PRIME MINISTER'S OFFICE
UNITED REPUBLIC OF TANZANIA

The United Republic of Tanzania

One Health Strategic Plan

2015 – 2020

Prepared by:
United States Department of Defense (DoD)
Defense Threat Reduction Agency (DTRA)
Cooperative Threat Reduction (CTR)
Cooperative Biological Engagement Program (CBEP)

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List of Abbreviations

AIDS	Acquired Immune Deficiency Syndrome	**MUHAS**	Muhimbili University of Health and Allied Sciences
ARU	Ardhi University	**NCA**	Ngorongoro Conservation Area
CDC	Centers for Disease Control and Prevention	**NCAA**	Ngorogoro Conservation Area Authority
CSO	Civil Society Organization	**NIMR**	National Institute for Medical Research
DPG	Development Partners' Group	**NM-AIST**	Nelson Mandela African Institute of Science and Technology
DTA	Data Transfer Agreement	**OECD**	The Organisation for Economic Co-operation and Development
EAC	East African Community	**OH**	One Health
EID	Emerging Infectious Diseases	**OIE**	World Organization for Animal Health
FAO	Food and Agriculture Organization	**PHEIC**	Public Health Emergencies of International Concern
GCLA	Government Chemist Laboratory Agency	**PMO**	Prime Minister's Office
GIS	Global Implementation Solutions	**RALG**	Regional Administration and Local Government
GPD	Gross Domestic Product	**SSA**	Sub-Saharan Africa
HIV	Human Immunodeficiency Virus	**SUA**	Sokoine University of Agriculture
IHI	Ifakara Health Institute	**TALIRI**	Tanzania Livestock Research Institute
IHR	International Health Regulations	**TANAPA**	Tanzania National Parks
IUCN	International Union for Conservation of Nature	**TAWIRI**	Tanzania Wildlife Research Institute
KCRI	Kilimanjaro Clinical Research Institute	**TDV**	Tanzania Development Vision
MAF	MDG Acceleration Framework	**TFDA**	Tanzania Food and Drug Authority
MDG	Millennium Development Goals	**TFELTP**	Tanzania Field Epidemiology Laboratory Training Program
MIC	Middle Income Country	**TLU**	Tropical Livestock Units
MLFD	Ministry of Livestock and Fisheries Development	**TOR**	Terms of Reference
MNRT	Ministry of Natural Resources and Tourism	**TPDF**	Tanzania People's Defense Force
MoFEA	Ministry of Finance and Economy Affairs	**TVLA**	Tanzania Veterinary Laboratory Agency
MoHSW	Ministry of Health and Social Welfare	**TWG**	Technical Working Group
MoU	Memo of Understanding	**UDSM**	University of Dar es Salaam
MTA	Material Transfer Agreement	**URT**	United Republic of Tanzania
MTEF	Medium Term Expenditure Frameworks	**WHO**	World Health Organization

Foreword

Recent global disease events have highlighted the increasing effects of zoonotic pathogens on human and animal health. It has also become evident that changes in the environment, including agricultural intensification, population growth, urbanization, climate change, and human encroachment into wildlife habitats are drivers for such zoonotic disease emergence. The *One Health* approach has been recognized as a major element of disease control and prevention strategies as it emphasizes the relatedness of human, animal, and environmental health and the importance of transdisciplinary efforts. This has also been demonstrated in the recent major Rift Valley Fever outbreak in Tanzania in 2007, where enhanced cross-sectoral communication during the outbreak led to the effective handling of the response. Similar efforts were seen in the preparation of the Tanzania National integrated avian and human influenza pandemic emergency preparedness planning document in 2006.

This is the first "National *One Health* Strategic Plan" to be developed using a multisectoral approach and has drawn expertise from various sectors reflecting shared commitment to enhanced collaboration among animal, wildlife and human health sectors to reduce the burden of zoonotic diseases. The coordination of the development of this plan was done by the Prime Minister's Office of the United Republic of Tanzania. This strategic plan is a whole-of-government guiding document aimed at summarizing operations and activities among various stakeholders. This strategic plan also aims to create and maintain active collaboration between the sectors for the prevention and control of zoonotic diseases to ensure that there is timely preparedness, and a consistent and coordinated response in the event of an occurrence of a zoonotic event. To achieve this, the plan proposes the establishment of a "National Coordinating Unit" which will continue to evolve, enhance, and refocus *One Health* programs to meet existing and impending challenges. To support the unit, a *One Health* Steering Committee and technical working groups will be created.

Successful implementation of the strategic plan will contribute significantly to the overall goal of improving public health, food safety and security, and the livelihoods of our people. It is in this regard that we call upon other government departments, development partners, institutions of higher learning, civil society, private sector and the Tanzanian community to

join us in this noble One Health initiative. This strategic plan should be considered a "living document" and is open for feedback, additions and revisions based on changing needs.

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1.0 Introduction

1.1 Country Profile

1.1.1 Geography and Population

Tanzania, officially the **United Republic of Tanzania (URT)**, is a country in East Africa in the Great Lakes region and lies between 3°S and 12°S and 26°E and 41°E. It borders the Indian Ocean to the East (800km), and has a long international border of approximately 3,900km shared with eight countries including Kenya (796 km) and Uganda (396 km) to the North, Rwanda (217 km), Burundi (451 km), the Democratic Republic of Congo (478 km) to the West, Zambia (338 km) to the South West, Malawi (475 km) and Mozambique (750 km) to the South. The total area including inland water and Zanzibar is 947,303 km^2, of which 886,040 km^2 is land and 62,050 km^2 is water (Lake, 2013). Tanzania is the 13th largest country in Africa and the 31st largest in the world.

The climate varies with geographical zones: tropical on the coast where it is hot and humid (rainy season March-May); semi-temperate in the mountains with short rains November-December and long rains February – May; while it is drier in the plateau region with considerable seasonal variations in temperature. Total rainfall increases towards the north around Lake Victoria. Rainfall is well distributed throughout the year reaching its peak during the period of March through May. Such diverse climate attracts a wide range of vectors of veterinary and public health importance.

Tanzania is endowed with 95.5 million hectares of land, of which 44 million hectares are classified as suitable for agriculture. Only 10.6 million hectares are under cultivation. The major crops are sugar cane, tea, tobacco, cashew nuts, coffee, cotton, maize and rice. Approximately 50 million hectares of rangelands are suitable for livestock grazing, but only 24 million hectares are currently being utilized, supporting 14.6 million ruminant Tropical Livestock Units (TLUs)[1TLUs~ 1 Adult cattle]. The remaining land suitable for livestock grazing is currently not being utilized due to the presence of tsetse flies.

The population of Tanzania consists of 125 ethnic groups (Levinson, 1998). According to the 2012 census, the total population was 44,928,923. Density varies from 12/ km^2 in less populated regions, such as Katavi, to 3,133/ km^2 in highly populated regions, such as Dar es Salaam (National Bureau of Statistics, 2013). The overall population growth rate is estimated to be 2.9% per year with the urbanization growth rate standing at 4.77% per year. Agriculture supports the livelihoods of 82% of the population, 70% of which is rural (National Report, Dar es Salaam, Prime Minister's Office, 2007/2008). About 37% (1,745,776 out of 4,901,837) of the households keep livestock. The < 15 age group represents 44.1% of the population (Tanzania National Bureau of Statistics, 2013).

1.1.2. Economic activities

Tanzania's Gross Domestic Product (GDP) recorded an average growth rate of about 7% between 2001 and 2010. The sectors that recorded high growth rates of more than 10% in 2010 were communications (22%), construction, electricity and gas (10.2 %) and financial intermediation (10.1%). Overall however, trading and repairs, tourism, agriculture, manufacturing and real estate and business services drove GDP growth. As of 2014, Tanzania's GDP was estimated at $36.6 billion, or $86.4 billion on a purchasing power parity (PPP) basis (Tanzania International Monetary Fund, 2014). The per capita GDP was $1,813 (PPP) which is 32% below the average of $2,673 for the 45 sub-Saharan African countries and ranked 23rd among those countries (Tanzania International Monetary Fund, 2014). From 2009 through 2013, Tanzania's per capita GDP (based on constant local currency) grew an average of 3.5% per year; higher than any other member of the East African Community (EAC) and exceeded only by nine countries in Sub-Saharan Africa (GDP per capita growth, November 2014). Livestock farming is one of the major agricultural activities in the country. The livestock industry's contribution to the Agricultural Gross Domestic product is about 13%, and 4.0% of the National Gross Domestic Product in 2009, compared to 4.7% in 2008. Livestock plays important roles in Tanzanian's socio-economic development and contributes towards household food and nutritional security. Tanzania's animal wealth, according to 2014/15 budget's speech, included 22.8 million cattle, 15.6 million goats, 7 million sheep, 2.01 million pigs, 0.3 million donkeys and 60 million poultry, together with very small numbers of domestic buffalo and humped camels (URT budget speech for the Ministry of livestock and Fishery development 2014-2015). More than 99% of these livestock are kept in low input/low output

systems, owned and managed by resource-poor mixed and pastoral producers who operate under the traditional husbandry system with little or no access to good and reliable animal husbandry practices and reliable veterinary services.

1.1.3 Economic development

The thrust of Tanzania's development agenda, since independence, has been on economic growth, and fighting illiteracy, poverty and disease burden. Since the mid 1980's, the Tanzanian economy has been undergoing gradual and fundamental transformations towards a market-based economy. The macro-economic policy reforms have required a redefinition of the roles of the public and private sectors in livestock development and health service provisions. These changes have paved the way for the withdrawal of government involvement in subsidies and non-participation in private good inputs and services provision, which can be better performed by the private sector. Based on challenges associated with those transformations, Tanzania developed Vision 2025, a blue print to consolidate the three major challenges of illiteracy, poverty and disease and articulate a long-term development agenda for the country. Vision 2025 outlines the country's social, economic and political aspirations for the first quarter of the 21st century with an underlying drive to reach the middle-income country (MIC) status with a per capita income of $3,000 USD through a cycle of short and mid-term plans. These short and mid-term plans incorporate inputs from Sector Strategic Plans, Medium Term Expenditure Frameworks (MTEFs), Millennium Development Goals (MDG), MDG Acceleration Framework (MAF) and other national and international initiatives. The targeted average GDP growth rate for the FYDP period is 8 percent per annum (equivalent to a 5 percent per capita growth target), building up from 7 percent in 2010, and thereafter sustaining growth rates between 8 and 10 percent until 2025. Specific sectors' targets include agriculture to increase its average annual growth rate from 4.4 percent to 5.6 percent, manufacturing from 8 percent to 12.1 percent, industry from 8.6 percent to 9.4 percent, and services from 7.5 percent to 7.8 percent.

1.1.4 Administrative structure

Tanzania is divided into thirty regions; twenty-five on the mainland and five in Zanzibar (three on Unguja, two on Pemba). In total, there are 169 districts, also known as local government authorities. Of these, 34 districts are urban units, which are further classified into five city

councils (Dar es Salaam, Arusha, Tanga, Mbeya, and Mwanza), 19 municipal councils, and 12 town councils.

