals.	INC	5.218.731					
Create and integrate an information service on hazardous chemicals into the public health surveillance system.	INC	265.000					
Update the National Contingency Plan for accidental hydrocarbon spills.	INC	5.175.531					
Total Cost	**70.743.068 CVE**						

4.3.5. Radiological emergencies

JEE Indicator(s)		JEE Score
RE.1	Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies.	1
RE.2	Enabling environment in place for the management of radiological and nuclear emergencies.	1

Goal(s):

- Establish a mechanism to detect and respond to radiological and nuclear emergencies.
- Initial Radiological Assessment in Cabo Verde

Strategic activity (ies)	Responsible Authority(ies)	Total Budget (CVE)	Execution Schedule				
			2022	2023	2024	2025	2026
Develop capacity, SOPs or protocols for coordination and communication with national authorities, clearly indicating roles and responsibilities, including for the Ministry of Health and IHR focal points.	INC	5.180.331					
Develop a radiological risk map (cartography).	DNA INC	28.244.462					
Elaborate legislation regarding import authorization and registration of radiological and nuclear devices.	INC	6.257.731					
Elaborate National Plan of Contingency and Response to radiological emergencies.	INC	6.401.581					
Periodically update the registers of radiological equipment existing in the country.	INC	0					
Disseminate policies, plans and legislation for radiological event surveillance, warning and response to relevant stakeholders.	DNA	2.000.000					
Train relevant personnel on detection and response procedures for radiological and nuclear emergencies.	INC	3.426.300					

Conduct a radiation risk assessment to define prevention and response actions.	INC	5.472.281						
Present the results of the initial risk assessment and proposed preventive actions to national authorities.	INC	775.450						
Develop a radiation monitoring mechanism with the necessary SOPs and guidelines and establish a mechanism for sharing information among relevant stakeholders.	INC	12.023.581						
Join the International Atomic Energy Agency (IAEA)	INC	0						
Total Cost	**69.781.717 CVE**							

5. FINANCING THE NAPHS

Of the activities budgeted in the NAPHS, only 17% have funding already identified. This value represents a tiny part of the amount needed to fulfill the plan, so resource mobilization is necessary for its success.

Table 7. Distribution of costs by existence of funding

	2022	**2023**	**2024**	**2025**	**2026**	**TOTAL (EVC)**	**TOTAL (USD)**	**%**
Funded	1.822.300	467.965.842	1.796.850	1.251.600	1.251.600	474.088.192	4.472.530	17,0
Not Funded	81.155.842	621.278.170	51.207.116	409.697.026	386.501.712	2.309.839.866	21.790.942	83,0
Total	**382.978.142**	**1.089.244.012**	**513.003.966**	**410.948.626**	**387.753.312**	**2.783.928.058**	**26.263.472**	**100%**

The Ministry of Health will use the NAPHS as an advocacy tool to mobilize resources both internally (to allocate more resources for health security in the State's General Total Budget (CVE) and from external sources (development partners and donors). Due to the cross-cutting nature of the NAPHS in various areas, the participation of other ministries in resource mobilization is essential.

6. ASSESSMENT, ASSUMPTIONS AND MANAGEMENT OF RISKS TO THE EXECUTION OF THE NAPHS

The execution of the NAPHS is conditioned by several internal and external factors that if not considered can affect and even make the plan unfeasible. To ensure the best effectiveness of the NAPHS it is fundamental that its strategic moment, as Carlos Matus proposes, analyzes the support, threat and risk factors that can alter too much the execution of the plan [29]. Thus, it is fundamental to map these factors and the mitigation strategies that could be planned beforehand and that could minimize the interferences or even allow the plan to undergo revisions as necessary in face of different scenarios, in order to remain effective.

For the context of this plan, the risks were classified in a risk matrix, according to table 1, considering the probability of occurrence and the possible magnitude of the impact on the plan, thus conforming the risk classification.

From the risk identification and classification the management/mitigation assumptions or strategies were derived (table 2).

