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RÉPUBLIQUE TOGOLAISE

Executive Summary

Assessment of Climate Change-related Risks and Vulnerabilities in the Health Sector in Togo

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According to the latest report of the Intergovernmental Panel on Climate Change (IPCC), hereinafter referred to as 'AR5', climate change undeniably affects human health. On the one hand, it increases the frequency and intensity of natural disasters (the direct cause of death and injuries) and, on the other hand, it causes temperature variation and precipitation that leads to the aggravation of climate-sensitive diseases.

In Togo, the threat of climate change to health has been confirmed by official documents. Studies of the Ministry of Environment, Sustainable Development and Nature Protection (formerly known as the Ministry of Environment and Forest Resources), have concluded that effects of climate change contribute to the continued spread of vector-borne, water-borne and infectious diseases[1]. This is all the more problematic for Togo which does not yet have a climate change adaptation strategy specifically for the health sector.

Thus, in order to assess the health sector's vulnerability to the effects of climate change, the Ministry of Health and Public Hygiene (MHSP) requested the support of GIZ through the Project on Health System Strengthening – Sexual and Reproductive Health and Rights (ProSanté). Through the ProSanté Programme, funded by the German Federal Ministry for Economic Cooperation and Development (BMZ), which is being implemented since September 2017 in Lomé and Kara, GIZ operates in the health sector in Togo, in collaboration with the MSHP.

ProSanté Project objectives include enhancing the resilience to the effects of climate change, thereby contributing to the broader goal of strengthening the Togolese health care system as a whole. It is in this regard that an assessment of the health sector vulnerability to the effects of climate change was commissioned and conducted by the Consortium EPOS and adelphi firms, in collaboration with national stakeholders.

The overall objective of this study is to identify and assess the health risks arising from the effects of climate change, as well as the adaptive capacity of the health system. The findings of this assessment have led to the mapping of climate-sensitive diseases and can serve as a reference for the development of a climate change adaptation plan for the health sector with a view to strengthening the capacities of the health systems in order to protect and improve the health of the population for responses to instability and climate change.

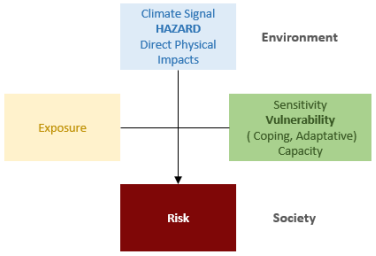


Figure 1: The AR5 Risk Concept

The assessment was conducted by a team of experts of EPOS/adelphi Consortium: Dr Hanna Schmuck as Team Lead/Expert in Risk and Vulnerability Assessment, Dr Stefan Kienberger as Expert in Geographic Information System, Dr Olga Bassong as Health Expert and Claire Belluard as Technical Support person.

The approach and methodology of the assessment are based on the concepts of risk and vulnerability assessment developed in *The Vulnerability Sourcebook* and the *Risk Supplement to the Vulnerability Sourcebook*[2]. The core element of the approach is developing impact chains, a tool which serves to identify and visualize all the factors that, through a chain of causal relationships, lead to the risk – the ultimate purpose of the assessment. In the AR5 conceptual framework, risk is determined by three components: *hazard, exposure and vulnerability*, which are further made up of multiple factors.

[1] Third National Communication on Climate Change (MERF 2015a): Third National Communication on Climate Change in Togo. Report. Togo: UNFCC/ FEM/PNUD.
MERF 2015 b: Draft of the Third National Communication on Climate Change in Togo. Vulnerability and Adaptation Assessment: Urban settlements and health facilities. Final Report. Togo: UNFCC/ FEM/PNUD.

[2] GIZ 2014: The Vulnerability Sourcebook: Concept and guidelines for standardized vulnerability assessments. Bonn: GIZ.
GIZ and EURAC 2017: Risk Supplement to the Vulnerability Sourcebook: Risk Concept. Guidance on how to apply the Vulnerability Sourcebook's approach with the new IPCC AR5 concept of climate risk. Bonn: GIZ.

During the course of this assessment, a participatory process involving representatives of institutions related to the health sector in Togo identified three major risks and their respective impact chains (see Annex 1). In the context of this assessment, the three risks are three climate-sensitive diseases, namely malaria, respiratory infections/conditions and meningitis. A three-day field visit (in the Maritime and Kara regions) was also carried out to check the factors of the impact chains and to get an overview of the capacities of local facilities, in particular with regard to the recommendations for adaptation measures.

Subsequently, the team collected the available quantitative data to define the indicators chosen to measure the risk factors identified in the impact chains. The selection of indicators taken into account in the assessment was therefore based on data availability; some indicators were equally relevant to the study but they could not be used due to the lack of information to measure them.

Once the values of these elements were calculated for each of the risk components (*hazard, exposure, vulnerability*), the final values of the risks could be extrapolated. The next step consisted in exploiting the results through their mapping (see Annex 2), developing recommendations on adaptation measures and preparing the report.

