Fortifying institutional resilience against biological threats (FIRABioT) project launch

Assessing hazards in emergencies through risk analysis

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14-16 March 2023

Multi-hazard spectrum

Emergencies and disasters are often complex and involve **multiple hazards** which can take different shapes and forms.

Today’s highly interconnected world faces many health security threats caused by disease outbreaks, climate change, conflict, and other factors.

Forms of emergency and disaster

Biological

directly affecting terrestrial and aquatic animal production systems, such as the incursion of a transboundary disease of economic importance into the livestock industry

Geophysical

originating from solid earth

Meteorological

caused by short-lived, small to medium-sized extreme weather and atmospheric conditions that last from minutes to days

Climatological

emerging from long-lived, small to medium-sized atmospheric processes ranging from intra-seasonal to multi-decadal climate variability

Hydrological

caused by the occurrence, movement and distribution of surface and subsurface freshwater and saltwater

Technological

caused by chemical spills, toxic gas releases, and nuclear and radiological events

Multi-hazard approach

Multi-hazard approach is a broad term encompassing the examination of the hazards in a specific geographic area and time and their magnitude as well as the description of their interaction and the interpretation of their compounding outcomes.

It expands on single-hazard analysis and its outcomes are not just the sum of its parts.

Multi-hazard approach

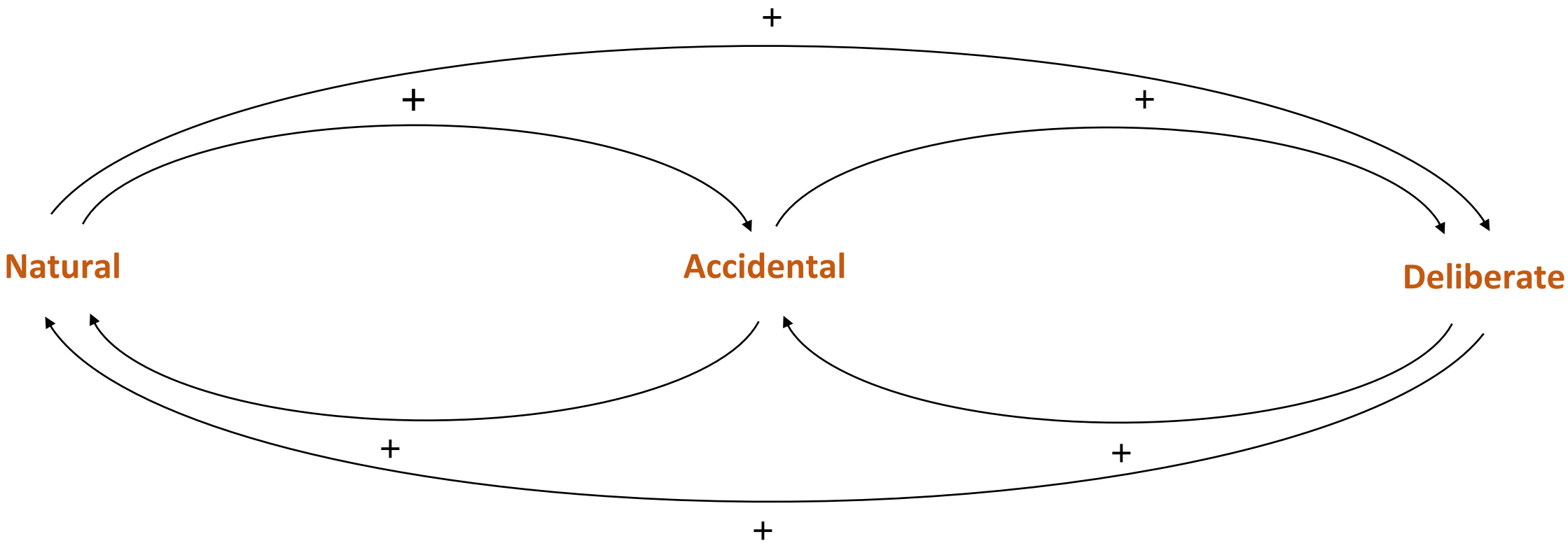
Situations with more than one hazard at a time and potentially interacting with each other.

