

Sudan

This document is a compilation of all questions, justifications, and sources used to determine the 2021 Global Health Security Index scores for Sudan. For a category and indicator-level summary, please see the Country Profile for Sudan.

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Category 1: Preventing the emergence or release of pathogens with potential for international concern

1.1 ANTIMICROBIAL RESISTANCE (AMR)

1.1.1 AMR surveillance, detection, and reporting

1.1.1a

Is there a national AMR plan for the surveillance, detection, and reporting of priority AMR pathogens?

Yes, there is evidence of an AMR plan, and it covers surveillance, detection, and reporting = 2, Yes, there is evidence of an AMR plan, but there is insufficient evidence that it covers surveillance, detection, and reporting = 1, No evidence of an AMR plan = 0

Current Year Score: 2

Sudan has a national antimicrobial resistance (AMR) plan for the surveillance, detection, and reporting of priority AMR pathogens. The National Action Plan on Antimicrobial Resistance for the Republic of Sudan 2018-2020, published in May 2018, is publicly available via the World Health Organization (WHO) Library of National Action Plans. It states that part of its objectives is to enhance surveillance, detection, and reporting of priority AMR pathogens. It also states that part of its strategic priorities is to "set up an integrated National Surveillance System for AMR in Sudan, establish and implement an active and integrated AMR surveillance plan for animal, agriculture and environment sectors under the concept of One Health Approach, build the capacity of the regional veterinary research labs to detect the priority AMR pathogens" [1]. According to a WHO report, "Monitoring Global Progress on Addressing AMR," as of May 2018, Sudan has a National AMR Action Plan that is approved by the government and reflects global action plan objectives with an operational plan and monitoring arrangements [2].

[1] World Health Organization (WHO). "Library of National Action Plans. National Action plan on Antimicrobial Resistance for the Republic of Sudan, 2018-2020".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed on 6 January 2021.

[2] World Health Organisation (WHO). "Monitoring Global Progress on Addressing Antimicrobial Resistance, Analysis Report of the Second Round of Results of AMR Country Self-assessment Survey".

[<http://apps.who.int/iris/bitstream/handle/10665/273128/9789241514422-eng.pdf?ua=1>]. Accessed on 6 January 2021.

1.1.1b

Is there a national laboratory/laboratory system which tests for priority AMR pathogens?

All 7 + 1 priority pathogens = 2, Yes, but not all 7+1 pathogens = 1, No = 0

Current Year Score: 2

Sudan has a national laboratory system that tests for all priority antimicrobial resistance (AMR) pathogens. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "the National Public Health Laboratory (NPHL), and all State Public Health Laboratories (SPHLs) can test for salmonella, mycobacterium tuberculosis, Escherichia coli, Klebsiella pneumoniae, Neisseria gonorrhoeae, Staphylococcus aureus, S. pneumoniae, Salmonella spp., and Shigella spp." In addition, it states that "multiple public health surveillance systems exist in Sudan and each of these siloed surveillance systems has its own list of sentinel sites" [1]. The National Action

Plan on Antimicrobial Resistance for the Republic of Sudan 2018-2020, published in May 2018, which is publicly available on the World Health Organization (WHO) Library of National Action Plans website, states that Sudan has a national laboratory system but it needs improvement and is currently only able to test for a few priority AMR pathogens. It also states that "Sudan has joined Global Antimicrobial Resistance Surveillance System (GLASS) and assigned a National Reference lab and sentinel sites." It does not provide more details in this regard [2]. A WHO report, "Monitoring Global Progress on Addressing Antimicrobial Resistance," published in May 2018, does not provide information on a national laboratory/laboratory system that tests for priority AMR pathogens in Sudan [3].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed on 6 January 2021.

[2] World Health Organization (WHO), Library of National Action Plans. "National Action Plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed on 6 January 2021.

[3] World Health Organization (WHO). "Monitoring Global Progress on Addressing Antimicrobial Resistance".

[<http://apps.who.int/iris/bitstream/handle/10665/273128/9789241514422-eng.pdf?ua=1>]. Accessed on 6 January 2021.

1.1.1c

Does the government conduct environmental detection or surveillance activities (e.g., in soil, waterways) for antimicrobial residues or AMR organisms?

Yes = 1, No = 0

Current Year Score: 0

There is no publicly available evidence that the government conducts detection or surveillance activities (e.g., in soil, waterways, etc.) for antimicrobial residues (AMR) or AMR organisms. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that Sudan only focuses on chemical events when it comes to the environmental tests (e.g., water and soil). The report does not provide information about detection or surveillance for antimicrobial residues or AMR organisms in the environment (e.g., water, soil) [1]. The Ministry of Environment, Natural Resources, and Urban Development website does not provide information about detection or surveillance for AMR or AMR organisms in the environment (e.g., water, soil) [2]. The national action plan on AMR for 2018-2020, published in May 2018, is publicly available on the World Health Organization (WHO) Library of National Action Plans website does not provide information about detection or surveillance for AMR or AMR organisms in the environment (e.g., water, soil) [3]. A WHO report entitled "Monitoring Global Progress on Addressing Antimicrobial Resistance," published in May 2018, does not provide information about detection or surveillance for antimicrobial residues or AMR organisms in the environment (e.g., water, soil) [4].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed on 6 January 2020.

[2] Ministry of Environment, Natural Resources, and Urban Development. [<http://www.mepd.gov.sd/>]. Accessed on 7 January 2020.

[3] World Health Organization (WHO) Library of National Action Plans. "National Action plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed on 7 January 2020.

[4] World Health Organization (WHO). "Monitoring Global Progress on Addressing Antimicrobial Resistance". [http://apps.who.int/iris/bitstream/handle/10665/273128/9789241514422-eng.pdf?ua=1]. Accessed on 7 January 2020.

1.1.2 Antimicrobial control

1.1.2a

Is there national legislation or regulation in place requiring prescriptions for antibiotic use for humans?

Yes = 2 , Yes, but there is evidence of gaps in enforcement = 1 , No = 0

Current Year Score: 1

There is evidence of national legislation in place requiring prescriptions for antibiotic use for humans; however, there is evidence of gaps in enforcement. Sudan has a law in place requiring prescriptions for antibiotic use for humans. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that the Medicine and Poisoning Law was published in 2012 to regulate antibiotics use and it requires prescription for humans. However, the report states that the law is not enforced [1]. The National Action Plan on AMR for 2018-2020, published in May 2018, which is publicly available on the World Health Organization (WHO) Library of National Action Plans website, states that "the Directorate General of Pharmacy has developed the National Medicines Policy to rationalize medicines use. It has also developed the National Essential Medicines List and Standard Treatment Guidelines and Antibiotic Prescribing Policy and other policies regarding antimicrobial consumptions." It is also stated in the plan that these policies are not enforced [2]. A WHO report, "Monitoring Global Progress on Addressing Antimicrobial Resistance," published in May 2018, does not provide information about a national legislation or regulation in place requiring prescriptions for antibiotic use for humans in Sudan [3]. There is no publicly available evidence of law enforcement for using Antibiotics by prescription on Sudan Federal Ministry of Health website [4]. Sudan Medicine and Poisoning Law for 2001 states that "no medical prescription should be provided by a pharmacy without a Doctor's or a Veterinarian's ticket [5].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1]. Accessed on 6 January 2020.

[2] World Health Organization (WHO). Library of National Action Plans. "National Action plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed on 6 January 2020.

[3] World Health Organization (WHO). "Monitoring Global Progress on Addressing Antimicrobial Resistance".

[http://apps.who.int/iris/bitstream/handle/10665/273128/9789241514422-eng.pdf?ua=1]. Accessed on 6 January 2020.

[4] Federal Ministry of Health. "Laws and Policies Documents Page". [https://fmoh.gov.sd/index.php/files/index/93]. Accessed on 6 January 2021.

[5] Sudan Medical Council. "Pharma and Toxins Act". [http://www.sudmc.org/images/books/Pharma-and-Toxins-Act.pdf]. Accessed on 19 February 2021.

1.1.2b

Is there national legislation or regulation in place requiring prescriptions for antibiotic use for animals?

Yes = 2 , Yes, but there is evidence of gaps in enforcement = 1 , No = 0

Current Year Score: 1

There is evidence of national legislation or regulation in place requiring prescriptions for antibiotic use for animals. However, there is evidence of gaps in enforcement. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that the Medicine and Poisoning Law was published in 2012, regulating antibiotics use and requires prescriptions for animals. The report states that although the law is there, it is not enforced [1]. The national action plan on antimicrobial resistance (AMR) for 2018-2020, published in May 2018, which is publicly available on the World Health Organization's (WHO) Library of National Action Plans website, states that "the Directorate General of Pharmacy has developed the National Medicines Policy to rationalize medicines use. It has also developed the National Essential Medicines List and Standard Treatment Guidelines and Antibiotic Prescribing Policy and other policies regarding antimicrobial consumptions." It is also stated in the plan that these policies are not enforced [2]. Furthermore, the Ministry of Animal resources and Fisheries does not provide evidence on law enforcement for prescribing antibiotics use for animals [3]. Sudan's Medicine and Poisoning Law for 2001 states that "no medical prescription should be provided by a pharmacy without a doctor's or a veterinarian's ticket" [4].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed on 6 January 2021.

[2] World Health Organization (WHO), Library of National Action Plans. "National Action plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed on 6 January 2021.

[3] The Ministry of Animal resources and Fisheries. "Electronic Library of Studies and Announcements".

[<http://mar.gov.sd/library/category/1>]. Accessed on 6 January 2021.

[4] Sudan Medical Council. "Pharma and Toxins Act". [<http://www.sudmc.org/images/books/Pharma-and-Toxins-Act.pdf>]. Accessed on 19 February 2021.

1.2 ZOO NOTIC DISEASE

1.2.1 National planning for zoonotic diseases/pathogens

1.2.1a

Is there national legislation, plans, or equivalent strategy documents on zoonotic disease?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Sudan has a national law, plan, or equivalent strategy document on zoonotic disease. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, does not provide information about a national law, plan, or equivalent strategy document on zoonotic disease [1]. Moreover, the websites of the Federal Ministry of Health and the Ministry of Animal Resources, or the National Action Plan on Antimicrobial Resistance (AMR) for 2018-2020, published in May 2018 also does not provide any information in this regard [2,3,4]. According to a document available on the website of the Food and Agriculture Organization (FAO), Sudan issued a law in 2001 called the 'Law of Animals Epidemic Diseases' that provides procedures to deal with situations in which an animal is diagnosed with an epidemic disease or even those that only have a few symptoms of a disease [5].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 6 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 6 January 2021.

[3] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 6 January 2021.

[4] World Health Organization (WHO), Library of National Action Plans. "National Action Plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 6 January 2021.

[5] Food and Agriculture Organization (FAO). "Law of Animals Epidemic Diseases".

[<http://extwprlegs1.fao.org/docs/pdf/sud189333.pdf>]. Accessed 6 January 2021.

1.2.1b

Is there national legislation, plans or equivalent strategy document(s) which includes measures for risk identification and reduction for zoonotic disease spillover events from animals to humans?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence of risk reduction policy/ law for zoonotic diseases spillover in Sudan.

The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, does not provide information about a national law, plan, or equivalent strategy document on zoonotic diseases spillover between animals and humans [1]. Moreover, the World Health Organization (WHO) Library of National Action Plans does not provide any evidence on Zoonotic diseases spillover [2], and neither do the Federal Ministry of Health nor the Ministry of Environment and Animal Resources have any publicly available document/evidence on spillover of zoonotic diseases [3,4]. Furthermore, the Ministry of Agriculture and Natural Resources has no publicly available evidence on the spillover of zoonotic diseases [5].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed on 7 January 2021.

[2] World Health Organization (WHO), Library of National Action Plans. "National Action plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20", [http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805], Accessed 7 January 2021.

[3] Federal Ministry of Health. "Laws and Policies Publication Page". [<https://fmoh.gov.sd/index.php/files/index/93>]. Accessed 7 January 2021.

[4] Ministry of Environment and Animal Resources. "Electronic Library". [<http://mar.gov.sd/library/category/1>]. Accessed 7 January 2021.

[5] Ministry of Agriculture and Natural Resources. [<http://moaf.gov.sd/publicationsar.html>]. Accessed January 2021.

1.2.1c

Is there national legislation, plans, or guidelines that account for the surveillance and control of multiple zoonotic pathogens of public health concern?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient evidence that Sudan has national plans, guidelines, or laws that account for the surveillance and control of multiple zoonotic pathogens of public health concern. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "a plan of action has been developed for brucellosis and Rift Valley Fever (RVF) surveillance and control to reduce spillover of these zoonoses into the human population." The report also states that "annual surveillance in animals exists for zoonotic diseases. Contingency plans are in place for Rift Valley fever, Crimean-Congo hemorrhagic fever, brucellosis, rabies, anthrax, bovine tuberculosis, and leishmaniasis" [1]. The National Action Plan on antimicrobial resistance (AMR) for 2018-2020, published in May 2018, which is publicly available on the website of the World Health Organization (WHO) Library of National Action Plans, does not provide information on national plans, guidelines, or laws that account for the surveillance and control of multiple zoonotic pathogens of public health concern in Sudan [2]. According to the World Organization for Animal Health (OIE) PVS evaluation reports website, Sudan OIE PVS evaluation report does not mention anything about surveillance and control of zoonotic pathogens [3,4]. Neither do the Federal Ministry of Health nor the Ministry of Environment and Animal Resources have any publicly available document/evidence on surveillance and control of zoonotic pathogens [5]. The Ministry of Agriculture and Natural Resources has no publicly available evidence on surveillance and control of zoonotic pathogens [6].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 7 January 2021.

[2] World Health Organization (WHO), Library of National Action Plans. "National Action Plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20". [http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 7 January 2021.

[3] World Organization for Animal Health (OIE). "OIE PVS Evaluation Reports". [<http://www.oie.int/solidarity/pvs-evaluations/pvs-evaluation-reports/>]. Accessed on 7 January 2021.

[4] Federal Ministry of Health. "Laws and Policies Publication Page". [<https://fmoh.gov.sd/index.php/files/index/93>]. Accessed on 7 January 2021.

[5] Ministry of Environment and Animal Resources. "Electronic Library". [<http://mar.gov.sd/library/category/1>]. Accessed 7 January 2021.

[6] Ministry of Agriculture and Natural Resources [<http://moaf.gov.sd/publicationsar.html>]. Accessed 7 January 2021.

1.2.1d

Is there a department, agency, or similar unit dedicated to zoonotic disease that functions across ministries?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that there is a department, agency, or similar unit dedicated to zoonotic disease that functions across ministries. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, does not provide information about a department, agency, or similar unit dedicated to zoonotic disease that functions across ministries. It states that there is a "national zoonotic committee is chaired at ministerial level" but does not provide more information [1]. The national action plan on AMR for 2018-2020, published in May 2018, which is publicly available on the website of the World Health Organization (WHO) Library of National Action Plans, does not provide information about a department, agency, or similar unit dedicated to zoonotic disease that functions across ministries [2]. No information in this regard is provided on the websites of the Federal Ministry of Health or the Ministry of Animal Resources [3,4].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 10 January 2021.

[2] World Health Organization (WHO), Library of National Action Plans. "National Action Plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 10 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 10 January 2021.

[4] Ministry of Animal Resources. [<http://mar.gov.sd/library/category/1>]. Accessed 10 January 2021.

1.2.2 Surveillance systems for zoonotic diseases/pathogens

1.2.2a

Does the country have a national mechanism (either voluntary or mandatory) for owners of livestock to conduct and report on disease surveillance to a central government agency?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient evidence that Sudan has a national mechanism (either voluntary or mandatory) for owners of livestock to conduct and report on disease surveillance to a central government agency. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "a plan of action has been developed for brucellosis and Rift Valley fever surveillance and control to reduce spill over of these zoonoses into the human population. The plan includes public awareness and communication to encourage farmers and livestock-keeping communities to report animal diseases." The report does not provide information about a national mechanism (either voluntary or mandatory) for owners of livestock to conduct and report on disease surveillance to a central government agency [1]. The national action plan on antimicrobial resistance (AMR) for 2018-2020, published in May 2018, which is publicly available on the World Health Organization (WHO) Library of National Action Plans website, does not provide information about a national mechanism (either voluntary or mandatory) for owners of livestock to conduct and report on disease surveillance to a central government agency [2]. Moreover, the websites of the Federal Ministry of Health or the Ministry of Animal Resources also do not contain information in this regard [3,4].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 10 January 2021.

[2] World Health Organization (WHO) Library of National Action Plans. "National Action Plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 10 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 10 January 2021.

[4] Ministry of Animal Resources and Fisheries [<http://mar.gov.sd/>]. Accessed 10 January 2021.