Key Results for Malaria Risk:

- The main *hazard* areas are in the central and southern districts, particularly along the coast and the south-west part of Togo. Risk factors for malaria include the length of the transmission season, the number of people infected, as well as floods, stagnant water and inadequate sewage disposal, which all create conducive breeding conditions for mosquitoes.
- The main areas of *vulnerability* are everywhere in Togo, but in particular in the districts of Moyen-Mono, Plaine de Mô, Oti and Anié. The most important factors that characterise vulnerability to malaria are the level of education, availability of mosquito nets in households, access to health services and resources. The most vulnerable population groups due to their biological disposition are children under five years of age, pregnant and nursing women, the elderly, immune-impaired people and the chronically ill people. Generic vulnerability refers to people working outdoors and on low income.
- By aggregating the preceding elements, current conditions show that overall, the districts in central and southern Togo have higher risk values than the districts in the north (with the exception of the western districts in the south). The five main areas at risk are mainly in the south, namely Vo, Lacs, Moyen-Mono, Kpélé and Bas-Mono.
- For future climate scenarios, modelling indicates a decrease in the length of the malaria transmission season in the future. However, given the predicted evolution of the hazard index, the effect will be insignificant and the conditions will remain conducive for malaria across the country.

Key Results for Respiratory Conditions/Infections Risk:

- The areas where *hazards* are most significant for respiratory conditions/infections are in the North, with a gradual decline southward. Hazard conditions are influenced by people who are already infected, air and climate pollution (exhaust gases, wildfires, waste burning, particulate matter, etc.), high temperature amplitudes and dry periods.
- *Vulnerability* results also show higher values in the northern and central districts. The highest value is in the district of Plaine de Mô, followed by Bassar, Oti, Doufelgou and Tchaoudjo. Factors of vulnerability include, first, the level of education, hygienic conditions, poverty and access to health services. Regarding vulnerable groups, there are people with asthma, elderly people, and children under the age of five.
- By combining the previous components, it follows that the risk areas are in the northern and central districts, with the highest risk values in Oti and Kpendjal, followed by Tandjoare, Doufelgou and Tône.
- For climate risks, two climate change indicators were used, namely Consecutive Dry Days (CDD) and maximum temperature. At present, these two parameters are higher in the north

than in the south. On average, these indicators are expected to increase until the end of the century, suggesting that the risk is expected to increase in the north of the country.

Key Results for Meningitis Risk:

- The main *hazard* areas of meningitis are mainly in the north, with a gradual decline towards the south. Meningitis *hazard* conditions are influenced by the infected people, as well as all the factors contributing to air pollution (aerosols or dust) that are temperature rise and drought, land cover and land use and deforestation. Indeed, the drying of the nasal mucous membranes by these factors facilitates the penetration of bacteria into the body.
- Regarding *vulnerability*, the highest values are in the Plaine de Mô, followed by Kpendjal, Sotouboua, Tchamba and Anié. The areas of increased vulnerability are therefore scattered throughout the country while the lowest values are in the southern and south-eastern districts. The main vulnerabilities factors are lack of access to health care, lack of education, relatively high numbers of children under 10, migration dynamics and inadequate vaccination programmes (particularly for the most at-risk population category, namely people who are between two and 29 years).
- Based on the analysis of the aforementioned considerations, it can be concluded that the regions of northern Togo are the most at risk for meningitis. The highest risk value is found in Kpendjal, in the north-east of Togo, followed by Oti, Cinkassé, Tchamba and Tône. Similarly, Tchamba, although located in the centre east of Togo, is characterised by an exceptionally high value compared to the rest of its region.
- For future climate risks, the two indicators considered are again the Consecutive Dry Days (CDD) and the maximum temperature. At present, these factors give rise to the disease in the northern regions. For future projections, the trends have been described above and the same observation is made about respiratory infections: the risk of meningitis is expected to increase in the north of the country.

Beyond the indications that it provides through its findings, the added value of this assessment is that it confirms the main difficulties or obstacles identified in similar assessments. It also reveals a number of additional data-related challenges – the need to build national capacity to share and manage climate change knowledge across institutions; importance of having an integrated vision of climate risk covering environmental, socio-economic or health aspects; decline in the use of results given the availability of data and method; etc.

Regarding the content of this study, it is innovative in various aspects: First, the AR5 risk concept was used, which is a novelty for Togo. In addition, qualitative and quantitative approaches were used, adding a touch of innovation to the risk analysis reference method implemented. In addition, an in-depth quantitative assessment was carried out for the three diseases, in particular for the current conditions and providing such a level of specific details is unprecedented for the country in question. Finally, based on a good framework of quantitative indicators and the most recent climate projections for this region, this report revealed uncertainty about future scenarios.

The assessment also provides recommendations for specific adaptation measures based on the results previously described, best practices from other countries with similar conditions and a desk review of existing strategies and policies in Togo. Measures should be streamlined through three pillars targeting key factors identified in the impact chains: a) increase people's understanding of risks and how to reduce or avoid them, b) improve access, geographic coverage and quality of health services, and c) take structural measures to make sanitary facilities resilient to extreme weather events.

