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Public Disclosure Authorized

Project Information Document (PID)

Concept Stage | Date Prepared/Updated: 20-Dec-2018 | Report No: PIDISDSC25115

BASIC INFORMATION

A. Basic Project Data

Country	Project ID	Parent Project ID (if any)	Project Name
Africa	P167817		Regional Disease Surveillance Systems Enhancement (REDISSE) Phase IV (P167817)
Region	**Estimated Appraisal Date**	**Estimated Board Date**	**Practice Area (Lead)**
AFRICA	Feb 08, 2019	Apr 30, 2019	Health, Nutrition & Population
Financing Instrument	**Borrower(s)**	**Implementing Agency**	
Investment Project Financing	Republic of Chad,Republic of Angola,Central African Republic,Democratic Republic of Congo,ECCAS,Republic of Congo	ECCAS Secretariat, Ministry of Healht and Population	

Proposed Development Objective(s)

The project development objectives are: (i) to strengthen national and regional cross-sectoral capacity for collaborative disease surveillance and epidemic preparedness in ECCAS Region; and (ii) in the event of an eligible crisis or emergency, to provide immediate and effective response to said eligible crisis or emergency.

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	280.00
Total Financing	280.00
of which IBRD/IDA	280.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	60.00

International Development Association (IDA)	220.00
IDA Credit	220.00

Environmental and Social Risk Classification	Concept Review Decision
Moderate	Track II-The review did authorize the preparation to continue

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Other Decision (as needed)

B. Introduction and Context

Regional and Country Context

The Regional Disease Surveillance Systems Enhancement Project (REDISSE IV) is the fourth project under the REDISSE Program, which is being prepared as an interdependent series of project (iSOP). The other projects in the series have involved multiple borrowers from the Economic Community of West Africa States (ECOWAS) member countries and Mauritania. The Program has two objectives: (i) to address systemic weaknesses within the animal and human health systems that hinder effective cross sectoral and cross border collaboration for disease surveillance and response, and; (ii) in the event of an eligible emergency, to provide immediate and effective response to said eligible emergency. To date, eleven West African countries are participating in the REDISSE Program (Benin, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo): REDISSE I includes Guinea, Senegal and Sierra Leone; REDISSE II includes: Guinea Bissau, Liberia, Nigeria and Togo; and REDISSE III includes: Benin, Mali, Mauritania and Niger. The concept of the proposed Regional Disease Surveillance Systems Enhancement Program ("REDISSE" and/or "Program") involves strengthening the weak human health, animal health, and disaster response systems to improve the preparedness of the region to handle future disease outbreaks, and thereby minimize the national, regional, and potential global effects of such events.

The technical design of REDISSE is not specific to West Africa and is appropriate for consideration by other sub-regions, including the Central Africa sub-region in which countries (i) are at elevated risk of disease outbreaks because of epidemiological, ecological and demographic factors; and (ii) are poorly prepared to carry out core public health functions required to prevent, detect and respond to disease threats. REDISSE proposes investment in country capacity in disease surveillance, laboratories, outbreak preparedness, human resources and institutional capacity and regional investment in collaboration and collective action. These investments are badly needed in Central African countries, more so than in the countries of West Africa. The countries of Central Africa are urgently in need of both direct investment in national capacity for health security and a platform for participation in cross-border collaboration and collective action. Without a purposeful investment of this type, the countries of Central Africa will continue to be the weakest link in health security on the continent. These countries are vulnerable to outbreaks of epidemic prone diseases and emerging pathogens, with health systems, particularly at the periphery that are notoriously ill equipped to deliver health services, let alone provide resilience in the context of an epidemic threat. This situation is further complicated by fragility, conflict and violence,

which, in the case of the ongoing Ebola Virus Disease (EVD) outbreak in the DRC has thwarted efforts to rapidly contain the disease and end the outbreak. Given the epidemiologic similarities, the comparable weaknesses of the health systems, the trade and cultural connections between the countries of West and Central Africa and the expressed demand of the Central African governments for financial support for disease surveillance and response, it is both urgent and logical that the REDISSE approach be applied to this sub-region. Other than the fact that the countries in this project are in the Economic Community of Central Africa States (ECCAS) area, this project has the same objective and components as the REDISSE Series of project. This project should be considered as the next step in the geographic expansion of the REDISSE model and an opportunity to innovate and experiment with the model in a group of countries with a somewhat different set of challenges than in West Africa.

This fourth project – REDISSE IV - will involve five countries (Angola, Central African Republic (CAR), Chad, Congo Republic and Democratic Republic of Congo (DRC)), which belong to the Economic Community of Central African States (ECCAS) with a total population of more than 192 million people (Figure 1). Such an approach provides a platform for high-level policy and regular harmonization, cooperation, and coordination between countries aiming toward achieving benefits that will go beyond each country's boundary; they create regional public goods, generate positive externalities, or mitigate negative ones[1]. These countries are included in this fourth series of project because this year, they prioritized this initiative and allocated national IDA and IBRD financing to meet obligations under the International Health Regulations and the Terrestrial Animal Health Code. Discussions with other countries have indicated that they will allocate some of the national IDA and/or IBRD financing to this initiative in the years ahead.

REDISSE IV will benefit from the lessons learned from the earlier REDISSE projects. Some of these lessons learned include the following:

i) The need to **clearly outlined project activities** – We intend to clearly define both country-implemented activities and activities implemented by regional institutions that contribute to the regional and global public good.

ii) Project needs to **promote cooperation across sectors through the adoption of a OH** approach. We will put in place national and regional platforms for joint planning and resource coordination.

iii) Important to take a country-driven approach to build resilience to health emergencies in synergy with WBG's gender strategy. Important to **resolve the gender disparity in the percentage of female participants in training** (FELTP, FETP). Address the skewed gender ratio through greater participation and training of women in disease surveillance, infection control, and emergency response.

iv) While many projects supported significant improvement in disease diagnostic capacity, there was a tendency for projects to focus too much on investing in laboratory infrastructure and equipment rather than in **systems development and human capacity**. There is therefore a need to apply cost-effectiveness considerations in all aspects of strategic planning and implementation.

v) There are some areas where the private sector and other entities may have a comparative advantage and/or complement the public-sector service delivery. Need to **promote partnership with the private sector and non-governmental networks.**

vi) Sustainability and client ownership: Need to **use a cross-sectoral interventions towards long-term capacity**

[1] WB Investment Project Financing – Series of Projects Guidance Note (2014)

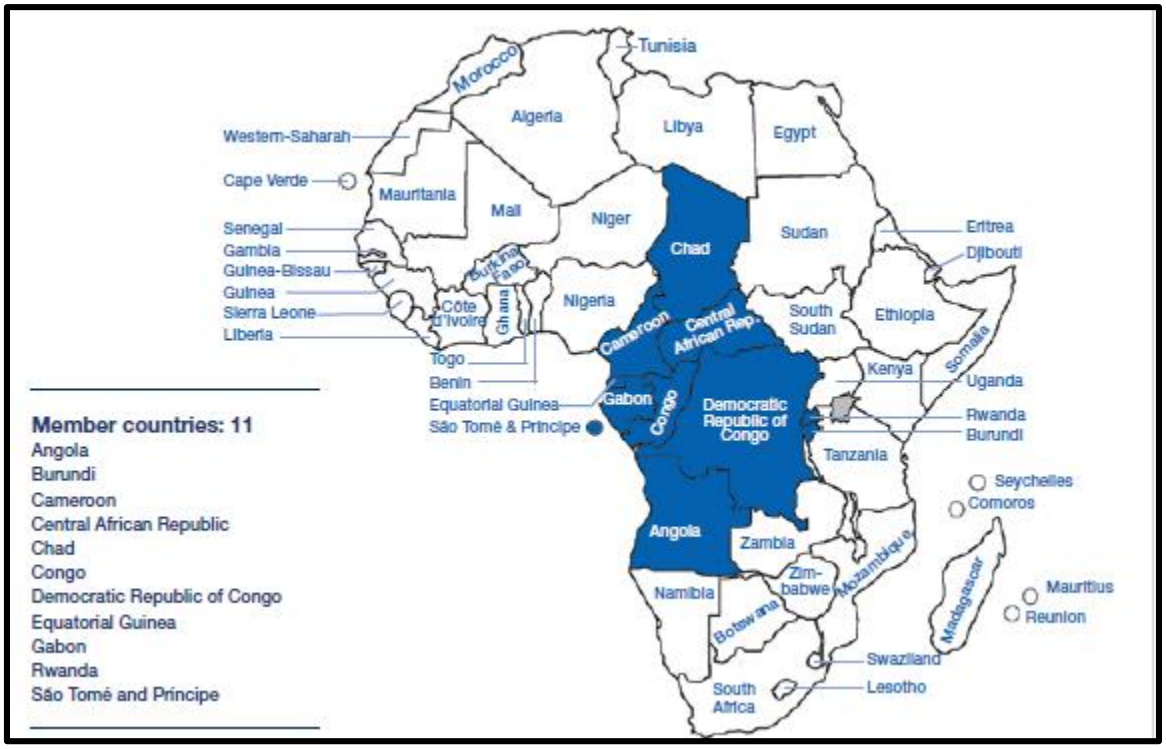
building to support health systems identified as the proper approach post-GPAI. Individual countries are central to ensure a coordinated regional program that address the threat posed by infectious diseases.

At the regional level, REDISSE IV will be housed in the Economic Community of Central African States (ECCAS). ECCAS is a regional organization that serves to promote economic integration across the Central Africa region. ECCAS was established in October 1983 but started its activities only in 1985. The General Secretariat is the Institution's executive organ, which experienced a long halt to its activities from 1992 – 97 due to social and political crisis within the sub-region. The Office of the General Secretariat has a financial Controller, an Accountant and the staff required for the functioning of the community. There are also four Departments, each headed by a Deputy Secretary-General who is supported by technical directorates within the General Secretariat: (i) the Department of Programme, Budget, Administration and Human Resources (DPBARH) sub-divided into three Directorates (Administration and Finance, Programming and Monitoring and Human Resources); (ii) the Department of Human Integration, Peace, Security and Stability (DIHPSS) comprising three Directorates (Directorate of Human Integration and Humanitarian Issues; the MARAC Directorate; the Peace Keeping and Security Directorate); (iii) the Department of Physical, Economic and Monetary Integration (DIPEM), made up of two Directorates namely, the Directorate of Trade, Customs and Monetary and Financial Issues; and the Directorate of Transport and Communications sub-divided into three Divisions (Transport, Energy and CIT)), and (iv) the Department of Socio-Cultural Integration (DISC), made up of two Directorates, namely, the Directorate of Education, Science and Culture and the Department of Health and sports . The Deputy- Secretary Generals are supported by technical directorates. ECCAS plays an important role for addressing trans-boundary hazards and coordinating regionally harmonized preparedness and response policies and activities in Central Africa.