1.2.2b

Is there legislation and/or regulations that safeguard the confidentiality of information generated through surveillance activities for animals (for owners)?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that there are laws or guidelines that safeguard the confidentiality of information generated through surveillance activities for animals (for owners). The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, does not provide information in this regard [1] and neither does the National Action Plan on AMR for 2018-20, published in May 2018, or the websites of the Federal Ministry of Health or the Ministry of Animal Resources [2,3,4].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 10 January 2021.

[2] World Health Organization (WHO), Library of National Action Plans. "National Action Plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 10 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 10 January 2021.

[4] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 10 January 2021.

1.2.2c

Does the country conduct surveillance of zoonotic disease in wildlife (e.g., wild animals, insects, other disease vectors)?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Sudan conducts surveillance of zoonotic disease in wildlife. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, does not provide information about conducting surveillance of zoonotic disease in wildlife. The report states that "A real-time surveillance system is needed for zoonotic diseases in an animal–human–wildlife–ecosystems interface for effective and timely response" [1]. The National Action Plan on AMR for 2018-2020 that was published in May 2018 is publicly available on the website of the World Health Organization (WHO) Library of National Action Plan does not provide information about conducting surveillance of zoonotic disease in wildlife. The plan states, "the laboratory capacities of one central, two sub sectoral (fish and wildlife), two private, and eleven state (regional) laboratories are variable and, in some cases, require immediate support if not rehabilitation" [2]. Neither the Federal Ministry of Health website nor that of the Ministry of Animal Resources provide information about conducting surveillance of zoonotic disease in wildlife [3,4].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 10 January 2021.

[2] World Health Organisation (WHO) Library of National Action Plans. "National Action Plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 10 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 10 January 2021.

[4] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 10 January 2021.

1.2.3 International reporting of animal disease outbreaks

1.2.3a

Has the country submitted a report to OIE on the incidence of human cases of zoonotic disease for the last calendar year?

Yes = 1 , No = 0

Current Year Score: 0

2019

OIE WAHIS database

1.2.4 Animal health workforce

1.2.4a

Number of veterinarians per 100,000 people

Input number

Current Year Score: 16.02

2019

OIE WAHIS database

1.2.4b

Number of veterinary para-professionals per 100,000 people

Input number

Current Year Score: 11.14

2019

OIE WAHIS database

1.2.5 Private sector and zoonotic

1.2.5a

Does the national plan on zoonotic disease or other legislation, regulations, or plans include mechanisms for working with the private sector in controlling or responding to zoonoses?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Sudan has a national law, plan, or equivalent strategy document, on zoonotic disease and, therefore, there is no evidence that the plan includes mechanisms for working with the private sector in controlling or responding to zoonoses. No evidence is available via the Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, the national action plan on AMR for 2018-2020, the Federal Ministry of Health website or the website of the Ministry of Animal Resources [1,2,3,4]. No national laboratory

system website or national public health institute website in place.

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 10 January 2021.

[2] World Health Organization (WHO), Library of National Action Plans. "National Action Plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 10 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed on 10 January 2021.

[4] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 10 January 2021.

1.3 BIOSECURITY

1.3.1 Whole-of- government biosecurity systems

1.3.1a

Does the country have in place a record, updated within the past five years, of the facilities in which especially dangerous pathogens and toxins are stored or processed, including details on inventories and inventory management systems of those facilities?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Sudan has in place a record, updated within the past two years, of the facilities in which especially dangerous pathogens and toxins are stored or processed, including details on inventories and inventory management systems of those facilities. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "There is no national record or inventory of pathogens within facilities that store or process dangerous pathogens and toxins and what they house" [1]. The websites for the Federal Ministry of Health, Ministry of Animal Resources, and Ministry of Defence do not provide information that shows that there is such record [2,3,4]. Sudan has not submitted Confidence Building Measures under the United Nations (UN) Biological Weapons Convention [5]. Moreover, there is no national laboratory system website or national public health institute website in place. Sudan has no available reports or publications for biosecurity on the Verification Research, Training, and Information Centre (VERTIC) database [6].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 13 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed on 13 January 2021.

[3] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 13 January 2021.

[4] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 14 January 2021.

[5] United Nations Biological Weapons Convention. "Confidence Building Measures". [<https://bwc-ecbm.unog.ch/state/sudan>]. Accessed 13 January 2021.

[6] Verification Research, Training, and Information Centre (VERTIC). "Verification and Monitoring Organization Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/>]. Accessed 14 January 2021.

1.3.1b

Does the country have in place legislation and/or regulations related to biosecurity which address requirements such as physical containment, operation practices, failure reporting systems, and/or cybersecurity of facilities in which especially dangerous pathogens and toxins are stored or processed?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Sudan has in place legislation and/or regulations related to biosecurity that address requirements such as physical containment, operation practices, failure reporting systems, and/or cybersecurity of facilities in which especially dangerous pathogens and toxins are stored or processed. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "comprehensive national biosafety and biosecurity legislation, while not finalised, is being developed." It does not provide more information [1]. The National Action Plan on AMR for 2018-20 and the websites of the Federal Ministry of Health, the Ministry of Animal Resources do not provide information that shows that Sudan has in place legislation and/or regulations related to biosecurity that address requirements such as physical containment, operation practices, failure reporting systems and/or cybersecurity of facilities in which especially dangerous pathogens and toxins are stored or processed [2,3,4]. Sudan has not submitted Confidence Building Measures under the United Nations (UN) Biological Weapons Convention [5]. Sudan has no available reports or publications for biosecurity on the Verification Research, Training, and Information Centre (VERTIC) database [6]. There is no national laboratory system website or national public health institute website in place, and there is no further evidence on the website of the Ministry of Defence [7].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 14 January 2021.

[2] World Health Organization (WHO), Library of National Action Plans. "National Action Plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20". [http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 14 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 14 January 2021.

[4] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 14 January 2021.

[5] United Nations Biological Weapons Convention. "Confidence Building Measures". [<https://bwc-ecbm.unog.ch/state/sudan>]. Accessed 14 January 2021.

[6] The Verification Research, Training, and Information Centre (VERTIC). "Verification and Monitoring Organization Legislation Database" [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/>]. Accessed 14 January 2021.

[7] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 14 January 2021.

1.3.1c

Is there an established agency (or agencies) responsible for the enforcement of biosecurity legislation and regulations?

Yes = 1 , No = 0

Current Year Score: 0

Sudan does not have in place a legislation and/or regulations related to biosecurity that address requirements such as physical containment, operation practices, failure reporting systems, and/or cybersecurity of facilities in which especially dangerous pathogens and toxins are stored or processed and, therefore, there is no evidence of an established agency (or

agencies) responsible for the enforcement of biosecurity legislation and regulations. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "comprehensive national biosafety and biosecurity legislation, while not finalised, is being developed"; it does not provide more information [1]. The National Action Plan on AMR for 2018-20, and the websites of the Federal Ministry of Health and the Ministry of Animal Resources do not provide information that shows that Sudan has in place legislation and/or regulations related to biosecurity that address requirements such as physical containment, operation practices, failure reporting systems, and/or cybersecurity of facilities in which especially dangerous pathogens and toxins are stored or processed [2,3,4]. Sudan has not submitted Confidence Building Measures under the UN Biological Weapons Convention [5]. There has no available reports or publications for biosecurity on the Verification Research, Training, and Information Centre (VERTIC) database [6]. Moreover, there is no national laboratory system website or national public health institute website in place; there is no further evidence on the website of the Ministry of Defence [7].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 14 January 2021.

[2] World Health Organization (WHO) Library of National Action Plans. "National Action Plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20". [http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 14 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 14 January 2021.

[4] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed on 14 January 2021.

[5] United Nations Biological Weapons Convention. "Confidence Building Measures". [<https://bwc-ecbm.unog.ch/state/sudan>]. Accessed on 14 January 2021.

[6] The Verification Research, Training, and Information Centre (VERTIC). "Verification and Monitoring Organization Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/>]. Accessed 14 January 2021.

[7] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 14 January 2021.

1.3.1d

Is there public evidence that shows that the country has taken action to consolidate its inventories of especially dangerous pathogens and toxins into a minimum number of facilities?

Yes = 1 , No = 0

Current Year Score: 0

There is no public evidence that shows that the country has taken action to consolidate its inventories of especially dangerous pathogens and toxins into a minimum number of facilities. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, does not provide information that shows that Sudan has taken action to consolidate its inventories of especially dangerous pathogens and toxins into a minimum number of facilities [1]. The Federal Ministry of Health website does not provide information that shows that Sudan has taken action to consolidate its inventories of especially dangerous pathogens and toxins into a minimum number of facilities [2]. The website of the Ministry of Animal Resources does not provide information that shows that Sudan has taken action to consolidate its inventories of especially dangerous pathogens and toxins into a minimum number of facilities [3]. Sudan has not submitted Confidence Building Measures under the United Nations Biological Weapons Convention [4]. Sudan has no available reports or publications for biosecurity on the Verification Research, Training, and Information Centre (VERTIC) database [5]. There is no national laboratory system website or national public health institute website in place, and

there is no further evidence on the website of the Ministry of Defence [6].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 14 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 14 January 2021.

[3] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 14 January 2021.

[4] United Nations Biological Weapons Convention. "Confidence Building Measures". [<https://bwc-ecbm.unog.ch/state/sudan>]. Accessed 14 January 2021.

[5] The Verification Research, Training, and Information Centre (VERTIC). "Verification and Monitoring Organization Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/>]. Accessed 14 January 2021.

[6] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 14 January 2021.

1.3.1e

Is there public evidence of in-country capacity to conduct Polymerase Chain Reaction (PCR)-based diagnostic testing for anthrax and/or Ebola, which would preclude culturing a live pathogen?

Yes = 1, No = 0

Current Year Score: 0

There is insufficient evidence that Sudan has the capacity to conduct polymerase chain reaction (PCR)-based diagnostic testing for anthrax and/or Ebola. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "the central laboratories visited are proficient in classical diagnostic techniques including polymerase chain reaction (PCR). The laboratory systems in place are capable of detecting 7 of the 10 core IHR tests. The National Public Health Laboratory (NPHL) and all State Public Health Laboratory (SPHL) are capable of testing for anthrax" [1]. Neither the national action plan on AMR for 2018-20 nor the websites of the Federal Ministry of Health or the Ministry of Animal Resources provide information that reveals that Sudan has in-country capacity to conduct PCR-based diagnostic testing for anthrax and/or Ebola, which would preclude culturing a live pathogen [2,3,4]. There is no national laboratory system website or national public health institute website in place, and there is no further evidence on the website of the Ministry of Defence [5].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed on 14 January 2021.

[2] World Health Organization (WHO), Library of National Action Plans. "National Action Plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20". [http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 14 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 14 January 2021.

[4] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 14 January 2021.

[5] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 14 January 2021.

1.3.2 Biosecurity training and practices

1.3.2a

Does the country require biosecurity training, using a standardized, required approach, such as through a common curriculum or a train-the-trainer program, for personnel working in facilities housing or working with especially dangerous pathogens, toxins, or biological materials with pandemic potential?

Yes = 1, No = 0

Current Year Score: 0

There is no evidence that Sudan requires biosecurity training, using a standardized, required approach, such as through a common curriculum or a train-the-trainer program, for personnel working in facilities housing or working with especially dangerous pathogens, toxins, or biological materials with pandemic potential. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "there is no national training program in biosafety and biosecurity for all laboratories in all sectors. Academic training is lacking on biosafety and biosecurity for all public and private professionals to enhance their knowledge and skills." The report does not provide information about a curriculum or a train-the-trainer program [1]. Neither the National Action Plan on AMR for 2018-20, nor the websites of the Federal Ministry of Health or the Ministry of Animal Resources provide information that shows that Sudan requires such training [2,3,4]. Sudan has not submitted Confidence Building Measures under the United Nations (UN) Biological Weapons Convention [5]. No evidence was found regarding whether Sudan requires training or uses a common train-the-trainer program for personnel working in facilities with dangerous pathogens on the Verification Research, Training, and Information Centre (VERTIC) database [6]. There is no national laboratory system website or national public health institute website in place and there is no further evidence in this regard on the website of the Ministry of Defence [7].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 14 January 2021.

[2] World Health Organization (WHO), Library of National Action Plans. "National Action Plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 14 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 14 January 2021.

[4] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 14 January 2021.

[5] United Nations Biological Weapons Convention. "Confidence Building Measures". [<https://bwc-ecbm.unog.ch/state/sudan>]. Accessed on 14 January 2021.

[6] Verification Research, Training, and Information Centre (VERTIC), "Verification and Monitoring Organization Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/>] Accessed 14 January 2021.

[7] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 14 January 2021.

1.3.3 Personnel vetting: regulating access to sensitive locations

1.3.3a

Do regulations or licensing conditions specify that security and other personnel with access to especially dangerous pathogens, toxins, or biological materials with pandemic potential are subject to the following checks: drug testing, background checks, and psychological or mental fitness checks?

Personnel are subject to all three of these checks = 3, Personnel are subject to two of these checks = 2, Personnel are subject to one of these checks = 1, Personnel are not subject to any of these checks = 0

Current Year Score: 0

There is no evidence that regulations or licensing conditions specify that security and other personnel with access to especially dangerous pathogens, toxins, or biological materials with pandemic potential are subject to the following checks: drug testing, background checks, and psychological, or mental fitness checks. The National Action Plan on AMR for 2018-20, published in May 2018, does not provide information that shows that regulations or licensing conditions specify that security and other personnel with access to especially dangerous pathogens, toxins, or biological materials with pandemic potential are subject to the following checks: drug testing, background checks, and psychological or mental fitness checks [1] and neither do the websites of the Federal Ministry of Health or the Ministry of Animal Resources [2,3]. Moreover, Sudan has not submitted Confidence Building Measures under the United Nations (UN) Biological Weapons Convention [4]. Sudan has no available reports or publications relating to this matter on the Verification Research, Training, and Information Centre (VERTIC) database [5]. There is no national laboratory system website or national public health institute website in place, and there is no further evidence on the website of the Ministry of Defence [6].

[1] World Health Organization (WHO) Library of National Action Plans. "National Action Plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed on 14 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed on 14 January 2021.

[3] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed on 14 January 2021.

[4] United Nations Biological Weapons Convention. "Confidence Building Measures". [<https://bwc-ecbm.unog.ch/state/sudan>]. Accessed 14 January 2021.

[5] Verification Research, Training, and Information Centre (VERTIC). "Verification and Monitoring Organization Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/>]. Accessed 14 January 2021.

[6] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 14 January 2021.

1.3.4 Transportation security

1.3.4a

Does the country have publicly available information on national regulations on the safe and secure transport of infectious substances (specifically including Categories A and B)?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Sudan has publicly available information on national regulations on the safe and secure transport of infectious substances (Categories A and B). The websites of the Sudan Civil Aviation Authority, Sudan Airways, the Ministry of Animal Resources does not provide information on such regulations [1,2,3]. Sudan has not submitted Confidence Building Measures under the United Nations (UN) Biological Weapons Convention [4]. Sudan has no available reports or publications for such legislation on the Verification Research, Training, and Information Centre (VERTIC) database [5]. There is no national laboratory system website or national public health institute website in place, and there is no further evidence on the website of the Ministry of Defence [6].

- [1] Sudan Civil Aviation Authority. [<http://scaa.gov.sd>]. Accessed 14 January 2021.
- [2] Sudan Airways. [<http://www.sudanair.com/en/>]. Accessed 14 January 2021.
- [3] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 14 January 2021.
- [4] United Nations Biological Weapons Convention. "Confidence Building Measures". [<https://bwc-ecbm.unog.ch/state/sudan>]. Accessed 14 January 2021.
- [5] Verification Research, Training, and Information Centre (VERTIC). "Verification and Monitoring Organization Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/>]. Accessed 14 January 2021.
- [6] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 14 January 2021.

1.3.5 Cross-border transfer and end-user screening

1.3.5a

Is there legislation and/or regulations in place to oversee the cross-border transfer and end-user screening of especially dangerous pathogens, toxins, and pathogens with pandemic potential?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Sudan has a national legislation, regulation, or other guidance in place to oversee the cross-border transfer and end-user screening of especially dangerous pathogens, toxins, and pathogens with pandemic potential. Evidence of such legislation could not be found via the Verification Research, Training, and Information Centre (VERTIC) database, the Federal Ministry of Health, the Ministry of Animal Resources, the Sudan Civil Aviation Authority or the Ministry of Industry and Trade [1,2,3,4,5]. Furthermore, Sudan has not submitted Confidence Building Measures under the UN Biological Weapons Convention [6]. There is no further evidence on the website of the Ministry of Defence in this regard [7].

- [1] Verification Research, Training, and Information Centre (VERTIC). "Verification and Monitoring Organization Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/>]. Accessed 14 January 2021.
- [2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 14 January 2021.
- [3] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 14 January 2021.
- [4] Sudan Civil Aviation Authority. [<http://scaa.gov.sd/>]. Accessed 14 January 2021.
- [5] Ministry of Industry and Trade. [<http://www.tpsudan.gov.sd/>]. Accessed on 14 January 2021.
- [6] United Nations Biological Weapons Convention. "Confidence Building Measures". [<https://bwc-ecbm.unog.ch/state/sudan>]. Accessed on 14 January 2021.
- [7] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 14 January 2021.