Following a brief definition of these three pillars, specific measures are proposed and classified for the three identified health risks, as well as for other weather events that are harmful to health (heat waves, torrential rain, strong winds and periods of drought). Measures can be integrated into existing programmes or serve as a starting point for a new programme. However, to ensure their success and sustainability, they must be adapted to the geophysical and socio-cultural context. Although Togo is a small country, it is characterised by a variety of ethnic groups each with their respective cultural norms and traditions.

In conclusion, the study proposes a multi-sectoral assessment of the capacities and physical state of health services, particularly at the peripheral level, in districts that have been identified as high-risk areas.

In the light of these considerations, this assessment provides a good basis for developing an action plan (including cost estimates) and seeking funding. At the same time, health officials will need to intensify their efforts, particularly at the national level, to ensure coordination with other sectors and that health adaptation measures are integrated into their respective policies. Stronger advocacy is needed to make it clear that the health of the Togolese people is an essential prerequisite for the country's development. In this respect, dissemination of the results at the central and regional level, by the target groups and according to the guidelines developed during the validation workshop (in November 2019), will be of paramount importance.

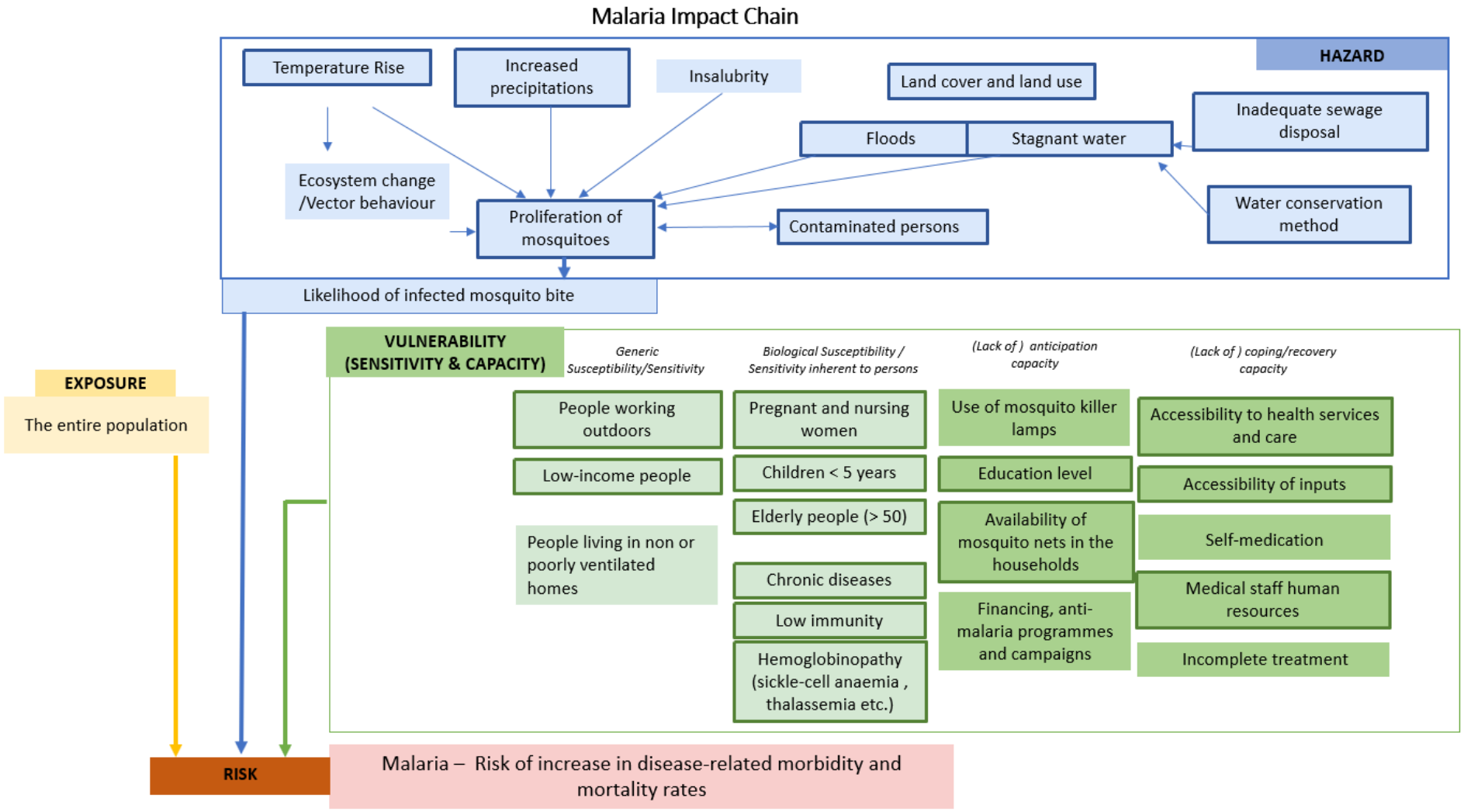
Communication materials (posters, flyers, etc.) may be produced with target groups to be used in health centres. Also, the translation of this assessment into English should be considered, in order to share the results in international networks, with GIZ headquarters and key partners. In addition, the outcomes of the assessment can be integrated into the content of the training on the nexus between climate change and health dedicated to decision makers of the Ministry of Health and based on a WHO and GIZ training manual.