Since 1986, the government has undergone several reforms in sectors, including Public, Agriculture and Local government. The Public Sector reforms identify functions that will continue to be provided by the central government and those that can best be performed by other actors, such as local governments, service boards, executive agencies, NGOs and the private sectors. The Agricultural Sector reforms have a main objective of rationalizing agricultural sector development functions so that they can be operated more efficiently under a changed macro-economic policy. The Local Government reforms, which started in 1999, have the main purpose of establishing a new local government system, capable of responding to the current macro-policies, namely, the introduction of multi-party democracy and the adoption of a free market economy. The new local government system is therefore based on political devolution and decentralization of functions and finances within the framework of a unitary state. Decentralization will make service providers more accountable to communities and the local government.

Sectors involved in One Health activities function at both the national and local governments. Within the devolved governance, veterinary services are managed under the Ministry of Livestock and Fisheries Development (MoLFD); public health service is managed under the Ministry of Health and Social Welfare (MoHSW) at the national level and at sub national (regional) level, by the Prime Minister's Office Regional and Local Administration (PMORALG), while the wildlife service is managed by the Ministry of Natural Resources and Tourism (MNRT). Affiliated institutions or agencies within each respective ministry provide technical support. Such agencies and institutions include Tanzania Veterinary Laboratory Agency (TVLA), Tanzania Livestock Research Institute (TALIRI), National Institute for Medical Research (NIMR), Tanzania Food and Drug Authority (TFDA), Government Chemist Laboratory Agency (GCLA) for Public Health, Tanzania Wildlife Research Institute (TAWIRI), Tanzania National Parks Authority (TANAPA), Ngorongoro Conservation Area Authority (NCAA) and the Tanzania Fisheries Research Institute (TAFIRI).

1.1.5 Wildlife

Wildlife refers to the flora and fauna of Tanzania. The country is among the four mega-biodiversity nations in the world, alongside Brazil, Indonesia and the Democratic Republic of Congo (DRC). Approximately 38% of the land area is set aside in protected areas for conservation, including 16 national parks, 31 game reserves, 38 game controlled areas, Ngorongoro Conservation Area (NCA) and Selous-Niassa Wildlife Corridor (Tegegn, 2014). The various types of protected areas are interwoven with agro-pastoral and pastoral community lands, some of which also support substantial biodiversity. Tanzania contains 20% of the species of Africa's large mammal population, found across its national parks, reserves, conservation areas and marine parks. These species are spread over an area of more than 370,000 km^2, forming more than one-third of the country's territory (Arce, 2009). In many protected areas, including major national parks (Ruaha & Serengeti) and conservation areas, livestock, wildlife and people intersect forming complex interactions and potential for disease transmission. The Ngorongoro Conservation Area (NCA) is a multiple land use area where livestock and wildlife are legally allowed to live together and in Game Controlled Areas, limited human activities like livestock keeping and temporary shelters are allowed. Many protected areas are also part of the wetlands of Tanzania. Wild animals tend to be closer to the wetlands, particularly the water loving species such as the hippopotamus, waterbucks, common warthogs, elephants, crocodiles, Sitatungas (marshbucks), as well as water birds including flamingoes and ducks. Tanzania is also home to about 130 amphibian and over 275 reptile species, many of them being strictly endemic and classified as endangered species, or under threat of extinction by the International Union for Conservation of Nature's (IUCN) (Kamukala, 1993). The wildlife resources in Tanzania provide an annual income of $30 million USD to the national exchequer, and an income of $9 million USD as revenue from leasing companies.

1.2 Overview of Zoonotic Diseases in Tanzania

1.2.1 Societal factors

Animals (domesticated or wildlife) and humans often live close together throughout the developing world. People are especially dependent on livestock and poultry for food, clothing, fertilizer, draught power, and an important degree of financial security. At the same time,

these animals and their products create disease risks for the populations, most of whom depend on them. Approximately 61% of human diseases are zoonotic (Latham, Woolhouse; 2001) but public health practitioners rarely consider the implication of these types of infections in humans. According to the World Health Organization (WHO), neglected zoonoses (the term "neglected" highlights that diseases affect mainly poor and marginalized populations in low-resource settings) affect about 2.7 billion people worldwide every year, and are commonly associated with poverty and impact the lives and livelihoods of millions of poor livestock keepers or those living in peri-urban slums primarily in developing countries. The dual impact of a substantial burden in terms of human and livestock health and the economic implications to community livelihoods exacerbates the poverty cycle in the most marginalized livestock-dependent communities. Agro-ecosystem change, especially forest fragmentation and edge effects land use patterns, globalisation (movement of people, goods, animal and animal products to different parts of the world), climate change, eating habits due to urbanisation and increased incomes can increase pathogen flow between people, livestock and wildlife, and increase zoonotic disease risk.

1.2.2 Burden of Zoonoses in Tanzania

In developing countries such as Tanzania, little is known about the incidence of many zoonoses. The Technical Working Group (TWG) (Annex 1) has drafted a provisional list of twenty-three zoonotic diseases affecting Tanzania for future prioritization and revision. Estimated incidence of diseases such as brucellosis in Tanzania in general is not known but reports from pastoralists in northern Tanzania indicate that about 7.7% of people are infected (Crump et al., 2013), and in wildlife in the Serengeti ecosystem 24% of buffaloes (Syncerus caffer) and 17% of wildebeest (Connochaetes taurinus) are seropositive for brucellosis. In the past, attempts to control these diseases have been carried out without involving key players on human and animal health. Although some successes were registered, the gains have not been sustained. This calls for an interdisciplinary, cross-disciplinary and multi-sectoral approach to understand the complex dynamics of these zoonoses in order to help design appropriate interventions to address them.

Neglected parasitic, bacterial and viral zoonotic diseases are among some of the most common infections affecting animals and humans. Reports indicate that over 50% of the new

infectious diseases in humans are caused by pathogens originating from animals or animal products, of which 70% have their roots in wildlife (WHO World Health Statistics, 2012). Wildlife hunting, trading, and consumption increase the opportunity for the transmission of diseases from wildlife to humans, thus the emergence of zoonotic diseases (Karesh 2005; Wolfe 2005; Karesh and Noble 2009). Human contact with animals during rearing, hunting, butchering, product handling (storage, transportation) and trading is an established method of transmission of pathogens from animals to humans (Wolfe et al. 2005). Some of the zoonoses are transboundary, complicating efforts to detect and control outbreaks of zoonotic disease. Furthermore, specific programmes and interventions to address some of the priority zoonotic diseases are non-existent or sporadic. It is important that comprehensive research be undertaken to establish facts of the spread and effect on vulnerable human populations and livestock production systems.

Livestock production is regarded as the cultural heritage of many resource-poor rural communities in Africa. It serves as a major source of livelihood and a pathway out of poverty for many African farmers. Apart from providing a rich source of animal protein, many livestock are kept as "bank on hooves." These animals are sold to earn hard cash necessary to settle important family problems. In addition, livestock are also used to accomplish many cultural and traditional religious practices such as marriage dowry, naming ceremonies, tribal rituals and religious sacrifices.

Africa is known to be endemic for viral hemorrhagic fevers including Ebola, Marburg, and West Nile virus with bats considered potential reservoirs of these deadly viruses (Towner et al. 2004; Leroy et al. 2005; Towner et al. 2007; 2009). In addition, other zoonotic viruses more commonly found in Asia such as the Heniparviruses (including Nipah virus) have also been identified in Africa, suggesting their distribution may be wider than originally thought (Pernet 2014). The fast growing human population in sub-Saharan Africa is increasing demand for animal protein and therefore wildlife, including bats, are increasingly hunted for meat causing risk of emerging infections, such as the Ebola virus, being transmitted to humans (Hayman et al. 2010).

WHO reports indicate that Q fever in humans is another bacterial zoonosis, affecting about 3.5 million people worldwide each year (Prabhu et al. 2011; Grace et al. 2012). The bacterium *Coxiella burnetii, the cause of Q fever,* is excreted in milk, urine, and feces of the infected animals; infection of humans usually occurs through inhalation of these organisms in contaminated environments, with the average prevalence in East Africa estimated at 10% (Prabhu et al. 2011; Grace et al. 2012). In Tanzania, febrile syndromes caused by zoonotic diseases, such as leptospirosis, brucellosis and Q-fever, are often misdiagnosed as malaria with mistreatment leading to prolonged illness and increased disease burden, as well as inappropriate use of antimalarial therapies. Approximately 20% of febrile illness cases admitted to hospitals in Tanzania are reported to be due to brucellosis, leptospirosis and Q-fever as opposed to 1.6% with malaria as the causative agent (Biggs *et al.* 2011; Bouley *et al.*2011).

Plague (caused by *Yersinia pestis*) is a highly contagious disease with an extremely high mortality rate if left untreated, and can be used as a weapon of biological warfare. Plague is now commonly found in sub-Saharan Africa and Madagascar, which now account for over 95% of reported cases in the world (Prentice et al. 2004; Little, 2007). In Tanzania, the disease is endemic in the Western Usambara Mountains where outbreaks have been reported from time to time (Laudisoit et al.2007). Recently, Mbulu and Karatu districts have reported sporadic outbreaks (Ziwa et al., 2013). However, the prevalence of the disease in the endemic regions in the country is not documented.

Anthrax is an endemic bacterial zoonosis caused by *Bacillus anthracis* in many sub-Saharan Africa countries, and most often humans are infected through contact with infected animals, wool, meat, or hides. The disease may present as cutaneous, gastrointestinal, or as an inhalant (Lembo et al. 2011). In pastoral communities in northern Tanzania, mortality rates are high for individuals who get infected due to consumption of dead animals (Rao et al. 2010; Lembo et al. 2011). In wildlife-protected areas, the disease is associated with drought and outbreaks are often predictable. In the Serengeti ecosystem in northern Tanzania, seroprevalence was noted in herbivorous species often hunted for bushmeat (meat that comes from wild animals captured for consumption), including buffalo (14-46%) and wildebeest (4-19%) (Lembo et al. 2011).

Some bacterial infections like *Brucella* spp are contagious resulting from consumption of infected raw milk or meat, or close contact with infected animal fluids. The disease can often lead to serious complications including arthritis, endocarditis and encephalitis lasting from a few weeks to years (Fyumagwa et al. 2009). Recent reports have shown that 7.7% of humans and over 50% of livestock in northern Tanzania tested positive for *Brucella abortus* (Crump et al. 2013). Spillover infections to wildlife can sustain the disease and become a source of spillback infection to humans and livestock.

Rift Valley fever (RVF) is an acute vector borne zoonotic viral disease presenting a potential threat to the human and animal population mainly in sub-Saharan Africa. RVF affects mainly livestock, especially sheep, goats and cattle causing abortion in females and a high mortality rate in newborn animals leading to considerable economic losses. Eastern and Southern African countries had reported several RVF outbreaks that resulted into substantial losses of animals and humans. During the last outbreak in 2006/07 in Tanzania, Kenya and Somalia, more than 1,000 infections in humans and 323 deaths were reported. RVF is a notifiable disease under the Tanzanian Animal Disease Act since 1980 (Ecosystem Health Research in Tanzania, 2010-20110) and according to the Integrated Disease Surveillance and Response (IDSR) Guidelines of the Tanzania Ministry of Health and Social Welfare since 2011.