1.4 BIOSAFETY

1.4.1 Whole-of-government biosafety systems

1.4.1a

Does the country have in place national biosafety legislation and/or regulations?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Sudan has in place national biosafety legislation and/or regulations. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "comprehensive national biosafety and biosecurity legislation, while not finalized, is being developed. Biosafety and biosecurity policies and guidelines are not yet implemented at all levels throughout the country, including private sector laboratories" [1]. No evidence of such legislation is available via the national action plan on antimicrobial resistance (AMR) for 2018-20, the Federal Ministry of Health, or the Ministry of Animal Resources [2,3,4]. Sudan has not submitted Confidence Building Measures under the UN Biological Weapons Convention [5]. Sudan has no available reports or publications for such legislation on the Verification Research, Training, and Information Centre (VERTIC) database [6]. There is no national laboratory system website or national public health institute website in place.

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 14 January 2021.

[2] World Health Organization (WHO), Library of National Action Plans. "National Action Plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 14 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 14 January 2021.

[4] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 14 January 2021.

[5] United Nations Biological Weapons Convention. "Confidence Building Measures". [<https://bwc-ecbm.unog.ch/state/sudan>]. Accessed 14 January 2021.

[6] Verification Research, Training, and Information Centre (VERTIC). "Verification and Monitoring Organization Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/>]. Accessed 14 January 2021.

1.4.1b

Is there an established agency responsible for the enforcement of biosafety legislation and regulations?

Yes = 1, No = 0

Current Year Score: 0

Sudan does not have in place national biosafety legislation and/or regulations; therefore, there is no evidence of an established agency responsible for the enforcement of biosafety legislation and regulations. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "comprehensive national biosafety and biosecurity legislation, while not finalized, is being developed. Biosafety and biosecurity policies and guidelines are not yet implemented at all levels throughout the country including private sector laboratories" [1]. There is no evidence of such legislation available via the National Action Plan on AMR for 2018-20, the Federal Ministry of Health, or the Ministry of Animal Resources [2,3,4]. Sudan has not submitted Confidence Building Measures under the United Nations (UN) Biological Weapons Convention [5]. Sudan has no available reports or publications for any such agency responsible for the enforcement of biosafety legislation on the Verification Research, Training, and Information Centre (VERTIC) database [6]. No national laboratory system website or national public health institute website in place.

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. 14 January 2021.

[2] World Health Organization (WHO) Library of National Action Plans. "National Action Plan on Antimicrobial Resistance for

the Republic of Sudan, 2018-20".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. 14 January 2021

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed on 14 January 2021.

[4] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed on 14 January 2021.

[5] United Nations Biological Weapons Convention. "Confidence Building Measures". [<https://bwc-ecbm.unog.ch/state/sudan>]. Accessed on 14 January 2021.

[6] Verification Research, Training, and Information Centre (VERTIC). "Verification and Monitoring Organization Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/>]. Accessed 14 January 2021.

1.4.2 Biosafety training and practices

1.4.2a

Does the country require biosafety training, using a standardized, required approach, such as through a common curriculum or a train-the-trainer program, for personnel working in facilities housing or working with especially dangerous pathogens, toxins, or biological materials with pandemic potential?

Yes = 1, No = 0

Current Year Score: 0

There is no evidence that Sudan requires biosafety training, using a standardized, required approach, such as through a common curriculum or a train-the-trainer program, for personnel working in facilities housing or working with especially dangerous pathogens, toxins, or biological materials with pandemic potential. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "there is no national training program in biosafety and biosecurity for all laboratories in all sectors. Academic training is lacking on biosafety and biosecurity for all public and private professionals to enhance their knowledge and skills." The report does not provide information about a curriculum or a train-the-trainer program [1]. Neither the National Action Plan on AMR for 2018-2020, nor the websites of the Federal Ministry of Health or the Ministry of Animal Resources provide information that shows that Sudan requires such training [2,3,4]. Sudan has not submitted Confidence Building Measures under the United Nations (UN) Biological Weapons Convention [5]. Sudan has no available reports or publications for such trainings on the Verification Research, Training, and Information Centre (VERTIC) database [6]. There is no national laboratory system website or national public health institute website in place.

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 14 January 2021.

[2] World Health Organization (WHO) Library of National Action Plans. "National Action Plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 14 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 14 January 2021.

[4] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 14 January 2021.

[5] United Nations Biological Weapons Convention. "Confidence Building Measures". [<https://bwc-ecbm.unog.ch/state/sudan>]. Accessed 14 January 2021.

[6] Verification Research, Training, and Information Centre (VERTIC). "Verification and Monitoring Organization Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/>]. Accessed

14 January 2021.

1.5 DUAL-USE RESEARCH AND CULTURE OF RESPONSIBLE SCIENCE

1.5.1 Oversight of research with especially dangerous pathogens, toxins, pathogens with pandemic potential and/or other dual-use research

1.5.1a

Is there publicly available evidence that the country has conducted an assessment to determine whether ongoing research is occurring on especially dangerous pathogens, toxins, pathogens with pandemic potential and/or other dual-use research?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that Sudan has conducted an assessment to determine whether ongoing research is occurring on especially dangerous pathogens, toxins, pathogens with pandemic potential, and/or other dual use research. No evidence of such an assessment is available via the national action plan on AMR for 2018-2020, the Federal Ministry of Health or the Ministry of Animal Resources [1,2,3]. Sudan has not submitted Confidence Building Measures under the United Nations (UN) Biological Weapons Convention [4]. No evidence was found on the Verification Research, Training, and Information Centre (VERTIC) database that the country has conducted an assessment to determine whether ongoing research is occurring on especially dangerous pathogens, toxins, pathogens with pandemic potential and/or other dual-use research [5]. There is no national laboratory system website or national public health institute website in place. and there is no further evidence on the website of the Ministry of Defence [6].

[1] World Health Organization (WHO) Library of National Action Plans. "National Action plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 14 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 14 January 2021.

[3] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 14 January 2021.

[4] United Nations Biological Weapons Convention. "Confidence Building Measures". [<https://bwc-ecbm.unog.ch/state/sudan>]. Accessed on 14 January 2021.

[5] The Verification Research, Training, and Information Centre (VERTIC). "Verification and Monitoring Organization Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/>]. Accessed 14 January 2021.

[6] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 14 January 2021.

1.5.1b

Is there legislation and/or regulation requiring oversight of research with especially dangerous pathogens, toxins, pathogens with pandemic potential and/or other dual-use research?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that there is a national policy requiring oversight of dual-use research, such as research with especially dangerous pathogens, toxins, and/or pathogens with pandemic potential. No evidence of such a policy is available via the National Action Plan on AMR for 2018-2020, the Federal Ministry of Health, the Ministry of Animal Resources [1,2,3]. Sudan

has not submitted Confidence Building Measures under the United Nations (UN) Biological Weapons Convention [4]. No evidence of such legislation was found on the Verification Research, Training, and Information Centre (VERTIC) database [5]. There is no national laboratory system website or national public health institute website in place, and there is no further evidence on the website of the Ministry of Defence [6].

- [1] World Health Organization (WHO) Library of National Action Plans. "National Action plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".
[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 15 January 2021.
- [2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 15 January 2021.
- [3] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 15 January 2021.
- [4] United Nations Biological Weapons Convention. "Confidence Building Measures". [<https://bwc-ecbm.unog.ch/state/sudan>]. Accessed 15 January 2021.
- [5] The Verification Research, Training, and Information Centre (VERTIC). "Verification and Monitoring Organization Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/>]. Accessed 15 January 2021.
- [6] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 14 January 2021.

1.5.1c

Is there an agency responsible for oversight of research with especially dangerous pathogens, toxins, pathogens with pandemic potential and/or other dual-use research?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that there is an agency responsible for oversight of research with especially dangerous pathogens, pathogens with pandemic potential, and/or other dual use research. There is no evidence that there is a national policy requiring oversight of dual-use research, such as research with especially dangerous pathogens, toxins, and/or pathogens with pandemic potential. No evidence of such a policy is available via the national action plan on antimicrobial resistance (AMR) for 2018-2020, the Federal Ministry of Health, or the Ministry of Animal Resources. [1,2,3]. Sudan has not submitted Confidence Building Measures under the United Nations (UN) Biological Weapons Convention [4]. There is no evidence of such agency on the Verification Research, Training, and Information Centre (VERTIC) database [5]. Furthermore, there is no national laboratory system website or national public health institute website in place, and there is no further evidence on the website of the Ministry of Defence [6].

- [1] World Health Organization (WHO) Library of National Action Plans. "National Action plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".
[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 15 January 2021.
- [2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 15 January 2021.
- [3] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 15 January 2021.
- [4] United Nations (UN) Biological Weapons Convention. "Confidence Building Measures". [<https://bwc-ecbm.unog.ch/state/sudan>]. Accessed on 15 January 2021.
- [5] The Verification Research, Training, and Information Centre (VERTIC). "Verification and Monitoring Organization Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/>]. Accessed 15 January 2021.

[6] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 14 January 2021.

1.5.2 Screening guidance for providers of genetic material

1.5.2a

Is there legislation and/or regulation requiring the screening of synthesized DNA (deoxyribonucleic acid) against lists of known pathogens and toxins before it is sold?

Yes = 1, No = 0

Current Year Score: 0

There is no evidence that Sudan has a national legislation, regulation, policy, or other guidance, requiring the screening of synthesised DNA before it is sold. No evidence of such legislation is available via the Ministry of Health, Ministry of Animal Resources, or the Ministry of Infrastructure and Transport [1,2,3]. Moreover, Sudan has not submitted Confidence Building Measures under the UN Biological Weapons Convention [4]. No evidence of such legislation was found on the Verification Research, Training, and Information Centre (VERTIC) database [5]. Furthermore, there is no national laboratory system website or national public health institute website in place, and there is no further evidence on the website of the Ministry of Defence [6].

[1] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed on 15 January 2021.

[2] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 15 January 2021.

[3] Ministry of Infrastructure and Transport. [<http://moiat.gov.sd/>]. Accessed 15 January 2021.

[4] United Nations Biological Weapons Convention. "Confidence Building Measures". [<https://bwc-ecbm.unog.ch/state/sudan>]. 15 January 2021.

[5] The Verification Research, Training, and Information Centre (VERTIC). "Verification and Monitoring Organization Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/>] Accessed 15 January 2021.

[6] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 14 January 2021.

1.6 IMMUNIZATION

1.6.1 Vaccination rates

1.6.1a

Immunization rate (measles/MCV2)

Immunization rate (measles/MCV2), 95% or greater = 2, 80-94.9% = 1, Less than 80%, or no data = 0

Current Year Score: 0

2019

World Health Organization

1.6.1b

Are official foot-and-mouth disease (FMD) vaccination figures for livestock publicly available through the OIE database?

Yes = 1, No = 0

Current Year Score: 1

2020

OIE WAHIS database

Category 2: Early detection and reporting for epidemics of potential international concern

2.1 LABORATORY SYSTEMS STRENGTH AND QUALITY

2.1.1 Laboratory testing for detection of priority diseases

2.1.1a

Does the national laboratory system have the capacity to conduct diagnostic tests for at least 5 of the 10 WHO-defined core tests?

Evidence they can conduct 5 of the 10 core tests and these tests are named = 2, Evidence they can conduct 5 of the 10 core tests and the tests are not named = 1, No evidence they can conduct 5 of the 10 core tests = 0

Current Year Score: 2

The national laboratory system in Sudan has the capacity to conduct diagnostic tests for at least five of the ten WHO-defined core tests. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that the National Public Health Laboratory (NPHL) can test for five of the ten core tests defined by the World Health Organization (WHO), which are microscopic testing for malaria and tuberculosis, serological testing for HIV, bacterial culture for Salmonella, virus culture for polio, and polymerase chain reaction (PCR) for influenza virus [1]. There is no national laboratory system website or national public health institute website in place.

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 15 January 2021.

2.1.1b

Is there a national plan, strategy or similar document for conducting testing during a public health emergency, which includes considerations for testing for novel pathogens, scaling capacity, and defining goals for testing?

Yes, there is evidence of a plan, and it includes considerations for testing for novel pathogens, scaling capacity, and defining goals for testing = 2, Yes, there is evidence of a plan, but there is insufficient evidence that it includes considerations for testing for novel pathogens, scaling capacity, and defining goals for testing = 1, No evidence of a plan = 0

Current Year Score: 0

There is no evidence that Sudan has a plan/strategy for conducting testing during a public health emergency.

The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, does not provide any evidence of a plan for testing for novel pathogens during public health emergencies [1]. The National Action Plan on Antimicrobial Resistance for the Republic of Sudan 2018-20, published in May 2018, which is publicly available on the World Health Organization (WHO) Library of National Action Plans website does not include any evidence about such a plan/ strategy [2]. There is no evidence found for a plan on the Federal Ministry of Health website [3]. Moreover, there is no national laboratory system website or national public health institute website in place.

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 14 January 2021.

[2] World Health Organization (WHO) Library of National Action Plans. "National Action plan on Antimicrobial Resistance for the Republic of Sudan, 2018-20".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 14 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 15 January 2021.

2.1.2 Laboratory quality systems

2.1.2a

Is there a national laboratory that serves as a reference facility which is accredited (e.g., International Organization for Standardization [ISO] 15189:2003, U.S. Clinical Laboratory Improvement Amendments [CLIA])?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that the national laboratory that serves as a reference facility is accredited. Neither the Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, nor the websites of the Federal Ministry of Health or the Ministry of Animal Resources provide information regarding any such accreditation [3]. Moreover, there is no national laboratory system website or national public health institute website in place.

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 15 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 15 January 2021.

[3] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 15 January 2021.

2.1.2b

Is there a national laboratory that serves as a reference facility which is subject to external quality assurance review?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that the national laboratory that serves as a reference facility is subject to external quality assurance review. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "there is no external quality assurance (EQA) program that cascades from national reference laboratories to the other laboratories and levels" [1]. Moreover, no evidence of a national laboratory

that serves as a reference facility that is subject to external quality assurance review was found on the website of the Federal Ministry of Health [2]. There is no national laboratory system website or national public health institute website in place.

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 15 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 15 January 2021.

2.2 LABORATORY SUPPLY CHAINS

2.2.1 Specimen referral and transport system

2.2.1a

Is there a nationwide specimen transport system?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient evidence that Sudan has a nationwide specimen transport system. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "a system is in place to transport specimens to the national laboratory from 50%–80% of intermediate level/districts within the country for advanced diagnostics." However, the report does not state that the system is nationwide and can reach all parts of the country [1]. There is no evidence of such a system on the website of the Federal Ministry of Health [2], and there is no national laboratory system website or national public health institute website in place.

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed on 15 January

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 15 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 15 January 2021.

2.2.2 Laboratory cooperation and coordination

2.2.2a

Is there a plan in place to rapidly authorize or license laboratories to supplement the capacity of the national public health laboratory system to scale-up testing during an outbreak?

Yes = 2 , Yes, but there is evidence of gaps in implementation = 1 , No = 0

Current Year Score: 0

There is no evidence that Sudan has a plan in place to rapidly authorize or license laboratories to supplement the capacity of the national public health laboratory system to scale-up testing during an outbreak. However the Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017 states that "a system of licensing of private health laboratories is in place" but with no further evidence of a plan specifically developed for an outbreak [1]. Moreover, the website of the Federal Ministry of Health has no evidence of such a plan [2], and there is no national laboratory system website or national public health institute website in place.

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 17 January 2021.

[2] Federal Ministry of Health. "Laws and Policies". [<https://fmoh.gov.sd/index.php/files/index/93>]. Accessed 19 February 2021.

2.3 REAL-TIME SURVEILLANCE AND REPORTING

2.3.1 Indicator and event-based surveillance and reporting systems

2.3.1a

Is there evidence that the country is conducting ongoing event-based surveillance and analysis for infectious disease?

Yes, there is evidence of ongoing event-based surveillance and evidence that the data is being analyzed on a daily basis = 2,
Yes, there is evidence of ongoing event-based surveillance, but no evidence that the data are being analyzed on a daily basis = 1, No = 0

Current Year Score: 0

There is no publicly available evidence that the country is conducting ongoing event-based surveillance and analysis for infectious diseases. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "event-based surveillance has not yet been formally established. Guidelines and SOPs for a comprehensive event-based surveillance system have been developed, but await approval" [1]. According to the website of the World Organization for Animal Health (OIE) PVS evaluation reports, Sudan's OIE PVS evaluation report does not provide information that reveals that the country is conducting ongoing event-based surveillance and analysis for infectious diseases [2]. Moreover, the website of the Federal Ministry of Health does not provide information that shows that the country is conducting ongoing event-based surveillance and analysis for infectious diseases. [3]. The Ministry of Agriculture does not provide evidence on event-based surveillance and analysis on infectious diseases [4]. There is no national laboratory system website or national public health institute website in place.

