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INAUGURAL ONE HEALTH CONFERENCE

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Wildlife Sector Evaluation Tools

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Why Wildlife Matters in One Health

We can’t afford to forget about wildlife!

- **>70% of emerging zoonotic infectious diseases have a wildlife origin**
- Human activities are creating more opportunities for the changes and types of contact with wildlife that can lead to **more pathogen spill over events**
- Low sampling effort in wildlife to date – but mammals are estimated to harbor over **1 million unknown viruses, some with pandemic potential**
- Wildlife are **valuable sentinels** for threats to human and domestic animal health (including non-communicable disease threats)
- Wildlife disease events can threaten the **conservation of biodiversity and ecosystems**

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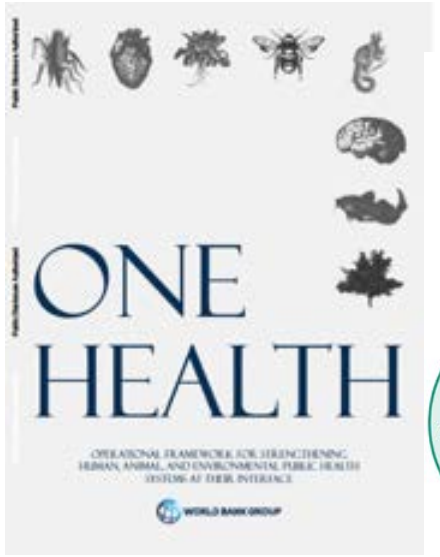
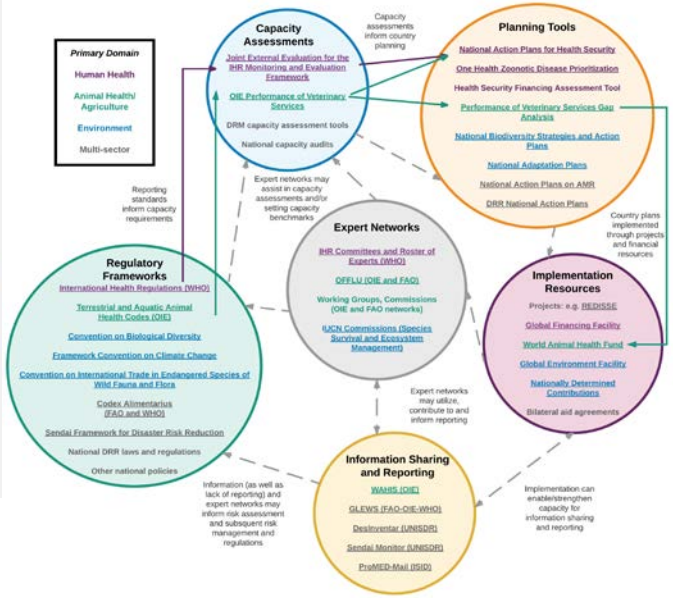
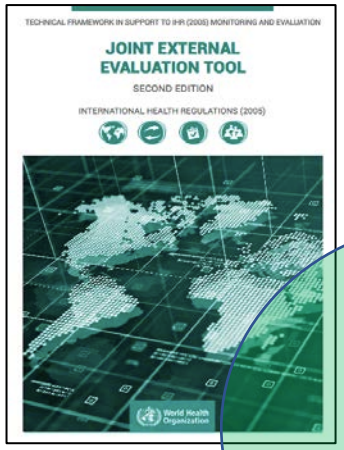
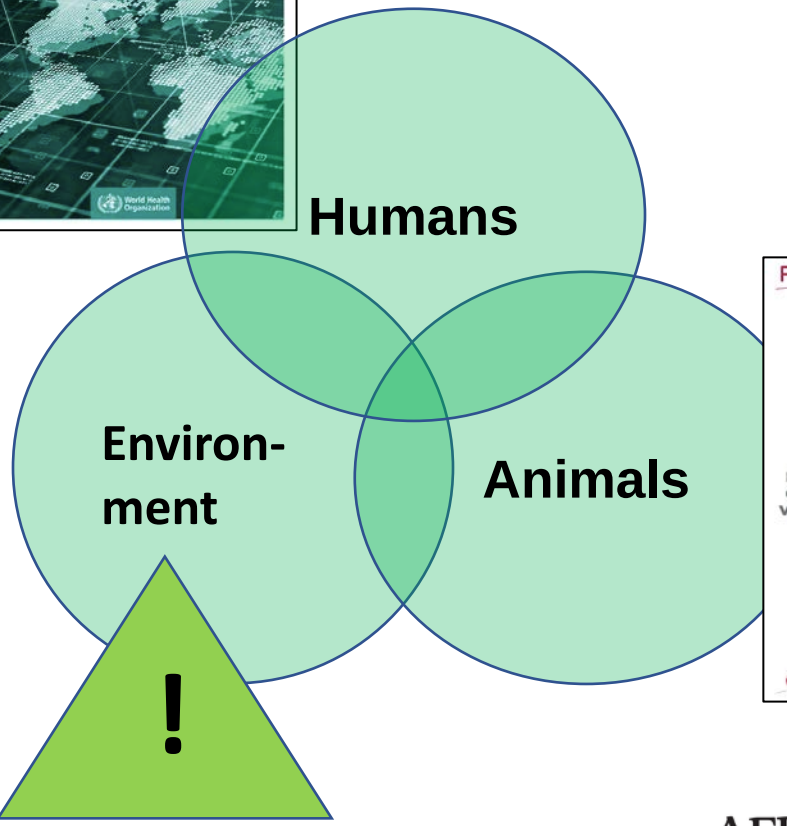
Global Landscape of Evaluation and Planning Tools