1.2.3 Potential Routes of Exposure

In Tanzania, illegal hunting of wild herbivores for game meat is very high. For example, in the Serengeti ecosystem between 30,000 and 100,000 wild herbivores are illegally hunted every year for commercial purpose targeting both local and foreign market (Hofer et al., 1996; Loibooki et al., 2002). The growing demand and increased trade of bushmeat for consumption creates increased opportunities for pathogen transmission to humans from wildlife (Liegeois et al 2012). In the 2014 Ebola epidemic in West Africa, more than 20,000 were infected with more than 8,500 deaths by end of December 2014, and the source of the epidemic is suspected to be from bats or non-human primates. Tanzania is at risk of many zoonotic diseases because it has the largest wildlife population in Africa including bats and non-human primates (Chaber et al. 2010; Smith et al. 2012).

Bats are usually considered inedible by most groups of people in East Africa because of their preference to nocturnal habits and associations with witchcraft and/or death. However, people in Pemba, Tanzania appear to be unique in that they hunt and eat bats (Walsh, 2009). At least 11 species of bats (Order Chiroptera) are found on Pemba Island. The most sought-after species is the endemic Pemba Flying Fox, *Pteropus voeltzkowi*, followed by the Straw-coloured Fruit Bat, *Eidolon helvum*.

A recent study in Morogoro, a city in the southern highlands of Tanzania, has reported a high (19.4%) prevalence of leptospirosis in bats (Mgode et al., 2014). The authors concluded that bats are a potential reservoir and transmitter of *Leptospira* serovar Sokoine (the serovar name "Sokoine" has been designated for this specific new *Leptospira* isolate). Another group of scientists assessed exposure of straw-coloured fruit bats *(Eidolon helvum)* to selected zoonotic pathogens in Tanzania. They detected antibodies to Henipaviruses in *E. helvum* populations in Dar es Salaam and Morogoro, with an average seroprevalence of 57% and 1% in adults and sexually immatures, respectively. Antibodies to lagos Bat Virus (lBV) were also detected in *E. helvum* populations and the average seroprevalence was 50% and 32% in adults and sexually immatures, respectively. They concluded that "Spill-over" transmission of these viruses to other mammalian species, including humans, is likely to occur (http://e-library.costech.or.tz/greenstone/collect/reports1/).

The high interaction among humans, livestock and wildlife can easily result in interspecies transmission of zoonotic diseases. The large human population and increased demand for land, food and use of natural resources is the root cause of increased transmission of diseases. Zoonotic diseases are of great importance at the interface among humans, livestock and wildlife, especially in self-identified populations that primarily rely on raising livestock on 'natural' pasture that has been unimproved by human intervention, otherwise referred to as "pastoral communities" (Salzman 2004). These nomadic communities consume raw milk and medium cooked meat, which is a potential source of infections (Crump et al. 2013). Exposure levels to these zoonotic pathogens in rural populations and those at occupational risk are widespread.

1.2.4 Zoonotic Disease Control Efforts

Many African countries lack adequate policies, technologies and resources to curb the incidence of zoonotic diseases. Most of the neglected zoonoses in Tanzania, such as Tuberculosis (TB), Brucellosis, Cysticercosis, Plague, Salmonellosis and Anthrax are making a strong comeback, causing devastating effects on livestock and adversely affecting human health. However, the prevalence of these zoonoses on the continent and within countries is not clear. For example, in Botswana, it is estimated that 10% of the estimated 1.7 million cattle are infected with *Cysticercus bovis*. This is profound in small scale farming communities, which account for a large percentage of the country's cattle population. Huge financial losses are incurred in beef export due to condemnation of infected carcasses and the zoonotic risk to pastoral communities in this country is high as well. However, in Tanzania, which is a third country in Africa for cattle population (22 million) and where majority of livestock is kept by semi-nomadic pastoralists, the problem of bovine cysticercosis is not clearly documented.

Among health care providers in Tanzania, knowledge of these diseases as cause of febrile illness is extremely limited (Swai and Schoonman, 2009) and this lack of awareness is confounded by the limited data on zoonosis and the capacity for diagnosis of these agents. The problem is further compounded by the lack of understanding of the underlying complexity of social, economic, and environmental factors as key drivers of zoonoses persistency in Tanzania. These drivers may be acting at local, regional and global levels; however, they greatly influence livestock ownership and management practices in many cultural settings in Tanzania. The rapid growing concern of urbanization is another driving demand for meat and milk products among the growing affluent population, also leading to changing patterns of urban livestock keeping. The consequence of these changes in livestock-keeping practices and zoonotic disease risks are almost unknown.

Many neglected zoonoses can be controlled and treated by providing safe and effective drug treatments to individuals in affected communities concurrent with public health education to avoid re-infection. The diseases thrive in places with poor sanitation and limited access to basic health care. They cause severe pain and life-long disabilities, and are often less visible and have a low priority. Many pastoral and agro-pastoral communities have little knowledge

of the epidemiology of most of these zoonoses. Consumption of raw meat, milk and blood is reported to be a common practice. Sanitation conditions are poor due to, among other things, lack of knowledge and nomadic lifestyle. Furthermore, the medical, public health system and veterinary sectors operate in a fragmented manner thus efforts to control these zoonoses are often fragmented and uncoordinated.

1.3 Evolution of One Health Approach

1.3.1 Global Steps Toward One Health

The One Health concept is a worldwide strategy for expanding interdisciplinary collaborations and communications in all aspects of health care for humans, animals and the environment. The synergism achieved will advance health care for the 21st century and beyond by accelerating biomedical research discoveries, enhancing public health efficacy, expeditiously expanding the scientific knowledge base, and improving medical education and clinical care. When properly implemented, it will help protect and save untold millions of lives in our present and future generations. Recognizing that human health (including mental health via the human-animal bond phenomenon), animal health, and ecosystem health are inextricably linked, One Health seeks to promote, improve, and defend the health and well-being of all species by enhancing cooperation and collaboration between physicians, veterinarians, other scientific health and environmental professionals and by promoting strengths in leadership and management to achieve these goals. Around the World, the One Health Initiative is a call to action for the establishment of closer professional interactions, collaborations, and educational and research opportunities across the health science professions and related disciplines to improve health of people, animals, plants, and the environment. Our changing environment now often increases human and animal contact creating significant challenges. These challenges require integrated solutions and call for collaborative leadership.

The World Health Organization (WHO) revised the International Health Regulations (IHR) in 2005 to provide a new framework for the coordination of events that may constitute a public health emergency of international concern, and for improving the capacity of countries to assess and manage acute public health risks. The IHR 2005 guidelines require that unusual health events, including zoonoses, be addressed by effective national surveillance and the

establishment of human-animal coordinated response mechanisms at all levels. The IHR 2005 guidelines also require the inclusion of veterinary officers and wildlife experts in the national and sub-national public health emergency management committees when dealing with zoonotic events. At the 61st World Health Assembly in 2008, WHO adopted 20 key indicators for monitoring IHR core capacity at the national level, including two indicators specific to One Health. First, each country is required to establish a mechanism for coordinating all relevant sectors in the implementation of IHR 2005. Second, each country must establish a system for surveillance of zoonoses and potential zoonotic events.

In addition, the World Organization of Animal Health (OIE) has advocated for improved governance of zoonotic diseases by its member countries and has recognized improved collaboration between the public and animal health sectors as key in this process. In February of 2006, a tripartite agreement between Food and Agriculture Organization (FAO), OIE, and WHO created the global early warning system for the prediction, prevention, and controlling disease threats including zoonoses. Adoption and implementation of this One Health Strategy will help Tanzania with implementation of the 2005 IHR.

1.3.2 Economics of One Health

The case for control of zoonotic diseases (zoonoses) is compelling. A 2011 report by the OECD shows that pandemics are a prime global catastrophic threat—a finding that is consistent with a number of other assessments (OECD 2011). Potential losses resulting from a severe influenza pandemic, for instance, which may lead to 71 million human fatalities would be $3 trillion, or 4.8 percent of the global GDP. In addition, tackling endemic zoonoses would reduce a major source of human suffering and economic losses that disproportionately affects many of the poorest households in developing countries. Echinococcosis, for instance, imposes a human and economic burden in developing countries that each year costs at least 1.5 million healthy life-years, as well as US$2 billion in livestock losses. Control of a zoonosis requires early and rapid actions. A typical episode may involve a pathogen that originates in wildlife, then passes to livestock, and is then transmitted from livestock to humans. Exposure to the pathogen in animals could be followed by symptoms in animals. Then there is a rise of exposure in humans, who subsequently could develop symptoms, may seek treatment, and infect each other. If the disease reaches the point of spreading among humans, the disease

will have already done substantial damage. Moreover, the spread of the disease among humans at that point may be difficult to slow or reverse, and the cost of disease control will usually increase rapidly. This pattern of progression is evident from the high and rising cost of controlling HIV/AIDS, which is also of zoonotic origin. Thus, effectiveness of zoonotic disease control requires early detection at the source of the disease in animals, an early and accurate diagnosis, and rapid disease control measures. Delays substantially reduce effectiveness. The more effective an approach is, the more lives it will save, and the higher the benefits in terms of avoided losses. Authorities too often start looking for the disease in animals and undertake diagnostic and control efforts only after human cases and deaths have been observed. When disease surveillance and control take this form, humans essentially serve as a sentinel species—human death and illness act as indicators of disease in animals. Because surveillance, diagnosis, and control of zoonotic disease take place at the interface between animals and humans, systematic communication and substantial coordination between human, wildlife, and veterinary health services is an important practical necessity. And this communication and coordination also needs to extend to those services that monitor food safety. One Health is an approach to ensure that this critically important interdisciplinary collaboration occurs. This collaboration reduces the gaps between institutions and disciplines that can cause costly delays, and even failures, in disease detection and control. One Health refers to "the collaborative efforts of multiple disciplines working locally, nationally and globally to attain optimal health for people, animals and our environment."

2.0 Situational Analysis

2.1 International Health Regulations (IHR) 2005

Member States use IHR 2005 to govern surveillance of public health emergencies of international concern. These guidelines were enacted in 2005 and came into force on 15 June 2007 and are legally binding for WHO Member States. In 2006, the Resolution AFR/RC56/R2 of the Regional Committee for Africa in Addis Ababa called for the implementation of the IHR (2005) in the context of the Integrated Disease Surveillance and Response (IDSR). IHR 2005 has an expanded scope to include all public health emergencies of international concern (including zoonoses). Successful implementation of IHR 2005 requires the fulfillment of 8 core capacities including legislation, policy and coordination, surveillance, preparedness, response, risk communications, laboratory and human resources for all levels including Point of Entries, as well as Potential hazards (zoonotic events). A developed checklist and indicators for monitoring progress in the development of IHR Core Capacities in State Parties have been developed and have been defined using capability levels (i.e. the level of performance attained by a State Party for a given indicator, component and core capacity). The aim of the checklist is to enable self-assessment of the status of States Parties' core capacity development and identify areas for strengthening. The recommended checklist for monitoring progress of IHR core capacity development in zoonotic events according to capability levels is as follows:

Capability Level 1: Foundational

- Coordination exists within the responsible government authority (ies) on the detection of, and response to zoonotic events.
- List of priority zoonotic diseases with case definitions available.
- A regularly updated roster (list) of experts that can respond to zoonotic events is available.