The countries of the sub-region have different cultures and are at different levels of economic and human development. Some countries are blend IBRD/IDA (Cameroon, Republic of Congo), and others are pure IBRD (Equatorial Guinea, Gabon and Angola) and IDA (Chad, Central African Republic, Democratic Republic of Congo, Burundi, Rwanda and Sao Tome and Principe)[2].

[2] https://policies.worldbank.org/sites/ppf3/PPFAnnex/Forms/DispPage.aspx?docid=b875a7a4-0f49-4632-92e9-d008584caab3Annex2

Figure 1: The region of the Economic Community of Central African States (ECCAS)



Source: https://www.uneca.org/oria/pages/eccas-economic-community-central-african-states *&* https://www.africaportal.org/documents/13431/CentralAfricaReportNo3_1.pdf

Overall, most of the member states rank low on the United Nations Development Programme' s (UNDP) human development index[3]. As of 2018, life expectancy at birth and gross national income per capita of countries in the region ranged from 52.9 to 66.8 years and US$663 to US$19,513 respectively (Table 1).

[3] Human Development Index (HDI): A composite index measuring average achievement in three basic dimensions of human development—a long and healthy life, knowledge and a decent standard of living. See Technical note 1 at http://hdr.undp.org/sites/default/files/hdr2018_technical_notes.pdf for details on how the HDI is calculated.

Table 1. Human Development Index and its components for ECCAS member countries

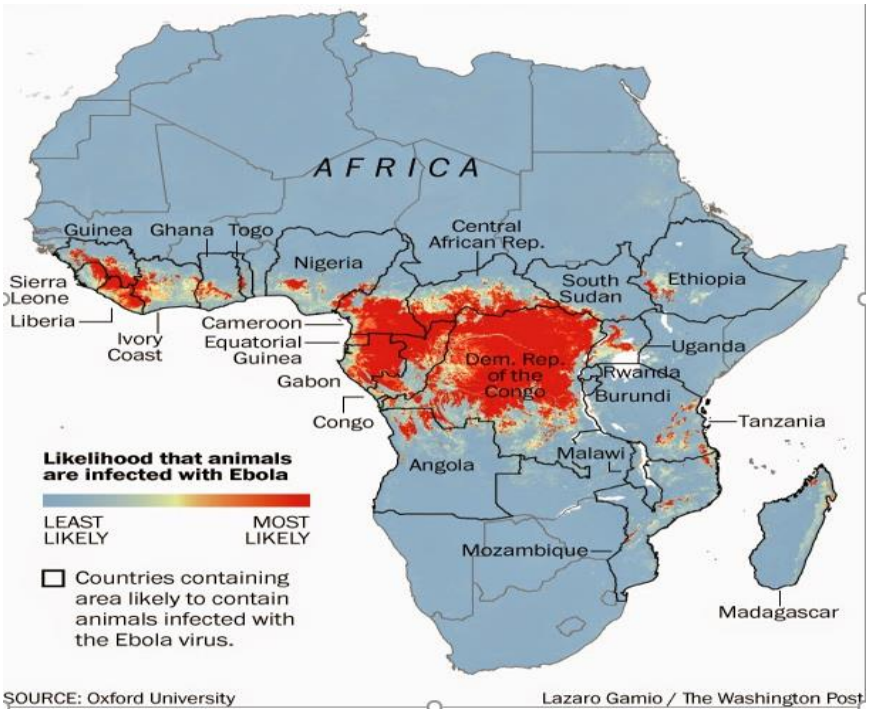
Country	Human Development Index	Life expectancy at birth	Gross national income per capita
Gabon	0.702	66.5	16,431
Congo, Republic	0.606	65.1	5,694
Equatorial Guinea	0.591	57.9	19,513
Sao Tome and Principe	0.589	66.8	2,941
Angola	0.581	61.8	5,790
Cameroon	0.556	58.6	3,315
Rwanda	0.524	67.7	1,811
Democratic Republic of Congo	0.457	60	796
Burundi	0.417	57.9	702
Chad	0.404	53.2	1,750
Central African Republic	0.367	52.9	663

Source: Data adopted from UNDP Human Development report (2018) http://hdr.undp.org/en/2018-update

Infectious diseases affecting human population in Central Africa: Given that most of the emerging and re-emerging infectious diseases such as, for example, Ebola, Marburg, lujo arenavirus, plague, yellow fever and H5N1 avian influenza, have originated from animals, the inextricable links between humans and animals within the region can lead to serious risks to public health. Within the sub-region, humans come into contact with potential new reservoirs as changes in land use and penetrate further into previously remote areas of the rainforest[4]. Countries in the Central Africa region are therefore at high-risk for infectious disease outbreaks including those of animal origin (zoonotic diseases) (Figure 2). Some common outbreaks in the region have included hemorrhagic Fevers (e.g. Ebola, Rift Valley fever, Crimean-Congo fever, Lassa fever, and Yellow fever), Cholera, Dysentery, Malaria, and Meningococcal Meningitis[5].

[4] Daszak P. 2000. Emerging infectious diseases of wildlife - threats to biodiversity and human health. *Science* 287:443–449. doi: 10.1126/science.287.5452.443.
[5] Kebede S1, Duales S, Yokouide A, Alemu W, 2010. Trends of major disease outbreaks in the African Region, 2003-2007. *East African Journal of Public Health; Mar;7(1):20-9.*

Figure 2: Areas at risk for Ebola Emergence[6]



Models have been produced that have shown that countries in Central Africa, especially DRC, contain areas likely to contain animals infected with Ebola virus[7]. It is therefore not surprising to observe that DRC is prone to epidemics, which are managed in an ad-hoc manner. The DRC shares porous borders with 9 countries (Angola, Republic of the Congo, Central African Republic, Sudan, Uganda, Rwanda, Burundi, Tanzania and Zambia). There is a high risk of exportation of epidemics to surrounding countries related to the fact that there are significant, regular, and ongoing population movements along various axes and through various entry points. In the most recent past, there were Ebola virus disease outbreaks in 2012, 2014, 2017 and 2018.

The experience from the West African Ebola outbreak indicated that there can be rapid and large spill-over effects of disease outbreaks that can transcend local and national boundaries. Profound impacts on the dispersion of Ebola cases during outbreaks is observed as changes in human mobility and connectivity are taking place[8]. The risk of the outbreak spreading to other provinces in the Democratic Republic of the Congo, as well as to neighboring countries, remains very high with ongoing transmission in communities in North Kivu. The situation is made worst by the prevailing security situation in the area where the EVD is prevalent. There are security incidents that include clashes between rebel and government forces resulting in civilian deaths, internal displacement and influx of Congolese refugees into neighboring

[6] A new model created at Oxford University shows areas where the Ebola virus is most likely prevalent in animal populations. These areas may be at risk for outbreaks of Ebola due to animal-human transmission. Viewed October 11, 2018 - https://www.siitube.com/articles/ethiopia-at-risk-of-animal-to-human-transmission-of-ebola-oxford-study_745.html

[7] A new model created at Oxford University shows areas where the Ebola virus is most likely prevalent in animal populations. These areas may be at risk for outbreaks of Ebola due to animal-human transmission. Viewed October 11, 2018 - https://www.siitube.com/articles/ethiopia-at-risk-of-animal-to-human-transmission-of-ebola-oxford-study_745.html

[8] Pigott, D. M., Golding, N., Mylne, A., Huang, Z., Henry, A. J., Weiss, D. J., ... Hay, S. I. (2014). Mapping the zoonotic niche of Ebola virus disease in Africa. *eLife*, *3*, e04395. https://doi.org/10.7554/eLife.04395

countries, and response vehicles being pelted with stones[9]. Some patients have been refusing treatment and might spread the virus to new areas. This poses a risk factor for transmission of the virus at national and regional level, as well as slow the response activities for the Ebola virus disease (EVD) outbreak in the Democratic Republic of the Congo. These incidents are occurring while there is intense EVD transmission in communities in the city of Beni in DRC.

Notwithstanding the difficulties, the Ministry of Health, WHO and partners are responding to this event, and working tirelessly to contain the outbreak. The WHO has not classified the epidemic as a world health emergency.

The **regional benefits and positive externalities** of effective disease surveillance and response are substantial. Collective action and cross-border collaboration are essential: (i) the project will support the efforts of the Economic Community of Central African States (ECCAS) and the Africa Centre for Disease Control to harmonize policies and procedures to exchange information, send and receive personnel and essential commodities in the event of an outbreak, etc.; (ii) countries will be empowered to engage in joint planning, implementation and evaluation of project activities across borders at regional, national and peripheral levels; and (iii) the project will promote resource sharing of high-cost specialized assets. The cross-border spread of pathogens is extremely important well beyond shared borders as the migration of birds, bats, and other wild animals travel with impunity, with no respect of national borders. The surveillance and response capacity of the regional system depends on the strength of the individual national systems and the front-line or community-level capacities that need to be in place throughout the countries. In other words, a regional disease surveillance network is only as strong as its weakest link. The project will therefore strengthen disease surveillance across community, national, and regional institutions in the ECCAS region, while implementing the ACDC protocols and policies.

The sections that follow describes briefly country-specific summaries of experiences with epidemics:

Angola has a population estimated at 30.99 million in 2018, and is bordered by three countries (Zambia, Namibia and DRC). It has a population density of 25 people per square kilometer[10]. The Angolan health care delivery system has a lot of problems that include shortages of doctors, medicines, nurses, primary health care workers, as well as inadequate training and a lack of a computerized information management system to efficiently track disease outbreaks and historical records of patients. Furthermore, the primary health care facilities are poorly-equipped with many needing repairs, lacking proper connection to water, electricity, and sanitation pipelines and networks. Angola has made progress towards improving key health indicators, but these remain weak compared to other middle-income countries.