Global gap in risk monitoring and management:
No formal capacity evaluation tool exists for environmental health systems

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Current Status of Wildlife Integration in Evaluation Tools

Key finding: wildlife considerations are poorly integrated in the use of existing tools

- In the majority (83%) of countries with a JEE or PVS report, there are either major wildlife sector gaps noted or no mention of wildlife at all

- No clear financing mechanism for national wildlife health system capacity development

Assessment or Planning Tool	Countries with evidence of functional wildlife health activities
Joint External Evaluation (JEE) and/or Performance of Veterinary Services (PVS)	45/107 (42%)
National Biodiversity Strategy and Action Plan	8/125 (6.4%)

Only 7/12 published National Action Plans for Health Security (NAPHS) mention wildlife/wild animals

Climate and weather are also poorly considered in JEE, PVS and NAPHS reports

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Machalaba C, Uhart M, Ryser-Degiorgis MP, and Karesh WB. *WHO Bulletin*, 2021

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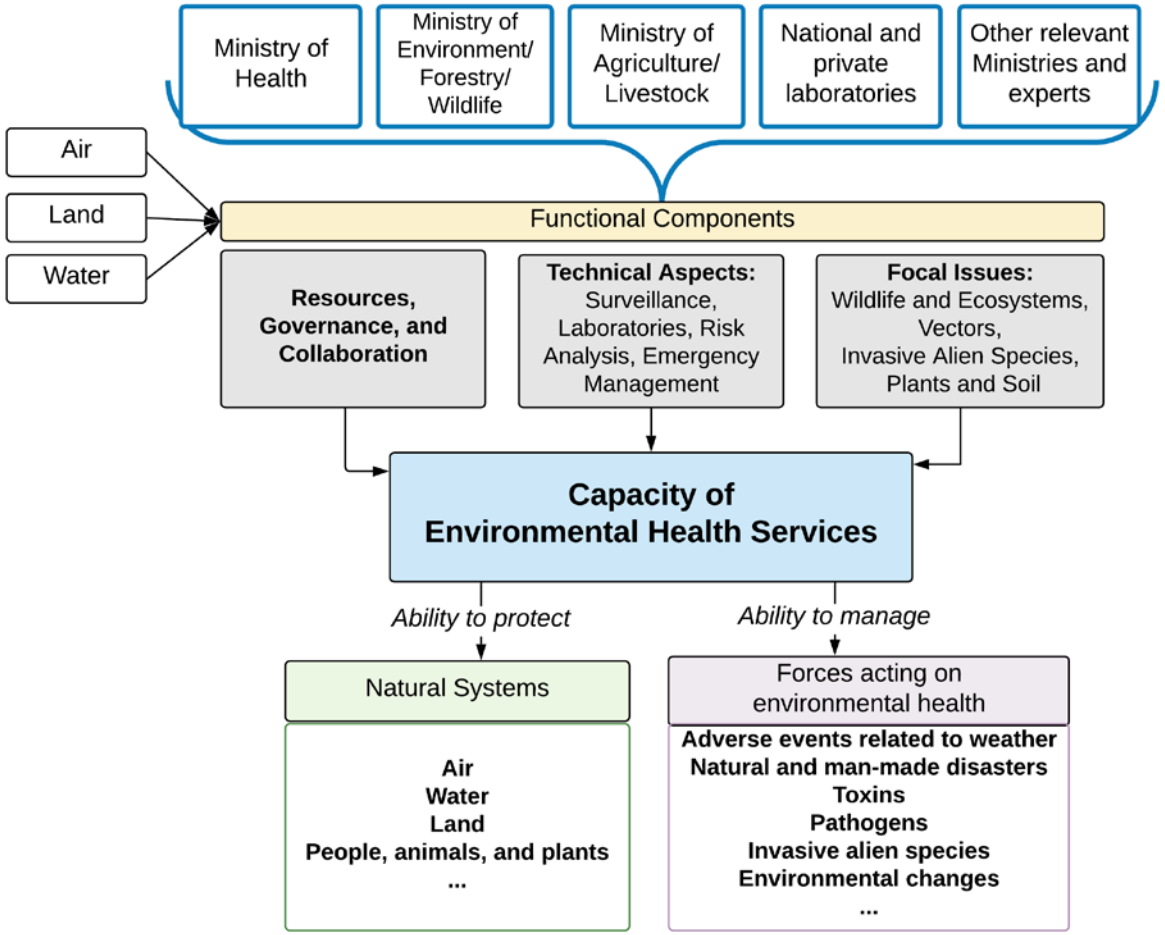
Wildlife and Environmental Health Services

Components and capacities to help reduce risk and promote resilience

Country Assessment of Environmental Health Services (prototype)



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Sincere thanks to colleagues from Liberia, Ghana, and the UK Animal and Plant Health Agency for collaboration and support on ground-truthing and pilot missions

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Country Assessment of Environmental Health Services

Pilot in Ghana, March 2021

a. Aquatic and Terrestrial Wildlife and Ecosystems