Capability Level 2: Inputs and processes

- National policy, strategy or plan for the surveillance and response to zoonotic events are in place.

- Focal point(s) responsible for animal health (including wildlife) designated for coordination with the Ministry of Health and compliance with IHR 2005
- Systematic and timely collection and collation of zoonotic disease data is done.
- Access to laboratory capacity, nationally or internationally (through established procedures) to confirm priority zoonotic events is available.
- A mechanism for response to outbreaks of zoonotic diseases by human and animal health sectors is established.

Capability Level 3: Outputs and outcomes

- Functional mechanisms for intersectoral collaborations that include animal and human health surveillance units and laboratories are established.
- Zoonotic disease surveillance that includes a community component is implemented.
- Timely and systematic information exchange between animal surveillance units, human health surveillance units and other relevant sectors regarding potential zoonotic risks and urgent zoonotic events.
- Timely response to more than 80% of zoonotic events of potential national and international concern.

Capability Level 4: Additional achievements

Country experiences and findings related to zoonotic risks and events of potential national and international concern have been shared with the global community

2.3 Strengths, Weaknesses, Opportunities and Threats Analysis for One Health Implementation in Tanzania

ONE HEALTH COORDINATING BODY	
STRENGTHS	**WEAKNESSES**
- Informal coordination amongst institutions exist (for some zoonotic diseases) - Presence of stakeholders of varied level of responsibilities and interest - Existence of disease surveillance and reporting system in place - Coordination and communication through PMO - Early prediction, detection and response - Timely response to disasters/ disease outbreaks - Availability of trained staff/manpower in specific areas - Existence of Laboratory infrastructure - Existence of accredited labs - Rational use of resources - Capacity and knowledge sharing - Availability of experts (multidisciplinary/multisectoral) - Availability of facilities (Infrastructure, labs, Institutions, etc.) - High political willingness (support from PMO is high) - Existence of contingency plans (National Avian Pandemic Influenza Plans , RVF contingency plan, Preparedness Plan for Public Health Risks and Emergencies) - Existence of One Health Initiatives in different sectors (OHCEA, SACIDS, Afrique One, etc.) - Availability of Disaster and Emergency committees - Legal power to coordinate and command - Power of resource mobilization. - Presence of multisectoral expertise (Animal, Human, Environmental health.) - Existence of National Task Force committees in various sectors to respond to public health events including zoonotic diseases	- Uncoordinated/fragmented habit of doing work - Low perception of burden of zoonoses among public/policy makers and politician - Criteria for resource allocation are not in favour of zoonotic diseases - Weak multisectoral coordination - Lack of funds for supporting the unit (sustainability) - Inadequate laboratory capacity for diagnosis all infectious pathogens (biosafety level) - Lack of coordination unit and lack of funds to support the suggested coordination unit (sustainability) - Lack of comprehensive National One Health Strategic Plan - Lack of One Health Policy guidelines - Lack of enough human resource capacity - Lack of appreciation of One Health Concept among policy makers - Misconception/conflicting roles of One Health Concept among experts - Inadequate integration of One Health Concept in University/Institutions Curriculum - Poor economy - Bureaucratic barrier among different sectors - Competing priorities - Resources are project oriented with starting and ending dates - Inadequate skilled staff

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OPPORTUNITIES	THREATS
- One health approach issues in regional and global resolutions which country has signed and adopted - New policy on One Health under PMO is forthcoming - Presense of (multiple) emerging and re-emerging zoonotic diseases such as Ebola - Inclusion of one health approach issues within government sectors as well as in the University training curriculum - Presence of PMO disaster management unit - Existence of some legal and policy framework - Existence of large expertise base (trained human resource) - Availability of surveillance systems in all involved ministries - Availability of basic institutional set up within involved ministries - Existence of potential development partners and local support - Existence of multisectoral coordination activities/projects - Availability of contingency plans which involve different sectors - Presence of the political will and stability - Existence of various local One Health implementing partners - Strong inter-ministerial cooperation through newly developed TWG - Recognized needs for the multisectoral collaboration	- Conflicting interests on priority setting amongst key players - Conflicting interests in different ministries and change of personnel - Unstable organizational Structure - Global economic crisis - Political instability among neighbouring countries - Competing Priorities - Existence of parallel projects with different priorities. - Inadequate of own resources

ONE HEALTH RESEARCH

STRENGTHS	WEAKNESSES
- Participating institutions are conducting relevant and reliable research related to One Health - Existence of multidisciplinary/sectoral research experts - Political will on importance of research - Availability of basic infrastructure and resources for research - Existence of research information sharing system - Existence of rich and diverse natural resources for use in research	- Each institution is conducting research in isolation - Lack of enough multidisciplinary research expert - Inadequate information sharing among institutions on One Health research - Duplication of research by different institutions - Inadequate support by policy makers - Inadequate and scattered lab facilities and infrastructure - Inadequate streamlined research priority - Output of One Health research is not used to inform appropriate policies - National research agendas do not address One Health issues
OPPORTUNITIES	**THREATS**
- Occurrence of emerging/re-emerging pandemic threats - Baseline information on one health are existing in different collaborating institutions - Existence of external funding agencies - Interest of development partners and innovation - Political will - Presence of PMO-Disaster Management unit - Existence of EAC One Health forum - Existence of forum (e.g. RMO/DMO meetings; TAWIRI, TVA, NIMR, TAWIR conferences) that can be used to provide policy briefs	- Many research projects are not demand driven - Lack of availability of renewable material resources - Global economic crisis - Competing priorities of the donor and local institutions - Diversity of one health group formulation - Lack of government commitment after donor withdrawal - Inadequate communication between researchers and policy makers - Customs and culture

ONE HEALTH TRAINING, ADVOCACY AND COMMUNICATION

STRENGTHS	WEAKNESSES
- Existence of human and animal health training institutions - Existence of Integrated Diseases Surveillance and Response (IDSR) strategy - Availability of multisectoral expertise - Existence of disaster management committees from national level to grassroots levels - Availability of **some** One Health demonstrations sites - Availability of One Health long and short courses (SUA, MUHAS)	- Weak information sharing mechanism - Weak multi-sectoral coordination - Lack of One Health policy - Lack of national One Health strategy plan - Lack of appreciation of One Health concept among policy makers - Lack of One Health harmonized curriculum among institutions - Inadequate resources - Academics rigid to adopt to new initiatives - Primary and secondary school do not capture elements of One Health
OPPORTUNITIES	**THREATS**
- Political will - Existence of national contingency plan (AI, RVF and National Pandemic Preparedness Plan) - Possibility of funding from government and donors - Various channels of communication exist, which will assist in education of the public through vibrant education media outlets - High need and demand for capacity building	- Unstable organizational structure of ministries (similarly to departments, directorates and units) - Political instability among neighbouring countries - Conflicting interests in priority setting among key players and participating agencies - Customs and culture

ONE HEALTH DISEASE SURVEILLANCE, PREVENTION AND CONTROL

STRENGTHS	WEAKNESSES
- Existence of legal and policy framework - Animal Disease Act (2003) - Public Health Act (2009) - National Livestock Policy (2006) - Wildlife Policy (2009) - Existence of disease surveillance guidelines - IDSR/IHR (2005) - OIE - FAO - Existence of contingency plan for some diseases - RVF Contingency Plan - HPAI - H5N1 - Laboratory infrastructure with some diagnostic capacity - Well trained and capable staff at all National levels - Multiple disease challenges - Funds are being allocated	- Habit to work in silos - Weak coordination of activities - Lack of knowledge of laboratory capacity throughout the different sectors (health, livestock, wildlife) - Lack of intersectoral laboratory sharing policy - Lack of harmonized disease surveillance guidelines - Lack of National OH policy and strategic plan - Inadequate human resource at subnational levels - Low disease awareness at lower levels (Famers/livestock keepers) - Inadequate information sharing (between sectors) - Inadequate surveillance data feedback (between sectors and farmers/livestock keepers) - Lack of integrated SOPs and guidelines focuses for zoonotic diseases
OPPORTUNITIES	**THREATS**
- Good communication infrastructure - ICT exists which supports reporting via mobile - Existence of various surveillance tools - Enhanced collaborations among stakeholders focused on zoonotic diseases - Presence of potential donors to support disease surveillance and prevention	- Conflicting political interests - Conflicting and / competing interests on priority setting and resource allocation - Diversity of disease reservoir - Unpredictable weather / climate change - Fragmented chain of command

EPIDEMIC PREPAREDNESS AND RESPONSE

STRENGTHS	WEAKNESSES
- Existence of Multisectoral Preparedness plans on RVF and Avian Influenza - Existence of multisectoral disaster management committees at region and district levels - Existence of preparedness and response teams at national level and selected subnational levels - Existence of Diagnostic and treatment facilities - Existence of IDSR guidelines - Trained personnel in outbreak investigation and response - Allocated funds for epidemic	- Epidemic preparedness plans are not exhaustive and those present are not tested - No joint outbreak investigation guidelines - The existing multisectoral emergency preparedness teams are not being utilized and are not functioning - Limited financial and human resources - Emergency preparedness teams are not functional in absence of outbreaks - No proper coordination of teams during outbreaks (within ministries and interministerial) - Inadequate laboratory capacity for diagnosis of all infectious pathogens (biosafety level) - Weak information sharing during outbreaks - Lack of isolation facilities - Lack of well trained staff at subnational levels
OPPORTUNITIES	**THREATS**
- Increasing occurrence of zoonotic disease - Existence of partners willing to support - Existence of regional collaboration (EAPHLN, ECSA, SADC, EAC) - Existence of diagnostic facilities - TVLA has become an agency to support diagnosis of zoonotic diseases - Existence of Tanzania Vaccine Institute under TVLA - Existence of TFDA - Establishment of Mobile Laboratory for Pathogens up to Risk Group 4 within National Institute for Medical Research	- Existence of different groups (ministries, private sector, NGOs, universities, etc.) addressing one health activities which are not coordinated - Change of patterns of emerging and re-emerging diseases

3.0 Five Year Plan

3.1 Background on the National One Health Strategic Plan

3.1.2 Core Values

The following are the core values that will guide the implementation of this strategic plan:

- *Collaboration* – promote engagement and collaboration to achieve the strength of a united force working for the benefit of all
- *Adaptability* – flexible, innovative and responsive to meet the changing needs of our society
- *Excellence* – promote the highest standards of performance throughout the scope of One Health to ensure quality and continuous improvement at all levels
- *Teamwork* - close working relationship with all stakeholders for synergy
- *Transparency* - openness and willingness to promote and share in executing One Health
- *Resilience* - recognising the varied staff, programmes, disciplines, sectors and backgrounds with the ultimate aim of reaching a common goal

3.2 Guiding Principles

The following principles will guide the implementation of this plan:

- Prevention and control of zoonoses is a national public good and requires strong political and financial commitment at national and county levels
- Sustainable utilization of existing institutions and whenever possible drawing on lessons learnt
- Use of a multidisciplinary approach to realize technical, political, and regulatory frameworks required to effectively manage zoonoses
- Science-based and continually adjust to new information and technologies
- Recognize and respect cultural diversity

3.3 Vision, Mission and Goals

VISION: A nation with optimal health for people, animals and the environment achieved through collaborative efforts locally, nationally, regionally and globally.