Because of the problems mentioned above, the health system capacity to manage public health outbreaks is limited. Between 2013 and 2016, the country's epidemiologic surveillance system detected five epidemics, namely: yellow fever (888 cases), measles (27,259 cases), rabies (230 cases), cholera (6,655 cases), and malaria (3,254,270 cases)[11]. There was a polio outbreak in 2010, followed in 2016 by a yellow fever outbreak that killed at least 400 people[12]. The outbreak erupted in December 2016 in the slums of the capital Luanda, spreading to 16 of Angola's 18 provinces and into neighboring Democratic Republic of Congo. Furthermore, since December 2016, a new cholera outbreak in the provinces of Zaire, Cabinda, and Benguela that resulted in 150 confirmed cholera cases, 10 of which resulted in deaths. These epidemic outbreaks indicate the vulnerability of the country and more importantly, the weak vaccination coverage (e.g. MICS 2015 – 16 reports 30.6 percent complete vaccination among children 12-23 months of age).

[9] **Ebola virus disease – Democratic Republic of the Congo. Disease outbreak news: update 25 October 2018.** https://www.who.int/csr/don/25-october-2018-ebola-drc/en/ (Accessed October 25, 2018)
[10] Angola Population. (2018-07-02). Retrieved 2018-09-16, from http://worldpopulationreview.com/countries/angola/
[11] From the National Environmental Plan 2018 – 2022 (Access from Website: https://www.info-angola.com/attachments/article/4867/PDNper cent202018-2022_MASTER_vf_Volumeper cent201_13052018.pdf & http://www.minsa.gov.ao/VerPublicacao.aspx?id=1554#)
[12] http://www.who.int/csr/don/archive/country/ago/en/

The **Central African Republic** has a population estimated in 2018 to be 4.75 million. This is a relatively large country but sparsely populated, around 8 people per square kilometer[13]. Its economy depends on subsistence agriculture, together with forestry and mining.

The health care system of the Central Africa Republic (CAR) is in very poor condition especially as the country has had frequent armed conflicts. Eighty percent of available health care is located in the capital, Bangui and only 13 percent of the population has access to health care since most of the population live in rural areas. Basic laboratory services were readily not available because of a lack of equipment, and qualified staff[14].

As concerns the workforce in the health facilities there is 1 doctor for 24,769 inhabitants, 1 midwife for 18,509 inhabitants, 1 state Nurse for 20,457 inhabitants and 1 community health worker for 1,643 inhabitants, meaning that Community Health Workers (CHWs) in 2016 accounted for about 51 percent of the workforce of the health system against 61 percent in 2015.

The tropical climate of the Central African Republic means it is already a hotspot for contagious and infectious diseases. This situation coupled with the poor condition of the health system makes the potential for more frequent outbreaks of diseases high. Since 2013, the Central African Republic has been experiencing at least one monkeypox outbreak every year, especially in its eastern region and the latest was from March 2018. There were also reports of a cholera outbreak in the Central African Republic in 2016. In the recent past before 2010, there were outbreaks of Meningitis, Yellow fever and shigellosis[15]. Typhoid and paratyphoid fever epidemics occur sporadically.

The **Republic of Chad** is a landlocked country bordered by 6 countries (Nigeria, Cameroon, CAR, Sudan, Libya and Niger) and has a population estimated at 15.35 million in 2018 with a population density of 12 people per square kilometer[16]. Since 2010, Chad has been experiencing at least one meningitis outbreak every year. It also experienced a yellow fever outbreak in 2013, a hepatitis E outbreak in 2017 and a cholera epidemic in 2010 and 2018[17].

The health system in Chad like in most low-income countries, suffers from insufficient financial and human resources, limited institutional capacity and infrastructure, weak health information systems, lack of comprehensiveness, embedded inequity and discrimination in availability of services and a lack of management capacity-building[18]. Barriers to health services are significant and coverage is low. Geographical access to health care services is limited: 30.2 percent of households (26.5 percent of none poor and 35.7 percent of poor) require more than a two hour walk to access a health facility, and only 10.2 percent of poor people live within a 15-minute walk of a health facility (Table 6.27)[19]. The combination of poor service accessibility, affordability, and quality has resulted in a very low use of existing health care services, especially at the primary level.

Chad and the Central African Republic (CAR) share a long and porous border especially around the regions of "Moyen Chari, Logone oriental, Mandoul, Sila, Salamat" which have land crossings, sites of intense population movements and

[13] Central African Republic Population. (2018-06-16). Retrieved 2018-09-16, from http://worldpopulationreview.com/countries/central-african-republic/

[14] Ministry of Public Health and Population, European Union and WHO, 2017. Enquête rapide sur l'estimation des besoins de santé des populations affectées par la crise en République Centrafricaine en 2016. Rapport HERAMS 2016.

[15] http://www.who.int/csr/don/archive/country/caf/en/

[16] Chad Population. (2018-06-16). Retrieved 2018-09-16, from http://worldpopulationreview.com/countries/chad/

[17] http://www.who.int/csr/don/archive/country/tcd/en/

[18] Mills A. Health care in low- and middle-income countries. N Engl J Med. 2014;370(6):552–7. doi: 10.1056/NEJMra1110897. https://www.nejm.org/doi/10.1056/NEJMra1110897

[19] Chad - Enquête sur la Consommation des Ménages et le Secteur Informel au Tchad 2011, Troisième. (Survey on Household Consumption and the Informal Sector in Chad 2011) (TCD_2011_ECOSIT_v01_M), 2013. Pp90-91. http://catalog.ihsn.org/index.php/catalog/4923

frequent family and commercial exchanges between the two countries. The existence of forest reserves and parks in the regions that border CAR provide a safe environment for potential reservoirs (monkeys, bats, antelopes, rodents, etc.) of some of the endemic diseases.

The **Democratic Republic of Congo (DRC)** is the second largest country in Africa, with an area of 2,345,000 square kilometers and an estimated population of 84.4 million[20] with a population density estimated at 36 people per square kilometer. It is estimated that 70 percent of Congolese have little or no access to health care. Strengthening the health care system is critical to improving the health of Congolese citizens. [21],[22],[23]. The health sector in the DRC is largely financed by external donors. The contribution by the government of the DRC (GDRC) to funding the health system is extremely low—3.8 percent in 2008, 1 percent in 2009, 2.8 percent in 2010, 2 percent in 2011, and 2 percent in 2012.

As already indicated above, the DRC shares porous borders with 9 countries (Angola, Republic of the Congo, Central African Republic, Sudan, Uganda, Rwanda, Burundi, Tanzania and Zambia), and is prone to epidemics, which are managed in an ad-hoc manner. The DRC was the epicenter of the first Ebola outbreak in 1976. So far, ten outbreaks have occurred mostly in rural areas of this country since the initial reported outbreak. The World Health Organization (WHO) was notified of the ninth EVD outbreak in Bikoro Health Zone, Équateur Province by the Ministry of Health on May 8, 2018. The end of the ninth outbreak of Ebola virus disease (EVD) which had affected 54 cases and resulted in 33 deaths (Case fatality rate (CFR) of 61 per cent) was declared over by the Ministry of Health on July 24, 2018[24].

However, on 1 August 2018, the tenth outbreak of Ebola virus disease was declared in North Kivu Province by the Ministry of Health. According to WHO, this outbreak is still going on and there have so far been 247 EVD cases (212 confirmed and 35 probable), including 159 deaths (124 confirmed and 35 probable) (Case Fatality Rate (CFR) of 64.4 percent), reported in seven health zones in North Kivu Province and three health zones in Ituri Province, as of October 23, 2018. Sixty-five cases have recovered and have reintegrated into their communities[25]. Sixty-five cases have recovered and have reintegrated into their communities[26].

A much bigger outbreak is possible in an urban setting, which can result in a high number of casualties and spread to neighboring countries. In addition, the country has regular outbreaks of diseases of international concern, such as cholera, measles, yellow fever, monkey pox, and plague, most of which began in remote areas and were discovered weeks after the first cases appeared due to sample transport and information dissemination issues. More specifically, since 2010, there have been four yellow fever outbreaks, in 2010, 2013, 2014 and 2016. Cholera epidemic outbreaks have occurred in DRC in 2011-2012, 2015 and 2017 and 2018. In 2017, DRC had one of the most severe cholera epidemic in years, affecting 21 of the country's 26 provinces[27].

These recent Ebola Virus Disease (EVD) epidemics[28] and the other disease epidemics confirmed the critical importance of strengthening national disease surveillance systems and inter-country collaboration in the sub-region to detect disease

[20]DR Congo Population. (2018-06-16). Retrieved 2018-09-16, from http://worldpopulationreview.com/countries/dr-congo/
[21] Angola Population. (2018-07-02). Retrieved 2018-09-16, from http://worldpopulationreview.com/countries/angola/
[22] Central African Republic Population. (2018-06-16). Retrieved 2018-09-16, from http://worldpopulationreview.com/countries/central-african-republic/
[23] Chad Population. (2018-06-16). Retrieved 2018-09-16, from http://worldpopulationreview.com/countries/chad/

[24] Ebola Virus Disease. Democratic Republic of Congo. External Situation Report 17, 25 July 2018. http://apps.who.int/iris/bitstream/handle/10665/273348/SITREP_EVD_DRC_20180725-eng.pdf?ua=1 (Accessed 25 October 2018)
[25] Ebola situation reports: Democratic Republic of the Congo https://www.who.int/ebola/situation-reports/drc-2018/en/ (Accessed October 25, 2018)
[26] Ebola situation reports: Democratic Republic of the Congo. https://www.who.int/ebola/situation-reports/drc-2018/en/ (Accessed October 25, 2018)
[27] http://www.who.int/csr/don/archive/country/cod/en/
[28] WHO, 2018. Ebola virus disease – Democratic Republic of the Congo (Accessed on June 28, 2018 from http://www.who.int/csr/don/30-may-2018-ebola-drc/en/)

outbreaks early and respond more swiftly and effectively, such that the loss of human lives and economic costs are minimized. The concept of the proposed Regional Disease Surveillance Systems Enhancement project (REDISSE Program) is designed to strengthen weak human health, animal health, and disaster response systems and to promote cross-border collaboration and collective action to improve the preparedness of the region to prevent, detect and respond to disease outbreaks, and thereby minimize the national, regional, and potential global effects of such events. While the government has acted swiftly to manage and contain epidemics in the past, it has directed less financing and technical assistance toward building a more strategic, cost-effective, and sustainable disease surveillance and response system. There is no formal arrangement between human and animal health laboratories, and the two data systems are not interoperable. Little personal protective equipment (PPE) is available; the availability of PPE depends on donations from partners, and PPE is not tracked for laboratories. Containing of the epidemics is not accompanied by a strengthening of the technical capacities of human resources at the local level, because all the equipment and staff come from the national or international level. This approach is only valid for emergencies and is not sustainable. The government has therefore proposed to build an Ebola Center of Excellence/Center for Disease Control.