Table 8. Matrix/qualitative classification of the risks to the execution of the NAPHS

Risk Matrix		Consequence (level of severity)				
		1. Very small	2. Small	3. Medium	4. Critical	5. Extreme
Probability of occurrence	5. Almost certain/certain (90-100%)	5	10	15	20	25
	4. Very likely (50-89%)	4	8	12	16	20
	3. Likely (10-49%)	3	6	9	12	15
	2. Rather unlikely (1-9%) 1.	2	4	6	8	10
	1. Unlikely	1	2	3	4	5

Risk matrix classification key

Very high	High (12-16)	Moderate (8-10)	Low (4-6)	Very low (1-3)

Type of risk	Risk description	Probability of occur	Severity Level	Risk Level	Assumption or Management / Mitigation Strategy
Administrative	• Lack of leadership and political engagement at the high level • Inadequate multisectoral collaboration and coordination • Delays in legislation development and implementation	Likely	Critical	High (12)	• Political endorsement of NAPHS • Binding to the National Coordinating Instance • National initiative of the "Year of Health Security" in 2022
Financial	• Unavailability of funds • Delayed allocation of funds for activities • Changes in government priorities	Very Likely	Critical	High (16)	• Availability of adequate funding • Funds will be distributed in a timely and sufficient manner according to the plan • National funds allocated by the government for NAPHS implementation will be maintained • Partners who can contribute resources will be identified
Human Resources	• High staff mobility/ turnover • Hiring/recruiting not approved by responsible authorities • Limited qualified human resources • Staff low motivation	Likely	Medium	Moderate (9)	• Human resources will be available, trained and motivated • EPICV training (FETP Front Line in progress) to train human resources
Social	• Low civil society awareness and participation	Likely	Small	Low (6)	• Sustained and targeted strategies for community engagement • Establishment of the "Year of Health Security" initiative in 2022

Infrastructure	• Country geography • Inability to provide timely services or supplies	Very likely	Small	Moderate (8)	• Routine coordination with health delegations and institutional representations on each island • Articulation and support of transportation services: Inter-islands and Airline
Implementation	• Misinterpretation and lack of ownership by the parties	Likely	Critical	High (12)	• Effective coordination at all levels • Parties' compliance in implementing the plan • Implementers understand their roles and limitations • Non-fragmentation of the plan • Communication and mobilization actions to engage stakeholders
Random	• Economic crises • Worsening conflict in Eastern Europe • Unforeseeable unknown disasters	Likely	Medium	Moderate (9)	• Adequate preparation and effective response to known events or hazards • Mobilization of national resources and partners beyond the United States of America, Europe, Russia axis

7. PLATFORM FOR NAPHS IMPLEMENTATION

7.1. Connection to existing plans and platforms

As recent events attest, public health requires a complex network of strategic intersectoral collaboration. In this sense, Cabo Verde already has a coordination platform to operationalize the One Health strategy in the country – the National Coordination Instance (INC). This entity integrates the areas of human health, animal health and environmental health, working together to improve public health in the country, in a multisectoral perspective (Council of Ministers, 2019).

In similar note, and according to Order No. 34/20, dated November 20, 2020, from the Minister of Health and Social Security, the Multisectoral Technical Team for the Management of Emergencies in Public Health (ETMGESP) was created in 2020. Coordinated by the INC, this team is intended to provide technical and operational support for the management of public health emergencies in the country.

The implementation of the NAPHS will make use of existing multi-sectoral and intersectoral coordination mechanisms to optimize resources and avoid duplication of efforts.

The following figure schematizes the interconnection between the NAPHS coordination structures.

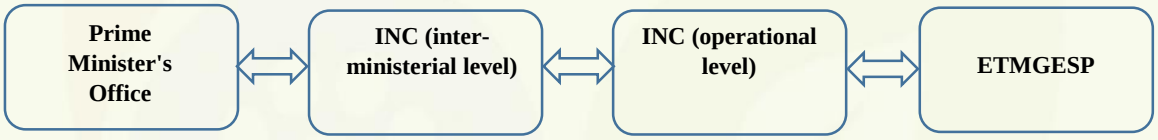


Figure 5. Interconnection between NAPHS coordination structures

7.2. Implementation of the NAPHS at the local level

Municipal health offices, both human and animal/environmental, as well as local political leadership (city councils) are essential drivers for health policy implementation at the local level. The implementation of the NAPHS will use these existing structures.