MISSION: Improve the well-being of the United Republic of Tanzania by promoting collaboration in addressing One Health country priorities.

GOALS:

1) Increase awareness on One Health for professionals, policy-makers and the community

2) Strengthen preparedness planning and improve the ability to respond to zoonotic disease outbreak at all levels (community, District, Regional and National)

3) Improve the health of human, animal and environment through evidence-based research

4) Provide functional and quality integrated human and animal health systems, at all levels, to reduce the burden of zoonotic diseases

5) Strengthen institutional framework to support One Health implementation

3.4 Objectives and Strategies

3.4.1 Thematic Area 1: Training, advocacy and communication				
Goal: Enhance awareness on One Health for professionals, policy-makers and the community				
Objective	**Strategy**	**Strategic activities**	**Indicators**	**Means of verification**
1. To increase awareness on One Health to 80% of at risk population from identified priority zoonotic diseases areas at all levels, by June, 2020	1.1. Developing and operationalizing One Health Communication and Advocacy Strategy	a) Prepare communication and Advocacy Strategy document	Communication and Advocacy Strategy in place	Communication and Advocacy Strategy
		b) Disseminate communication and Advocacy strategy through workshops, seminar, etc.	Workshops and seminars held nationally, regionally and in the districts to disseminate communication and Advocacy strategy	Quarterly and annual reports
	1.2. Sensitization on One Health through different media and other forum	a) Develop a dissemination plan to create awareness	Plan for awareness creation is developed and available	Work plans
		b) Develop sensitization materials (print, social media, electronics etc.)	Types and number of materials developed	Financial records, samples of materials
		c) Conduct dissemination and sensitization meetings	Number of meetings/sensitization meetings	Meeting reports; Quarterly reports
2. To increase the knowledge base focused on One	2.1. Developing One Health training materials	a) Curriculum review and development workshops	Number of curriculum review and development workshops held	Availability of curricula; Meeting and Progress reports

Health initiatives in 80% of pre-service and 30% of in-services trainings by July 2018		b) To integrate existing One Health curriculum among institutions	Integrated and updated One health curriculum is available in all institutions	Copies/samples of developed curriculum available at institutions
		c) Develop OH materials to conduct training to human health and animal health workers	Number of training institutions have same/common training materials developed for their trainees	Availability of copies of materials in institutions
	2.2 Conducting training to in-service/on-job human and animal health workers	a) Conduct capacity building to institution tutors	Number of institutions and tutors trained	Training reports; Inventory of institutions and tutors with skills on OH trainings
		b) Conducting Training of Trainers (ToT) for cascaded OH training	Type and number of ToTs	Training reports; Inventory of TOT on OH
3. To increase awareness about One Health to 100% of policy and decision makers by July 2020	3.1. Lobbying and advocacy to policy and decision makers	a) Conduct sensitization meetings / workshops	Number of sensitization meetings and workshops held to lobby and advocate on One Health to policy and decision makers	Advocacy briefs; Progress reports
		b) Dissemination of One Health Strategy	Number of copies of One Health strategy documents distributed policy and decision makers	Copy of strategies

3.4.2 Thematic Area 2: Preparedness and Response

Goal: To strengthen preparedness planning and improve the ability to respond to zoonotic disease outbreak at all levels (community, District, Regional and National)

Objective	Strategy	Strategic activities	Indicators	Means of verification

1. Develop a framework for improving capacity for preparedness to respond to Zoonotic disease outbreak to all levels by 2016	1.1. Setting up system to ensure availability of sustainable resources	a) Establish coordinated and functional Multidisciplinary emergency preparedness and response teams with TORS	Presence of TORS and functional multidisciplinary Emergency preparedness teams and number of outbreaks responded within a specified time	TORs available, outbreak investigations reports available
		b) Create a joint human resource mobilizing mechanism through the PMO from involved ministries and agencies	Common HR mobilization mechanism developed	HR policy
		c) Identify and develop a sustainable mechanism for soliciting operational funds for emergency preparedness and response	Mechanism for fund raising developed	Fund raising strategy
		d) Establish emergency preparedness funds	Availability of emergency preparedness funds	Presence of Emergency preparedness funds account and funds available in the account.
	1.2 Develop exercise response plans	a) Conduct tabletop simulation exercises	Gap analysis report	Simulation exercises report
		b) Conduct field simulation exercises	Gap analysis report	Training Report

2.To strengthen the coordination of emergency preparedness and response to zoonotic disease outbreak among relevant ministries and agencies by 2020	2.1. Develop coordinating mechanism for emergency preparedness and response to zoonotic outbreak	a) Develop integrated guidelines and contingency plans for coordinated emergency preparedness and response of zoonotic diseases.	Integrated One health guidelines and emergency preparedness and response plans are available among all collaborating ministries and partners	Copies of guidelines
		b) Develop coordinated standard operating procedures for emergence preparedness and response.	Emergency preparedness and response SOPs are developed and disseminated among all stakeholders	Copies of SOPs available

3.4.3 Thematic Area 3: Research

Goal: Improve the health of human, animal and environment through evidence based research

Objective	Strategy	Strategic activities	Indicators	Means of verification
1) To enhance Institutional collaborative Research projects on One Health by 60% in 2020	1.1 Strengthening and establish institutional agreement on collaborative research projects on One Health by 2020	a) Develop, review and revise MoUs and MTAs/DTAs to reflect one health among relevant research institutions and laboratories services	Evidence of MoUs and MTA/DTAs developed among research institutions	MoUs and MTA/DTAs
		b) Conduct inventory on existing capacity - develop database	Data-base of inventory on existing institutional research capacity developed	Inventory of research projects
	1.2. Improve existing laboratory	a) Procure laboratory requirements based on research needs	Inventory of procured lab equipment and supplies are available	Inventory of equipment and supplies

		b) Training of research teams	Training report on types, modules, venue and names of personnel trained with details of cadre is available	Training reports/records
and human resources capacities		c) Harmonize Institutional policy and regulations on utilization of laboratory services to integrated use (human/ animals)	Harmonized policies and regulations	MoUs, policy and regulations
2) To coordinate the setting of One Health research priorities among all institutions by 2020	2.1. Establish national One Health research agenda	a) Streamline joint OH research priorities	Proceedings of consultative meetings held A national priority list of OH research is available	OH research priority list
		b) Develop joint OH research proposals	Evidence of joint available proposals being undertaken	Project progress reports
		c) OH coordination workshops	Number, venue, dates and agenda of OH research workshop	Workshop records of OH coordination and proceedings
3) Enhance communication linkages between One Health researchers and policy makers by 2020	3.1. Communicating One Health concepts to policy and decision makers	a) Participate and present at existing fora, such as (RMO/DMO, TAWIRI, TVA, NIMR, TAFIRI, TPHA, MUHAS, UDOM, etc.) to communicate research findings	Conference proceedings	Proceedings
		b) Use of media/ agencies/ websites to	Evidence of research publications in journals and	Journals publications and manuscripts, booklets, Brochures

		disseminate research result to the public	media and number of times they have appeared.	
		c) Convene policy dialogues to policy makers on policy briefs	Proceedings of meetings/workshops/prese ntations convened for policy makers/bureaucrats and their numbers	Proceedings of the meetings and /Policy briefs
		d) Conduct dissemination meeting to communities	Proceeding of meetings	Proceeding of meetings

3.4.4 Thematic Area 4: Disease surveillance, prevention and control

Goal: Functional and quality integrated human and animal health systems to reduce the burden of zoonotic diseases

Objective	Strategy	Strategic activities	Indicators	Means of verification
1) To promote and strengthen integrated surveillance, prevention and control of zoonotic diseases in 12% of the districts annually by 2020	1.1 Establish an integrated zoonotic disease surveillance system at national, zonal/regional and district levels	a) Take inventory of the existing zoonotic disease surveillance tools	Availability of the inventory of zoonotic disease surveillance tool	Surveillance tools
		b) Develop risk map for priority zoonotic diseases	Risk map for priority zoonotic disease is available and in use	Current or updated risk maps
		c) Develop guidelines for disease surveillance based on the existing disease surveillance guideline (OIE, WHO, FAO, etc.)	Guidelines for surveillance of existing zoonotic diseases are developed and being used.	Guidelines
	1.2. Enhance integrated zoonotic disease surveillance at national, zonal/regional,	a) Conduct trainings	Number of training conducted at national, regional and community level on zoonotic disease surveillance	Training and progress reports

district and community levels	b) Raise community awareness on zoonotic diseases	Number and types of community awareness raising approaches used to enhance zoonotic diseases surveillance at all levels.	Progress reports
	c) Develop an integrated zoonotic disease database	Availability of a database	Database in place
	d) Conduct quarterly zoonotic disease surveillance meetings at national, regional and district level	Number of meetings	Report
1.3 Strengthen cross-border sharing of information on zoonotic diseases	a)Participate in quarterly cross-border surveillance committee meetings	Number of meetings attended	Report
	b) Identify and develop a list of priority zoonotic diseases	Evidence of list of priority zoonotic disease through inventory or publications	Records
	c) Develop guidelines and SOPs for integrated prevention and control for selected priority zoonotic diseases	Availability of strategies developed by the unit for prevention and control of priority zoonotic disease	Unit plans and strategies
	d) Incorporate and implement integrated zoonotic disease prevention and control strategies into LGA and other institutions	Evidence of implementation of zoonotic disease prevention and control strategies	Implementations plans and reports

		e) Conduct training on zoonotic disease prevention and control to regional, district and stakeholder institution staff	Number of trainings conducted on zoonotic disease prevention and control for regions, districts and institutions	Training reports
2) To enhance zoonotic disease diagnostic capacity at national (100%), zonal/regional (60%) and district (30%) levels by 2020	2.1. Strengthen laboratory capacity	a) Take inventory of diagnostic laboratories	Inventory of diagnostic laboratories	Inventory records
		b) Build laboratory capacities (physical, financial and human)	Number of laboratories built, equipped and staffed	Inventory and reports
		c) Develop laboratory network	Number of laboratories with networks among themselves and collaborating in delivery of research and services	Inventory
		d) Develop and harmonize SOPs	SOPs developed and harmonized for enhanced standards	SOPs
		e) Conduct training	Number of trainings conducted for laboratory staff to enhance quality and strengthen their capacity	Training reports
		f) Establish quality management system in all laboratories dealing with zoonotic disease diagnosis	Quality management system in place Number of labs/tests accredited	Quality assurance audit report

3.4.5 Thematic Area 5: Coordination

Goal: Strengthen institutional framework to support One Health implementation.