*Please complete this form if indicated in Surveillance or Risk Analysis chapter(s)

The authority and capability to manage wildlife and ecosystems in ways that protect the health of people and the environments they depend on

Wildlife and Ecosystem-Specific Questions	*Please provide specifics*
Is laboratory diagnostic capacity available for identifying pathogens or toxins in wildlife?[39]	☐ No ☐ Yes, please specify the laboratorie(s): ☐ Sometimes/partially; please specify:
Is there a national list of aquatic and terrestrial protected wildlife?[40]	☐ No ☐ Yes; If yes, how often is the list reviewed? Is disease risk considered?
What key threats to wildlife/ biodiversity are identified?[41]	Threats identified: Ministries involved in addressing them and mechanism of engagement:
What sources of information are included in natural resource planning?[42]	☐ National/local protected/threatened species listings or protected area classifications ☐ CITES Appendices ☐ IUCN Red List of Threatened Species ☐ IUCN Red List of Ecosystems ☐ IUCN Key Biodiversity Areas ☐ Ramsar wetland site designations ☐ Ecosystem services assessments (e.g. from the Intergovernmental Panel on Biodiversity and Ecosystem Services) ☐ Risk analyses, please specify:

Intended to raise awareness about relevance of wildlife/environment to health, assess baseline status and major needs, and provide guidance resources

Practical lessons learned:

- Lack of benchmarks makes scoring challenging, but can identify **clear gaps**
- Environment scope is wide; requires participation of many institutions and assessors to be comprehensive
- For wildlife, we need to ensure national systems considers all relevant interfaces, taxonomic groups, functions, and objectives

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Needs Assessment for National Wildlife Health Programs