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. 17 January 2021.

[2] World Organization for Animal Health (OIE). "OIE PVS Evaluation Reports". [<http://www.oie.int/solidarity/pvs-evaluations/pvs-evaluation-reports/>]. Accessed 17 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 17 January 2021.

[4] Ministry of Agriculture. [<http://moaf.gov.sd/publicationsar.html>]. Accessed 17 January 2021.

2.3.1b

Is there publicly available evidence that the country reported a potential public health emergency of international concern (PHEIC) to the WHO within the last two years?

Yes = 1, No = 0

Current Year Score: 1

Sudan has reported a potential public health emergencies of international concern to the World Health Organization (WHO) within the past two years.

According to the WHO Disease Outbreak News website, on August 8, 2018, Sudan reported an outbreak of chikungunya: "From May 31 through October 2, 2018, seven States (Kassala, Red Sea, Al Gadaref, River Nile, Northern State, South Darfur, and Khartoum) have been affected with a total of 13,978 cases of chikungunya" [1].

In addition, on August 9, 2020, the Federal Ministry of Health, Sudan, notified the WHO of the detection of a circulating vaccine-derived poliovirus type 2 (cVDPV2) in the country. According to the notification, the virus is genetically-linked with Chad (sequencing results revealed 12–19 nucleotide changes). In addition, two acute flaccid paralysis (AFP) cases were notified [2].

[1] World Health Organization (WHO). "Disease Outbreak News". [<https://www.who.int/csr/don/archive/year/2018/en/>]. Accessed 17 January 2021.

[2] World Health Organization (WHO). "Circulating vaccine-derived poliovirus type 2 – Sudan" 1 September 2020. [<https://www.who.int/csr/don/01-september-2020-polio-sudan/en/>]. Accessed 17 January 2021.

2.3.2 Interoperable, interconnected, electronic real-time reporting systems

2.3.2a

Does the government operate an electronic reporting surveillance system at both the national and the sub-national level?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that Sudan operates an electronic reporting surveillance system at both the national and sub-national levels. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "currently, no electronic reporting system exists and it is not clear whether the planned system can provide interoperable and interconnected real-time electronic reporting" [1]. The Federal Ministry of Health does not provide any evidence on the operation of an electronic reporting surveillance system [2]. Moreover, there is no national laboratory system website or national public health institute website in place.

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 17 January 2021.

[2] Federal Ministry of Health. [<https://fmoh.gov.sd/index.php/files/index/93>]. Accessed 17 January 2021.

2.3.2b

Does the electronic reporting surveillance system collect ongoing or real-time laboratory data?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that Sudan operates an electronic reporting surveillance system at both the national and sub-national levels. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "currently, no electronic reporting system exists and it is not clear whether the planned system can provide interoperable and interconnected real-time electronic reporting" [1]. The Federal Ministry of Health does not provide any evidence on the operation of an electronic reporting surveillance system [2]. Moreover, there is no national laboratory system website or national public health institute website in place.

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 17 January 2021.

[2] Federal Ministry of Health. [<https://fmoh.gov.sd/index.php/files/index/93>]. Accessed 17 January 2021.

2.4 SURVEILLANCE DATA ACCESSIBILITY AND TRANSPARENCY

2.4.1 Coverage and use of electronic health records

2.4.1a

Are electronic health records commonly in use?

Electronic health records are commonly in use = 2, Electronic health records are not commonly in use, but there is evidence they are used = 1, No evidence electronic health records are in use = 0

Current Year Score: 0

There is no evidence that electronic health records are commonly in use in Sudan. The website of the Federal Ministry of Health does not provide information that shows that electronic health records are commonly in use in Sudan [1]. Moreover, there is no national laboratory system website or national public health institute website in place.

[1] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 17 January 2021.

2.4.1b

Does the national public health system have access to electronic health records of individuals in their country?

Yes = 1, No = 0

Current Year Score: 0

There is no evidence that the national public health system has access to electronic health records (EHRs) of individuals in Sudan. The website of the Federal Ministry of Health does not provide information that shows that the national public health system has such access [1]. Moreover, there is no national laboratory system website or national public health institute website in place.

[1] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 17 January 2021.

2.4.1c

Are there data standards to ensure data is comparable (e.g., ISO standards)?

Yes = 1, No = 0

Current Year Score: 0

There is no evidence that there are data standards to ensure data is comparable (e.g., ISO standards). The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that part of the recommendations of the report is to "establish a national laboratory quality program for all health laboratories in the country and support total quality management system implementation towards certification/accreditation" [1]. The website of the Federal Ministry of Health does not provide information that reveals that there are data standards to ensure that data is comparable [2]. Moreover, there is no national laboratory system website or

national public health institute website in place.

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 17 January 2021.

[2] Federal Ministry of Health. "Laws and Policies Files Page". [<https://fmoh.gov.sd/index.php/files/index/93>]. Accessed 17 January 2021.

2.4.2 Data integration between human, animal, and environmental health sectors

2.4.2a

Is there evidence of established mechanisms at the relevant ministries responsible for animal, human, and wildlife surveillance to share data (e.g., through mosquito surveillance, brucellosis surveillance)?

Yes = 1, No = 0

Current Year Score: 0

There is no evidence of established mechanisms at the relevant ministries responsible for animal, human, and wildlife surveillance to share data (such as through mosquito surveillance, brucellosis surveillance, etc). Moreover, there is no evidence of such mechanisms available via the Joint External Evaluation (JEE) mission report of the Republic of the Sudan, or the websites of the Federal Ministry of Health or the Ministry of Environment [1,2,3]. According to the website of the World Organization for Animal Health (OIE) PVS evaluation reports, Sudan does not have an OIE PVS evaluation report that is publicly available and, therefore, does not provide information that shows that there are established mechanisms at the relevant ministries responsible for animal, human and wildlife surveillance to share data (such as through mosquito surveillance, brucellosis surveillance, etc.) [4]. Moreover, there is no national laboratory system website or national public health institute website in place.

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 17 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 17 January 2021.

[3] The Higher Council for Environment and Natural Resources (Reports and Studies) [<https://hcnr.gov.sd/%d8%a7%d9%84%d8%af%d8%b1%d8%a7%d8%b3%d8%a7%d8%aa/>]. Accessed 17 January 2021.

[4] World Organization for Animal Health (OIE). "OIE PVS Evaluation Reports". [<http://www.oie.int/solidarity/pvs-evaluations/pvs-evaluation-reports/>]. Accessed 17 January 2021.

2.4.3 Transparency of surveillance data

2.4.3a

Does the country make de-identified health surveillance data on infectious diseases publicly available via reports (or other format) on government websites (such as the Ministry of Health, Ministry of Agriculture, or similar)?

Yes = 1, No = 0

Current Year Score: 1

Sudan Health Observatory, within the Federal Ministry of Health, publishes a weekly Epidemiological Statistical Reports on infectious diseases with de-identified health surveillance data. The reports are mainly statistical in nature and demonstrate

reporting rates, new cases of each infectious diseases (such as malaria, typhoid, dysentery) in Sudan at a national level in addition to a breakdown for each state [1]. There is no national laboratory system website or national public health institute website in place.

[1] Federal Ministry of Health Observatory. [http://sho.gov.sd/controller/knowledge_hub.php?sm_id=132&mid=110&lid=1#]. Accessed 17 January 2021.

2.4.3b

Does the country make de-identified COVID-19 surveillance data (including details such as daily case count, mortality rate, etc) available via daily reports (or other formats) on government websites (such as the Ministry of Health, or similar)?

Yes = 1 , No = 0

Current Year Score: 0

Sudan does not have daily reporting for COVID-19 surveillance data available on government websites. However, the Federal Ministry of Health published reports for announcing deaths and new cases on less than a daily basis with maximum a week between reports [1]. There is no national laboratory system website or national public health institute website in place.

[1] Federal Ministry of Health. [https://fmoh.gov.sd/index.php/section/list_posts/11/]. Accessed 17 January 2021.

2.4.4 Ethical considerations during surveillance

2.4.4a

Is there legislation and/or regulations that safeguard the confidentiality of identifiable health information for individuals, such as that generated through health surveillance activities?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that there are laws, regulations, or guidelines that safeguard the confidentiality of identifiable health information for individuals, such as that generated through health surveillance activities. The website of the Federal Ministry of Health does not provide such information, neither does that of the Ministry of Animal Resources [1,2]. Moreover, there is no national laboratory system website or national public health institute website in place. No relevant data was found on the websites of law firms. No relevant templates/online forms for medical practitioners/lab personnel to submit surveillance data were found either.

[1] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 19 January 2021.

[2] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed 19 January 2021.

2.4.4b

Is there legislation and/or regulations safeguarding the confidentiality of identifiable health information for individuals, such as that generated through health surveillance activities, include mention of protections from cyber attacks (e.g., ransomware)?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that there are laws, regulations, or guidelines that safeguard the confidentiality of identifiable health information for individuals, such as that generated through health surveillance activities. The website of the Federal Ministry of Health does not provide such information, neither does that of the Ministry of Animal Resources [1,2]. There is no national laboratory system or national public health institute website in place, and no relevant data in this regard was found on the websites of law firms. In addition, no relevant templates/online forms for medical practitioners/lab personnel to submit surveillance data were found either.

[1] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed on 19 January 2021.

[2] Ministry of Animal Resources. [<http://mar.gov.sd/>]. Accessed on 19 January 2021.

2.4.5 International data sharing

2.4.5a

Has the government made a commitment via public statements, legislation and/or a cooperative agreement to share surveillance data during a public health emergency with other countries in the region?

Yes, commitments have been made to share data for more than one disease = 2, Yes, commitments have been made to share data only for one disease = 1, No = 0

Current Year Score: 0

There is no evidence that the government has made a commitment via public statements, legislation, and/or a cooperative agreement to share surveillance data during a public health emergency with other countries in the region for one or more diseases.

The website of the Federal Ministry of Health does not provide information that reveals that the government made a commitment via public statements, legislation, and/or a cooperative agreement to share surveillance data during a public health emergency with other countries in the region [1]. There is neither a national laboratory system website nor a national public health institute website in place nor is there evidence of nearby regional surveillance networks that Sudan is a member of.

[1] Federal Ministry of Health. [https://fmoh.gov.sd/index.php/section/list_posts/11]. Accessed 19 January 2021.

2.5 CASE-BASED INVESTIGATION

2.5.1 Case investigation and contact tracing

2.5.1a

Is there a national system in place to provide support at the sub-national level (e.g. training, metrics standardization and/or financial resources) to conduct contact tracing in the event of a public health emergency?

Yes, there is evidence that the national government supports sub-national systems to prepare for future public health emergencies = 2, Yes, there is evidence that the national government supports sub-national systems, but only in response to active public health emergencies = 1, No = 0

Current Year Score: 0

There is no evidence found of a national system in place to provide support at the sub-national level to conduct contact tracing in the event of an active or future public health emergency on the website of the Federal Ministry of Health [1].

Moreover, there are no national laboratory system website or national public health institute website in place.

[1] Federal Ministry of Health. [<https://fmoh.gov.sd/index.php/files/index/93>]. Accessed 19 January 2021.

2.5.1b

Does the country provide wraparound services to enable infected people and their contacts to self-isolate or quarantine as recommended, particularly economic support (paycheck, job security) and medical attention?

Yes, both economic support and medical attention are provided = 2, Yes, but only economic support or medical attention is provided = 1, No = 0

Current Year Score: 0

There is no evidence that Sudan provides wraparound services to enable infected people and their contacts to self-isolate or quarantine as recommended, particularly economic support (paycheck, job security) and medical attention. The Federal Ministry of Health does not provide any evidence on economic or medical support in such cases [1]. Moreover, there is no national laboratory system website or national public health institute website in place.

[1] Federal Ministry of Health. "Announcements". [https://fmoh.gov.sd/index.php/section/list_posts/11]. Accessed 2 May 2021.

2.5.1c

Does the country make de-identified data on contact tracing efforts for COVID-19 (including the percentage of new cases from identified contacts) available via daily reports (or other format) on government websites (such as the Ministry of Health, or similar)?

Yes = 1, No = 0

Current Year Score: 0

There is no evidence that Sudan make de-identified data on contact tracing efforts for COVID-19 available via daily reports on government websites. The Federal Ministry of Health does not provide evidence on contact tracing efforts for COVID-19 [1]. Moreover, there is no national laboratory system website or national public health institute website in place.

[1] Federal Ministry of Health. "Federal Ministry of Health Reports Database". [<https://fmoh.gov.sd/index.php/files/index/116>]. Accessed 19 January 2021.

2.5.2 Point of entry management

2.5.2a

Is there a joint plan or cooperative agreement between the public health system and border control authorities to identify suspected and potential cases in international travelers and trace and quarantine their contacts in the event of a public health emergency?

Yes, plan(s)/agreement(s) are in place to prepare for future public health emergencies = 2, Yes, but plan(s)/agreement(s) are in place only in response to active public health emergencies = 1, No = 0

Current Year Score: 0

There is no evidence of a joint plan or cooperative agreement between the public health system and border control authorities to identify suspected and potential cases in international travelers and trace and quarantine their contacts in the event of an active or future public health emergency. The Federal Ministry of Health has no publicly available evidence on such a plan/cooperation [1]. Moreover, there is no national laboratory system website or national public health institute website in place.

[1] Federal Ministry of Health. "Federal Ministry of Health Reports Database". [https://fmoh.gov.sd/index.php/files/index/116]. Accessed 19 January 2021.

2.6 EPIDEMIOLOGY WORKFORCE

2.6.1 Applied epidemiology training program, such as the field epidemiology training program, for public health professionals and veterinarians (e.g., Field Epidemiology Training Program [FETP] and Field Epidemiology Training Program for Veterinarians [FETPV])

2.6.1a

Does the country meet one of the following criteria?

- Applied epidemiology training program (such as FETP) is available in country
- Resources are provided by the government to send citizens to another country to participate in applied epidemiology training programs (such as FETP)

Needs to meet at least one of the criteria to be scored a 1 on this measure. , Yes for both = 1 , Yes for one = 1 , No for both = 0

Current Year Score: 1

Sudan has an Applied epidemiology training program available in the country. According to the website of the Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET), "In 2017 through a productive collaboration between the Eastern Mediterranean Public Health Network (EMPHNET) and the Federal Ministry of Health (FMOH), Sudan developed its program for Field Epidemiology (Sudan FETP). The FMOH officially selected the candidates for training from the states and the national level and launched the first batch of the program in 2017" [1]. Furthermore, there is no evidence that resources are provided by the government to send citizens to another country to participate in applied epidemiology training programs on the website of the Federal Ministry of Health [2].

[1] Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET) [https://www.tephinet.org/training-programs/sudan-field-epidemiology-training-program]. Accessed 19 January 2021.
[2] Federal Ministry of Health. "Announcements". [https://fmoh.gov.sd/index.php/section/list_posts/11]. Accessed 19 January 2021.

2.6.1b

Are the available field epidemiology training programs explicitly inclusive of animal health professionals or is there a specific animal health field epidemiology training program offered (such as FETPV)?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence of an available field epidemiology training programs (FETPs) explicitly inclusive of animal health professionals. The website of the Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET)

does not mention evidence of such a training program and neither does the Federal Ministry of Health [1,2].

[1] Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET)

[<https://www.tephinet.org/training-programs/sudan-field-epidemiology-training-program>]. Accessed 19 January 2021.

[2] Federal Ministry of Health. "Announcements". [https://fmoh.gov.sd/index.php/section/list_posts/11]. Accessed 19 January 2021.

2.6.2 Epidemiology workforce capacity

2.6.2a

Is there public evidence that the country has at least 1 trained field epidemiologist per 200,000 people?

Yes = 1 , No = 0

Current Year Score: 0

2020

Completed JEE assessments; Economist Impact analyst qualitative assessment based on official national sources, which vary by country

Category 3: Rapid response to and mitigation of the spread of an epidemic

3.1 EMERGENCY PREPAREDNESS AND RESPONSE PLANNING

3.1.1 National public health emergency preparedness and response plan

3.1.1a

Does the country have an overarching national public health emergency response plan in place which addresses planning for multiple communicable diseases with epidemic or pandemic potential?

Evidence that there is a plan in place, and the plan is publicly available = 2, Evidence that the plan is in place, but the plan is not publicly available OR, Disease-specific plans are in place, but there is no evidence of an overarching plan = 1, No evidence that such a plan or plans are in place = 0

Current Year Score: 0

There is no evidence that Sudan has an overarching national public health emergency response plan that addresses planning for multiple communicable diseases with pandemic potential. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "a well-developed and comprehensive national emergency response plan is validated, approved, and implemented. The plan covers all IHR hazards." It also states that "the National Civil Defense Commission (NCDC) has developed an overarching national plan for emergency preparedness and response in the country. The National Committee for Emergency Preparedness and Response, established by law, is housed within the Supreme Council for Civil Defense. The Committee has clear roles and responsibilities and is headed by the Ministry of Interior. A national emergency management policy was developed in 2006 and updated in 2013." The report does not mention whether the plan addresses planning for multiple communicable diseases with pandemic

potential [1]. Moreover, the website of the Federal Ministry of Health does not provide information that indicates that the country has a national public health emergency response plan in place that addresses planning for multiple communicable diseases with pandemic potential [2].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 19 January 2021.