Since independence in 1960, the **Republic of Congo (ROC)** has been plagued by internal conflicts in the late 1990s when most of the country's infrastructure was destroyed. However, it has been peaceful since 2000. The population of the Republic of Congo has been estimated at 5.4 million in 2018, and a population density of 13 inhabitants per square kilometer[29].

On the economic front, the country relied heavily on hydrocarbon resources that crowded out the development of other sectors such agriculture and forestry. The Congolese economy has been hit hard by the fall in oil prices so much so that GDP contracted at 4.6 percent in 2017 from 2.8 percent in 2016, notwithstanding the increased oil production in 2017. However, economic growth will slowly recover at an average rate of 1.4 percent over 2018 – 2020[30].

As concerns the health workforce, a census of Human resources carried out in 2011 indicated that the overall qualified human resources are sufficient. However, certain categories of staff are not adequately represented. For example, there are only 0.23 laboratory technicians per 1,000 inhabitants.

The tropical climate of the Congo Republic like in other countries in the sub-region facilities outbreaks of contagious and infectious diseases. The first recorded outbreak of Ebola Virus hemorrhagic fever (EVHF) in Congo occurred in 2001 – 2002, particularly in the Cuvette Ouest department, a forested area located in the Western North of Congo. This outbreak occurring over the border of Gabon and the Republic of Congo with 59 cases resulted in 47 deaths (CFR 73 percent)[31].

In 2003, 143 people were infected with EVHF in Mbomo and Kelle with 128 deaths (CFR 89.5 percent)[32],[33]. In the same year, another outbreak of 35 cases resulted in 29 deaths (CFR 83 percent), 16 cases were laboratory confirmed; and the first four cases of the epidemic had been exposed to animals[34]. During these outbreaks, intra-familial transmission was

[29] http://worldpopulationreview.com/countries/republic-of-the-congo-population/ (Accessed October 11, 2018)

[30] http://www.worldbank.org/en/country/congo/overview (Accessed October 11, 2018)[31] World Health Organization. Outbreak(s) of Ebola haemorrhagic fever, Congo and Gabon, October 2001- July 200 [518 KB, 12 pages]. *Weekly Epidemiological Report*. 2003;78(26):223-225.

[31] World Health Organization. Outbreak(s) of Ebola haemorrhagic fever, Congo and Gabon, October 2001- July 200 [518 KB, 12 pages]. *Weekly Epidemiological Report*. 2003;78(26):223-225.

[32] Formenty P, Libama F, Epelboin A, et al. Outbreak of Ebola hemorrhagic fever in the Republic of the Congo, 2003: a new strategy? *Médecine Tropicale (Marseille)*. 2003;63(3):291-295, (Abstract accessed December 4, 2018 - https://www.ncbi.nlm.nih.gov/pubmed/14579469)

[33] Center for Disease Control and Prevention (CDC), (updated 2018). Years of Ebola Virus Disease around the World (Accessed December 4, 2018 - https://www.cdc.gov/vhf/ebola/history/chronology.html) & https://stacks.cdc.gov/view/cdc/41088/cdc_41088_DS1.pdf.

[34] Muyembe-Tamfum, J.J., Mulangu, S., Masumu, J., Kayembe, J.M., Kemp, A. & Paweska, J.T., 2012, 'Ebola virus outbreaks in Africa: Past and present', *Onderstepoort Journal of Veterinary Research* 79(2), Art. #451, 8 pages. http://dx.doi. org/10.4102/ojvr.v79i2.451 (Accessed October 11, 2018 -

important, and the population attributed the disease to wizards and evil-minded persons. In 2005, there was a limited Ebola virus disease where 12 cases with one case laboratory confirmed resulting in 10 deaths (CFR 83 percent)[35]. There were also reports of a cholera outbreak in the Congo Republic in 2013, measles in 2015 and yellow fever epidemics in 2012 and 2013. Congo is also on the WHO list of "high burden" countries for TB and HIV.

This project will be at the junction of the Regional Disease Surveillance Systems Enhancement Program (REDISSE I, II & III) in West Africa, the East Africa Public Health and Laboratory Networking Project (EAPHLN) and the Africa Center for Disease Control (ACDC) project being designed and supported by the World Bank. This will ensure proper disease response preparedness among the 3 geographical regions on the African continent.

Sectoral and Institutional Context

Most of the countries in the ECCAS region are hotspots for emerging infectious diseases**.** In this region, emerging and re-emerging diseases at the human-animal-ecosystems interface are occurring with increased frequency. These add to the ongoing burden of neglected and endemic human and animal diseases, including zoonoses. The Ebola virus disease (EVD), one of the deadliest viral diseases, was discovered in 1976 when there was an outbreak of fatal hemorrhagic fever in the present day Democratic Republic of Congo (DRC)[36]. Recently in May and August 2018, there were Ebola virus disease outbreaks in DRC, which had the potential to easily cross borders to turn into regional epidemics but was fortunately controlled by the DRC government with support from the WHO, the Africa Center for Disease Control (ACDC) and development partners including the World Bank.

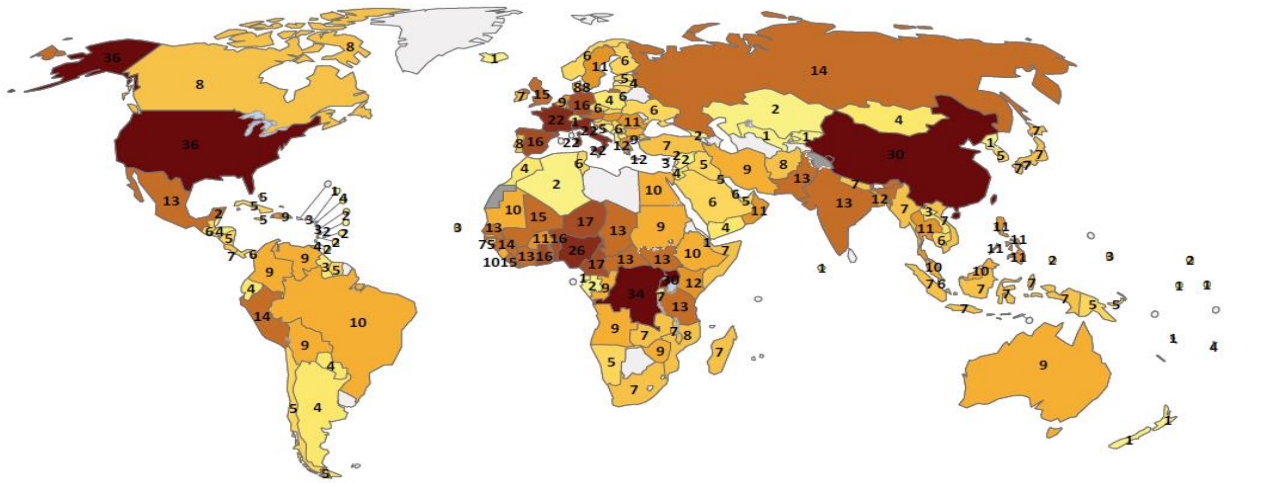
Worldwide there were 1,307 epidemic events in 72 countries between 2011 – 2017. Of this number, 105 (8 percent) were within the eleven ECCAS countries and the set of countries in the REDISSE 4 series (Angola, Central Africa Republic, Chad, Congo Republic and the Democratic Republic of Congo) accounted for 65.7 percent of the events in the ECCAS sub-region (Figure 3).

https://pdfs.semanticscholar.org/907d/413a39a76399fc7a202f7c398d75afb82c3b.pdf)

[35] Nkoghe D, Kone ML, Yada A, Leroy E. A limited outbreak of Ebola haemorrhagic fever in Etoumbi, Republic of Congo, 2005. *Transactions of the Royal Society of Tropical Medicine and Hygiene*. 2011; 105:466-472 (Abstract Accessed December 4, 2018 - https://academic.oup.com/trstmh/article-abstract/105/8/466/1897114)

[36] World Health Organization. Ebola haemorrhagic fever in Zaire, 1976. Report of an International Commission. *Bulletin of the World Health Organization*. 1978;56(2):271-293

Figure 3: Burden of Epidemics: Illustrations. Epidemic events globally 2011 – 2017: A total of 1,307 epidemic events in 72 countries.



* Analysis excluded Poliomyelitis. The following *epidemic and pandemic diseases* were analysed: Avian Influenza A(H5N1), A(H7N9), A(H7N6) A(H10N8), A(H3N2), A(H5N6), A(H9N2), Chikungunya, Cholera, Crimean-Congo haemorrhagic fever, Ebola virus disease, Lassa fever, Marburg virus disease, Meningitis, MERS-CoV, Monkeypox, Nodding syndrome, Nipah virus infection, Plague, Rift Valley fever, Shigellosis, Typhoid fever, Viral haemorrhagic fever, West Nile fever, Yellow fever, Zika virus disease. If a disease caused more than 1 epidemic event by year in a country, it was only counted once for the year it occurred in that country. Includes cases imported or locally transmitted.