7.3. Other facilitators

Political commitment and partnerships: The development of the National Health Security Plan is a result of the commitment of the national political leadership to strengthen mechanisms for prevention, detection, and response to public health events.

Likewise, development partners are committed to supporting the country in developing these mechanisms. The WHO strategic partnership is particularly relevant given that organization's efforts to support member states in developing and strengthening the core capacities of the International Health Regulations.

Human resources and infrastructure: As a result of the outbreak of COVID-19 and the need to prepare to respond to other potential risks, the MOH strengthened the health

system by recruiting new technicians including doctors, nurses, and laboratory technicians. Additionally, laboratory capacity was expanded to other islands, from one virology laboratory to four on different islands.

In terms of training, the INSP, in partnership with other entities, started in 2021 the training in Field Epidemiology in Cabo Verde, having trained two classes by the time of elaboration of this plan.

7.4. Contribution to health system strengthening (Agenda 2030, SDG 3)

The implementation of the NAPHS requires significant mobilization of resources for different sectors, particularly for the areas of the One Health approach. The reinforcements assumed in the plan for the areas of human resources, material infrastructure and health technologies, information systems, community engagement and health promotion, health security and emergencies, among others, will greatly contribute to the strengthening and resilience of the country's health system. As a result, it is expected to strengthen health security to prevent deaths and combat diseases, thus improving the overall health and well-being of the population, which meets the third Sustainable Development Goal – SDG 3 (ensure healthy lives and promote well-being for all at all ages) [30].

8. NAPHS EXECUTION

8.1. Roles and responsibilities of key stakeholders

The execution of the activities framed in the NAPHS requires the active engagement of various stakeholders working together to achieve the proposed objectives. Responsibilities range from national or sectoral leadership, technical and/or financial support, to intangible resources such as community engagement.

8.1.1. Government/ public sector

Interested Party	Roles/Responsibilities
Office of the President/Office of the Prime Minister	High-level leadership and decision-making.
	Political commitment to ensure that state institutions fulfill their duties under the plan.
	Advocacy.
Ministry of Health (MS)	Overall administration and management of NAPHS implementation, monitoring and evaluation.
	Mobilize resources (human, infrastructure, equipment, etc.) to strengthen the human health components of the plan.
	Technical and financial support for the development of policies, regulations and laws necessary for the successful implementation of the NAPHS.
	Monitor compliance with international obligations and
	information sharing requirements of the NAPHS and the IHR.

Ministry of Agriculture and Environment (MAA)	Advocacy.
	Joint management with the MoH of NAPHS activities under the One Health approach.
	Strengthen national capacity to prevent, detect and respond to zoonoses.
Ministry of Internal Administration (MAI)	Mobilize resources (human, infrastructure, equipment, etc.) for implementation, monitoring and evaluation of the animal and environmental health components of NAPHS.
	Collaborate with MOH and MAA in response to public health threats and disasters.
Ministry of Finance	Allocate internal financial resources for the implementation of the NAPHS (inclusion in the General State Budget)
	Monitor efficiency in the use of resources collected for NAPHS implementation.
Ministry of Foreign Affairs, Cooperation and Regional Integration	Brokering agreements to facilitate cross-border collaborations for health security.
	Promote Cabo Verde cooperation with regional (ECOWAS, AU, etc.) and global bodies to improve health security.
Ministry of Tourism and Transportation	Facilitate sanitary control of persons entering the national territory.
	Lead efforts to improve disaster risk reduction associated with air and maritime transport.

8.1.2. Development Partnerships

International organizations of which Cabo Verde is a member (CPLP, ECOWAS/ WAHO), multilateral cooperation namely the agencies of the United Nations system (WHO, FAO, OIE, UNICEF, UNFPA) the African Union, etc., and bilateral cooperation. Some international agencies may also monitor the country's compliance with the IHR core capacities included in the plan.

8.1.3. Media

Given their function to inform, educate and entertain the population, and recognizing their importance in shaping opinions and as a platform to citizens, the Media can assume a vigilant role in the implementation of the NAPHS. More specifically, they should safeguard the interest of the population against malpractices, make citizens aware of the plan's activities, and provide feedback on the implementation of NAPHS initiatives.