[2] Federal Ministry of Health. "Laws and Policies". [<https://fmoh.gov.sd/index.php/files/index/93>]. Accessed 19 January 2021.

3.1.1b

If an overarching plan is in place, has it been updated in the last 3 years?

Yes = 1 , No /no plan in place= 0

Current Year Score: 0

There is no evidence that Sudan has an overarching national public health emergency response plan that addresses planning for multiple communicable diseases with pandemic potential. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "a well-developed and comprehensive national emergency response plan is validated, approved, and implemented. The plan covers all IHR hazards." It also states that "the National Civil Defense Commission (NCDC) has developed an overarching national plan for emergency preparedness and response in the country. The National Committee for Emergency Preparedness and Response, established by law, is housed within the Supreme Council for Civil Defense. The Committee has clear roles and responsibilities and is headed by the Ministry of Interior. A national emergency management policy was developed in 2006 and updated in 2013." However, the report does not mention whether the plan addresses planning for multiple communicable diseases with pandemic potential [1]. Moreover, the website of the Federal Ministry of Health does not provide information that reveals that the country has a national public health emergency response plan in place that addresses planning for multiple communicable diseases with pandemic potential [2].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 19 January 2021.

[2] Federal Ministry of Health. "Laws and Policies". [<https://fmoh.gov.sd/index.php/files/index/93>]. Accessed 19 January 2021.

3.1.1c

If an overarching plan is in place, does it include considerations for pediatric and/or other vulnerable populations?

Yes = 1 , No /no plan in place= 0

Current Year Score: 0

There is no evidence that Sudan has an overarching national public health emergency response plan that addresses planning for multiple communicable diseases with pandemic potential. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "a well-developed and comprehensive national emergency response plan is validated, approved and implemented. The plan covers all IHR hazards." It also states that "the National Civil Defense Commission (NCDC) has developed an overarching national plan for emergency preparedness and response in the country. The National Committee for Emergency Preparedness and Response, established

by law, is housed within the Supreme Council for Civil Defense. The Committee has clear roles and responsibilities and is headed by the Ministry of Interior. A national emergency management policy was developed in 2006 and updated in 2013." However, the report does not mention whether the plan addresses planning for multiple communicable diseases with pandemic potential [1]. Moreover, the website of the Federal Ministry of Health does not provide information that reveals that the country has a national public health emergency response plan in place that addresses planning for multiple communicable diseases with pandemic potential [2].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 19 January 2021.

[2] Federal Ministry of Health. "Laws and Policies". [<https://fmoh.gov.sd/index.php/files/index/93>]. Accessed 19 January 2021.

3.1.1d

Does the country have a publicly available plan in place specifically for pandemic influenza preparedness that has been updated since 2009?

Yes = 1 , No = 0

Current Year Score: 0

2020

WHO Strategic Partnership for IHR and Health Security (SPH)

3.1.2 Private sector involvement in response planning

3.1.2a

Does the country have a specific mechanism(s) for engaging with the private sector to assist with outbreak emergency preparedness and response?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Sudan has specific mechanism(s) for engaging with the private sector to assist with outbreak emergency preparedness and response. The Federal Ministry of Health does not provide information that shows that Sudan has such mechanism(s) in place [1].

[1] Federal Ministry of Health. "Laws and Policies". [<https://fmoh.gov.sd/index.php/files/index/93>]. Accessed 19 January 2021.

3.1.3 Non-pharmaceutical interventions planning

3.1.3a

Does the country have a policy, plan and/or guidelines in place to implement non-pharmaceutical interventions (NPIs) during an epidemic or pandemic?

Yes, a policy, plan and/or guidelines are in place for more than one disease= 2, Yes, but the policy, plan and/or guidelines exist only for one disease = 1, No = 0

Current Year Score: 0

There is no evidence that Sudan has a policy, plan, and/or guidelines in place to implement non-pharmaceutical interventions (NPIs) during an epidemic or pandemic for one or more diseases. The Federal Ministry of Health does not provide evidence for such a plan/policy [1]. Moreover, there are no national laboratory system website or national public health institute website in place.

[1] Federal Ministry of Health. "Laws and Policies". [<https://fmoh.gov.sd/index.php/files/index/93>]. Accessed 19 January 2021.

3.2 EXERCISING RESPONSE PLANS

3.2.1 Activating response plans

3.2.1a

Does the country meet one of the following criteria?

- Is there evidence that the country has activated their national emergency response plan for an infectious disease outbreak in the past year?

- Is there evidence that the country has completed a national-level biological threat-focused exercise (either with WHO or separately) in the past year?

Needs to meet at least one of the criteria to be scored a 1 on this measure. , Yes for both = 1 , Yes for one = 1 , No for both = 0

Current Year Score: 0

There is no evidence that Sudan has activated a national emergency response plan neither for an infectious disease outbreak nor for COVID-19 in the past year or that it has completed a national-level biological threat-focused exercise (either with the World Health Organization (WHO) or separately).

Sudan's Country Profile on the WHO does not provide evidence on activating a certain plan and neither does the website of the Federal Ministry of Health [1,2]. Moreover, the extranet of the WHO does not provide evidence of biological-threat-focused exercises completed last year [3].

[1] World Health Organization (WHO), "Sudan Country Profile". [<http://www.emro.who.int/sdn/sudan-news/>] Accessed 19 January 2021.

[2] Federal Ministry of Health. "Announcements". [https://fmoh.gov.sd/index.php/section/list_posts/11] Accessed 19 January 2021.

[3] World Health Organization (WHO) Extranet. [<https://extranet.who.int/sph/donor-contribution-area/biosafety-and-biosecurity?page=45>]. Accessed 19 January 2021.

3.2.1b

Is there evidence that the country in the past year has identified a list of gaps and best practices in response (either through an infectious disease response or a biological-threat focused exercise) and developed a plan to improve response capabilities?

Yes, the country has developed and published a plan to improve response capacity = 2 , Yes, the country has developed a plan to improve response capacity, but has not published the plan = 1 , No = 0

Current Year Score: 0

There is insufficient evidence that Sudan has identified a list of gaps and best practices in response (either through an infectious disease response or a biological-threat-focused exercise) and developed a plan to improve response capabilities. According to Sudan's Profile on the website of the World Health Organization (WHO), Sudan, "WHO, and the Federal Ministry of Health organized two After Action Reviews, one regarding Rift Valley fever outbreak and the other regarding the cholera outbreak. The meetings gathered colleagues from the federal and state Ministries of Health, health partners, stakeholders, and donors, all of whom were closely involved in the response", but mentions nothing on an applied or developed plan [1]. In addition, neither the WHO After Action Review Portal nor the Federal Ministry of Health have evidence available pertaining to such a plan [2,3].

[1] World Health Organization (WHO). "Sudan Country Profile". [<http://www.emro.who.int/sdn/sudan-news/who-supports-after-action-reviews-to-improve-and-strengthen-the-multisectoral-response-efforts.html>]. Accessed 21 January 2021

[2]. World Health Organization (WHO). "After Action Review Portal". [<https://extranet.who.int/sph/after-action-review?region=201&country=290>]. Accessed on 21 January 2021.

[3] Federal Ministry of Health. "Laws and Policies". [<https://fmoh.gov.sd/index.php/files/index/93>] Accessed 21 January 2021.

3.2.2 Private sector engagement in exercises

3.2.2a

Is there evidence that the country in the past year has undergone a national-level biological threat-focused exercise that has included private sector representatives?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Sudan has undergone a national-level biological threat-focused exercise that has included private sector representatives. Neither the Sudan Profile on the website of the World Health Organization (WHO) nor the WHO After Action Review Portal provide evidence on such an exercise [1,2] . Moreover, the Federal Ministry of Health has no publicly available evidence on such an exercise [3]. The WHO extranet does not provide evidence of a completed biological threat- focused exercise that has included private sector representatives last year [4], and there is no further evidence on the WHO Simulation Exercise page [5].

[1] World Health Organization (WHO). "Sudan Country Profile". [<http://www.emro.who.int/sdn/sudan-news/who-supports-after-action-reviews-to-improve-and-strengthen-the-multisectoral-response-efforts.html>]. Accessed 21 January 2021.

[2] World Health Organization (WHO). After Action Review Portal. [<https://extranet.who.int/sph/after-action-review?region=201&country=290>]. Accessed 21 January 2021.

[3] Federal Ministry of Health Laws and Policies. [<https://fmoh.gov.sd/index.php/files/index/93>]. Accessed 21 January 2021.

[4] World Health Organization (WHO) Extranet. [<https://extranet.who.int/sph/donor-contribution-area/biosafety-and-biosecurity?page=45>]. Accessed 20 February 2021.

[5] World Health Organization (WHO). Simulation Exercise. [<https://extranet.who.int/sph/simulation-exercise>]. Accessed 20 February 2021.

3.3 EMERGENCY RESPONSE OPERATION

3.3.1 Emergency response operation

3.3.1a

Does the country have in place an Emergency Operations Center (EOC)?

Yes = 1 , No = 0

Current Year Score: 1

Sudan has in place an Emergency Operations Centre (EOC). The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "An EOC exists within the FMOH at the federal and some state levels. The EOC has appropriate physical structure to augment strategic functions in a response to a medical emergency at the state level. The Incident Commander is the state minister or the federal undersecretary" [1].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 21 January 2021.

3.3.1b

Is the Emergency Operations Center (EOC) required to conduct a drill for a public health emergency scenario at least once per year or is there evidence that they conduct a drill at least once per year?

Yes = 1 , No = 0

Current Year Score: 0

There is neither evidence that the Emergency Operations Centre (EOC) has a requirement of conducting an annual health-focused drill nor evidence of any annual health-focused drills.

Moreover, no such evidence is available via the Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, the websites of the Federal Ministry of Health and the Ministry of Defence, or the United Nations (UN) Office for Disaster Risk Reduction (UNDRR) Sendai Framework progress reports for Sudan [1,2,3,4].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 21 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 21 January 2021.

[3] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed on 21 January 2021.

[4] United Nations (UN) Office of Disaster Risk Reduction. "Sendai Framework Progress Reports: Sudan". [<https://www.unisdr.org/partners/countries/sdn>]. Accessed 21 January 2021.

3.3.1c

Is there public evidence to show that the Emergency Operations Center (EOC) has conducted within the last year a coordinated emergency response or emergency response exercise activated within 120 minutes of the identification of the public health emergency/scenario?

Yes = 1 , No = 0

Current Year Score: 0

There is no public evidence that shows that the Emergency Operations Centre (EOC) can conduct, or has conducted within the last year, a co-ordinated emergency response or emergency response exercise activated within 120 minutes of the identification of the public health emergency/scenario. No such evidence is available via the Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, the websites of the Federal Ministry of Health, and the United Nations (UN) Office for Disaster Risk Reduction (UNDRR) Sendai Framework progress reports for Sudan [1,2,3].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 21 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 21 January 2021.

[3] United Nations Office of Disaster Risk Reduction. "Sendai Framework Progress Reports: Sudan". [<https://www.unisdr.org/partners/countries/sdn>]. Accessed 21 January 2021.

3.4 LINKING PUBLIC HEALTH AND SECURITY AUTHORITIES

3.4.1 Public health and security authorities are linked for rapid response during a biological event

3.4.1a

Does the country meet one of the following criteria?

- Is there public evidence that public health and national security authorities have carried out an exercise to respond to a potential deliberate biological event (i.e., bioterrorism attack)?
- Are there publicly available standard operating procedures, guidelines, memorandums of understanding (MOUs), or other agreements between the public health and security authorities to respond to a potential deliberate biological event (i.e., bioterrorism attack)?

Needs to meet at least one of the criteria to be scored a 1 on this measure., Yes for both = 1, Yes for one = 1, No for both = 0

Current Year Score: 1

There is evidence that public health and national security authorities have carried out an exercise to respond to a potential deliberate biological event (i.e., bioterrorism attack) or of a publicly available standard operating procedures, guidelines, memorandums of understanding (MOUs) or other agreements between the public health and security authorities to respond to such an event. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that Sudan achieved a score of 5/5 (sustainable capacity) for an indicator assessing whether public health and security authorities (such as law enforcement, border control and customs) are linked during a suspected or confirmed biological event. The report states that "a clear Memorandum of Understanding between the public health and security sector specifies roles and responsibilities." However, no mention is made regarding whether this MoU is only for naturally occurring disease outbreaks or if it also applies to a deliberate event [1]. Furthermore, no evidence is available via the Federal Ministry of Health in this regard [2]. According to the website of the World Organization for Animal Health (OIE) PVS evaluation reports, Sudan does not have an OIE PVS evaluation report that is publicly available and, therefore, does not provide information that indicates that public health and national security authorities have carried out an exercise to respond to a potential deliberate biological event (i.e., bioterrorism attack) or that there are publicly available standard operating procedures, guidelines, MOUs or other agreements between the public health and security authorities to

respond to a potential deliberate biological event (i.e., bioterrorism attack) [3].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed on 21 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed on 21 January 2021.

[3] World Organization for Animal Health (OIE). "OIE PVS Evaluation Reports". [<http://www.oie.int/solidarity/pvs-evaluations/pvs-evaluation-reports/>]. Accessed 21 January 2021.

3.5 RISK COMMUNICATIONS

3.5.1 Public communication

3.5.1b

Does the risk communication plan (or other legislation, regulation or strategy document used to guide national public health response) outline how messages will reach populations and sectors with different communications needs (eg different languages, location within the country, media reach)?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that the strategy (or other legislation, regulation, or strategy document) used to guide national public health response outlines how messages will reach populations and sectors with different communications needs (e.g., different languages, location within country, media reach, etc.). Moreover, no evidence on this is available via the Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016, or the website of the Federal Ministry of Health [1,2].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 21 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 21 January 2021.

3.5.1 Risk communication planning

3.5.1a

Does the country have in place, either in the national public health emergency response plan or in other legislation, regulation, or strategy documents, a section detailing a risk communication plan that is specifically intended for use during a public health emergency?

Yes = 1 , No = 0

Current Year Score: 1

There is some evidence that Sudan has in place in its national risk communication plan a section detailing a plan that is specifically intended for use during a public health emergency. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "a national risk communication plan developed in 2014 was endorsed by the [health ministry] in September 2016. A specialized health promotion unit within the [health ministry], comprising 32 staff members, has been established and brings together risk communication and health promotion functions under one team. Prior real-time experience in communicating health risks during disease outbreaks can

be used to harness best practices and lessons learnt for risk communication platforms" [1].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 21 January 2021.

3.5.1c

Does the risk communication plan (or other legislation, regulation or strategy document used to guide national public health response) designate a specific position within the government to serve as the primary spokesperson to the public during a public health emergency?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient evidence that Sudan has a designated specific position within the government to serve as the primary spokesperson to the public during a public health emergency. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "The Federal Ministry of Health Undersecretary has the authority to release health messages and to communicate directly with the media and that the Undersecretary has been designated as the National Focal Point" [1]. There is no further evidence on designating a spokesperson.

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 21 January 2021.

3.5.2 Public communication

3.5.2a

In the past year, is there evidence that the public health system has actively shared messages via online media platforms (e.g. social media, website) to inform the public about ongoing public health concerns and/or dispel rumors, misinformation or disinformation?

Public health system regularly shares information on health concerns = 2, Public health system shares information only during active emergencies, but does not regularly utilize online media platforms = 1, Public health system does not regularly utilize online media platforms, either during emergencies or otherwise = 0

Current Year Score: 2

Sudan has actively utilized its Federal Ministry of Health website and Official Facebook Page to inform the public about ongoing public health concerns and/or dispel rumors, misinformation, or disinformation. The Federal Ministry of Health regularly posted updates on their News Page in 2020 about dealing with a certain infectious disease like malaria or a clarification about the import of expired medicines on social network, in addition to informing about any public health campaign or any aid received for a certain public health issue [1,2].

[1] Federal Ministry of Health. [https://fmoh.gov.sd/index.php/section/list_posts/11]. Accessed 21 January 2021.

[2] Federal Ministry of Health Facebook Page. [<https://www.facebook.com/FMOH.SUDAN/>]. Accessed 21 January 2021.

3.5.2b

Is there evidence that senior leaders (president or ministers) have shared misinformation or disinformation on infectious diseases in the past two years?

No = 1, Yes = 0

Current Year Score: 1

There is no evidence that senior leaders in Sudan have shared misinformation or disinformation on infectious diseases in the past two years. Moreover, national or international media outlets do not provide evidence on misinformation or disinformation shared by senior leaders [1,2].

[1] Sudan News Agency. [<https://www.suna-sd.net/>]. Accessed 25 January 2021.

[2] Sudan Sky News Arabia.