Objective	Strategy	Strategic activities	Indicators	Means of verification
1) By July 2016, a cost effective and efficient One Health coordinating Unit involving 80% of stakeholders established in the DMD PMO's office	1.1. Roles and responsibilities of coordination unit defined and agreed upon	a) Establish a secretariat for coordination of One Health	One Health coordination secretariat is established and working (functional)	Minutes of meetings
		b) Develop terms of reference for the One Health secretariat	Detailed TOR for One Health secretariat that defines roles and responsibilities is available	TOR
		c) Enlist and identify professionals and agencies that are the main stakeholders	Inventory of all stakeholders represented in One Health coordination is available	List of stakeholders
		d) Develop concept notes and proposals to raise funds to manage the secretariat e) To secure and equip the OH office	Evidence of fund raised and proposal making is available	List of funded proposals
	1.2. Technical Working Groups (TWG) are functional and active and well coordinated	a) Identify the number and sectors brought together under each TWG	An inventory of names and number of ministries, sectors and partners working with TWGs is readily available at the secretariat	List of members of TWGs: progress reports
		b) Define roles for the TWGs	Clearly defined functions and roles of each TWG is available	Defined roles of TWGs

		c) Define and agree on frequency of meetings for each TWGs	Minutes of meetings and their scheduled dates are available	Minutes of meetings held
		d) To establish One Health National Forum	ToR establishing the forum and minutes of meetings held.	ToR and minutes of meetings
2) By 2020, establish a mechanism to facilitate and collaborate One Health activities with the relevant ministries, agencies and other organizations by average of 60%	2.1. Establish and operationalize a TWG of all stakeholders	a) Identify leadership for each Technical Working Group	Membership and chair of each TWG is identified and communicated	Minutes of meetings of TWGs
		b) Develop MoU with each ministry, institutions and partners as members of TWGs	MoU binding each partners and their roles are available	MoUs
		c) Establish linkages between TWGs from national, regional to district levels	Evidence of formal working relationship between TWGs, regional and districts coordination units is available	MoUs, Reports

3.5 One Health Strategic Framework

The aim of the OH approach is to diminish the threat of emerging infectious diseases and to minimize the impact of endemic zoonoses. This OH strategic plan is based upon recognition of the intimate linkages among the human, animal and ecosystem health domains. It proposes an interdisciplinary, cross-sectoral approach to disease surveillance, monitoring, prevention, control and mitigation of endemic and emerging diseases. Pooling resources will lead to economies of scale and enable common problems across systems to be addressed in a targeted manner without duplication.

This OH strategic plan will be achieved by pursuing three broad approaches. First, to enhance capacity for zoonotic disease prevention and control, particularly in the animal sector that has traditionally been under-resourced. Secondly, to facilitate collaboration between animal and human health sectors, as well as players in the ecosystem in areas of common interest. These include disease surveillance, early detection, rapid response, education and research. Finally, to conduct applied research at the human-animal-ecosystem interface to fill gaps in the understanding of mechanisms of transmission of zoonotic diseases in order to better formulate prevention and control strategies for these diseases.

3.5.1 Strategic Interventions

Tanzania's One Health Strategic Plan 2015 – 2020 focuses on five thematic areas in consonance with its objectives as outlined below:

1. Training, advocacy and communication
2. Preparedness and response
3. Research
4. Disease surveillance, prevention and control
5. Coordination

3.5.1.1 Training, advocacy and communication

<u>Goal</u>: **Enhance awareness on One Health for professionals, policy-makers and the community**

The aim of this goal is to train in order to increase awareness of One Health for professionals, policy makers and the community in Tanzania. With little knowledge of zoonotic diseases, the

extent of how they spread, or the health and socio-economic impact on the nation and society at large, it will be difficult for policy makers to accept and appreciate the public health implications of zoonosis and allocate appropriate resources for control, management and prevention. Not only do professionals fail to appreciate the epidemiological and relational nature of the zoonosis, but they also function within a disorganized and disintegrated system. The current system is unaware of the best approach to integrated management and coordination that will help articulate management measures. This would undermine rational utilization of the scarce national resources to control and prevent existing and emerging zoonosis. Further, the community continues to bear the burden of diseases that regularly cause major public health hazards, social disruption and economic stress. Under this strategic goal, issues related to education, advocacy and communication for awareness and information are emphasized and given proper attention.

Three strategic objectives have been identified to achieve the above goals. These are:

1. To increase awareness about One Health to 80% of at risk population from identified priority zoonotic disease areas at all levels, by June, 2020
2. To increase the knowledge base focused on One Health initiatives in 80% of pre-service and 30% of in-services trainings by July 2018
3. To increase awareness about One Health to 100% of policy and decision makers by July 2020

Objective 1: To increase awareness about One Health to 80% of at risk population from identified priority zoonotic disease areas at all levels by June 2020

Increasing awareness will be a nationwide event beginning from the top policy makers to regional and districts leadership, partners and stakeholders stretching all the way down to the community and villages across the country. Since the One Health concept is new within the country's context, it is essential that all stakeholders and communities are well informed, educated and equipped to respond appropriately. The importance to leaders and policy makers cannot be over emphasized. They are the best placed to influence the direction the nation could take and are the most trusted source of information as the peoples' representatives. These groups are also influential at the level of resources mobilization and lobbying for the best legislation. The community is the one that feels the immediate effect of

zoonotic diseases. A unified and integrated approach to health care of the affected, prevention and control is better achieved through inclusive and appropriate communication system at all levels. Approaches to achieve this objective include the development and operationalization of One Health communication strategy and sensitization of communities through different media for information, communication and education to enhance changes in behavior.

Objective 2: To increase the knowledge base focused on One Health initiatives in 80% of pre-service and 30% of in-services trainings by July 2018

Building and developing the knowledge and skill base of professional and technical staff in institutions of higher learning countrywide is a necessary and essential intervention that will ensure that the country has the human resource capacity needed to respond to and manage zoonotic diseases well. Including One Health teaching within all institutions of higher learning, such as colleges and universities will help ensure that both new and in-service professionals are well coached, informed and trained in approaches to One Health in Tanzania. This will further reduce the cost and save resources invested in recurrent workshop and short courses. There are two strategies to achieve this objective. The first is to develop or adopt One Health training curriculum in all institutions of higher learning across the country. The second relates to conducting relevant training to in-service human and animal health workers to ensure they have the right knowledge and skills to appropriately respond to and manage zoonosis.

Objective 3: To increase awareness about One Health to 100% of policy and decision makers by July 2020

Engaging policy makers, including the political class, funders and decision makers, is essential and necessary if the One Health approach is to function efficiently and attract attention, resources and succeed in implementation. Legislation, regulations and policies will only pass when each of these groups are adequately sensitized, engaged and convinced to consider the intervention as a priority. Lobbying and advocacy by technical teams and other stakeholders interested in pursuing the issues to the benefit of larger society will ensure the sustainability of the proposed One Health activities. It is only when the hearts and minds of such leaders are won, that influence is assured, leading to allocation of the required resources.

3.5.1.2: Preparedness and response

<u>Goal</u>: Strengthen preparedness planning and improve the ability to respond to zoonotic disease outbreak at all levels (community, District, Regional and National)

Current emergency preparedness teams in Tanzania are not multi-sectoral and coordinated, except under very specific circumstances in which different sectors come together due to highly sensitive outbreaks (H1N1). However, even during outbreaks, there is no proper coordination mechanism for the teams. Emergency preparedness teams are almost non-functional in the absence of outbreaks. Many government agencies and major stakeholders are addressing One Health activities in isolation. With a weak information sharing mechanism, lack of integrated and coordinated investigation guidelines and incomplete preparedness plans, response to outbreaks remains a huge challenge.

Amidst these challenges, inadequate laboratory capacity for diagnosis of all infectious pathogens (biosafety level) is common, coupled with limited financial and human resources. In addition, lack of isolation facilities for patients where highly infectious diseases are handled remains a major deterrent to response, amidst the changing patterns of emerging and re-emerging diseases.

Two strategic objectives have been identified to achieve the above goals. These are:

1. To develop a framework for improving capacity for preparedness to respond to zoonotic disease outbreaks at all levels by 2016
2. To strengthen the coordination of emergency preparedness and response to zoonotic disease outbreak among relevant ministries and agencies by 2020

Objective 1: To develop a framework for improving capacity for preparedness to respond to zoonotic disease outbreaks at all levels by 2016

A One Health framework will provide a mechanism for improving human resource capacity through tabletop and field trainings, as well as support emergency response teams. The Prime Minister's Office can help coordinate teams from relevant ministries based on response needs for emergencies.

The framework will also be used as a tool for funding priorities and inform decisions about establishing government supported emergency preparedness funds. As funding remains a major challenge, initiating a robust and efficient mechanisms to mobilize resources is essential. One strategy will focus on setting up systems to ensure the availability of sustainable resources. To achieve this, relationships with both external and internal technical institutions, experts, funding agencies, donors and other interested parties will be pursued vigorously through sensitization meetings and interministerial meetings.

Objective 2: To strengthen the coordination of emergency preparedness and response to zoonotic disease outbreaks among relevant ministries and agencies by 2020

Coordinating emergency preparedness and response to disease outbreaks and emergencies related to zoonosis is an essential component of the disease management process. Experts within the health, livestock and wildlife fields can be utilized to develop integrated disease-specific data collection documents, guidelines and contingency plans. Developing integrated guidelines will allow multi-sectoral teams to conduct disease outbreak investigations using the same tools and means of documentation and reporting. Revising Standard Operating Procedures (SOP) for preparedness and response to outbreaks, to include both human and livestock health elements will ensure that information is streamlined and easily distributed to all relevant ministries.

3.5.1.3: Research

Goal: Improve the health of human, animal and environment through evidence-based research

There is generally a lack of well-coordinated approaches to conducting research by different institutions due to the lack of streamlined research priorities. Many of the research projects conducted by different sectors are not need-driven and are conducted irregularly by the sectors. Subsequently, research is conducted in isolation, which unknowingly creates duplication due to lack of coordination. Even after research is conducted and published, information on research findings are not shared between institutions or policy makers, as there is a lack of a well-established channel of communication.

Policy makers lack essential information and knowledge of the importance of One Health research, thereby they fail to make it a priority at the governance level. Stand-alone projects fail to gain enough funding from the government once donors withdraw their support upon the end of a project. Failure to prioritize One Health research also impacts the number of research facilities and infrastructure, as well as creates a shortage of multidisciplinary research experts.

Research forms an important part of building evidence for knowledge and decision-making. Conducting research in a collaborative and integrated manner helps different institutions, departments and partners to improve efficiency in terms of information sharing, the establishment of commonality in implementation of programs related to One Health and cost minimization.

Three strategic objectives have been identified to achieve the above goals. These are:

1. To enhance institutional collaborative research projects on One Health by 60% in 2020
2. To coordinate the setting of One Health research priorities among all institutions by 2020
3. To Enhance communication linkages between One Health researchers and policy makers by 2020

Objective 1: To enhance institutional collaborative research projects on One Health by 60% in 2020

Enhancing collaborative efforts among institutions implementing One Health research programs will support more robust and complete findings without duplication of effort. Research conducted by experts from complementary fields will provide unique data focused on zoonotic diseases and will also increase communication among relevant ministries, stakeholders and research partners. As institutions and ministries agree to conduct collaborative research, Memos of Understanding, or other official contracts must be agreed upon, including roles and responsibilities, as well as data and material management.

When efforts are combined, resources are more effectively utilized and waste is reduced, while knowledge and information is shared. One of the strategies under this objective is to improve existing laboratory and human resource capacity by investing in appropriate

equipment and supplies. Capacity building of technical personnel through training ensures availability of personnel that are competent and qualified to be able to conduct the required research.