Adaptation is ultimately about building resilience. To this end, a strategy for the adaptation of the health sector to climate change needs to be developed based on WHO guidelines, and particularly the *WHO Guidance to protect health from climate change through health adaptation planning* or the *Operational framework for building climate-resilient health systems*.[3]

Finally, based on this strategy and a list of priority facilities and measures, it will then be necessary to seek financial support to finance these measures and consequently the health sector adaptation strategy.

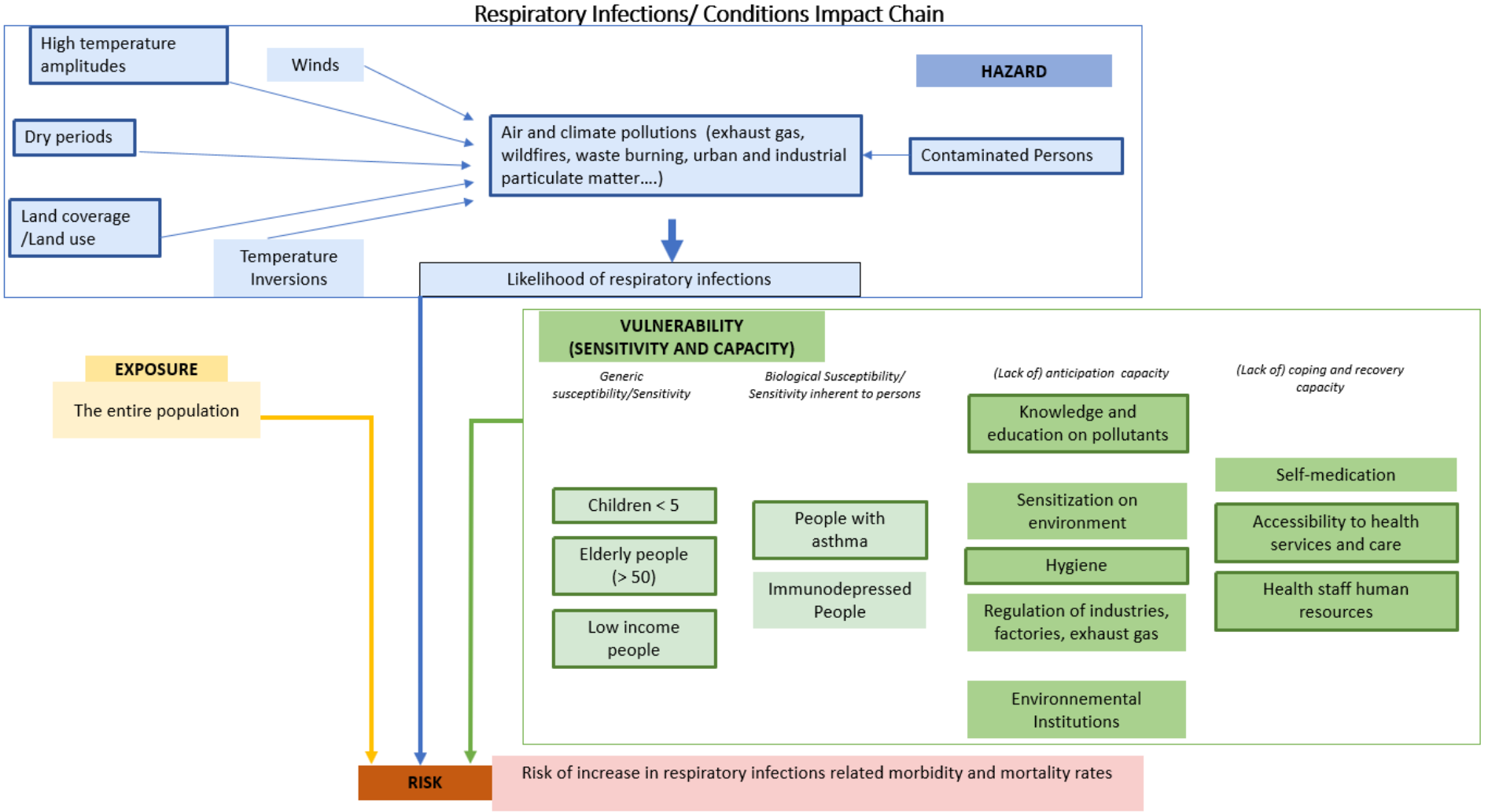
[3] World Health Organization (WHO) 2015: WHO Guidance to protect health from climate change through health adaptation planning. Geneva: WHO.
World Health Organization (WHO) 2016: Operational framework for building climate-resilient health systems. Geneva: WHO.