[<https://www.skynewsarabia.com/tag?s=%D8%A3%D8%AE%D8%A8%D8%A7%D8%B1%20%D8%A7%D9%84%D8%B3%D9%88%D8%AF%D8%A7%D9%86&offset=84&sort=RELEVANCE>]. Accessed 25 January 2021.

3.6 ACCESS TO COMMUNICATIONS INFRASTRUCTURE

3.6.1 Internet users

3.6.1a

Percentage of households with Internet

Input number

Current Year Score: 30.87

2019

International Telecommunication Union (ITU)

3.6.2 Mobile subscribers

3.6.2a

Mobile-cellular telephone subscriptions per 100 inhabitants

Input number

Current Year Score: 77.11

2019

International Telecommunication Union (ITU)

3.6.3 Female access to a mobile phone

3.6.3a

Percentage point gap between males and females whose home has access to a mobile phone

Input number

Current Year Score: 10.18

2018-2019

Gallup; Economist Impact calculation

3.6.4 Female access to the Internet

3.6.4a

Percentage point gap between males and females whose home has access to the Internet

Input number

Current Year Score: 9.62

2018-2019

Gallup; Economist Impact calculation

3.7 TRADE AND TRAVEL RESTRICTIONS

3.7.1 Trade restrictions

3.7.1a

In the past year, has the country issued a restriction, without international/bilateral support, on the export/import of medical goods (e.g. medicines, oxygen, medical supplies, PPE) due to an infectious disease outbreak?

Yes = 0, No = 1

Current Year Score: 1

There is no evidence that Sudan has issued a restriction on the export/import of medical goods due to an infectious disease outbreak. Moreover, national or international media outlets do not provide evidence on such a restriction [1,2]. The Federal Ministry of Health and The Ministry of Agriculture and Natural Resources do not provide any evidence on import/export restrictions [3,4].

[1] Sudan News Agency. [<https://www.suna-sd.net/>]. Accessed 25 January 2021.

[2] Sudan Sky News Arabia.

[<https://www.skynewsarabia.com/tag?s=%D8%A3%D8%AE%D8%A8%D8%A7%D8%B1%20%D8%A7%D9%84%D8%B3%D9%88%D8%AF%D8%A7%D9%86&offset=84&sort=RELEVANCE>]. Accessed 25 January 2021.

[3] Federal Ministry of Health. [https://fmoh.gov.sd/index.php/section/list_posts/11]. Accessed 25 January 2021.

[4] Ministry of Agriculture and Natural Resources. [<http://moaf.gov.sd/publicationsar.html>]. Accessed 25 January 2021.

3.7.1b

In the past year, has the country issued a restriction, without international/bilateral support, on the export/import of non-medical goods (e.g. food, textiles, etc) due to an infectious disease outbreak?

Yes = 0, No = 1

Current Year Score: 1

There is no evidence that Sudan has issued a restriction on the export/import of non-medical goods due to an infectious disease outbreak. Moreover, national or international media outlets do not provide evidence on such a restriction [1,2]. In addition, the Federal Ministry of Health and The Ministry of Agriculture and Natural Resources do not provide any evidence on import/export restrictions [3,4].

[1] Sudan News Agency. [<https://www.suna-sd.net/>]. Accessed 25 January 2021.

[2] Sudan Sky News Arabia.

[<https://www.skynewsarabia.com/tag?s=%D8%A3%D8%AE%D8%A8%D8%A7%D8%B1%20%D8%A7%D9%84%D8%B3%D9%88%D8%AF%D8%A7%D9%86&offset=84&sort=RELEVANCE>]. Accessed 25 January 2021.

[3] Federal Ministry of Health. [https://fmoh.gov.sd/index.php/section/list_posts/11]. Accessed 25 January 2021.

[4] Ministry of Agriculture and Natural Resources. [<http://moaf.gov.sd/publicationsar.html>]. Accessed 25 January 2021.

3.7.2 Travel restrictions

3.7.2a

In the past year, has the country implemented a ban, without international/bilateral support, on travelers arriving from a specific country or countries due to an infectious disease outbreak?

Yes = 0 , No = 1

Current Year Score: 0

There is evidence that Sudan has implemented a ban, without international/bilateral support, on travelers arriving from a specific country or countries due to an infectious disease outbreak. The Sudanese Civil Aviation Authority announced they would be restricting air travel from the UK, Netherlands and South Africa until January 13, 2021. Flights to and from some regional countries have been operational through the COVID-19 pandemic although some commercial options have remained limited [1].

[1] TravelBans. 2021. [<https://travelbans.org/africa/sudan/>]. Accessed 21 January 2021.

Category 4: Sufficient and robust health sector to treat the sick and protect health workers

4.1 HEALTH CAPACITY IN CLINICS, HOSPITALS, AND COMMUNITY CARE CENTERS

4.1.1 Available human resources for the broader healthcare system

4.1.1a

Doctors per 100,000 people

Input number

Current Year Score: 26.18

2017

WHO; national sources

4.1.1b

Nurses and midwives per 100,000 people

Input number

Current Year Score: 69.52

2017

WHO; national sources

4.1.1c

Does the country have a health workforce strategy in place (which has been updated in the past five years) to identify fields where there is an insufficient workforce and strategies to address these shortcomings?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that the country has a public workforce strategy in place (which has been updated in the past five years) to identify fields where there is an insufficient workforce and strategies to address these shortcomings. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "the strategy for human resource for health (2012-2016) is reviewed regularly, with an annual report delivered. However, issues with assigning of targets for some indicators hinder tracking and review of the strategy. The workforce strategy does not cover public health staff" [1]. Further, there is no evidence of such strategies available via the website of the Federal Ministry of Health [2].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 25 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 25 January 2021.

4.1.2 Facilities capacity

4.1.2a

Hospital beds per 100,000 people

Input number

Current Year Score: 74

2017

WHO/World Bank; national sources

4.1.2b

Does the country have the capacity to isolate patients with highly communicable diseases in a biocontainment patient care unit and/or patient isolation room/unit located within the country?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that the country has the capacity to isolate patients with highly communicable diseases in a biocontainment patient care unit and/or patient isolation facility located within the country. The Federal Ministry of Health website does not provide evidence of such capacity, neither does the website of one of the largest hospitals in Sudan (Universal Hospital) [1,2].

[1] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 25 January 2021.

[2] Universal Hospital Sudan. [<https://uhg-sd.org/>]. Accessed 25 January 2021.

4.1.2c

Does the country meet one of the following criteria?

- Is there evidence that the country has demonstrated capacity to expand isolation capacity in response to an infectious disease outbreak in the past two years?

- Is there evidence that the country has developed, updated or tested a plan to expand isolation capacity in response to an infectious disease outbreak in the past two years?

Yes = 1, No = 0

Current Year Score: 0

There is neither evidence that Sudan has demonstrated capacity to expand isolation capacity in response to an infectious disease outbreak nor that it has developed, updated, or tested a plan to expand isolation capacity in response to an infectious disease outbreak in the past two years.

The Federal Ministry of Health does not provide evidence for such a plan/ policy [1]. There is no national laboratory system website or national public health institute website in place. Moreover, the website of the Universal Hospital of Sudan, one of the biggest hospitals in the country, does not show evidence of any expansion of isolation capacity over the past two years [2].

[1] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 2 May 2021.

[2] Universal Hospital Sudan. [<https://uhg-sd.org/>]. Accessed 2 May 2021.

4.2 SUPPLY CHAIN FOR HEALTH SYSTEM AND HEALTHCARE WORKERS

4.2.1 Routine health care and laboratory system supply

4.2.1a

Is there a national procurement protocol in place which can be utilized by the Ministries of Health and Agriculture for the acquisition of laboratory supplies (e.g. equipment, reagents and media) and medical supplies (e.g. equipment, PPE) for routine needs?

Yes for both laboratory and medical supply needs = 2, Yes, but only for one = 1, No = 0

Current Year Score: 0

There is no evidence that Sudan has a national procurement protocol in place that can be utilized by the Ministries of Health and Agriculture for the acquisition of neither laboratory supplies (e.g., equipment, reagents, and media) nor medical supplies (e.g., equipment, personal protective equipment (PPE)) for routine needs. Moreover, the websites of the Federal Ministry of Health or the Ministry of Agriculture provide no evidence on such a protocol [1,2]. Sudan's Page on the World Health Organization (WHO) does not provide evidence of such a protocol [1,3].

[1] Federal Ministry of Health. [https://fmoh.gov.sd/index.php/section/list_posts/11]. Accessed 3 May 2021.

[2] Ministry of Agriculture. [<http://moaf.gov.sd/>]. Accessed 3 May 2021.

[3] World Health Organization (WHO). "Sudan Profile" [<http://www.emro.who.int/sdn/sudan-news/who-and-ministry-of-health-invest-in-national-capacities-for-procurement-and-supply-chain-management.html>]. Accessed 3 May 2021.

4.2.2 Stockpiling for emergencies

4.2.2a

Does the country have a stockpile of medical supplies (e.g. MCMs, medicines, vaccines, medical equipment, PPE) for national use during a public health emergency?

Yes = 2, Yes, but there is limited evidence about what the stockpile contains = 1, No = 0

Current Year Score: 0

There is no evidence that Sudan has a stockpile of medical supplies (e.g., medical countermeasures (MCMs), medicines, vaccines, medical equipment, personal protective equipment (PPE)) for national use during a public health emergency.

The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "National profiles on risks and resources have been developed and are reviewed at least on an annual basis, and stockpiles (critical stock levels) for responding to priority biological, chemical and radiological events and other emergencies are accessible." However, it does not mention clear details of the contents of such stockpiles and if it covers medical supplies, including MCMs, medicines, vaccines, medical equipment, and PPE [1]. Moreover, there is no further evidence on the website of the Ministry of Health [2].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 23 February 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 3 May 2021.

4.2.2b

Does the country have a stockpile of laboratory supplies (e.g. reagents, media) for national use during a public health emergency?

Yes = 2, Yes, but there is limited evidence about what the stockpile contains = 1, No = 0

Current Year Score: 0

There is no evidence the Sudan has a stockpile of laboratory supplies (e.g., reagents, media) for national use during a public health emergency. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, does not provide any evidence on stockpile of laboratory supplies [1]. Moreover, the Federal Ministry of Health provides no evidence of a stockpile of laboratory supplies [2]. There is no website for an emergency planning agency.

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 23 February 2021.

[2] Federal Ministry of Health. [<https://fmoh.gov.sd/index.php>]. Accessed 25 January 2021.

4.2.2c

Is there evidence that the country conducts or requires an annual review of the national stockpile to ensure the supply is sufficient for a public health emergency?

Yes = 1, No = 0

Current Year Score: 0

There is no evidence that Sudan conducts or requires an annual review of the national stockpile to ensure the supply is sufficient for a public health emergency.

The Ministry of Health, Ministry of Defence, and The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, do not provide any evidence on an annual review of the stockpile [1,2,3].

[1] Federal Ministry of Health. [https://fmoh.gov.sd/index.php/section/list_posts/11] Accessed 3 May 2021.

[2] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 3 May 2021.

[3] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 3 May 2021.

4.2.3 Manufacturing and procurement for emergencies

4.2.3a

Does the country meet one of the following criteria?

- Is there evidence of a plan/agreement to leverage domestic manufacturing capacity to produce medical supplies (e.g. MCMs, medicines, vaccines, equipment, PPE) for national use during a public health emergency?

- Is there evidence of a plan/mechanism to procure medical supplies (e.g. MCMs, medicines, vaccines, equipment, PPE) for national use during a public health emergency?

Needs to meet at least one of the criteria to be scored a 1 on this measure., Yes for both = 1, Yes for one = 1, No for both = 0

Current Year Score: 0

There is neither evidence of a plan/agreement to leverage domestic manufacturing capacity to produce medical supplies (e.g., medical countermeasures (MCMs), medicines, vaccines, equipment, personal protective equipment (PPE)) for national use during a public health emergency nor a plan/mechanism to procure medical supplies (e.g., MCMs, medicines, vaccines, equipment, PPE) for national use during a public health emergency. Moreover, neither the Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, nor the website of the Ministry of Health provide evidence on such plans [1,2].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 4 May 2021.

[2] Federal Ministry of Health. [<https://fmoh.gov.sd>]. Accessed 4 May 2021.

4.2.3b

Does the country meet one of the following criteria?

- Is there evidence of a plan/agreement to leverage domestic manufacturing capacity to produce laboratory supplies (e.g. reagents, media) for national use during a public health emergency?

- Is there evidence of a plan/mechanism to procure laboratory supplies (e.g. reagents, media) for national use during a public health emergency?

Needs to meet at least one of the criteria to be scored a 1 on this measure., Yes for both = 1, Yes for one = 1, No for both = 0

Current Year Score: 0

There is neither evidence of a plan /agreement to leverage domestic manufacturing capacity to produce laboratory supplies (e.g., reagents, media) for national use during a public health emergency nor procure them. However, The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "there are regional agreements for procurement of supplies during emergencies" but does not elaborate on the agreements [1]. The Federal Ministry of Health does not provide evidence on such plan/ mechanism [2].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 23 February 2021.

[2] Federal Ministry of Health. [<https://fmoh.gov.sd>] Accessed 26 January 2021.

[3] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 14 January 2021

4.3 MEDICAL COUNTERMEASURES AND PERSONNEL DEPLOYMENT

4.3.1 System for dispensing medical countermeasures (MCM) during a public health emergency

4.3.1a

Does the country have a plan, program, or guidelines in place for dispensing medical countermeasures (MCM) for national use during a public health emergency (i.e., antibiotics, vaccines, therapeutics and diagnostics)?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient evidence that the country has a plan, program, or guidelines in place for dispensing medical countermeasures for national use during a public health emergency (i.e., antibiotics, vaccines, therapeutics, and diagnostics). The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that there is a plan for distributing medical countermeasures; however, the report does not state that there is a plan in place for dispensing medical countermeasures. The report states that "there is a system in place for sending and receiving medical countermeasures during a public health emergency. Sudan Medical Council Law and the Sudanese Medical Profession Council Law form the legislative backing for sending or receiving medical countermeasures" [1]. The website of the Federal Ministry of Health does not provide information that indicates that the country has a plan, program, or guidelines in place for dispensing medical countermeasures for national use during a public health emergency [2]. There is no further evidence on the website of the Ministry of Defense in this regard [3].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 26 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 26 January 2021.

[3] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 14 January 2021.

4.3.2 System for receiving foreign health personnel during a public health emergency

4.3.2a

Is there a public plan in place to receive health personnel from other countries to respond to a public health emergency?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient evidence that the country has a public plan in place to receive health personnel from other countries to respond to a public health emergency. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "Sudan's experience in facing medical emergencies has built its capacity to send medical teams abroad and receive expertise and supplies from other countries. The plan for sending and receiving medical countermeasures and personnel was revised in 2015 in line with response and recovery experiences. The national policy is currently at the parliamentary approval phase." The report does not mention whether there are agreements in place to provide or receive medical personnel during a public health emergency [1]. Moreover, the website of the Federal Ministry of Health does not provide information that indicates that the country has a public plan in place to receive health personnel from other countries to respond to a public health emergency [2]. In addition, there is no

further evidence on the website of the Ministry of Defense in this regard [3].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 26 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 26 January 2021.

[3] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 14 January 2021.

4.4 HEALTHCARE ACCESS

4.4.1 Access to healthcare

4.4.1a

Does the constitution explicitly guarantee citizens' right to medical care?

Guaranteed free = 4, Guaranteed right = 3, Aspirational or subject to progressive realization = 2, Guaranteed for some groups, not universally = 1, No specific provision = 0

Current Year Score: 4

2020

World Policy Analysis Center

4.4.1b

Access to skilled birth attendants (% of population)

Input number

Current Year Score: 77.5

2014

WHO/World Bank/United Nations Children's Fund (UNICEF)

4.4.1c

Out-of-pocket health expenditures per capita, purchasing power parity (PPP; current international \$)

Input number

Current Year Score: 227.35

2017

WHO Global Health Expenditure database

4.4.2 Paid medical leave

4.4.2a

Are workers guaranteed paid sick leave?

Paid sick leave = 2, Unpaid sick leave = 1, No sick leave = 0

Current Year Score: 2

2020

World Policy Analysis Center

4.4.3 Healthcare worker access to healthcare

4.4.3a

Has the government issued legislation, a policy, or a public statement committing to provide prioritized healthcare services to healthcare workers who become sick as a result of responding to a public health emergency?

Yes = 1, No = 0

Current Year Score: 0

There is no evidence that the government issued a legislation, policy, or public statement committing to provide prioritized healthcare services to healthcare workers who become sick as a result of responding to a public health emergency. The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, does not provide information on such legislation, policy, or public statement [1]. Similarly, the website of the Federal Ministry of Health also does not include any such information [2], and there is no further evidence on the website of the Ministry of Defense in this regard [3].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 26 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 26 January 2021.

[3] Ministry of Defence. [<http://mod.gov.sd/>]. Accessed 14 January 2021.