To ensure that research efforts are in line with priorities and that findings are shared in the most effective manner, Tanzania should have an accurate inventory of past and current research, as well as current research proposals. Collecting and organizing information about research conducted in laboratories and research facilities will serve as an indicator for emerging priorities.

Objective 2: To coordinate the setting of One Health research priorities among all institutions by 2020

This objective reflects the need to identify research themes and the zoonotic diseases that have maximum impact on the health of the population to attract the desired attention and invest accordingly. Collaborating relevant ministries, partners and institutions can maximize utilization of resources by proposing research programs that will contribute to the reduction of the disease burden. The strategy involves the establishment of a national One Health research agenda that acts as a roadmap based on the country's zoonotic disease priorities. Another strategy includes holding workshops to discuss barriers to coordinated research and to explore concrete approaches to overcoming them, as well as discuss methodologies and research results, and lay the groundwork for future research and publication.

Objective 3: To enhance communication linkages between One Health researchers and policy makers by 2020

This effort will ensure strengthened knowledge and appreciation among leaders. When leadership is fully engaged and involved, the opportunity for lobbying to increase resource allocation and dissemination of information is boosted. As a strategy, communicating One Health concepts to policy and decision makers will be implemented through meetings, conferences, workshops and seminars, and information will be shared through briefs.

3.5.1.4: Disease surveillance, prevention and control

Goal: Establish functional and quality integrated human and animal health systems to reduce the burden of zoonotic diseases

Disease surveillance is the continuous systematic collection, analysis and interpretation of health-related data needed for the planning, implementation, and evaluation of public health practice. It is also critical for detecting and managing outbreaks, monitoring the impact of interventions and reducing disease. Surveillance can serve as an early warning system for impending public health emergencies; help document the impact of an intervention, or track progress towards specified goals; and strengthen monitoring and evaluation of the epidemiology of health problems, to allow priorities to be set and to inform public health policy and strategies (WHO).

A weak coordination mechanism, exacerbated by the behavior of different sectors preferring to work in isolation, remains a hiderance to better surveillance, prevention and control of diseases. Lack of or poor coordination, lack of harmonized disease surveillance, poor intersectoral laboratory sharing policy and a lack of harmonized disease surveillance guidelines cause apparent inefficiencies in governance. While laboratory human resource capacity and infrastructure is insuffient, lack of adequate financial resources continue to undermine improvement, as no progress can be made without funding.

From the national level to the regions and districts and to basic community levels including villages and households, information sharing among and between sectors is lacking. There is a general failure to adhere to prevention and control guideliens due to a lack of knowldege, information and skills that would enahnce prevention mechanisms at all levels of society.

Numerous and diverse disease reservoirs continue to contribute to an upsurge in new and emerging zoonotic diseases.

Two strategic objectives have been identified to achieve the above goals. These are:

1. To promote and strengthen integrated surveillance, prevention and control of zoonotic diseases in 12% of the districts annually by 2020
2. To enhance zoonotic disease diagnostic capacity at the national level (100%), zones

and regions (60%) and district levels (30%) by 2020

Objective 1: To promote and strengthen integrated surveillance, prevention and control of zoonotic diseases in 12% of the districts annually by 2020

Communication and coordination among national disease surveillance and response networks are vital in ensuring timely response to a public health event. Globally, zoonoses account for the majority of emerging infectious disease events, and domestic animals and wildlife are well-known reservoirs of many diseases of public health significance. Effective multi-sectoral One Health networks play key roles in disease detection, identification, reporting, and response leading to a decrease in disease burden on both human and animal health. Although systematic information sharing between the human and animal health sectors can help decision makers detect and respond to zoonotic diseases rapidly, resource constraints and other barriers often prevent efficient cross-sector coordination.

Success of any multi-sectoral zoonotic collaboration is reliant on identifying and establishing, or building upon, current modes of communication across traditional and non-traditional public and animal health stakeholders to combat priority zoonotic diseases and establishing and implementing robust national strategies on the prevention, detection, and control of zoonotic pathogens.

An important activity to support enhanced surveillance it to map the laboratory and surveillance networks currently in place for detecting and reporting priority zoonotic diseases in Tanzania. Mapping of zoonoses and the burden of such diseases can help identify hotspots where zoonoses cause significant burdens on health but also where efforts can be focused to improve prevention, communication, and coordination across veterinary and human health.

Objective 2: To enhance zoonotic disease diagnostic capacity at the national level (100%), zones and regions (60%) and district levels (30%) by 2020

To enhance zoonotic disease diagnostic capacity, both medical (human) and veterinary laboratories will be strengthened countrywide. To do this successfully, laboratory infrastructures will be expanded and improved; modern equipment and supplies provided and human resource capacity be developed through training.

Developing a working group to build a framework for cross-border surveillance in order to enable formal sharing of information across borders is an important aspect of building diagnostic capacity. Interministerial meetings with border country leadership will enable improvement of cross-border detection and reporting of infectious disease outbreaks, epidemiological investigations, surveillance-specific laboratory capabilities and communications systems, as well as surveillance and epidemiology related training.

3.5.1.5: Coordination

Goal: **Strengthen institutional framework to support One Health implementation.**

Coordination of One Health initiatives and activities under one national umbrella is essential for providing effective leadership, efficient response to epidemics and better management of resources. Through the One Health coordination body, it is envisaged that institutions will be strengthened, collaboration enhanced, resources mobilized, research coordinated and information availed on time.

Due to the lack of multisectoral One Health coordination, there is nothing to unify the different sectors and institutions that perform similar roles in an integrated manner. Ministries, sectors, departments and institutions continue to work in isolation, while also dealing with bureaucratic barriers. Low perception of the burden of zoonoses among policy makers, politicians and the general public is common, and there is inadequate integration of One Health in University/Institutions curriculum.

Lack of funds for supporting a coordination unit from the government perspective is due to the lack of prioritization, poor economy, policy and strategy gaps. Furthermore, under the current situation, resource allocation is project oriented.

Laboratories are few and lack capacity (human, infrastructural and financial) for diagnosis of all infectious pathogens (biosafety level). Misconception and conflicting roles of One Health among experts is another hindrance to a better approach to achieve a common goal.

Two strategic objectives have been identified to achieve the above goals. These are:

1. To establish a cost effective and efficient One Health coordinating unit involving 80% of stakeholders, to be housed within the DMD PMO's office by July 2016

2. To establish a mechanism to facilitate and collaborate One Health activities with the relevant ministries, agencies and other organizations by average of 60% by 2020

Objective 1: To establish a cost effective and efficient One Health coordinating Unit involving 80% of stakeholders, to be housed within the DMD PMO's office by July 2016

The Coordination of One Health will be through the Prime Minster's Office (PMO), DMD department. This department is already responsible for coordination of other important and related government activities specifically disaster management. With vast experience and influence, it will be a unifying entity as the trust has been built and responsibility fully defined. A mechanism for facilitation and collaboration of One Health activities with the relevant ministries and other stakeholders will be established and operationalized. To achieve this, roles and responsibilities of the coordination unit will be defined and agreed upon by the stakeholders who are mainly the technical sectors and institutions brought together for the purpose. A Technical Working Group (TWG) will be formed to identify roles and contribution expected of each sector. The TWGs are charged with specific technical duties required of them and will meet regularly and advise the coordination unit as appropriate. By playing their role as required, each TWG will bring the positive contribution to the steering committee and add more value to functioning of the coordination unit.

The strategy will provide guidelines on all resource mobilisation that the zoonotic disease control unit will engage in. A TWG to provide oversight and coordination shall meet on quarterly basis. Funding concept papers and proposals will be developed and submitted to groups and organizations based on outcomes of advocacy meetings. Proposals for support to zoonosis control interventions will continue to be submitted to development partners and funding agencies. The TWG will engage with potential donors, government and other funding agencies to advocate for more resource allocation from national and county governments.

The coordination unit along with TWG will facilitate review of the programme performance, address implementation challenges and review the available resources against the program needs. Regular performance reporting on grants will be institutionalized using a standard format.

The unit will further engage partners locally, regionally and internationally for behaviour change at the community level, resource mobilization and to advocate for policy and legislative environment.

Objective 2: To establish a mechanism to facilitate and collaborate One Health activities with the relevant ministries, agencies and other organizations by average of 60% by 2020

The role of the coordinating body will mainly be that of providing oversight including supervision, setting policies and related strategies, as well as legislation and regulations. The unit will play a coordination role to convene meetings, communicate agenda and provide venue to host them.

The unit will closely work with the technical working groups and steering committee to coordinate implementation of One Health among ministries, agencies, institutions and other organizations to articulate matters of national priority as related to One Health and facilitate resource mobilization effort.

The success of a national One Health coordination will largely depend on a well functional unit that is better equipped, well-staffed with competent and technically enriched personnel that will provide management/coordination oversight. It is therefore essential that such competence be identified from the diverse background that will enrich the unit in order to ensure adequate representation of the relevant technical sectors that will compose the unit. It is also equally important later on to compose a well-integrated team of regional and district expertise for smooth implementation and One Health projects at the lower levels.

Staff capacity and abilities will be enhanced through involvement in national, regional and international conferences, meetings, workshops and trainings. This will not only enhance their knowledge, but also strengthen their capacity to learn and articulate state of the art zoonotic disease prevention and control technologies, policies and strategies for implementation of efficient and technically sound program. The working environment will further be improved through identification and equipping of office infrastructure, plant, logistics, equipment, utilities, communication and connectivity.

To discharge its coordination role effectively, the unit will take the lead in supporting, coordination and facilitation of TWGs while at the same time conducting regular performance monitoring and review meetings.