8.1.4. Civil Society

Civil society organizations play an important role in articulating society in order to promote and defend education, health, environment, civil rights, among others. Considering these attributions, as well as the role of civil society in raising awareness and debating social problems, it should assume a critical role in following up on the implementation of the NAPHS.

8.1.5. Private organizations

Strategic partnerships and technical cooperation with private organizations will be of great value in implementing NAPHS activities.

9. MONITORING AND EVALUATION OF THE NAPHS

Monitoring and evaluation (M&E) are essential components for the successful implementation of any program. The purpose of this M&E strategy is to support the country to fully comply with the IHR (2005) by monitoring the progress of activities for the 19 technical areas of the NAPHS.

This strategy is aligned with the overall MeA framework of the IHR, incorporating supporting documents such as State Party Annual Self-Assessment Tool (SPAR), data from eventual After Action Reports (AAR), Joint External Evaluation and Simulation Exercises [31].

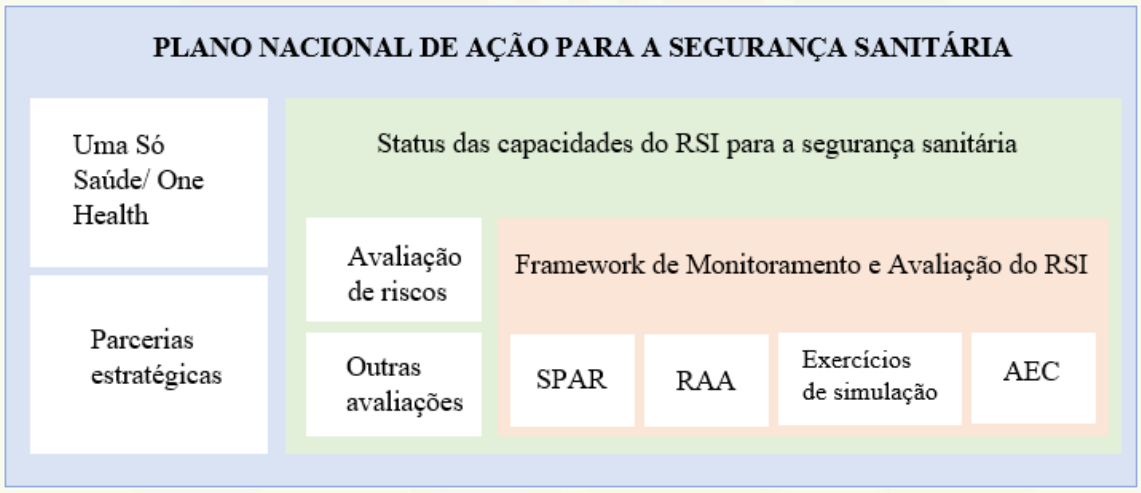


Figure 6. NAPHS M&E Framework

9.1. Components of the Monitoring and Evaluation (M&E) strategy

The NAPHS M&E will be carried out by a NAPHS follow-up multisectoral core, supervised by the INC, following a logical model and based on the indicators established for each activity.

9.1.1. Nomination of focal points for each technical area

The INC should designate the focal points that will constitute the multisectoral core to follow up on the activities and the attributions of the working group.

This step aims to promote a sense of ownership of the NAPHS by stakeholders from the different technical areas and facilitate interoperability between areas.

9.1.2. Indicators for monitoring and evaluation

The NAPHS planning Excel tool outlines the monitoring and evaluation scheme for the NAPHS (see complementary Excel). This follows the logical model of MeA and includes, for each detailed or specific activity, process indicators, result indicators, frequency of collection, and sources of verification.

The multisectoral core of the plan's follow-up, using this tool, should document and disseminate in periodic meetings the progress of the plan's implementation. Through this methodology, one intends to identify successes, obstacles, gaps or areas for improvement, which, in turn, should be discussed and addressed during implementation.

9.1.3. Biannual review meeting

A meeting including the focal points of each technical area, representatives of relevant institutions/ministries and other partners should be held in the middle of each calendar year to assess the progress of activities, challenges encountered, and share best practices.