Annex 1—Impact Chains for the Three Diseases Assessed



007

Impact chain for the risk of increased malaria-related mortality and morbidity rates



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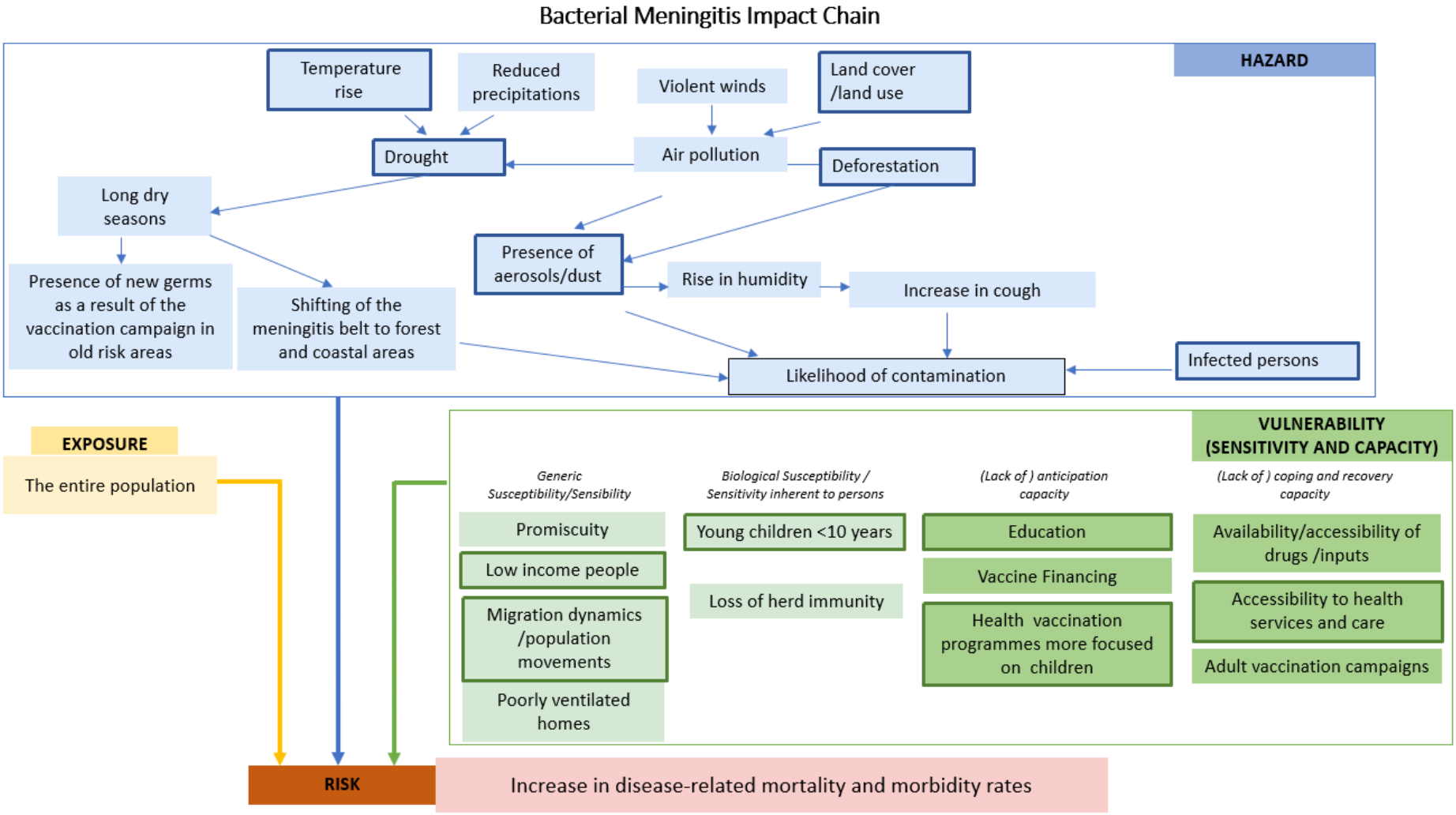