4.0 Organizational Chart and Functions

4.1 PMO Organizational Chart
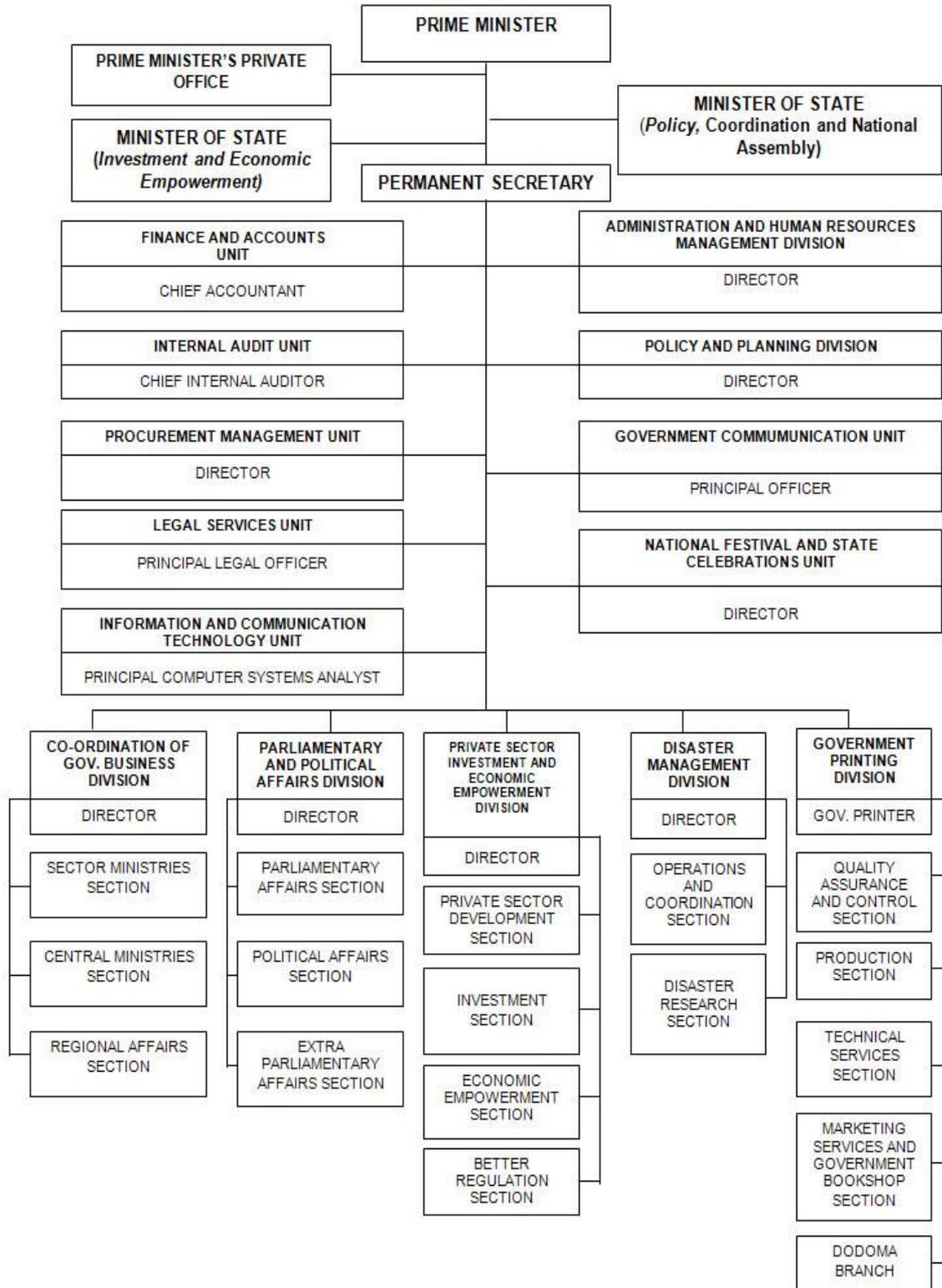
4.2 Functions

4.2.1 One Health Steering Committee

The One Health Steering Committee will be comprised of the Permanent Secretaries of the following offices:

- Prime Minister Office – Chair
- Ministry responsible for Livestock
- Ministry responsible for Public Health and Social Welfare
- Ministry responsible for Tourism and Natural Resources (Wildlife)
- Ministry responsible for Environment
- Ministry responsible for Agriculture, Food Security and Cooperatives
- Ministry responsible for Education and Vocational Training
- Ministry responsible for Finance and Economy Affairs
- Ministry responsible Home Affairs (Internal Security, Immigration)
- Ministry responsible for Defence and National Service
- Ministry responsible for Communication/Broadcasting

Others may include:

- Development Partners' Group (DPG) Tanzania
- World Health Organization
- Faith-based Organisations
- Private Sector
- Humanitarian Organisations
- Food Agriculture Organisations

The roles and responsibilities of the steering committee are to:

- Receive proposals from the Secretariat/Technical Working Groups (TWGs)
- Make decisions regarding proposals submitted by Secretariat/TWGs
- Provide guidance on policy and technical directions/directives
- Mobilise resources

The One Health Steering Committee will meet twice a year.

4.2.2 Technical Working Groups (TWG)

4.2.2.1 Training, Advocacy and Communication TWG

The Training, Advocacy and Communication TWG will be comprised of members from the following institutions:

INSTITUTIONS	MEMBERS
Universities	5 members from MUHAS, SUA, UDSM, ARU & NM-AIST
Ministries	6 members from MoHSW (Health education unit), MoLFD, MNRT, PMO-RALG, MoFEA, TPDF, Ministry of Information, Youth, Culture and Sports
VPO-DoE	1 members
PMO-DMD	Secretariat
NEMC	1 members
COSTECH	1 members
Development Partners (DPs)	5 Members from IHI, KCRC, UN-agencies, Bilateral organisations, CSOs

The roles and responsibilities of the Training, Advocacy and Communication TWG are to:

- Operationalize OH strategy under respective thematic area
- Prepare annual plan as per strategy
- Report to steering committee on the progress to the implementation of OH strategy
- Develop curriculum
- Organize training
- Develop and implement communication and advocacy strategies
- Each representative will provide updates on ongoing activities and will provide technical advice to OH Steering Committee (One more focal person selected as deputy from respective units will represent in the absence of focal person)

Funding: Members will be paid by their organisations and institutes. The Secretariats will be responsible to facilitate quarterly meetings.

The Training, Advocacy and Communication TWG will meet quarterly.

4.2.2.2 Research and Development TWG

The Research and Development TWG will be comprised of members from the following institutions:

INSTITUIONS	MEMBERS
Universities	6 members from MUHAS, SUA, UDSM, ARU & NM-AIST
Ministerial Research Institutes	4 members from NIMR, TAWIRI, TAFIRI, TVLA
PMO-DMD	Secretariat
VPO-DoE	1 members
NEMC	1 members
Ministry of Defence	1 members
COSTECH	1 members
Development Partners (DPs)	5 Members from IHI, KCRI, UN-agencies, Bilateral organisations, CSOs

The roles and responsibilities of the Research and Development TWG are to:

- Operationalize OH strategy under respective thematic area
- Prepare annual plan as per strategy
- Quarterly meeting
- Report to steering committee on the progress to the implementation of OH strategy
- Proposal writing
- Each representative will provide updates on ongoing activities and provide technical advice to the One Health Steering Committee (One more focal person selected as deputy from respect units to represent in the absence of focal person)

Funding: Members will be paid by their organisations and institutions.

The Secretariats will be responsible to facilitate quarterly meetings.

4.2.2.3 Surveillance TWG

The Surveillance TWG will be comprised of members from the following institutions:

1. Assistant Director Epidemiology (MoHSW)

2. National Epidemiologist (MoLFD)

3. Director of Research (TAWIRI)

4. Principal Veterinary Officer (TANAPA)

5. Director of Preventive Services (TPDF)

6. Director (NIMR)

7. 3 Representatives (Universities)

8. Director (TMA)

9. Representative (NHLQATC, TVLA, NIMR, etc)

10. Development partners

The roles and responsibilities of the Surveillance TWG are to:

1. Identify and advise on priority zoonotic diseases

2. Prepare guidelines for zoonotic disease surveillance

3. Proposal preparations for different surveillance programs

4. Provide technical surveillance guidance to SC and OHU

5. To monitor and evaluate surveillance programme

6. To review disease surveillance reports from OHU

7. Prepare agenda for SC

8. Prepare early warning system

9. Meeting schedule: Quarterly/when needed

Funding: Members will be paid by their organisations and institutions. The Secretariats will be responsible to facilitate quarterly meetings.

4.2.2.4 Preparedness and Response TWG

The Preparedness and Response TWG will be comprised of members from the following institutions:

1. Representative (PMO-DMD)

2. Assistant Director Epidemiology (MoHSW)

3. Assistant Director Emergency and Preparedness Section (MoHSW)

4. Director of Veterinary Services (DVS-MoLFD)

5. Director of Research (TAWIRI)

6. Principal Veterinary Officer (TANAPA)

7. Director of Preventive Services (TPDF)

8. Representative (NIMR)

9. 3 Representatives (Universities)

10. Director (TMA)

11. Representative (NHLQATC, TVLA, NIMR, etc)

12. Representative (Relevant Sectors e.g. National Security, Water, Transport, Immigration, etc)

13. Development partners

14. Assistant Director – Health Education and Promotion Section (MoHSW)

The roles and responsibilities of the Preparedness and Response TWG are to:

1. Prepare guidelines/SOPs for preparedness and response

2. Proposal preparations for preparedness and response and resource mobilization

3. Provide technical guidance to SC and OHU

4. Advice and develop on better communication strategies

5. To monitor, evaluate and facilitate preparedness and response plans

6. Prepare agenda for Steering Committee

Funding: Members will be paid by their organisations and institutions.

The Secretariats will be responsible to facilitate quarterly meetings.

4.2.3 One Health Coordinating Unit

The One Health Coordinating Unit will be housed within the PMO- Disaster Management Department.

The Unit will comprised of 5 individuals. They will include:

- OH National Coordinator – With experience in DM and OH issues
- Senior Medical Officer – With knowledge on OH issues experience in disease surveillance and outbreak investigations
- Senior Veterinarian - With knowledge on OH issues, experience in disease surveillance and outbreak investigations
- Supporting staff (Administrative Secretary and Driver)
- Data Manager – With knowledge in IT and experience in Database Management particularly in health

The roles and responsibilities of the One Health Coordinating Body are to:

- Mobilise resources
- Facilitate intersectoral coordination of zoonoses surveillance
- Facilitate intersectoral coordination of outbreak investigation of zoonoses
- Request experts as needed
- Coordinate M&E
- Provide Secretariat to the National OH Steering Committee and TWGs
- Facilitate interministerial social mobilization/psychosocial

Funding: The respective Ministries will cover salaries of National OH Coordinator, Medical Officer and Veterinarian. Salaries of Administrative Secretary and Database Manager (IT) will initially be covered by partner and later passed on to the Government. The cost of the unit will initially be covered by partners and later passed on to the Government.

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Annex 1: Provisional list of reported zoonotic disease in Tanzania

Category	Disease	Etiological agent
Viral	Rabies	Lyssavirus, Rhabdovirus
	Rift valley fever	RVF Virus, Phlebovirus, Bunyaviridae
	HPAI	H1N1, H5N7, H5N1
Bacterial	Plague	Yersnia pestis
	Salmonellosis	Salmonella spp
	Bovine tuberculosis	Mycobacterium bovis
	Anthrax	Bacillus anthracis
	Brucellosis	Brucella species
	Campylobacteriosis	Thermophilic campylobacters
	Verotoxigenic Escherichia coli	Escherichia coli O:157
	Shigellosis	Shigella spp
	Tick borne replasing fever	Borrelia spp
	Q-fever	Coxiella burnetii
	Spotted fever	Rickettsia –typhus group
	Leptospirosis	Leptospira spp
Parasitic	Cryptosporidiosis	Cryptosporidia spp
	Sleeping sickness	Trypanosome spp
	Porcine cysticercosis/Taeniasis	Taenia solium
	Toxoplasmosis	Toxoplasma gondii
	Bovine cysticercosis	Taenia bovis
	Hydatidosis	Echnococcus granulosus
	Trichnellosis	Trichnella spiralis
	Trematodosis (Faciliosis)	Fasciolla spp
	Giardiasis	Giadia lamblia
	Visceral and Ocular larva migrans	Toxocara canis
	Schistosomiasis	Schstosoma spp
Fungal	Dermatophytoses (Ring worm)	Epidemophyton, Microsporum, and Trichophyton spp.
	Sporotrichosis	*Sporothrix schenckii*