** WHO/IHM data as of 12 January 2018 (note: 2017 data is not complete)

Source: data reported to WHO and in media

Source: World Health Organization (WHO). 2018. Managing epidemics: key facts about major deadly diseases. Geneva: World Health Organization; 2018. Licence: CC BY-NC-SA 3.0 IGO. Part 1: pg22

At least thirty new infectious agents that affect human beings worldwide, most of which are zoonotic, have emerged over the past three and half decades[37],[38];[39] with more than 70 percent of emerging zoonotic infectious diseases coming from wildlife. The impacts of infectious disease outbreaks can be devastating to the fragile social and economic situation of countries. The pandemic of H1N1; epidemics of SARS, H5N1 and Middle East Respiratory Syndrome Coronavirus (MERS-CoV); and recent outbreaks of EVD are reminders of persistent risk of infectious, zoonotic diseases, and the economic losses they cause. Animal losses from zoonotic diseases are also high. On average, about half of all annual losses of Livestock Units (LSU) reported on average by veterinary services to the OIE-WAHID database from 2006 to 2009 were the result of zoonotic diseases. The World Bank estimates that the cost of the 2014-2015 EVD outbreak in West Africa was US$2.8 billion[40]. However, a recent study estimated the comprehensive economic and social burden from the 2014 EVD outbreak in West Africa to be US$53.19 billion (2014 USD) [41]. This includes US$18.8 billion, that was estimated to be the cost of the deaths from non-Ebola causes. Additionally, a recent analysis by the World Bank shows that a severe pandemic such as the 1918 Spanish Flu could cost approximately US$3 trillion globally[42], an estimate comparable to the impact of

[37]. Nicholas Israel Nii-Trebi, 2017. Emerging and Neglected Infectious Diseases: Insights, Advances, and Challenges. Biomed Res Int. 2017; doi: 10.1155/2017/5245021 [Last accessed on 2018 July 09] (Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5327784/)
[38].Shuvankar Mukherjee. 2017. Emerging Infectious Diseases: Epidemiological Perspective. Indian J Dermatol. 2017 Sep-Oct; 62(5): 459–467. doi: 10.4103/ijd.IJD_379_17 [Last accessed on 2018 July 09] (Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5618832/)
[39] Jonathan Runstadler, 2018. Influenza's wild origins in the animals around us. [Internet]. Available from: https://theconversation.com/influenzas-wild-origins-in-the-animals-around-us-91058.
[40] 2014-2015 West Africa Ebola Crisis: Impact Update. Accessed October 30, 2018. http://www.worldbank.org/en/topic/macroeconomics/publication/2014-2015-west-africa-ebola-crisis-impact-update
[41] Caroline Huber, Lyn Finelli, Warren Stevens; The Economic and Social Burden of the 2014 Ebola Outbreak in West Africa, *The Journal of Infectious Diseases*, , jiy213, https://doi.org/10.1093/infdis/jiy213. Accessed October 30, 2018. https://academic.oup.com/jid/advance-article/doi/10.1093/infdis/jiy213/5129071?rss=1
[42] Burns et al. (2008) Evaluating the economic consequences of avian influenza (http://siteresources.worldbank.org/EXTAVIANFLU/Resources/EvaluatingAHIeconomics_2008.pdf).

the 2008 global financial crisis.

Although the population and health indicators of the five countries in this REDISSE IV series of countries varies (Annex 1), all these countries have poor public health outcomes and are at risk of epidemics**.** Some of these countries are experiencing improvement in certain health indicators such as Diphtheria Tetanus Toxoid Pertussis (DTP3) immunization coverage (for example, the Democratic Republic of Congo (DRC) has an immunization coverage of 79 percent and Angola has 64 percent as indicated by DTP3 coverage among 1-year old) [43]. However, improvements of other health indicators remain a challenge. All these countries have high infant mortality rates (ranging between 56.9 per 1,000 live births in Angola to 91.2 per 1,000 live births in the Central Africa Republic (CAR)), high under-five mortality rates (ranging between 86.5 deaths per 1,000 live births in Angola to 130.9 deaths per 1,000 live births in Chad). In all the five countries, children suffer from both chronic and acute malnutrition with high prevalence of stunting (between 37.6 percent in Angola and 42.6 percent in DRC) and wasting children under five varying between 8.2 percent in Angola and 14.4 percent in Chad.

Infectious disease burden is high in all the five countries. The mortality and morbidity in all the five countries is dominated by many endemic and epidemic communicable diseases (including malaria, Acute Respiratory Illness (ARI), diarrheal diseases, malnutrition, cholera, meningitis, HIV/AIDS, tuberculosis). Two of the five countries (Chad and Central African Republic) fall within the African Meningitis Belt and all two countries have reported outbreaks/epidemics of major infectious diseases, including meningitis and WHO priority diseases, such as Yellow Fever, Marburg Hemorrhagic Fever, and Ebola. More details are shared in Annex 1. The adverse effects of diseases in all five countries are further exacerbated by lack of education, gender disparities, ineffective communication and poor availability of quality health services. Moreover, all these countries have porous borders, high population and cattle mobility, and rapid urbanization which present major challenges in terms of epidemiological surveillance and health security. Typically, these systems also suffer from insufficient appropriations, insufficient human resource capacity and low community involvement.

Control of the accelerating spread of communicable diseases in Central Africa is hampered by the limited capacities of individual country health systems for efficient prevention, early detection and rapid response to infectious disease outbreaks. These outbreaks can result in significant reversals in human development progress in the region including increased morbidity and mortality, threats to food security, and substantial economic losses[44]. For many of the countries in Central Africa, years of civil conflict and underinvestment have resulted in weak health infrastructure, periodic disruption in service delivery, and critical shortages or gaps in the workforce (e.g. epidemiologists, laboratorians, information technology experts, etc.). Mitigation of the risks posed by diseases with pandemic potential, including emerging zoonosis, will have to address these weaknesses in country health systems in the region.

The effectiveness of disease surveillance and response systems is currently hampered by the following weaknesses:

- overall weakness of human and animal disease information systems, including insufficient data collection and use of data for informing policy decisions and action, as well as for the prevention and mitigation of the cross-border spread of diseases;
- inadequate human and animal health laboratory capacity, including inadequate specimen transportation networks, and low involvement of laboratories in the surveillance and response systems;
- scarcity and non-retention of trained and motivated human and animal health workforce resources, at both central and local levels;
- insufficient cross-sectorial coordination and collaboration among Ministries, in particular among those in charge of public health, animal health and the environment leading to inadequate operationalization of the “One Health”

[43] WHO Global Health Observatory Data http://apps.who.int/gho/data/?theme=main
[44]. Endemic zoonoses in the tropics: a public health problem hiding in plain sight. Available from: https://veterinaryrecord.bmj.com/content/vetrec/176/9/220.full.pdf

concept;
- disparity in detection and disease management capabilities among countries and insufficient regional cooperation.

In June 2007, the WHO set forth a mandate via the International Health Regulation (IHR 2005) that requires country governments to develop, strengthen and maintain the core capacities of national public health systems to detect, assess, notify, and respond promptly and effectively to health risks and public health emergencies of international concern (PHEICs).[45] In the WHO Africa Region (WHO/AFRO), the Integrated Disease Surveillance and Response (IDSR) strategy serves as a framework to fulfill the mandates of IHR (2005)**.** However, till today, IDSR has not been fully implemented in most countries in the region,[46] thus contributing to the limited capacity of the countries' health system for systematic collection, analysis, confirmation, and interpretation of disease surveillance data, in addition to insufficient capabilities for preparedness and rapid response. Implementing IDSR strengthens networks of public health laboratories, thereby contributing to effective monitoring of Antimicrobial resistance (AMR). Thus, the need to reinforce these capacities in this region as a mitigating risk for potential future pandemic outbreaks.

The Joint External Evaluation (JEE) of two countries in the ECCAS region (Cameroon and Chad) on disease surveillance, preparedness and response capacity revealed some typical, key weaknesses of health systems in terms of infectious disease surveillance, epidemic preparedness and response. These included: (i) limited availability of laboratory infrastructure in place for timely and quality diagnosis of epidemic-prone diseases; (ii) lack of interoperability of different information systems hampers analysis and utilization of information for decision making and disease mitigation measures; (iii) generally inadequate infection prevention and control standards, infrastructure and practices; (iv) weak and inefficient management of the supply chain system; and (v) significant gaps in regional level surge capacity for outbreak response, stockpiling of essential goods, information sharing and collaboration; (vi) lack at each level of the health pyramid of a fit for purpose health workforce for disease surveillance, preparedness and response; (vii) community level surveillance and response structures either do not exist or need significant improvement; and (viii) inability for self-assessment.

Animal Health

Three of the five REDISSE 4 countries are major producers of livestock**.** Within the Central African Sub-region, Chad has one of the largest populations of livestock and is a major exporter of livestock to its neighboring countries[47]. Cattle, camels, horses and goats are kept in all the traditional systems within the sub-region. Between 2005 and 2006, there was a tendency of the number of cattle, horses, camels and goats seen within the sub-region to increase. Livestock populations in the sub-region are growing as indicated in figures 4 and 5[48].

Within the five countries, the majority of those employed are in Agriculture, ranging from 50.6 percent in Angola to 87.19 percent in Chad and 85.6 percent in CAR[49], Consequentially, there is increased likelihood of interactions between wildlife, domesticated animals, labor force, and human settlements. Movement of live animals is a major risk factor for the spread of livestock diseases and zoonotic infections. The importance of animal movements, porous borders, and trade in the region further increases the risk of disease occurrence and disease spread. As a result, there is not only higher risk of

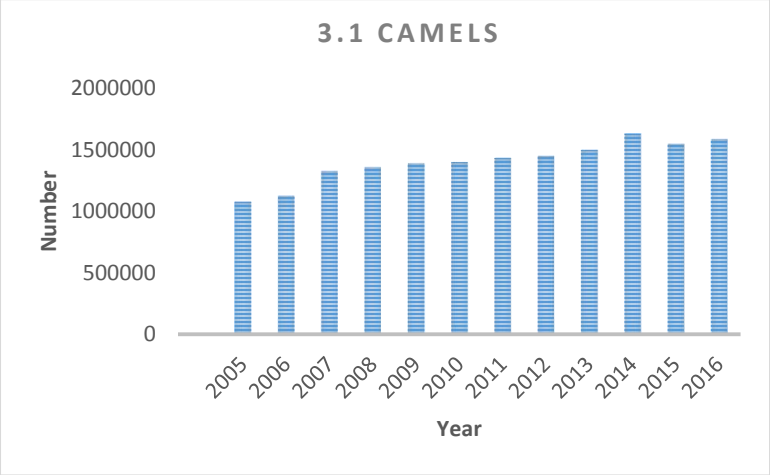
[45] International Health Regulation (IHR 2005) is a legally binding document set forth by the WHO that mandates country governments to develop, strengthen and maintain the core capacities of national public health systems to detect, assess, notify, and respond promptly and effectively to health risks and public health emergencies of international concern (PHEICs) *World Health Organization (2008)*
[46] Report to the Director-General of the Review Committee on Second Extensions for Establishing National Public Health Capacities and on IHR Implementation. *World Health Organization (2014)*
[47] FaoStat 2016 : http://www.fao.org/faostat/en/#data/QA
[48] Data for the graphs from http://www.fao.org/faostat/en/#data/QA
[49] Employment in agriculture (per cent of total employment) (modeled ILO estimate) -https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS

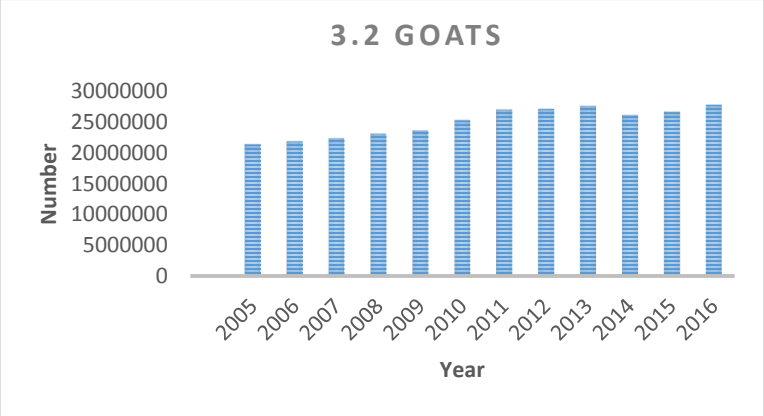
disease (both in animals and humans) but also higher risk of loss of livelihood and poverty due to animal disease outbreaks. Within the sub-region, we have an increasing number of chickens (Figure 5), and in the last few years, between October 2016 and July 2018, a *highly pathogenic avian influenza A (*HPIA) outbreak (H5N8) was reported in only one of the five countries, DRC. Of the five countries, DRC, has recently undergone a JEE or prepared a disease preparedness and response plan. The JEE, conducted in DRC in May 2016, found that only the National Institute of Biomedical Research (French acronym INRB) and no other laboratory is capable of detecting 100 percent of IHR priority diseases, and it also found that the specimen referral and transport system is weak, given the size of the country and its limited transport capabilities. Only in one of the countries (CAR) has the World Organization for Animal Health (OIE) evaluated the Performance of Veterinary Services (PVS) since 2010. Though the countries have epidemiological surveillance systems in place, there is a shortage of human resources, a weak information system and a lack of financial resources for implementation (see Annex 2 for more details).

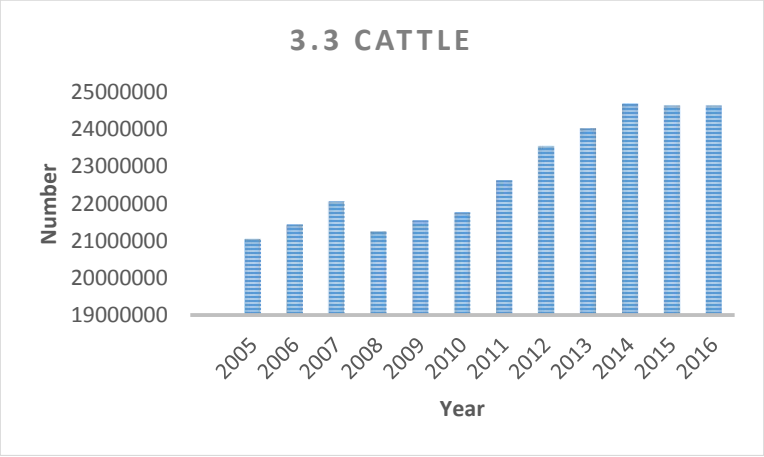
There is a high incidence and prevalence of infectious communicable diseases, both zoonotic and non-zoonotic, within the animal health sector. This situation impacts veterinary and public health, trade, and rural development. Improvement of animal health requires increased and sustained investments in national Veterinary Services (VS) to meet international standards of quality defined by the OIE. Insufficient government funding and limited interest from donors to support VS have not allowed significant progress to date in addressing systemic issues. There is always a potential for trans-border disease transmission due to the extensive transhuman movement within and across national borders in search of food and water. In most of the countries in the sub-region, animal health care delivery systems are inadequate, and the lack of a regional strategy for prevention and control of important animal diseases[50]. Any country failing to prevent, detect, inform, react and control sanitary issues, such as infectious diseases or antimicrobial resistance places other countries at risk, hence the importance of regional approaches. Within the Central African region, the extent of the AMR problem is not well known because surveillance of drug resistance is not carried in most countries.

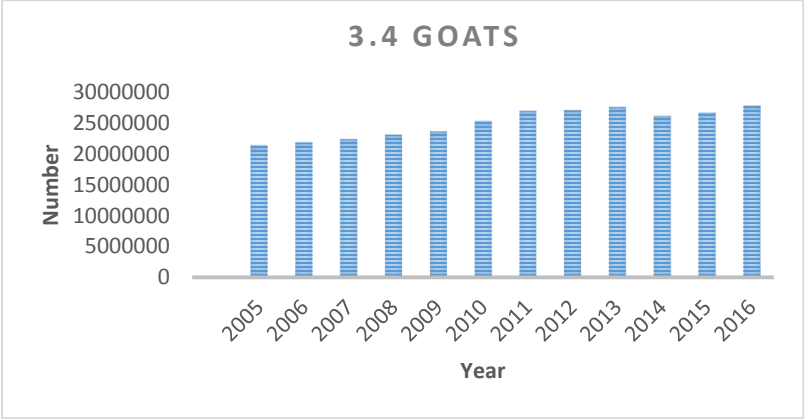
[50]. Awa, D. N; Achukwi M. D. 2009. Review of livestock pathology in the central African region: epidemiological considerations and control strategies. In: L. SEINY-BOUKAR, P. BOUMARD (éditeurs scientifiques), 2010. Actes du colloque « Savanes africaines en développement : innover pour durer », 20-23 avril 2009, Garoua, Cameroun. Prasac, N'Djaména, Tchad ; Cirad, Montpellier, France, cédérom. [Available from: https://www.researchgate.net/publication/43076207_Review_of_livestock_pathology_in_the_central_African_region_epidemiological_considerations_and_control_strategies]

Figure 4: Livestock population (Cattle, Camels, Goats and Horses) within Middle (Central) Africa









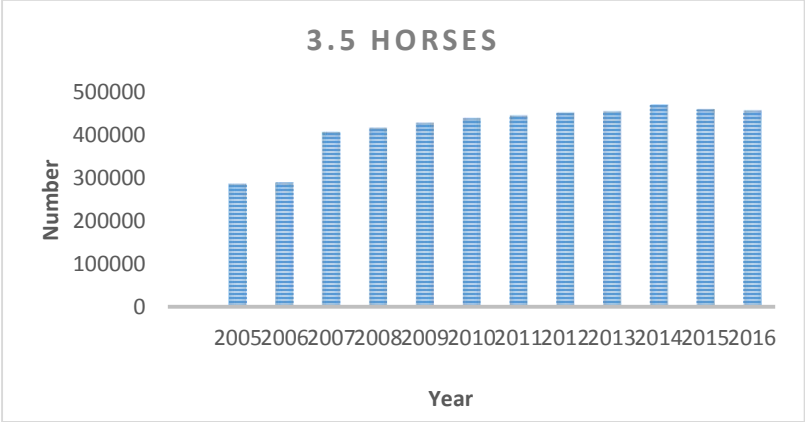
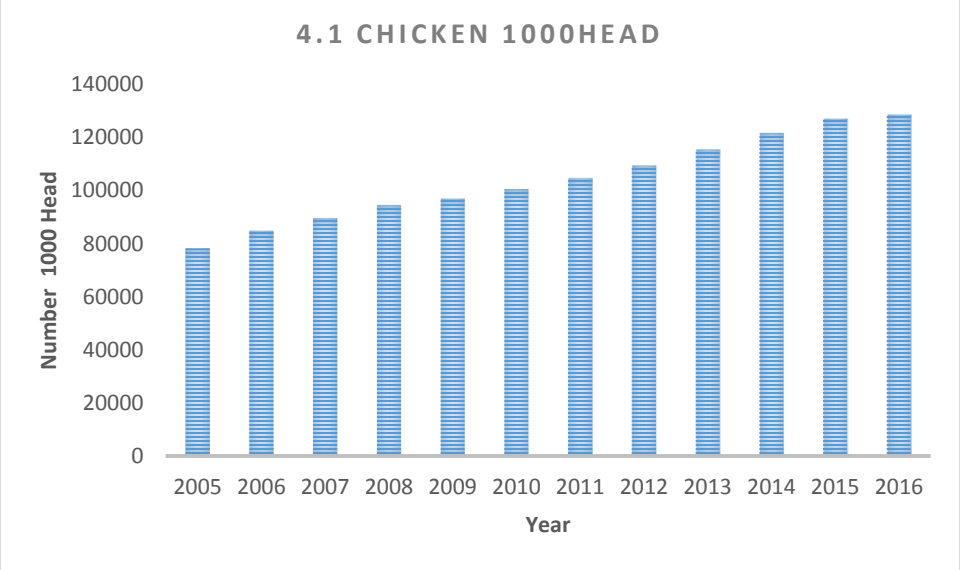


Figure 5: Livestock population (Chicken) within Middle (Central) Africa



Collaboration between Veterinary and Human Public Health Systems: Central african countries do not yet have the requisite systems in place and are genreally ill-equiped to prevent human infections and to mitigate the losses from exposure to diseases of animal origin[51]. In addition to strengthening national veterinary and human public health systems and their regional cooperation[52], there is an urgent need to establish or reinforce and maintain strong collaboration between human and animal health systems at national and regional levels in order to better manage risks that arise at the animal-human-ecosystem interface (the 'One Heath'(OH) approach). For that to happen, particular attention will be given to priority core public health functions (veterinary public health and human public health) that would reduce these risks. Assessing these core functions, bridging divides among systems and ministries and reducing capacity gaps would constitute a critical element of the program. Country assessment tools now exist for both systems (Performance of Veterinary Services pathway assessment; IHR JEE and monitoring framework costing tool) as well as identified bridges for OH competencies. Attention to building systems for core functions and policy dialogue, based on credible assessments, rigorous analysis and adequate financing, will ensure sustainability and reduce disease risks. These efforts would support specific ongoing national and regional disease-control initiatives, already part of system-strengthening country program, and demonstrate the performance of collaboative systems in disease surveillance, prevention and control.