9.1.4. Annual Review Meeting

This meeting will be held annually (at the end of the outgoing year or beginning of the new year) and should complement the semi-annual review. At this meeting, documents such as any AARs conducted, simulation exercise results, and the SPAR can be used to assess the progress of actions. It is suggested as participants of this meeting the same ones as the biannual meeting, as well as managers, ministers, representatives of the leadership of other implementing partners, representatives of development partners.

Additionally, the M&E strategy will make use of existing IHR capacity implementation evaluation mechanisms, such as the following items:

9.1.5. State Party Self-Assessment Annual Report (SPAR)

Cabo Verde will continue to prepare annual reports on the development of the core capacities of the IHR (2005), through SPAR.

9.1.6. After-action Reviews (AAR)

AARs help review the actions taken to respond to an emergency or outbreak, allowing the identification of good practices, challenges, and lessons learned. The country should conduct an AAR after responding to any public health event in the country.

9.1.7. Simulation Exercises

Cabo Verde should conduct at least one (1) simulation exercise annually at the national level to test the functionality of the IHR capabilities. The results of simulation exercises may provide an indication of the level of these capacities, as well as points for improvement.

9.1.8. Joint External Evaluation (JEE)

Cabo Verde conducted the JEE in 2019, which was the starting point for the current NAPHS. The next assessment should be conducted in 2024 and will support the mid-term evaluation of the NAPHS.

9.1.9. Mid-term evaluation

A mid-term evaluation of the NAPHS should be conducted in 2024 to assess progress, identify challenges, and provide recommendations to optimize the implementation of activities for the remaining plan period. The mid-term evaluation should be led by the Ministry of Health and INC with support from relevant partners.

9.2. Other evaluations

Other evaluations at the level of the One Health sectors as well as other relevant agencies will also be used to assess the implementation of the NAPHS. These include:

- Annual health sector reviews
- Performance evaluation of veterinary services
- Environmental assessments
- Other relevant

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11. ANNEXES

11.1. Annex 1. NAPHS summary tables/figures

Table 9. Distribution of costs by scale of implementation

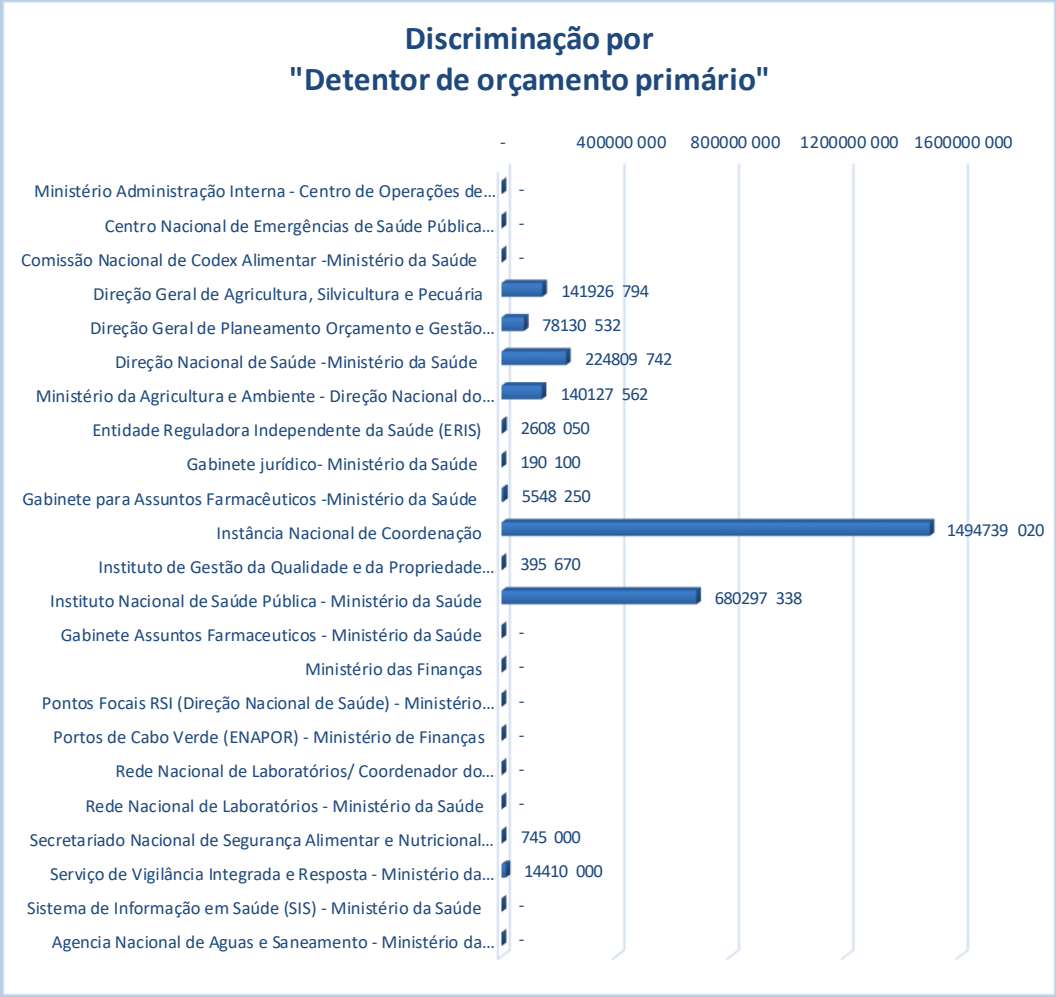
	2022	2023	2024	2025	2026	Total (ECV)	Total (USD)	
National	348 240 053	593 384 758	466 484 641	390 012 966	366 607 147	2 164 729 565	20 421 977	77,8%
Central	27 147 549	484 866 784	35 922 525	10 338 860	6 870 365	565 145 993	5 331 566	20,3%
Regional	5 518 500	2 004 500	2 004 500	2 004 500	5 683 500	17 215 500	162 410	0,6%
Municipal	2 467 800	8 529 300	8 592 300	8 592 300	8 592 300	36 837 000	347 519	1,3%
Total	383 373 812	1 088 848 342	513 003 966	410 948 626	387 753 312	2 783 928 058	26 263 472	100,0%