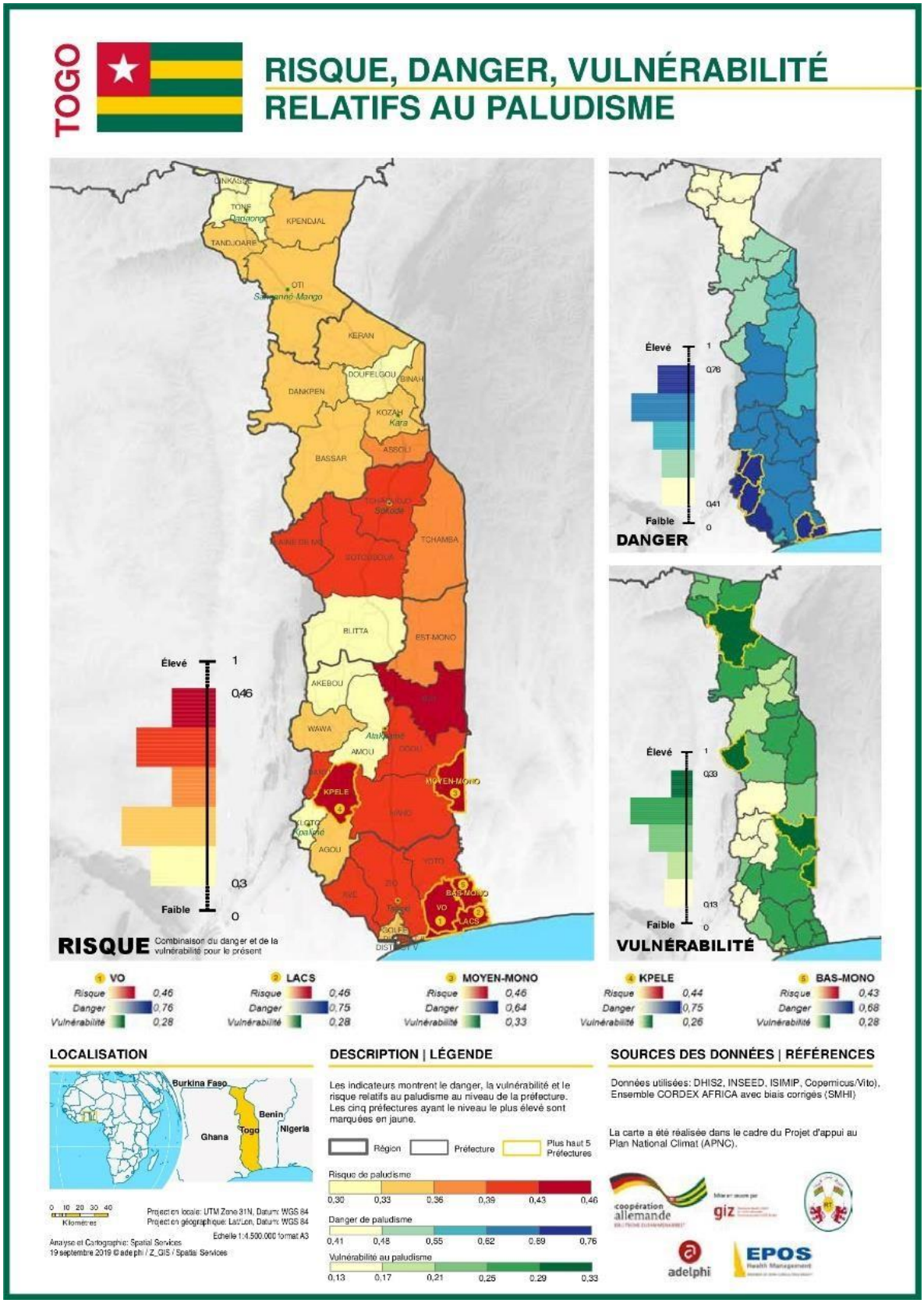
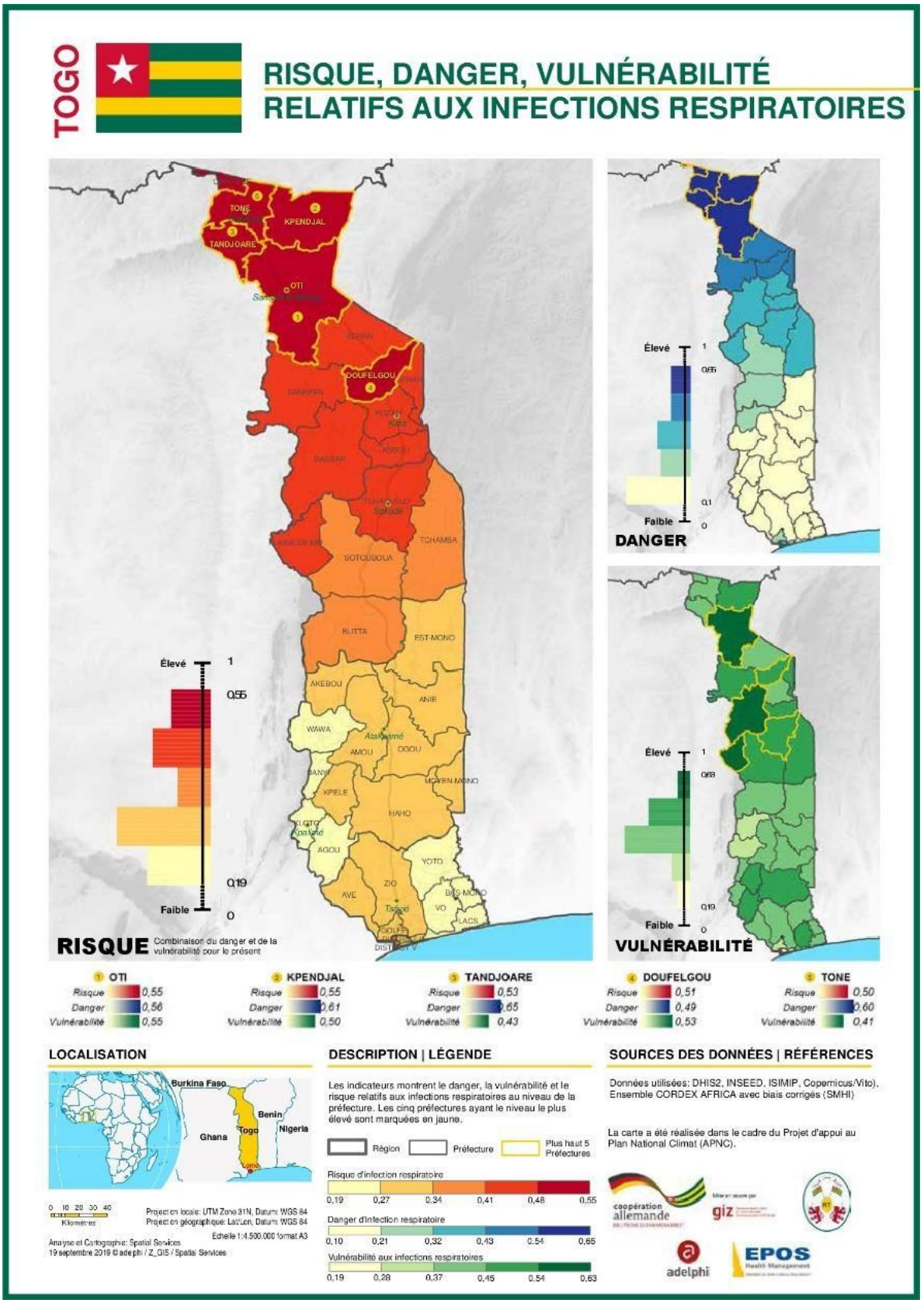
Impact chain for the risk of increased mortality and morbidity rates related to respiratory infections