One Health approach

One health (OH) is a framework that recognizes the systematic connectedness of human, animal and environmental health. Tackling multisector issues efficiently requires working across sectors and disciplines and across borders. Yet very few countries have adopted coordinated approaches, along the lines of the OH concept. Within the ECCAS region, there is insufficient multisector coordination. In the JEE mission for Cameroon, one ECCAS country, conducted in September 2017, it was observed that there was an absence of a formal coordination framework with other sectors and the lack of standard operating procedures hampered the proper functioning of the national focal point. There is a lack of documentation and written procedures for many activities that limit the implementation of the IHR (2005). The situation in the other countries of the region is not very different from that of Cameroon as described above. It is therefore suggested to strengthen the IDSR and the epidemiological surveillance network for animal health, to improve analytical capacity and exchange of information. The establishment of operating procedures specifying the coordination mechanisms between sectors should improve the reporting procedures to WHO and (OIE).

Given the transboundary nature of infectious diseases and the fact that a significant number of these pathogens can be transmitted between animals and humans (more than 70 percent of 1,450 known infectious diseases are zoonotic diseases), there is a critical need for coordination and exchange of knowledge and information between sectors involved with animal and human health and regionally among countries. The response to the HPAIV H5N1 crisis since 2005 contributed to enhancing cooperation between the human and veterinary health sectors in many countries in the region, but in the absence of a dedicated program incentivizing such a joint approach, silos remain established. Yet, important lessons have been learned and experience gained, and successful regional programs for the control of selected priority diseases, both within and outside the region have demonstrated the efficiency of a regionally coordinated approach to diseases surveillance and response.

The project will promote the "One Health" (OH) approach, which is a multi-sectoral initiative for the prevention, detection and control of health threats, including epidemics and other major endemics. This approach ensures that human, animal,

[51]. Michael Muleme1, Richard Mafigiri1, Joyce Nguna, et al. 2017. A comparative assessment of the animal and human disease surveillance systems in the East-Central Africa infectious disease hot-spot, 2013: a case study of Uganda. The Pan African Medical Journal. 2017;27 (Supp 4):19. (Available from : http://www.panafrican-med-journal.com/content/series/27/4/19/full)

[52]. Vincent Agu*; Alexandre N Correia; Kazem Behbehani, 2007. Strengthening international health co-operation in Africa through the regional economic communities. African Journal of Health Sciences (The Kenya Medical Research Institute (KEMRI)); 14 (3-4): 104-113

and environmental health are working collaboratively, considering the fact that stressors in any of these domains impact the others and increase the likelihood of experiencing deadly outbreaks. The approach is formalized by the one health platform which includes training veterinarians, nurses and hospital workers on infection control measures, investing in Health and animal Information System, surveillance system, simulating cross-border emergency preparedness exercises, purchasing equipment and supplies for laboratories, and supporting the development of multi-sectoral standard operation procedures to combat zoonotic disease outbreaks.

Relationship to CPF

The project is aligned with both World Bank Group strategic priorities for Africa (Resilience to shocks and climate change impacts), as well as the Africa Regional Integration and Cooperation Assistance Strategy for the period FY18-FY23[53]. More specifically, alignment is with Africa's R*egional Integration (RI)* strategic priority 4, which promotes "collective action to address risks of regional economic contagion, fragility, epidemic, and climate 'hot spots'. This strategic priority rests on three arguments: (i) some of Africa's development challenges and potential risks do not stop at national borders and require collective effort on the part of multiple countries; (ii) ensuring effective collective action requires clear understanding of the pros and cons of addressing these risks, addressing possible asymmetry of benefits for the parties involved and ensuring strong regional platforms which bring together key stakeholders; and (iii) over time, it would be important to make such collective action efforts more sustainable from a financing and institutional point of view and less reliant only on development financing. This strategic priority responds to sub-regional, regional or global risks which could impact the continent and compromise the development gains made so far. The project meets the four regional criteria for utilizing the regional International Development Association (IDA) funds: (i) involves three or more countries; (ii) has benefits, either economic or social, that spill over country boundaries; (iii) reflects strong interest from regional bodies and the region's countries in the project; and (iv) provides a platform for a high level of policy harmonization between countries (See Box 1). With these minimum criteria addressed, it is important to note that collaboration and collective action across borders to address disease threats is one of the clearest examples of a global public good.

The project is in line with the WBG's mission to end extreme poverty and boost shared prosperity. The REDISSE Program is also aligned with *the CPF of countries in the ECCAS region. For example, the project is aligned with the* CPF of *two* countries *within the region*: Chad for the Period FY16-20, with **Engagement Theme 2 and its Objective 2.1 "More productive and resilient agriculture",** which addresses a number of constraints that reduce returns in agriculture, including among other things, the limited access to animal health services; and with **Engagement Theme 3 and its Objective 3.1. "Improve rural access to reproductive health services**", which builds human capital through improving the access of poor households to good quality health care; and Cameroon for *the period* FY17-FY21, *with the* **objective 1 "Increased productivity and access to markets in the agriculture and livestock sectors" and objective 2 "to improve maternal and child health, and nutrition"** *by strengthening of the health system through performance based financing*.

Communicable and non-communicable diseases are a major constraint to the health, education and potential earnings of people living in the ECCAS region and have greatest impact on the most vulnerable population. Compounding the threats in this reality is climate change, which will stress already weak systems, displace populations, and create environmental conditions more favorable for disease. Seven of the eleven ECCAS countries (Burundi, Central African Republic, Chad, Congo, Democratic Republic of Congo, Rwanda, Sao Tome and Principe) are characterized as "hotspots" for climate-sensitive health impacts, meaning they are in climate-vulnerable geographic regions, have vulnerable populations, and have pre-existing burdens of infectious diseases that are likely to increase with climate change (see

[53] Supporting Africa's Transformation: Regional Integration and Cooperation Assistance Strategy for the Period FY18-FY23 dated December 15, 2017 (page 37)

World Bank recent publications on geographic differences for climate change and health and action plans).[54,55] It is now not a secret that climate change is and will continue to have an impact on infectious disease transmission patterns and geographic range. Temperature, humidity, precipitation changes in vegetation, host species, predators, competitors, parasites and human interventions have an impact on Vector-borne diseases; water-borne diseases are correlated with precipitation and flooding; animal migration patterns vary according to climatic conditions affecting water and feed resources; and refugee situation due to crises as is the case in the sub-region can result in the emergence of new diseases. A significant threat to global health also comes from zoonoses that come from wildlife. It has been suggested that tropical forest regions, high mammal biodiversity, anthropogenic land use changes are responsible for a high risk of these zoonoses, and their occurrences appear more often in tropical regions[56]. It has also been suggested that these zoonoses also occur more in areas with higher human population density and greater wildlife diversity, as a result of increased human-animal contact[57]. On the whole, human-driven forces driving changes in ecological and social dynamics (e.g., land use changes, population growth, burgeoning demand for livestock products, transformation of livestock systems without sufficient biosecurity improvements, complex intra- and inter-regional value webs, peri-urban farming, rapid urbanizations, etc.) are largely responsible for disease emergence, reemergence, increase in prevalence, and the factors that facilitate their spread. There is therefore need for close collaboration between the health sector and other sectors in order to be able to prevent, detect, respond to, and recover from the diseases.

The economic rationale for investing in REDISSE 4 interventions is strong, given that success can reduce the economic burden suffered both by individuals and countries. The project complements both WBG and development partner investments in health systems strengthening, disease control and surveillance, attention to changing individual and institutional behavior, and citizen engagement. Further, as part of the IDA 18 commitments, the World Bank will assist at least 25 countries in their pandemic preparedness efforts including countries in West Africa.

The project contributes to the implementation of IHR (2005), Integrated Disease Surveillance and Response (IDSR), and the OIE international standards, the Global Health Security Agenda, the Paris Climate Agreement[58], the attainment of Universal Health Coverage and of the Sustainable Development Goals (SDG), and the promotion of a One Health approach. It also builds on the several resolutions that have been passed by the WHO Regional Committee for Africa that include the resolution on Strengthening Public Health Laboratories in the African Region (AFR/RC58/R2)[59] and Strengthening Preparedness and Response Strategies to Epidemic and Pandemic-prone diseases including influenza A H1N1 (AFR/RC59/12)[60].

[54] Geographic Hotspots for World Bank Action on Climate Change and Health (2017); Climate-Smart Healthcare - Low-Carbon and Resilience Strategies for the Health Sector (2017); Climate Change and Health - Approach and Action Plan (2017)
[55] WHO (2015) Climate Change and Human Health - Risk and Responses.
[56] Allen, T. Murray, K. A., Zambrana-Torrelio, C., et al (2017). Global hotspots and correlates of emerging zoonotic diseases. NATURE COMMUNICATIONS. 8: 1124. DOI: 10.1038/s41467-017-00923-8
[57] Morse, S. 1995. Factors in the Emergence of Infectious Diseases. Emerg. Infect. Dis. 1, 7–15.
[58] Per the Paris Climate Agreement "*Acknowledging that climate change is a common concern of humankind, Parties should, when taking action to address climate change, respect, promote and consider their respective obligations on human rights,* ***the right to health****.... and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity".* The Bank is committed to ensure 28 per cent of its entire portfolio and 20per cent of new HNP projects are climate sensitive by 2020.
[59] WHO, Resolution AFR/RC58/R2: Strengthening public health laboratories in the WHO African Region: a critical need for disease control: In: Fifty-Eighth Session of the WHO Regional Committee for Africa, Yaoundé, Republic of Cameroon, 1–5 September 2008, Final Report. Brazzaville, World Health Organization, Regional Office for Africa, 2008 (AFR/RC58/20), pp. 11–13.
[60] WHO, Resolution AFR/RC59/12: Strengthening outbreak preparedness and response in the African Region in the context of the current influenza pandemic: In: Fifty-Ninth Session of the WHO Regional Committee for Africa, Kigali, Republic of Rwanda, 31 August - 4 September 2009

C. Proposed Development Objective(s)

Note to Task Teams: The PDO has been pre-populated from the datasheet for the first time for your convenience. Please keep it up to date whenever it is changed in the datasheet. ***Please delete this note when finalizing the document.***

The project development objectives are: (i) to strengthen national and regional cross-sectoral capacity for collaborative disease surveillance and epidemic preparedness in ECCAS Region; and (ii) in the event of an eligible crisis or emergency, to provide immediate and effective response to said eligible crisis or emergency.