Table 10. Distribution of costs by JEE technical area and by year

Technical Area	2022	2023	2024	2025	2026	Total (ECV)	Total (USD)	Total
National Legislation and Financing	-	5 702 380	182 550	260 550	182 550	6 328 030	59 698	0,2%
IHR Coordination and Functions of the National IHR Focal Points	495 200	5 183 081	6 242 600	152 750	-	12 073 631	113 902	0,4 %
Antimicrobial Resistance (AMR)	4 285 770	8 266 300	4 770 550	2 505 600	3 068 350	22 896 570	216 005	0,8%
Zoonotic Events and Human-Animal Interface	3 863 230	39 657 731	75 563 231	36 063 231	36 063 231	188 210 654	1 775 572	6,8%
Food Safety	-	4 318 000	2 891 000	2 136 000	2 136 000	11 481 000	108 311	0,4%
Biosafety and Biosecurity	8 131 756	12 125 245	329 725	7 788 560	329 725	20 704 831	270 800	1,0%
Immunization	2 173 750	17 426 756	2 173 750	7 014 250	1 854 390	30 642 896	289 084	1,1%
National laboratory system	130 101 413	625 787 545	142 388 691	142 388 691	142 388 691	1 183 055 031	11 160 897	42,5%
Real-time surveillance	59 483 647	68 258 422	27 920 540	25 280 240	52 068 744	233 011 593	2 198 223	8,4 %
Notification	16 801 931	3 463 481	803 100	3 463 481	2 070 650	20 602 643	250 968	1,0%
Human Resources/workforce development	51 555 514	92 662 293	130 448 673	55 391 510	62 963 830	393 021 820	3 707 753	14,1%
Liaison between Public Health and Security authorities	3 463 190	6 327 950	-	-	-	9 791 140	92 369	0,4%
Preparedness	3 636 331	2 549 050	371 300	2 534 050	3 621 331	12 712 062	119 925	0,5%
Emergency Response Operations	20 276 148	22 505 001	13 034 900	13 034 900	13 034 900	81 885 849	772 508	2,9 %
Medical countermeasures and personal deployment	-	26 985 540	-	11 826 430	-	38 811 970	366 151	1,4%
Risk communication	18 691 160	22 817 710	10 751 960	20 749 160	10 751 960	83 761 950	790 207	3,0%
Points of entry (PoE)	60 019 282	57 088 041	54 434 760	54 434 760	54 434 760	280 411 603	2 645 392	10,1%