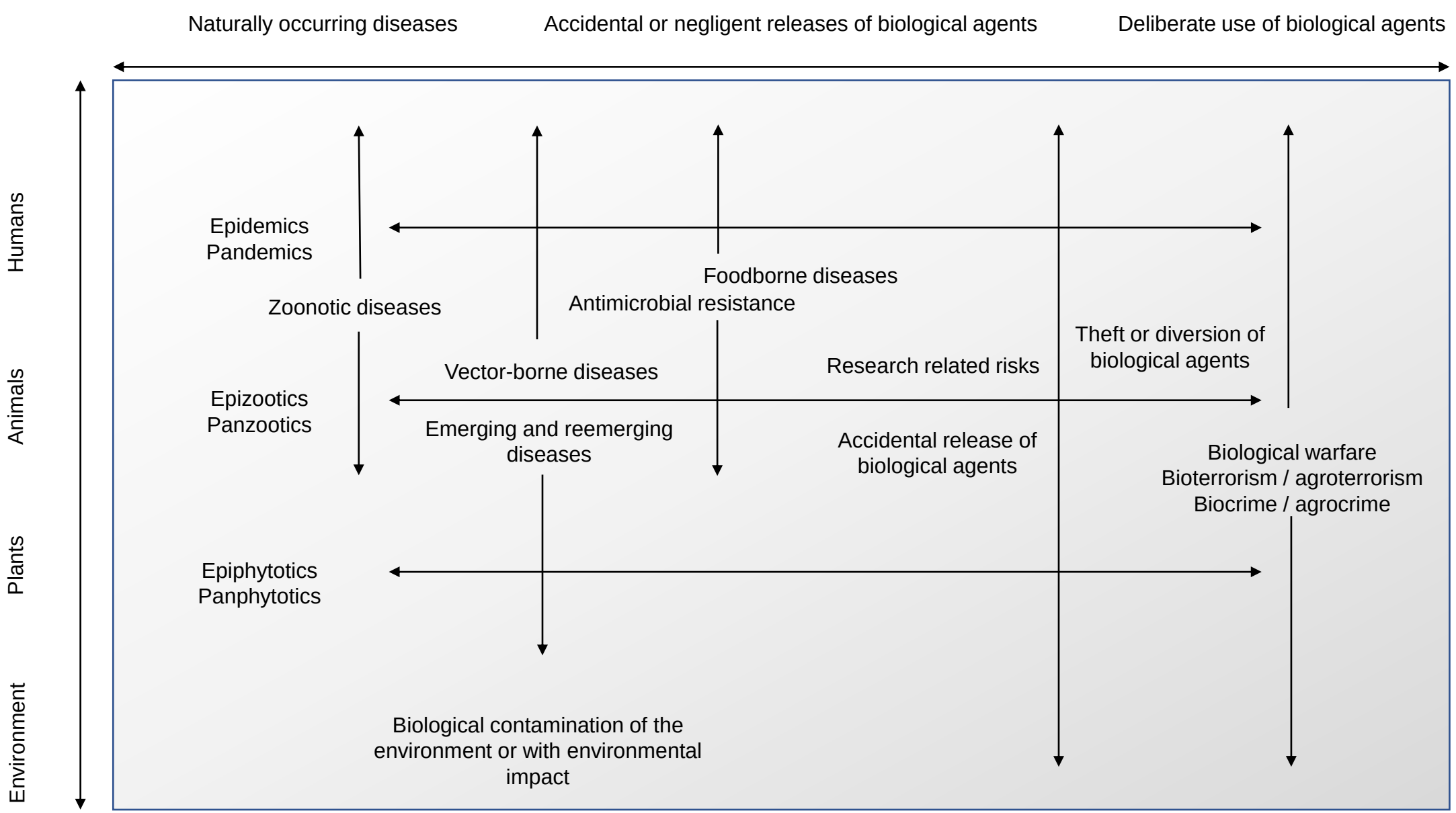
Strategic planning:

Common ends - ways - means


SAÚDE
DIREÇÃO-GERAL

Biological threats spectrum




Naturally occurring diseases
Accidental or negligent releases of biological agents
Deliberate use of biological agents
Humans
Animals
Plants
Environment
Epidemics
Pandemics
Zoonotic diseases
Foodborne diseases
Antimicrobial resistance
Theft or diversion of biological agents
Vector-borne diseases
Research related risks
Epizootics
Panzootics
Emerging and reemerging diseases
Accidental release of biological agents
Biological warfare
Bioterrorism / agroterrorism
Biocrime / agrocrime
Epiphytotics
Panphytotics
Biological contamination of the environment or with environmental impact

Infectious disease emergencies

Infectious disease emergencies can escalate into disasters as we have seen with pandemics, which often have an animal origin and start off as localised outbreaks, most recently COVID-19; with animal disease outbreaks such as avian influenza ('bird flu') which led to a panzootic in the early 2000s; or with food safety disasters, such as Bovine spongiform encephalopathy ('mad cow disease').

More than 60% of existing human diseases and about 75% of emerging human infectious diseases are thought to be of animal origin.

This highlights the importance of including animal-related issues in emergency and disaster management and risk reduction plans and the central role that the global veterinary community must play in bolstering preparedness.

Yet, Veterinary Services are often not ‘at the negotiating table’:

as countries from various regions revealed that they were only included in less than half of whole-of-government frameworks for emergencies and disasters ↗

. **Veterinary Services must be recognised for their valuable contributions to emergency management** and engaged in high-level government strategies to support and protect global health security.

High politics vs. Low politics dicotomy

In political science and in the subfield of international relations, the concept of **high politics** covers all matters that are vital to the very survival of the state: namely national and international security concerns.