Project Components: The REDISSE 4 project will be prepared by the HNP GP using the one-health approach. It will comprise 4 broad components: (i) Surveillance and Laboratory Capacity strengthening to Rapidly Detect Outbreaks; (ii) Emergency Planning and Management Capacity to Rapidly Respond to Outbreaks; (iii) Public Health Workforce Development; (iv) Institutional Capacity Building, Project Management, Coordination and Advocacy.

Key Results (From PCN)

The project will contribute to: (i) ensure more efficient collaboration and synergies between human and animal epidemiological surveillance and response networks at country and regional levels via the one health platform; (ii) facilitate country and regional compliance with international standards for veterinary services, with a particular focus on early detection and rapid response capacity, as adopted by the OIE members states in the Terrestrial Animal Health Code, and utilize the findings and recommendations from the OIE PVS pathway; (iii) develop national and regional capacity to fully implement the integrated disease surveillance and response (IDSR) strategy, which calls for the continuous monitoring of mortality and morbidity to identify and respond to threats before they can develop into large scale or transboundary epidemics.

The following key indicators will be used to track progress towards the PDOs:

a. Laboratory testing capacity for detection of priority diseases: number of countries that achieve a JEE score of 4 or higher out of 5;
b. Availability of human resources to implement IHR core capacity requirements; number of countries that achieve a JEE score of 3 or higher out of 5.
c. Progress towards establishing an active, functional regional One Health Platform (Number based on 5-point Likert scale);
d. Percentage of laboratories in the network that attain a SLIPTA rating of 4 stars or greater.
e. Progress in establishing indicator and event-based surveillance systems: number of countries that achieve a JEE score of 4 or higher out of 5;
f. Number of countries that have signed the regional agreement on sending and receiving personnel and commodities across borders during an outbreak.

Three of the six PDO level indicators will be based on the periodic Joint External Evaluation (JEE) for monitoring progress in the implementation of the WHO IHR (2005)[61].

[61] The World Health Organization, together with other partners, has developed a Joint External Evaluation Tool-International Health Regulations (2005) (JEE-IHR) to assess country capacity to prevent, detect, and rapidly respond to public health threats. The tool allows countries to identify the most urgent needs within their health

D. Concept Description

There are strong linkages between the project, other World Bank investments at national and regional level. The project complements but does not duplicate ongoing and new portfolio projects in all five participating countries. In all the countries, the project will be implemented through the same project implementation units (PIU) in the Ministries of Health as ongoing and new projects in the health sector. The PIUs will be further strengthened by the project enabling resource sharing and more effective, efficient and timely management of implementation of all the projects in the sector. Moreover, the complementarity of the projects allows the World Bank to have a larger footprint and greater impact at country level. However, a new PIU will be created if one does not already exist or if the existing one cannot harbor a multisector project like REDISSE. The regional implementation unit will be hosted by the Economic Community of Central African States (ECCAS).

Project Financing: The tentative project financing in the amount of US$280 million is considered the fourth Investment Project Financing of the "Series of Projects (IPF-SOP) approach" of the REDISSE Program. The project will eventually engage and support all 11 ECCAS member countries[62] in an effective and sustainable regional surveillance network. Project financing will be mobilized via contributions from individual country allocation of International Development Association (IDA) and IBRD funds and a regional integration matching fund mechanism (table 2). This project design will cover five (5) Central Africa countries[63] whose selection was based, above all, on the expressed interest of the national governments in participating in the project. Epidemiologic considerations were also considered as well as the needs and assets of the candidate countries. Other member countries will be included in the project as resources become available through follow-on investments.

Table 2: Breakdown of Project Financing

Country/Regional Institution	Country IDA (US$ Million)	Regional IDA (US$ Million)	IBRD (US$ Million)	Total (US$ Million)
Angola			60.0	60.0
Chad	10.0	20.0		30.0
Central African Republic	5.0	10.0		15.0
Congo Republic	5.0	10.0		15.0
Democratic Republic of Congo	50.0	100.0		150.0
ECCAS Secretariat		10.0		10.0
TOTAL	**70.0**	**150.0**	**60.0**	**280.0**

A consultative process will be adopted to inform the detailed project design, which will enhance the capacities of the human and veterinary public health systems of selected ECCAS member countries for efficient and effective surveillance

security system, to prioritize opportunities for enhanced preparedness, response and action, and, through regular evaluations, will help monitor the progress by country in implementation of the International Health Regulations (2005). http://apps.who.int/iris/bitstream/10665/204368/1/9789241510172_eng.pdf. The JEE makes use of the PVS evaluation missions results which provide an assessment of the strengths and weaknesses of the national Veterinary Services (http://www.oie.int/support-to-oie-members/pvs-evaluations/oie-pvs-tool/)

[62] This will depend on what other partners are already doing in Angola, Chad, Central African Republic, and the Democratic Republic of Congo.

and response via a collaborative regional approach that encompasses the One Health agenda and supports the IDSR framework.

Project Components
The project will be comprised of four components that will collectively strengthen preparedness and response to emerging public health threats across the region. All proposed activities will directly contribute to realizing commitments under the International Health Regulations (IHR) and demonstrating achieved capacity through the Joint External Evaluations (JEE).

The project will potentially comprise four components as follows.

Component 1: Surveillance and laboratory capacity strengthening to rapidly detect outbreaks

Early detection of disease outbreaks will be enhanced through the planning and implementation of coordinated surveillance, laboratory, information and reporting systems in the human and animal sectors. This component will focus on the regional, national and sub-national levels to establish and scale-up systems that are both sensitive and high quality and can be sustainably implemented and managed by national and regional authorities. It will also finance the timely reporting of human public health and animal health emergencies in line with the IHR (2005) and the OIE Terrestrial Animal Health Code. On the whole, this component will enhance the national surveillance and reporting systems and their interoperability at the different tiers of the health systems. The four sub-components of this activity will include establishing the following: (i) national and sub-national surveillance systems, (ii) health information and reporting systems, (iii) laboratory diagnosis capacity, and (iv) supply chain management systems.

Component 2: Emergency planning and management capacity to rapidly respond to outbreaks

Proactive planning, testing and financing of emergency management systems is critical to launching a rapid outbreak response. This component will focus on the technical, personnel, legal, infrastructure and community elements that are required to build an effective incident management system. It will then support activation of the system to respond to outbreaks including provision for emergency financing if required. This component will enhance the scientific base to improving outbreak response including the development of vaccines and therapeutics by strengthening national and regional capacities for research and evaluation. The five sub-components of this activity will include establishing the following: (i) emergency management systems including planning, legal, facilities and communications requirements, (ii) medical countermeasures, (iii) non-pharmaceutical interventions, (iv) research and evaluation, and (v) contingent emergency response.

Component 3: Public health workforce development

The foundation for any region or individual country to effectively detect and respond to disease threats is a strong public health workforce. However, most human resource systems lack plans for a multi-disciplinary health cadre that includes epidemiologists, data managers, laboratory technicians, emergency management and risk communications specialists, and public health managers. This component will focus on activities that support the recruitment, training and retention of qualified staff for both routine and emergency public health functions. It will also address coordination with the private sector health workforce. The three sub-components of this activity will include establishing the following: (i) public health staffing, (ii) training, (iii) regulations.

Component 4: Institutional Capacity Building, Project Management, Coordination and Advocacy

This component focuses on all aspects related to project management. It includes fiduciary aspects (financial management and procurement), monitoring and evaluation (M&E), knowledge generation and management, communication, and management (capacity building, monitoring and evaluation) of social and environmental safeguard mitigation measures. It also provides for critical cross-cutting institutional support, meeting capacity-building and training needs identified in the five countries on top of specific technical capacity-building activities undertaken within the four technical components (including support to the management of operational research). It will support the routine external independent assessment of critical animal health and human health capacities of national systems using reference tools (such as OIE PVS and JEE) to identify weaknesses and monitor progress. This component will build on and complement other projects and initiatives such as the West Africa Regional Disease Surveillance project (WARDS) and REDISSE 1, 2 and 3 programs being implemented in ECOWAS countries. The two sub-components are: (i) project coordination, fiduciary management, monitoring and evaluation, data generation, and knowledge management; and (ii) Institutional support, capacity building, advocacy, and communication at the regional level.

Across all project components, the project will promote partnership with the private sector to improve areas of known weaknesses in the provision of public goods across all project activities. Potential areas involve aspects where the private sector may have a comparative advantage over, or complementary to, the public sector such as in logistics and supply chain management, information communication and technology development, and improvement of specimen transportation systems. Private medical practitioners, veterinarians and veterinary paraprofessionals may be entrusted with official tasks through contractual arrangements. Under similar contractual mechanisms, the project will explore possible partnerships, with identified centers of excellence and private laboratories with the appropriate capacity to play a critical role in the provision of diagnostic and reporting services for diseases of national, regional and/or global importance. The estimated budget allocation by components is presented in Table 3 below.

Table 3. Estimated Project Budget Allocations by Component

Project Components	**Budget Allocation (US$ million)**
Component 1: Surveillance and laboratory capacity to rapidly detect outbreaks	US$
Component 2: Emergency planning and management capacity to rapidly respond to outbreaks	US$
Component 3: Public health workforce development	US$
Component 4: Institutional Capacity Building, Project Management, Coordination and Advocacy	US$
Total	US$280.00

Note to Task Teams: The following sections are system generated and can only be edited online in the Portal. ***Please delete this note when finalizing the document.***

Legal Operational Policies	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

Summary of Screening of Environmental and Social Risks and Impacts

The project is likely to result in a range of impacts associated with the civil works and transport. This will include environmental impacts associated with any construction activities such as air and noise emissions, impacts on water quality and disposal and management of waste (including chemicals and medical waste). Impacts to biodiversity and living natural resources are not anticipated. Impacts to people are also anticipated again associated with civil works including to community health and safety as a result of traffic movements and the presence of workers (GBV, SEA and disease transmission). In addition, the working conditions of those employed to undertake construction activities will need to be managed in order to protect the workforce and meet GIIP in relation to occupational health and safety. Land acquisition is not anticipated as all civil works are planned to be on existing government land. All 5 countries are home to IP/SSAHUTLC who will need to be considered during project implementation in particular in relation to public health campaigns. Stakeholder Engagement will need to be undertaken both at the national level in relation to the overall program and the local level in relation to civil works and to ensure that public health campaigns are appropriately designed and implemented.

Note To view the Environmental and Social Risks and Impacts, please refer to the Concept Stage ESRS Document**.**

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