Chemical events	-	35 007 743	13 370 512	22 364 813	-	70 743 068	667 387	2,5%
Radiation emergencies	-	33 111 743	30 326 124	3 559 650	2 784 200	69 781 717	658 318	2,5%
Other Technical Area/Focus	-	-	-	-	-	-	-	0,0%
Total	382 978 142	1 089 244 012	513 003 966	410 948 626	387 753 312	2 783 263 472	26 263 472	100%

Detentor de orçamento primário	5 anos total
Ministério Administração Interna - Centro	-
Centro Nacional de Emergências de Saúd	-
Comissão Nacional de Codex Alimentar -	-
Direção Geral de Agricultura, Silvicultura	141 926 794
Direção Geral de Planeamento Orçament	78 130 532
Direção Nacional de Saúde -Ministério da	224 809 742
Ministério da Agricultura e Ambiente - Dir	140 127 562
Entidade Reguladora Independente da Sa	2 608 050
Gabinete jurídico- Ministério da Saúde	190 100
Gabinete para Assuntos Farmacêuticos -M	5 548 250
Instância Nacional de Coordenação	1 494 739 020
Instituto de Gestão da Qualidade e da Pro	395 670
Instituto Nacional de Saúde Pública - Min	680 297 338
Gabinete Assuntos Farmaceuticos - Minis	-
Ministério das Finanças	-
Pontos Focais RSI (Direção Nacional de S	-
Portos de Cabo Verde (ENAPOR) - Ministé	-
Rede Nacional de Laboratórios/ Coorden	-
Rede Nacional de Laboratórios - Ministér	-
Secretariado Nacional de Segurança Alim	745 000
Serviço de Vigilância Integrada e Respost	14 410 000
Sistema de Informação em Saúde (SIS) - M	-
Agencia Nacional de Aguas e Saneamento	-
Total	2 783 928 058



Graph 10. Distribution of costs by activities' executing agency

Table 11. Distribution of costs by category of activity

	2022	2023	2024	2025	2026	Total (ECV)	Total (USD)	
Meeting	14 892 640	15 852 130	12 599 870	5 591 080	5 273 170	54 208 890	511 405	1,9%
Training	39 286 310	115 671 150	82 187 420	85 765 540	65 802 810	388 713 230	3 667 106	14,0 %
Workshop	15 079 660	18 830 590	11 996 760	2 505 600	8 021 160	65 954 710	622 214	2,4%
Development of SOP (standard operational procedure)	-	-	-	-	-	-	-	0,0%
Communication	5 070 150	2 232 650	570 150	2 238 650	570 150	10 681 750	1 100 771	0,4%
Building	-	465 969 242	-	-	-	465 969 242	4 395 936	16,7%
Consulting	99 197 901	147 097 620	105 967 810	44 758 686	45 950 967	442 972 984	4 178 990	15,9%
Evaluation	8 576 000	-	3 262 281	-	-	11 838 281	111 682	0,4%
Field visit	11 433 500	28 933 500	23 302 500	24 472 500	23 302 500	111 444 500	1 051 363	4,0%
Human Resources	33 813 935	72 475 860	70 072 905	70 270 740	70 072 905	316 706 345	2 987 796	11,4%
Infrastructure	24 000 000	24 000 000	24 000 000	24 000 000	24 000 000	120 000 000	1 132 075	4,3 %
Copying/printing documents	2 500 000	-	10 000	10 000	-	2 520 000	23 774	0,1%
Purchase	115 451 336	149 290 000	154 550 000	123 126 000	118 050 000	660 467 336	6 230 824	23,7%
Services	3 715 000	6 035 000	3 715 000	3 695 000	3 695 000	20 845 000	196 651	0,7%
Simulation	-	10 803 460	8 082 460	8 082 460	8 082 460	35 050 840	330 668	1,3 %
Advocacy	-	-	-	-	-	-	-	0,0%
Studies	8 426 810	26 24 479 810	8 426 810	8 426 810	8 426 810	58 187 050	548 934	2,1%
Equipment	-	690 000	1 500 000	-	-	2 190 00	20 660	0,1%
Others	1 534 900	6 883 000	2 760 000	2 500 000	2 500 000	16 177 900	152 622	0,6%
Total	382 978 142	1 089 244 012	513 033 966	410 948 626	387 753 312	2 783 928 058	26 263 472	100%