Impact chain for the risk of increased meningitis-related mortality and morbidity rates

Annex 2—Maps of the risk assessment outcomes




TOGO
RISQUE, DANGER, VULNÉRABILITÉ
RELATIFS AUX INFECTIONS RESPIRATOIRES
TONE
KPENDJAL
TANDJOARE
OTI
DOUFELGOU
TCHAMBA
SOTOUBOUA
BLITTA
EST-MONO
AKEBOU
ANIE
WAWA
AMOU
OGOU
KPELE
MOYEN-MONO
HAHO
AGOU
YOTO
ZIO
AVE
VO
LACS
Élevé
1
0,55
0,19
Faible
0
RISQUE
Combinaison du danger et de la vulnérabilité pour le présent
DANGER
VULNÉRABILITÉ
1 OTI
Risque 0,55
Danger 0,56
Vulnérabilité 0,55
2 KPENDJAL
Risque 0,55
Danger 0,61
Vulnérabilité 0,50
3 TANDJOARE
Risque 0,53
Danger 0,65
Vulnérabilité 0,43
4 DOUFELGOU
Risque 0,51
Danger 0,49
Vulnérabilité 0,53
5 TONE
Risque 0,50
Danger 0,60
Vulnérabilité 0,41
LOCALISATION
Burkina Faso
Benin
Togo
Ghana
Nigeria
0 10 20 30 40
Kilomètres
Projection locale: UTM Zone 31N, Datum: WGS 84
Projection géographique: Lat/Lon, Datum: WGS 84
Echelle 1:4.500.000 format A3
Analyse et Cartographie: Spatial Services
19 septembre 2019 © adelphi / Z_GIS / Spatial Services
DESCRIPTION | LÉGENDE
Les indicateurs montrent le danger, la vulnérabilité et le risque relatifs aux infections respiratoires au niveau de la préfecture. Les cinq préfectures ayant le niveau le plus élevé sont marquées en jaune.
Région
Préfecture
Plus haut 5 Préfectures
Risque d'infection respiratoire
0,19 0,27 0,34 0,41 0,48 0,55
Danger d'infection respiratoire
0,10 0,21 0,32 0,43 0,54 0,65
Vulnérabilité aux infections respiratoires
0,19 0,28 0,37 0,45 0,54 0,63
SOURCES DES DONNÉES | RÉFÉRENCES
Données utilisées: DHIS2, INSEED, ISIMIP, Copernicus/Vito), Ensemble CORDEX AFRICA avec biais corrigés (SMHI)
La carte a été réalisée dans le cadre du Projet d'appui au Plan National Climat (APNC).