4.5 COMMUNICATIONS WITH HEALTHCARE WORKERS DURING A PUBLIC HEALTH EMERGENCY

4.5.1 Communication with healthcare workers

4.5.1a

Is there a system in place for public health officials and healthcare workers to communicate during a public health emergency?

Yes = 1, No = 0

Current Year Score: 0

There is insufficient evidence that the country has a system in place for public health officials and healthcare workers to communicate during a public health emergency.

The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "The [Emergency Operations Centre] contributes to internal communication and coordination using video technology to link up with state and local government officials and to develop operational procedures to respond more

effectively to multihazard emergencies. The EOC has a network of 2500 mobile phones for state and local health officials in order to develop a fast, unified, integrated two-way system for surveillance, reporting, and risk communication. Strong partnerships exist within the health sector to detect and manage disease outbreaks and these processes can be transferred to other sectors where linkages are weaker." It is unclear whether video technology and mobile phones are used for communication between public health officials and healthcare workers, or for communication between public health officials [1]. The website of the Federal Ministry of Health does not provide information that shows that the country has a system in place for public health officials and healthcare workers to communicate during a public health emergency [2].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 26 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 26 January 2021.

4.5.1b

Does the system for public health officials and healthcare workers to communicate during an emergency encompass healthcare workers in both the public and private sector?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that the Sudan has a system for public health officials and healthcare workers to communicate during an emergency that encompasses healthcare workers in both the public and private sector.

The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that "The [Emergency Operations Centre] contributes to internal communication and coordination using video technology to link up with state and local government officials and to develop operational procedures to respond more effectively to multihazard emergencies. The EOC has a network of 2500 mobile phones for state and local health officials in order to develop a fast, unified, integrated two-way system for surveillance, reporting and risk communication. Strong partnerships exist within the health sector to detect and manage disease outbreaks and these processes can be transferred to other sectors where linkages are weaker." It is unclear whether video technology and mobile phones are used for communication between public health officials and healthcare workers, or for communication between public health officials [1].

The website of the Federal Ministry of Health does not provide information that shows that the country has a system in place for public health officials and healthcare workers to communicate during a public health emergency [2].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 26 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 26 January 2021.

4.6 INFECTION CONTROL PRACTICES AND AVAILABILITY OF EQUIPMENT

4.6.1 Healthcare associated infection (HCAI) prevention and control programs

4.6.1a

Is there evidence that the national public health system is monitoring for and tracking the number of healthcare associated infections (HCAI) that take place in healthcare facilities?

Yes = 1, No = 0

Current Year Score: 0

The national public health system does not monitor and track the number of healthcare-associated infections (HCAIs) that take place in healthcare facilities.

The Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016 and published in January 2017, states that Sudan has "limited capacity" (a score of 2/5) for HCAI prevention and control programmes. It also states that "Sudan has drafted an infection prevention and control (IPC) plan, distributed a National IPC Manual, and established an Infection Control Unit as part of the Federal Ministry of Health (FMoH). A few health facilities have an IPC programme. Soba University pharmacy makes its own hand sanitizers" [1]. However, there is no evidence of an HCAI tracking that takes place at healthcare facilities.

The Federal Ministry of Health website does not provide information that shows that the national public health system monitors for and tracks the number of HCAIs that take place in healthcare facilities [2]. The same lack of evidence was found via a World Health Organization (WHO) report, "Monitoring Global Progress on Addressing Antimicrobial Resistance", published in 2018, and in the national action plan on AMR for 2018-20, which is publicly available on the WHO Library of National Action Plans website [4].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission, Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 26 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 26 January 2021.

[3] World Health Organization (WHO). "Monitoring Global Progress on Addressing Antimicrobial Resistance". [<http://apps.who.int/iris/bitstream/handle/10665/273128/9789241514422-eng.pdf?ua=1>]. Accessed 26 January 2021.

[4] World Health Organization (WHO). "Library of National Action Plans. National Action plan on Antimicrobial Resistance for the Republic of Sudan, 2018-2020."

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=263805]. Accessed 26 January 2021.

4.7 CAPACITY TO TEST AND APPROVE NEW MEDICAL COUNTERMEASURES

4.7.1 Regulatory process for conducting clinical trials of unregistered interventions

4.7.1a

Is there a national requirement for ethical review (e.g., from an ethics committee or via Institutional Review Board approval) before beginning a clinical trial?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient evidence that Sudan has a national requirement for ethical review (such as from an ethics committee or via Institutional Review Board approval) before beginning a clinical trial. The current requirement is an ethical guideline, not a national requirement. The Physicians Ethics Guide published on the Sudan Medical Council's website states that "physicians must comply with internationally accepted scientific research standards when conducting clinical trials and obtain approval from the Research Ethics Committee" [1]. There is no further evidence on the website of the Federal Ministry of Health in this regard [2].

[1] Sudan Medical Council. "Physicians Ethics Guide". [<http://www.sudmc.org/images/books/Guidance-of-Medical-Professional-Ethics.pdf>]. Accessed 26 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 26 January 2021.

4.7.1b

Is there an expedited process for approving clinical trials for unregistered medical countermeasures (MCM) to treat ongoing epidemics?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that there is an expedited process for approving clinical trials for unregistered medical countermeasures to treat ongoing pandemics. The Physicians Ethics Guide published on the Sudan Medical Council's website does not provide information that shows that there is an expedited process for approving clinical trials for unregistered medical countermeasures to treat ongoing pandemics [1]. No evidence of such a process is available via the Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016, or the website of the Federal Ministry of Health [3].

[1] Sudan Medical Council. "Physicians Ethics Guide". [<http://www.sudmc.org/images/books/Guidance-of-Medical-Professional-Ethics.pdf>]. Accessed 26 January 2021.

[2] World Health Organisation (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 26 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 26 January 2021.

4.7.2 Regulatory process for approving medical countermeasures

4.7.2a

Is there a government agency responsible for approving new medical countermeasures (MCM) for humans?

Yes = 1 , No = 0

Current Year Score: 1

There is evidence that Sudan has a government agency responsible for approving new medical countermeasures for humans. The National Council for Drugs and Toxins is responsible for "registration of medicines, pharmaceuticals, cosmetics, medical supplies and toxins, and determining the conditions for registration." It is also responsible for "approving the reference laboratories and establishing the necessary rules, regulations and conditions for the licensing of drug stores, pharmaceutical factories" [1].

[1] National Medicines and Poisons Board. "About the Council". [<http://www.nmpb.gov.sd/intro.php>]. Accessed 26 January 2021.

4.7.2b

Is there an expedited process for approving medical countermeasures (MCM) for human use during public health emergencies?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that there is an expedited process for approving medical countermeasures for human use during public health emergencies. The Sudan Medical Council's website does not provide information that shows that such a process exists [1]. Similarly, no such evidence is available via the Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016, or the website of the Federal Ministry of Health [2,3].

[1] Sudan Medical Council. [<http://www.sudmc.org>]. Accessed 26 January 2021.

[2] World Health Organisation (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 26 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 26 January 2021.

Category 5: Commitments to improving national capacity, financing plans to address gaps, and adhering to global norms

5.1 INTERNATIONAL HEALTH REGULATIONS (IHR) REPORTING COMPLIANCE AND DISASTER RISK REDUCTION

5.1.1 Official IHR reporting

5.1.1a

Has the country submitted IHR reports to the WHO for the previous calendar year?

Yes = 1 , No = 0

Current Year Score: 1

2020

World Health Organization

5.1.2 Integration of health into disaster risk reduction

5.1.2a

Are epidemics and pandemics integrated into the national risk reduction strategy or is there a standalone national disaster risk reduction strategy for epidemics and pandemics?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that pandemics are integrated into the national risk reduction strategy, nor is there evidence of a standalone national disaster risk reduction strategy for pandemics. No such evidence is available via the Joint External Evaluation (JEE) mission report of the Republic of the Sudan, completed in October 2016, or from the websites of the Federal Ministry of Health or the Ministry of Defense [1,2,3].

[1] World Health Organization (WHO). "Joint External Evaluation of IHR Core Capacities of The Republic of the Sudan Mission Report, 9-13 October 2016". [<https://apps.who.int/iris/bitstream/handle/10665/254791/WHO-WHE-CPI-2017.15-eng.pdf?sequence=1>]. Accessed 26 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 26 January 2021.

[3] Ministry of Defense. [<http://mod.gov.sd/>]. Accessed 26 January 2021.

5.2 CROSS-BORDER AGREEMENTS ON PUBLIC HEALTH AND ANIMAL HEALTH EMERGENCY RESPONSE

5.2.1 Cross-border agreements

5.2.1a

Does the country have cross-border agreements, protocols, or MOUs with neighboring countries, or as part of a regional group, with regards to public health emergencies?

Yes = 2, Yes, but there is evidence of gaps in implementation = 1, No = 0

Current Year Score: 1

Sudan has a cross-border agreement with regards to public health emergencies, but there is no evidence that ensure implementation. Sudan News Page of World Health Organization (WHO) states, "Six countries in WHO's Eastern Mediterranean and African Regions have signed a declaration committing themselves to strengthening preparedness and response to public health threats and events across borders in an effort to further the implementation of the International Health Regulations (IHR 2005) and enhance global health security. Countries pledged to establish a public health cross-border coordination centre to facilitate cross-border collaboration, develop a memorandum of understanding and implement activities to strengthen public health preparedness and response across borders. The Declaration was signed at the ministerial meeting held on the last day of a three-day WHO bi-regional meeting on 22 November 2018 on cross-border collaboration between Sudan and its neighboring countries." [1].

[1] World Health Organization (WHO). "Sudan News Page". [<http://www.emro.who.int/sdn/sudan-news/khartoum-declaration-cross-border-health-security.html>]. Accessed 29 January 2021.

5.2.1b

Does the country have cross-border agreements, protocols, or MOUs with neighboring countries, or as part of a regional group, with regards to animal health emergencies?

Yes = 2, Yes, but there is evidence of gaps in implementation = 1, No = 0

Current Year Score: 0

There is insufficient evidence that Sudan has cross-border agreements, protocols, or memorandums of understanding (MOUs) with neighboring countries, or as part of a regional group, with regard to animal health emergencies. However the World Organization of Animal Health Report on Sudan states, "The VS (Veterinary Service) work with their neighboring countries and trading partners to establish, apply and audit quarantine and border security procedures which systematically address all risks identified" [1]. There is no further evidence in this regard on the website of the Federal Ministry of Health [2].

[1] World Organization of Animal Health Report on Sudan. [https://rr-africa.oie.int/wp-content/uploads/2020/12/20140813_report_sudan_fu.pdf]. Accessed 29 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 26 January 2021.

5.3 INTERNATIONAL COMMITMENTS

5.3.1 Participation in international agreements

5.3.1a

Does the county have signatory and ratification (or same legal effect) status to the Biological Weapons Convention?

Signed and ratified (or action having the same legal effect) = 2, Signed = 1, Non-compliant or not a member = 0

Current Year Score: 2

2021

Biological Weapons Convention

5.3.1b

Has the country submitted confidence building measures for the Biological Weapons Convention in the past three years?

Yes = 1, No = 0

Current Year Score: 0

2021

Biological Weapons Convention

5.3.1c

Has the state provided the required United Nations Security Council Resolution (UNSCR) 1540 report to the Security Council Committee established pursuant to resolution 1540 (1540 Committee)?

Yes = 1, No = 0

Current Year Score: 1

2021

Biological Weapons Convention

5.3.1d

Extent of United Nations Security Council Resolution (UNSCR) 1540 implementation related to legal frameworks and enforcement for countering biological weapons:

Very good (60+ points) = 4, Good (45–59 points) = 3, Moderate (30–44 points) = 2, Weak (15–29 points) = 1, Very weak (0–14 points) or no matrix exists/country is not party to the BWC = 0

Current Year Score: 0

2021

Biological Weapons Convention

5.3.2 Voluntary memberships

5.3.2a

Does the country meet at least 2 of the following criteria?

- Membership in Global Health Security Agenda (GHSA)
- Membership in the Alliance for Country Assessments for Global Health Security and IHR Implementation (JEE Alliance)
- Membership in the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction (GP)
- Membership in the Australia Group (AG)
- Membership in the Proliferation Security Initiative (PSI)

Needs to meet at least two of the criteria to be scored a 1 on this measure. , Yes for five = 1 , Yes for four = 1 , Yes for three = 1 , Yes for two = 1 , Yes for one = 0 , No for all = 0

Current Year Score: 0

2021

Global Health Security Agenda; JE Alliance; Global Partnership; Australia Group; PSI

5.4 JOINT EXTERNAL EVALUATION (JEE) AND PERFORMANCE OF VETERINARY SERVICES PATHWAY (PVS)

5.4.1 Completion and publication of a Joint External Evaluation (JEE) assessment and gap analysis

5.4.1a

Has the country completed a Joint External Evaluation (JEE) or precursor external evaluation (e.g., GHSA pilot external assessment) and published a full public report in the last five years?

Yes = 1 , No = 0

Current Year Score: 1

2021

WHO Strategic Partnership for IHR and Health Security (SPH); Global Health Security Agenda

5.4.1b

Has the country completed and published, within the last five years, either a National Action Plan for Health Security (NAPHS) to address gaps identified through the Joint External Evaluation (JEE) assessment or a national GHSA roadmap that sets milestones for achieving each of the GHSA targets?

Yes = 1 , No = 0

Current Year Score: 0

2021

WHO Strategic Partnership for IHR and Health Security (SPH); Global Health Security Agenda

5.4.2 Completion and publication of a Performance of Veterinary Services (PVS) assessment and gap analysis

5.4.2a

Has the country completed and published a Performance of Veterinary Services (PVS) assessment in the last five years?

Yes = 1 , No = 0

Current Year Score: 0

2021

OIE PVS assessments

5.4.2b

Has the country completed and published a Performance of Veterinary Services (PVS) gap analysis in the last five years?

Yes = 1 , No = 0

Current Year Score: 0

2021

OIE PVS assessments

5.5 FINANCING

5.5.1 National financing for epidemic preparedness

5.5.1a

Is there evidence that the country has allocated national funds to improve capacity to address epidemic threats within the past three years?

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Sudan has allocated national funds to improve capacity to address epidemic threats within the past three years. Neither the national budget for the year 2021 nor the Federal Ministry of Health provide evidence of allocating funds to epidemic threats [1,2]. Moreover, no published budgets were found for the years 2019 and 2020 on the websites of the Ministry of Finance and the cabinet [3,4].

[1] Sudan Ministry of Finance. "National Budget for 2021". [<http://www.mof.gov.sd/images/files/yearly-budget/210126-Final-Budget.pdf>] Accessed 29 January 2021.

[2] Federal Ministry of Health. [<https://fmoh.gov.sd/>]. Accessed 29 January 2021.

[3] Sudan Ministry of Finance. "Budgets Publication page".

[<http://www.mof.gov.sd/%D8%AA%D9%82%D8%A7%D8%B1%D9%8A%D8%B1/%D9%85%D9%84%D9%81%D8%A7%D8%AA-%D8%A7%D9%84%D9%85%D9%88%D8%A7%D8%B2%D9%86%D8%A9/%D9%85%D9%86%D8%B4%D9%88%D8%B1-%D8%A7%D9%84%D9%85%D9%88%D8%A7%D8%B2%D9%86%D8%A9>]. Accessed 23 February 2021.

5.5.2 Financing under Joint External Evaluation (JEE) and Performance of Veterinary Services (PVS) reports and gap analyses

5.5.2a

Does the Joint External Evaluation (JEE) report, National Action Plan for Health Security (NAPHS), and/or national GHSA roadmap allocate or describe specific funding from the national budget (covering a time-period either in the future or within the past five years) to address the identified gaps?

Yes = 1 , No/country has not conducted a JEE = 0

Current Year Score: 0

2021

WHO Strategic Partnership for IHR and Health Security (SPH); Global Health Security Agenda

5.5.2b

Does the Performance of Veterinary Services (PVS) gap analysis and/or PVS assessment allocate or describe specific funding from the national budget (covering a time-period either in the future or within the past five years) to address the identified gaps?

Yes = 1 , No/country has not conducted a PVS = 0

Current Year Score: 0

2021

OIE PVS assessments

5.5.3 Financing for emergency response

5.5.3a

Is there a publicly identified special emergency public financing mechanism and funds which the country can access in the face of a public health emergency (such as through a dedicated national reserve fund, an established agreement with the World Bank pandemic financing facility/other multilateral emergency funding mechanism, or other pathway identified through a public health or state of emergency act)?