Table 12. Distribution of costs by frequency

	2022	2023	2024	2025	2026	Total (ECV)	Total (USD)	
One time	132 785 522	709 448 846	162 326 641	80 200 994	46 866 405	1 131 628 408	10 675 740	40,6%
Recurrent	150 192 620	258 095 166	236 677 325	216 747 632	226 886 907	1 088 599 650	10 269 808,02	39,1%
Capital/ investment	100 000 000	121 700 000	114 000 000	114 000 000	114 000 000	563 700 000	5 317 925	20,2%

Annex 2. List of members who contributed to the development of the NAPHS

Table 13. NAPHS Technical Working Group

Name	Institution
Maria da Luz Lima	National Institute of Public Health
Janilza Silveira Silva	National Institute of Public Health
Flávia Semedo	WHO Regional Office in Cabo Verde
Vandisa Furtado	National Institute of Public Health
Jonas Brant	University of Brasília
Regina Rodrigues	National Institute of Public Health
Jossara Silva	Ministry of Health
Ngibo Fernandes	National Institute of Public Health

Table 14. NAPHS Collaborators by home institution

Name	Institution
Afonso Tavares	Red Cross Cabo Verde
Ailton Ribeiro	National Institute of Public Health
Alécia Branco	Airports and Air Safety
Ana Lina Olende	Directorate-General of Agriculture, Forestry and Livestock
Aniceto Santos	Sanitary Region Santiago Norte
Anísia Neves	Health Delegation of Sal
Anísio Almeida	Civil Aviation Agency
Bruno Santos	Pharmaceutical Affairs Bureau
Carlos Brito	Ministry of Health
Carolina Cardoso Gomes	WHO Regional Office in Cabo Verde
Cecília Moreno	General Directorate of Planning, Total Budget and Management - Ministry of Finance
Celso Martins	Health Delegation of São Vicente
Cláudia Duarte Silva	Ramiro Alves Figueira Regional Hospital
Conceição Évora	Directorate General of Agriculture, Forestry and Livestock
Cristina Coutinho	Ministry of Agriculture and Environment
Deolindo da Luz	Sanitary Region of Santo Antão
Dionísio Semedo	Sanitary Region of Fogo and Brava
Domingos Teixeira	Integrated Surveillance and Response Service
Edith Pereira	WHO Regional Office in Cabo Verde
Edson Santos	Independent Health Regulatory Entity
Erilsys Hernandez	National Water and Sanitation Agency
Hélio Semedo	National Service of Civil Protection and Firemen
Hermenegilda do Livramento da Luz	National Police
Jéssica Ramos	Health Independent Regulatory Entity
Jianito Furtado	Maritime Port Institute
João Baptista Semedo	Santiago Norte Sanitary Region
José Carlos Carvalho	Independent Health Regulating Entity

José Rui Moreira	Health Delegation of Sal
Lisdália Moreira	National Directorate of the Environment
Liziana Barros	São Francisco de Assis Regional Hospital
Ludmilde Rodrigues	Santa Rita Vieira Regional Hospital
Maria Teresa Cabral	National Police
Mário Dantas	National Directorate of the Environment
Menilita dos Santos	National Institute of Public Health
Nilton Sousa	João Morais Regional Hospital
Paulo Almeida	Batista de Sousa Hospital
Rui Gonçalves	Maritime Port Institute
Sandra Baessa	General Directorate of Planning, Budget and Management - Ministry of Health

Table 15. Consultores colaboradores do NAPHS

WHO Consultants
Daniel Yota
Walter Manuel Firmino
Viviane Ndoungué Fossouo
Simplice Bonkoungou
Denise Tepeu Tiola
Estevão da Silva
Vera Vieira