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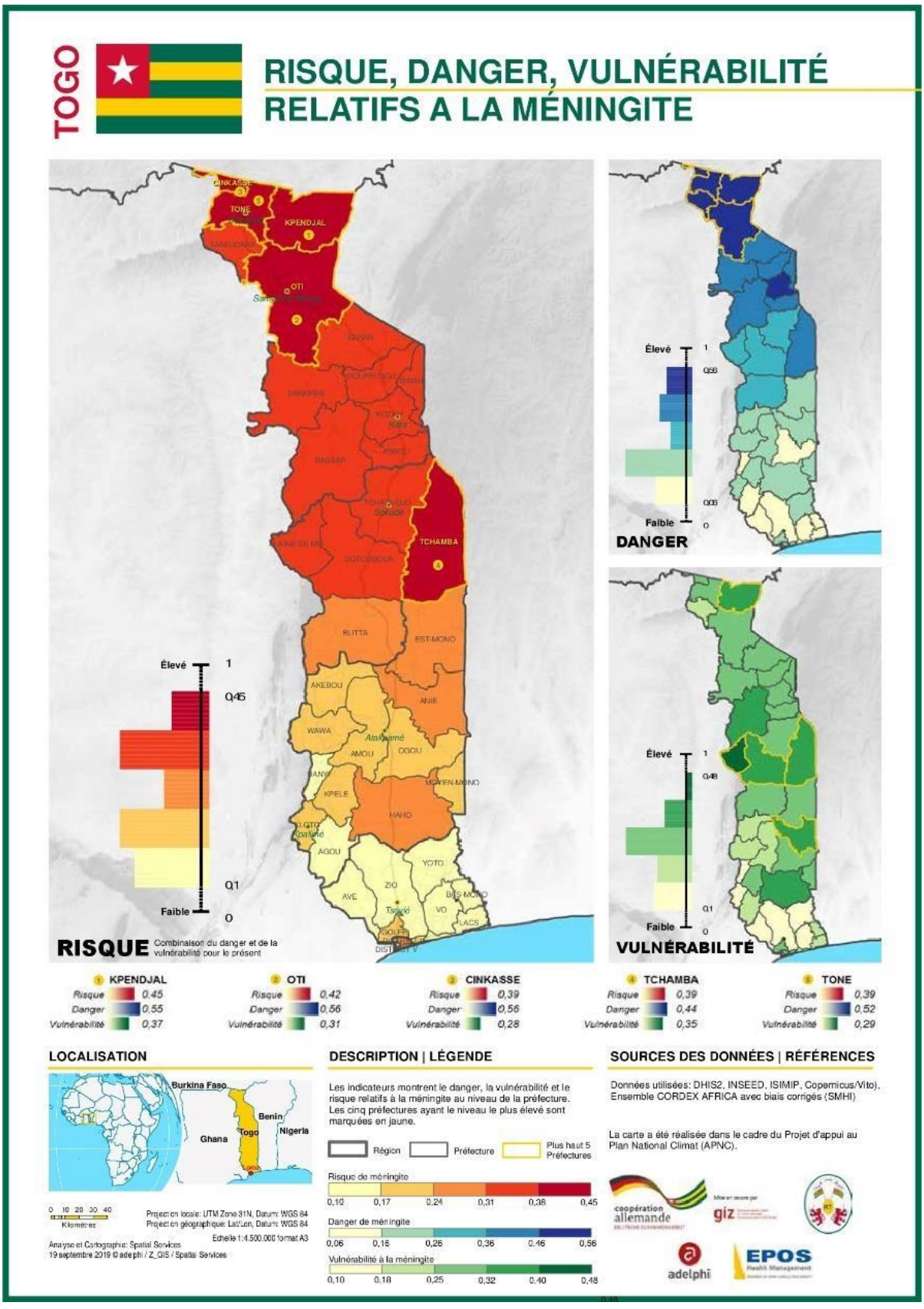
TOGO
RISQUE, DANGER, VULNÉRABILITÉ
RELATIFS A LA MÉNINGITE
KPENDJAL
OTI
TONE
CINKASSE
TCHAMBA
BLITTA
EST-MONO
AKEBOU
ANIE
WAWA
AMOU
OGOU
KPELE
HAHO
AGOU
YOTO
AVE
ZIO
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Faible
1
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RISQUE
Combinaison du danger et de la vulnérabilité pour le présent
DANGER
Q66
Q03
VULNÉRABILITÉ
Q48
1 KPENDJAL
Risque 0,45
Danger 0,55
Vulnérabilité 0,37
2 OTI
Risque 0,42
Danger 0,56
Vulnérabilité 0,31
3 CINKASSE
Risque 0,39
Danger 0,56
Vulnérabilité 0,28
4 TCHAMBA
Risque 0,39
Danger 0,44
Vulnérabilité 0,35
5 TONE
Risque 0,39
Danger 0,52
Vulnérabilité 0,29
LOCALISATION
Burkina Faso
Benin
Ghana
Togo
Nigeria
0 10 20 30 40
Kilomètres
Projection locale: UTM Zone 31N, Datum: WGS 84
Projection géographique: Lat/Lon, Datum: WGS 84
Echelle 1:4.500.000 format A3
Analyse et Cartographie: Spatial Services
19 septembre 2019 © adelphi / Z_GIS / Spatial Services
DESCRIPTION | LÉGENDE
Les indicateurs montrent le danger, la vulnérabilité et le risque relatifs à la méningite au niveau de la préfecture. Les cinq préfectures ayant le niveau le plus élevé sont marquées en jaune.
Région
Préfecture
Plus haut 5 Préfectures
Risque de méningite
0,10 0,17 0,24 0,31 0,38 0,45
Danger de méningite
0,06 0,16 0,26 0,36 0,46 0,56
Vulnérabilité à la méningite
0,10 0,18 0,25 0,32 0,40 0,48
SOURCES DES DONNÉES | RÉFÉRENCES
Données utilisées: DHIS2, INSEED, ISIMIP, Copernicus/Vito), Ensemble CORDEX AFRICA avec biais corrigés (SMHI)
La carte a été réalisée dans le cadre du Projet d'appui au Plan National Climat (APNC).
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