Low politics is a concept that covers all matters that are not absolutely vital to the survival of the state as the economics and the social affairs. The low politics are the domain of the state's welfare.

ANIMAL HEALTH SECURITY INTERFACE

Risk analysis

Risk management

Risk assessment

Risk communication

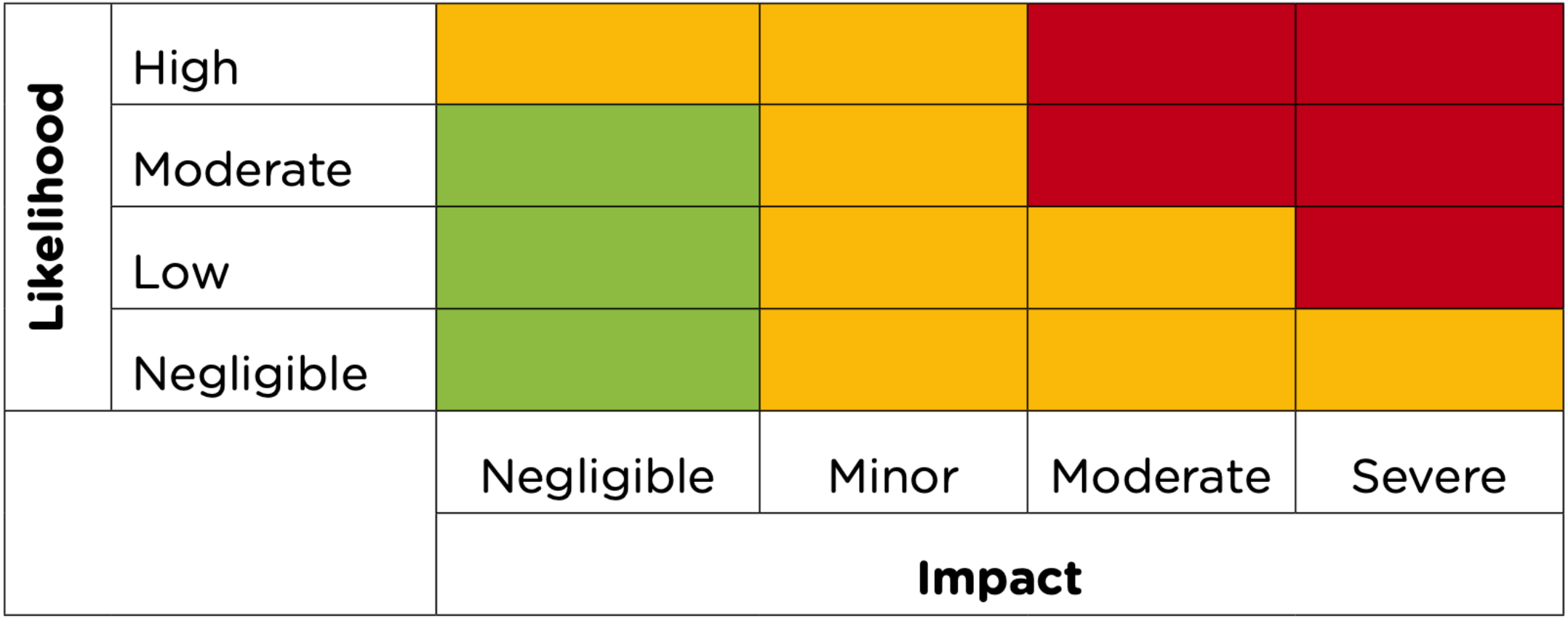
Risk

Risk comprises two components: likelihood (probability) and impact (consequences), and each element includes a measure of uncertainty.

Likelihood is the estimated probability or chance that the situation in the risk assessment question will occur.

Impact describes the level or severity of consequences if that situation occurs.

Risk matrix


Likelihood
High
Moderate
Low
Negligible
Negligible
Minor
Moderate
Severe
Impact

Principles of risk assessment

Risk assessment is the **systematic process** of gathering, assessing, and documenting information to estimate the risk level for a specific time period and location.

A risk assessment assesses **likelihood, impact, and associated uncertainty** for one or more risk assessment questions about a particular aspect of the risks associated with an event or hazard.

It is an **iterative process** based on the best information available during the assessment. **Science and evidence based**.

Quantitative vs. qualitative approaches

Quantitative risk assessments: likelihood, impact, and uncertainty are expressed using numbers. Missing data is estimated using mathematical models or through expert consultation. However, there are often not enough data to conduct valid quantitative assessments.

Qualitative risk assessments: likelihood, impact, and uncertainty are expressed using descriptive sets of categories, with clear meanings defined for each. Qualitative risk assessments are faster, require less complete information, and use expert opinion where scientific data are missing. Qualitative risk assessments evaluate health events or emergencies where data are limited or a quick response is required.

Concluding remarks

Multi-hazard approach

Biological threats spectrum

Animal health security interface

Risk, risk assessment and risk analysis

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