Yes = 1 , No = 0

Current Year Score: 1

There is a publicly identified special emergency public financing mechanism and funds that the country can access in the face of a public health emergency (such as through a dedicated national reserve fund, an established agreement with the World Bank pandemic financing facility/other multilateral emergency funding mechanism or other pathway identified through a public health or state of emergency act). The website of the International Development Association (IDA) states that Sudan is eligible for funding but is currently listed as an inactive country that has no active IDA financing, owing to protracted non-accrual status [1]. The Pandemic Emergency Financing Facility (PEF) operational brief that was published in November 2017 states the conditions for receiving emergency funding, and Sudan is eligible to receive emergency funding as per the mentioned conditions [2]. The United Nations (UN) Central Emergency Response Fund 10 Years report, published in 2016, states that Sudan received US\$280m in emergency aid from 2006 to the end of 2015. It also states that Sudan was one of the top ten countries receiving emergency aid globally [3]. The Federal Ministry of Health website does not provide information

that shows that there is a publicly identified special emergency public financing mechanism and funds which the country can access in the face of a public health emergency [4].

[1] International Development Association (IDA). "Borrowing Countries". [<http://ida.worldbank.org/about/borrowing-countries>]. Accessed on 29 January 2021

[2] Pandemic Emergency Financing Facility (PEF). November 2017. "Operational Brief for Eligible Countries". [<http://pubdocs.worldbank.org/en/574211510673362977/PEF-Operational-Brief-Nov-2017.pdf>]. Accessed 29 January 2021

[3] United Nations Central Emergency Response Fund. 2016. "10 Years Report". [https://reliefweb.int/sites/reliefweb.int/files/resources/CERF10layout_AR_20160518.compressed.pdf]. Accessed 29 January 2021.

[4] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 29 January 2021.

5.5.4 Accountability for commitments made at the international stage for addressing epidemic threats

5.5.4a

Is there evidence that senior leaders (president or ministers), in the past three years, have made a public commitment either to:

- Support other countries to improve capacity to address epidemic threats by providing financing or support?
- Improve the country's domestic capacity to address epidemic threats by expanding financing or requesting support to improve capacity?

Needs to meet at least one of the criteria to be scored a 1 on this measure., Yes for both = 1, Yes for one = 1, No for both = 0

Current Year Score: 0

There is no publicly available evidence that senior leaders (president or ministers) have made a public commitment either to support other countries to improve capacity to address epidemic threats by providing financing or support in the past three years or to improve its own domestic capacity to address epidemic threats by expanding financing or requesting support to improve capacity in the past three years. Moreover, no evidence of such commitments is available via the World Health Organization's (WHO) Sudan country profile webpage, the websites of the Federal Ministry of Health or the Ministry of Foreign Affairs, or international and local media outlets [1,2,3].

[1] World Health Organization (WHO). "Sudan Country Profile". [<https://www.who.int/countries/sdn/en/>]. Accessed 30 January 2021.

[2] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 30 January 2021.

[3] The Ministry of Foreign Affairs. [<https://www.mofa.gov.sd/>]. Accessed 30 January 2021.

[4] United Nations (UN) Sudan Profile [<https://sudan.un.org/>] Accessed 30 January 2021.

5.5.4b

Is there evidence that the country has, in the past three years, either:

- Provided other countries with financing or technical support to improve capacity to address epidemic threats?
- Requested financing or technical support from donors to improve the country's domestic capacity to address epidemic threats?

Needs to meet at least one of the criteria to be scored a 1 on this measure., Yes for both = 1, Yes for one = 1, No for both = 0

Current Year Score: 1

There is publicly available evidence that Sudan has invested finances from donors or provided technical support to improve its own domestic capacity to address epidemic threats to improve capacity in the past three years. Conversely, there is no evidence that Sudan has invested finances or provided technical support to support other countries to improve capacity to address epidemic threats in the past three years.

The Global Health Security (GHS) Tracking Dashboard states that Sudan has received US\$1.32b from 2014 to 2020 to improve its overall own health capacity. Top funding categories included US\$160.30m for immunization, US\$21.87m for real-time surveillance, and US\$6.33m for zoonotic diseases [1,2].

A March 2019 USAID fact sheet for Sudan states that Sudan has received around US\$95m in financial aid to improve its own health capacity [3]. A Bloomberg article entitled "Saudi Arabia Latest Nation to Offer Help to Crisis-Hit Sudan" states that "Saudi Arabia has provided 8 billion riyals (US\$2.1bn) in the past four years, and the United Arab Emirates has also provided Sudan with US\$300m, according to a Sudanese newspaper and a ruling party lawmaker." In addition, it is unclear what percentage of that financial aid has or will be used to improve Sudan's domestic capacity to address epidemic threats [4].

[1] Global Health Security Costing. "Funding Tracker". [<https://tracking.ghscosting.org/table/1057/recipient>]. Accessed 23 February 2021.

[2] Global Health Security Costing. "Event Response Funding". [<https://tracking.ghscosting.org/table/1057/recipient>]. Accessed 23 February 2021.

[3] United States Agency for International Development. "Sudan Fact Sheet". [https://www.usaid.gov/sites/default/files/documents/1866/sudan_ce_fs02_03-12-2019.pdf] Accessed 30 January 2021.

[4] Bloomberg. "Saudi Arabia Latest Nation to Offer Help to Crisis-Hit Sudan". [<https://www.bloomberg.com/news/articles/2019-01-24/saudi-arabia-ready-to-give-sudan-economic-help-minister-says>]. Accessed 30 January 2021.

5.5.4c

Is there evidence that the country has fulfilled its full contribution to the WHO within the past two years?

Yes = 1 , No = 0

Current Year Score: 0

2021

Economist Impact analyst qualitative assessment based on official national sources, which vary by country

5.6 COMMITMENT TO SHARING OF GENETIC AND BIOLOGICAL DATA AND SPECIMENS

5.6.1 Commitment to sharing genetic data, clinical specimens, and/or isolated specimens (biological materials) in both emergency and nonemergency research

5.6.1a

Is there a publicly available plan or policy for sharing genetic data, clinical specimens, and/or isolated specimens (biological materials) along with the associated epidemiological data with international organizations and/or other countries that goes beyond influenza?

Yes = 1, No = 0

Current Year Score: 0

There is no evidence that there is a publicly available plan or policy for sharing genetic data, epidemiological data, clinical specimens, and/or isolated specimens (biological materials) with international organizations, and/or other countries that goes beyond influenza. No information on such a plan is available via the websites of the Federal Ministry of Health or the Ministry of Agriculture and Natural Resources website [1,2]. Sudan does not have a Ministry of Research or other relevant research entities.

[1] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 26 January 2021.

[2] Ministry of Agriculture and Natural Resources. [<http://moaf.gov.sd/publicationsar.html>]. Accessed 26 January 2021.

5.6.1b

Is there public evidence that the country has not shared samples in accordance with the Pandemic Influenza Preparedness (PIP) framework in the past two years?

Yes = 0, No = 1

Current Year Score: 1

There is no evidence that the country has not shared samples in accordance with the pandemic influenza preparedness (PIP) framework in the past two years. No such evidence is available via the World Health Organization's (WHO) Sudan country profile website, the WHO Pandemic Influenza Preparedness Recipient Countries document, the Federal Ministry of Health or international, and local media outlets [1,2,3].

[1] World Health Organization (WHO). "Sudan Country Profile". [<https://www.who.int/countries/sdn/en/>]. Accessed 26 January 2021.

[2] World Health Organisation (WHO). "Pandemic Influenza Preparedness Recipient Countries". [https://www.who.int/influenza/pip/benefit_sharing/hlipii_2018_19_countrylist.pdf]. Accessed 26 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 26 January 2021.

5.6.1c

Is there public evidence that the country has not shared pandemic pathogen samples during an outbreak in the past two years?

Yes = 0, No = 1

Current Year Score: 1

There is no evidence that the country has not shared pandemic pathogen samples during an outbreak in the past two years, including for COVID-19. No such evidence is available via the website of the World Health Organization's (WHO) Sudan country profile, the WHO Pandemic Influenza Preparedness Recipient Countries document, the Federal Ministry of Health or international, and local media outlets [1,2,3].

[1] World Health Organization (WHO). "Sudan Country Profile". [<https://www.who.int/countries/sdn/en/>]. Accessed 26 January 2021.

[2] World Health Organization (WHO). "Pandemic Influenza Preparedness Recipient Countries". [https://www.who.int/influenza/pip/benefit_sharing/hlipii_2018_19_countrylist.pdf]. Accessed 26 January 2021.

[3] Federal Ministry of Health. [<https://www.fmoh.gov.sd/>]. Accessed 26 January 2021.

Category 6: Overall risk environment and vulnerability to biological threats

6.1 POLITICAL AND SECURITY RISK

6.1.1 Government effectiveness

6.1.1a

Policy formation (Economist Intelligence score; 0-4, where 4=best)

Input number

Current Year Score: 2

2020

Economist Intelligence

6.1.1b

Quality of bureaucracy (Economist Intelligence score; 0-4, where 4=best)

Input number

Current Year Score: 1

2020

Economist Intelligence

6.1.1c

Excessive bureaucracy/red tape (Economist Intelligence score; 0-4, where 4=best)

Input number

Current Year Score: 0

2020

Economist Intelligence

6.1.1d

Vested interests/cronyism (Economist Intelligence score; 0-4, where 4=best)

Input number

Current Year Score: 0

2020

Economist Intelligence

6.1.1e

Country score on Corruption Perception Index (0-100, where 100=best)

Input number

Current Year Score: 16

2020

Transparency International

6.1.1f

Accountability of public officials (Economist Intelligence score; 0-4, where 4=best)

Input number

Current Year Score: 0

2020

Economist Intelligence

6.1.1g

Human rights risk (Economist Intelligence score; 0-4, where 4=best)

Input number

Current Year Score: 0

2020

Economist Intelligence

6.1.2 Orderly transfers of power

6.1.2a

How clear, established, and accepted are constitutional mechanisms for the orderly transfer of power from one government to another?

Very clear, established and accepted = 4, Clear, established and accepted = 3, One of the three criteria (clear, established, accepted) is missing = 2, Two of the three criteria (clear, established, accepted) are missing = 1, Not clear, not established, not accepted = 0

Current Year Score: 0

2021

Economist Intelligence

6.1.3 Risk of social unrest

6.1.3a

What is the risk of disruptive social unrest?

Very low: Social unrest is very unlikely = 4, Low: There is some prospect of social unrest, but disruption would be very limited = 3, Moderate: There is a considerable chance of social unrest, but disruption would be limited = 2, High: Major social unrest is likely, and would cause considerable disruption = 1, Very high: Large-scale social unrest on such a level as to seriously challenge government control of the country is very likely = 0

Current Year Score: 0

2021

Economist Intelligence

6.1.4 Illicit activities by non-state actors

6.1.4a

How likely is it that domestic or foreign terrorists will attack with a frequency or severity that causes substantial disruption?

No threat = 4, Low threat = 3, Moderate threat = 2, High threat = 1, Very high threat = 0

Current Year Score: 2

2021

Economist Intelligence

6.1.4b

What is the level of illicit arms flows within the country?

4 = Very high, 3 = High, 2 = Moderate, 1 = Low, 0 = Very low

Current Year Score: 2

2020

UN Office of Drugs and Crime (UNODC)

6.1.4c

How high is the risk of organized criminal activity to the government or businesses in the country?

Very low = 4, Low = 3, Moderate = 2, High = 1, Very high = 0

Current Year Score: 2

2021

Economist Intelligence

6.1.5 Armed conflict

6.1.5a

Is this country presently subject to an armed conflict, or is there at least a moderate risk of such conflict in the future?

No armed conflict exists = 4, Yes; sporadic conflict = 3, Yes; incursional conflict = 2, Yes, low-level insurgency = 1, Yes; territorial conflict = 0

Current Year Score: 0

2021

Economist Intelligence

6.1.6 Government territorial control

6.1.6a

Does the government's authority extend over the full territory of the country?

Yes = 1, No = 0

Current Year Score: 0

2021

Economist Intelligence

6.1.7 International tensions

6.1.7a

Is there a threat that international disputes/tensions could have a negative effect?

No threat = 4, Low threat = 3, Moderate threat = 2, High threat = 1, Very high threat = 0

Current Year Score: 0

2021

Economist Intelligence

6.2 SOCIO-ECONOMIC RESILIENCE

6.2.1 Literacy

6.2.1a

Adult literacy rate, population 15+ years, both sexes (%)

Input number

Current Year Score: 60.7

2018

United Nations Development Programme (UNDP); United Nations Educational, Scientific and Cultural Organization (UNESCO);
The Economist Intelligence Unit

6.2.2 Gender equality

6.2.2a

United Nations Development Programme (UNDP) Gender Inequality Index score

Input number

Current Year Score: 0.44

2018

United Nations Development Programme (UNDP); The Economist Intelligence Unit

6.2.3 Social inclusion

6.2.3a

Poverty headcount ratio at \$1.90 a day (2011 PPP) (% of population)

Input number

Current Year Score: 2.8

2014

World Bank; Economist Impact

6.2.3b

Share of employment in the informal sector

Greater than 50% = 2, Between 25-50% = 1, Less than 25% = 0

Current Year Score: 2

Sudan's share of employment in the informal sector in 2011 was 77%, which is the most recent percentage according to the World Bank [1].

[1] World Bank Indicators. [<https://data.worldbank.org/indicator/SL.ISV.IFRM.ZS>]. Accessed 30 January 2021.

6.2.3c

Coverage of social insurance programs (% of population)

Scored in quartiles (0-3, where 3=best)

Current Year Score: 2

2016, or latest available

World Bank; Economist Impact calculations

6.2.4 Public confidence in government

6.2.4a

Level of confidence in public institutions

Input number

Current Year Score: 0

2021

Economist Intelligence Democracy Index

6.2.5 Local media and reporting

6.2.5a

Is media coverage robust? Is there open and free discussion of public issues, with a reasonable diversity of opinions?

Input number

Current Year Score: 1

2021

Economist Intelligence Democracy Index

6.2.6 Inequality

6.2.6a

Gini coefficient

Scored 0-1, where 0=best

Current Year Score: 0.34

Latest available.

World Bank; Economist Impact calculations

6.3 INFRASTRUCTURE ADEQUACY

6.3.1 Adequacy of road network

6.3.1a

What is the risk that the road network will prove inadequate to meet needs?

Very low = 4, Low = 3, Moderate = 2, High = 1, Very high = 0

Current Year Score: 0

2021

Economist Intelligence

6.3.2 Adequacy of airports

6.3.2a

What is the risk that air transport will prove inadequate to meet needs?

Very low = 4, Low = 3, Moderate = 2, High = 1, Very high = 0

Current Year Score: 2

2021

Economist Intelligence

6.3.3 Adequacy of power network

6.3.3a

What is the risk that power shortages could be disruptive?

Very low = 4, Low = 3, Moderate = 2, High = 1, Very high = 0

Current Year Score: 1

2021

Economist Intelligence

6.4 ENVIRONMENTAL RISKS

6.4.1 Urbanization

6.4.1a

Urban population (% of total population)

Input number

Current Year Score: 34.94

2019

World Bank

6.4.2 Land use

6.4.2a

Percentage point change in forest area between 2006–2016

Input number

Current Year Score: -0.01

2005-2015

World Bank; Economist Impact

6.4.3 Natural disaster risk

6.4.3a

What is the risk that the economy will suffer a major disruption owing to a natural disaster?

Very low = 4, Low = 3, Moderate = 2, High = 1, Very high = 0

Current Year Score: 1

2021

Economist Intelligence

6.5 PUBLIC HEALTH VULNERABILITIES

6.5.1 Access to quality healthcare

6.5.1a

Total life expectancy (years)

Input number

Current Year Score: 65.09

2018

United Nations; World Bank, UNICEF; Institute for Health Metrics and Evaluation (IHME); Central Intelligence Agency (CIA)
World Factbook

6.5.1b

Age-standardized NCD mortality rate (per 100 000 population)

Input number

Current Year Score: 625.7

2019

WHO

6.5.1c

Population ages 65 and above (% of total population)

Input number

Current Year Score: 3.63

2019

World Bank

6.5.1d

Prevalence of current tobacco use (% of adults)

Input number

Current Year Score: 14.04

2018

World Bank

6.5.1e

Prevalence of obesity among adults

Input number

Current Year Score: -

2016

WHO

6.5.2 Access to potable water and sanitation

6.5.2a

Percentage of homes with access to at least basic water infrastructure

Input number

Current Year Score: 60.27

2017

UNICEF; Economist Impact

6.5.2b

Percentage of homes with access to at least basic sanitation facilities

Input number

Current Year Score: 36.58

2017

UNICEF; Economist Impact

6.5.3 Public healthcare spending levels per capita

6.5.3a

Domestic general government health expenditure per capita, PPP (current international \$)

Input number

Current Year Score: 66.95

2018

WHO Global Health Expenditure database

6.5.4 Trust in medical and health advice

6.5.4a

Trust medical and health advice from the government

Share of population that trust medical and health advice from the government , More than 80% = 2, Between 60-80%, or no data available = 1, Less than 60% = 0

Current Year Score: 1

2018

Wellcome Trust Global Monitor 2018

6.5.4b

Trust medical and health advice from medical workers

Share of population that trust medical and health advice from health professionals , More than 80% = 2, Between 60-80%, or no data available = 1, Less than 60% = 0

Current Year Score: 1

2018

Wellcome Trust Global Monitor 2018