- Assesses **current state** and identifies needs to reach **target future state**
- Piloted in the Republic of Korea, Rwanda (Rwanda Development Board), and Thailand
- Organized by themes/functions (e.g. applied epidemiology, diagnostics) with specific infrastructure and capabilities
- Process:
  - ✓ Team of experts conducts reviews of strategic plans, risk assessments, and other relevant documents
  - ✓ Interviews with key partners and stakeholders: users of the program
  - ✓ Interviews with key personnel who deliver the program
  - ✓ Site visit to core facilities, etc.
  - ✓ Final report with a summary of main findings, identification of priority gaps and needs, recommendations for next steps, and co-creation of training and capacity strengthening activities as desired

Metrics for assessment of the current state of the capabilities:

1. None
2. Nascent/early
3. Emerging
4. Expanding
5. Mature

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USGS National Wildlife Health Center (an OIE Collaborating Center on Research, Diagnosis, and Surveillance of Wildlife Pathogens)

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Emerging infectious Disease Risk Profiling

Context is important for understanding and addressing factors that increase risk of emergence

Emergence Factors	Spread Factors
❖ Planned and unplanned land use change (for human settlements, estate division, mining, and rosewood logging) results in encroachment into peri-urban areas with wildlife populations, in some cases with livestock introduction. ❖ High volume of bushmeat hunting and trade, including of the fruit bat *E. helvum.* ❖ Rapid intensification of poultry production without sufficient biosecurity measures adds to the threat of AI outbreaks in backyard poultry. ❖ Improper refuse disposal is attracting both wildlife and domestic animals. ❖ Religious and cultural traditional practices involve exposure to wild animal exposures, including some of concern for emerging pathogens.	❖ Ghana has seen a steady rate of population growth of over 7% since 2010, most of which is occurring in urban centers. ❖ The movement of people, especially the seasonal migration of farmers, brings dispersed populations of humans and animals into contact. ❖ Poor residential planning combined with a rising urban population leads to slums with poor sanitation. ❖ Bushmeat is an important nutritional resource, creating spread risk along the commodity chain from hunters to consumers. ❖ Reliance on facility-based surveillance for disease detection leads to poor EID surveillance and response.
Vulnerability Factors	**Protective Factors**
❖ Ad hoc active surveillance (only during disease outbreaks) limits potential for early warning. ❖ Despite known endemicity of pathogens associated with viral hemorrhagic fevers, there is variable access to screening for differential diagnosis outside of common pathogens, particularly in certain belief systems (e.g. sorcery, traditional healers). ❖ Absence of quarantine facilities at points of entry, and low/no budget for wildlife disease surveillance for high-consequence pathogens. ❖ Veterinary laws are in need of modernization, and wildlife trade laws are viewed as weak and incomplete compared to international benchmarks. ❖ Limited coordination among agencies, with lack of empowerment of the environment sector in One Health and health security and low institutional knowledge due to turnover. • Conflict in Northern Ghana may affect exposures and makes delivery of infection prevention, detection and control challenging. • Lack of processes to comprehensively assess and manage known and novel disease risks maintains reliance on reactive approaches.	❖ An increase in awareness and available funds for protein alternatives is needed to reduce reliance on bushmeat hunting as a source of income and nutrition. ❖ Improved residential and urban planning would provide protection from the seasonal flooding and the associated increased disease exposure. ❖ Clear direction on responsibility for wildlife regulation and efforts to update the veterinary laws would improve protection from zoonoses spillover. ❖ More detailed and consistent basic field data on the interactions of wildlife, livestock and humans would build up Ghana's protective ability. ❖ Existing investment in early warning systems can be leveraged for expanded scope on disease threats.

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National-Level Recommendations

Planning: develop a wildlife health sector with institutional mandates, training, resourcing and workforce development

Reporting: establish mechanism(s) for centralized reporting of wildlife health and/or disease research to a national entity

Risk assessment and monitoring:

(i) set up arrangements with laboratories for testing of wildlife samples;
(ii) perform risk profiling and assessment of major wildlife–domestic animal and wildlife–human interfaces to identify high-risk transmission interfaces;
(iii) perform risk profiling and assessment for diseases in native and introduced wildlife species to inform conservation planning, livestock biosecurity and zoonotic disease prioritization;
(iv) require consultation of government wildlife entities or expert scientists in case of human or domestic animal disease connected to environmental resources;
(v) integrate wildlife and other environment information into a surveillance system leveraging local stakeholders (e.g. park rangers, community eco-monitors and hunters)

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THANK YOU

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