

# Biosurveillance as One Health

## Critique to Recent Policy Initiatives

- One Health Joint Plan of Action
  - World Bank Financing
- WHO Negotiations for Pandemic Instrument

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# Introduction - What is Biosurveillance?

## Bio-surveillance Agenda and Its Implications

According to the US National Security Directive, bio-surveillance means 'the process of active data-gathering with appropriate analysis and interpretation of biosphere data that might relate to disease activity and threats to human or animal health—whether infectious, toxic, metabolic, or otherwise, and regardless of intentional or natural origin—in order to achieve early warning of health threats, early detection of health events, and overall situational awareness of disease activity' (White House 2007).


This gathering approach is more related to a predictive approach than for reporting confirmed events. It extends surveillance from the inside of public health to the outside environment.

Since the early 2000s, the U.S. has run several surveillance programmes like BioAlert (Siegrist and 2007), BioWatch,<sup>4</sup> BioSense (Gould et al. 2017), and National Biosurveillance Integration System (Castillo-Chávez et al. 2011: 8–9)—which operate as a sort of network. BioAlert has focussed on data sources such as over-the-counter sales, pre-diagnostic clinical data, animal health data and absenteeism indicators, while BioWatch uses collectors to obtain air samples from multiple locations to detect health threats. BioSense has developed a system to monitor signs and symptoms directly from hospitals, instead of waiting for laboratory test results. Such systems are coordinated through the national bio-surveillance integration system,<sup>5</sup>

New additions pertain the use of data from wastewater management systems, waterways and environmental sampling through methods based on genomic sequencing (Liang et al. 2023: 38). Reservoir Biosurveillance is now under accelerated expansion through its task of monitoring agricultural practices and animal farms to wildlife hotspots. In its National Bio-surveillance Strategy, the US Centre for Disease Control (CDC) enlists four core functions: (1) scan and discern the environment; (2) identify and integrate essential information; (3) inform and alert decisionmakers and (4) forecast and advise potential impacts.<sup>6</sup> Emphasis is primar-

# Definition of Prevention of Spillover by OHHLEP

## BOX 1. PREVENTION OF ZOOONOTIC SPILLOVER TO HUMANS



Prevention of pathogen spillover from animals to humans; shifting the infectious disease control paradigm from reactive to proactive (Primary prevention). Prevention includes addressing the drivers of disease emergence, namely ecological, meteorological and anthropogenic factors and activities that increase spillover risk, in order to reduce the risk of human infection. It is informed by, amongst other actions, biosurveillance in natural hosts, people and the environment, understanding pathogen infection dynamics and implementing intervention activities.

# INB Bureau's Proposal for Draft Negotiating Text

## Article 5. One Health

1. The Parties commit to promote and implement a One Health approach for pandemic prevention, preparedness and response that is coherent, integrated, coordinated and collaborative among all relevant actors, with the application of, and in accordance with, national law.
2. The Parties shall promote and enhance synergies between multisectoral and transdisciplinary collaboration at the national level and cooperation at the international level, in order to identify and conduct risk assessments at the interface between human, animal and environment ecosystems, while recognizing their interdependence, and with applicable sharing of the benefits, per the terms of Article 12 herein.
3. The Parties commit to identify and address the drivers of pandemics and the emergence and re-emergence of disease at the human-animal-environment interface through the identification and integration of interventions into relevant pandemic prevention, preparedness plans, and, where appropriate, according to national legislation and capacity, through the strengthening of synergies with other relevant instruments.
4. Each Party shall, in accordance with national context and to the extent necessary, protect human, animal and plant health by:
  - (a) implementing science-based actions, including but not limited to: improving infection prevention and control measures; antimicrobial research and development; access to and stewardship of antimicrobials; and harmonization of surveillance, in order to prevent, reduce the risk of, and prepare for, pandemics;
  - (b) fostering and implementing actions at national and community levels that encompass whole-of-government and whole-of-society approaches to control zoonotic outbreaks, including through the engagement of communities in surveillance to identify zoonotic outbreaks;
  - (c) taking a One Health approach into account in order to produce science-based evidence, including that which is related to social and behavioural sciences, and risk communication and community engagement; and

(d) promoting or establishing One Health joint training and continuing education programmes for human, animal and environmental health workforces, needed to build complementary skills, capacities and capabilities to prevent, detect, control and respond to pandemic health threats.

5. The Parties commit to develop, within the framework of relevant institutions, international norms and guidelines to prevent zoonoses.
6. Pursuant to Article 21 herein, the Conference of the Parties shall develop appropriate modalities to address the measures set forth in Articles 4 and 5 of this Agreement.
7. The Parties shall, in line with Article 16 herein, develop and implement or strengthen, as appropriate, bilateral, regional, subregional and other multilateral channels to enhance financial and technical support, assistance and cooperation, in particular in respect of developing countries, to strengthen surveillance systems and laboratory capacity in respect of promoting and implementing a One Health approach at the national level.

# Key challenge.

Firstly and most importantly, **surveillance cannot substitute prevention, preparedness and response** to pandemics/health emergencies. We cannot wrongly **align developing countries public health priorities to surveillance capacities**, while several other key capacities are lacking.

These scholars argue that:

zoonotic origins are often described as a sequential process, in which pathogens must pass through a series of biological, ecological and social filters that would otherwise prevent their emergence. At each of these steps, machine learning has been successfully and reliably applied to predict the animal origins of a novel zoonosis, the potential hosts of undiscovered zoonoses, the ecological and anthropogenic risk factors for zoonotic spillover, the ability of novel viruses to infect humans and their ability to transmit onwards in human populations. Such models have also been used to predict the severity of disease, and may be extended to predict mortality in the future (Carlson et al. 2021: 2).

Nevertheless, they also concede that:

these approaches might not allow scientists to predict exactly where and when the next outbreak will begin, they allow a different kind of prediction, one focused on exploring and explaining biological possibility and socioecological risk factors with an eye towards future threats (Carlson et al. 2021: 2).

In 2021, some 33 scholars jointly wrote an opinion piece published by the Royal Society Publishing with the intent to caution about zoonotic risk prediction technology:

We warn that investments in research and development on topics like machine learning or animal virus genomics must not come at the expense of other essential kinds of modelling work (e.g. work focused on virus transmission and spread, or identifying the most consequential surveillance gaps), or more importantly, at the expense of non-technological investments in health systems strengthening, including attainment of universal health coverage, and similar aspects of pandemic preparedness. Similarly, it is possible that interest in pre-emergence zoonotic viruses might conflict with, redirect, or undermine local priorities like water and food-borne diseases (and sanitation), agricultural, high burden communicable diseases (e.g. HIV-AIDS, tuberculosis and malaria) or non-communicable diseases; interventions may even disrupt local interests and norms, potentially weakening outbreak response during emergencies (Carlson et al. 2021).

## LIST OF CAPACITIES AND INDICATORS

- |   |  |
|---|--|
| C1. Policy, legal and normative instruments to implement IHR          | C9. Infection prevention and control (IPC)   |
| C1.1. Policy, legal and normative instruments                         | C9.1. Infection prevention and control programmes  |
| C1.2. Gender equality in health emergencies                           | C9.2. Health care-associated infections (HCAI) surveillance                                    |
| C2. IHR coordination and National IHR Focal Point                     | C9.3. Safe environment in health facilities  |
| C2.1. National IHR Focal Point functions                              | C10. Risk communication and community engagement (RCCE)  |
| C2.2. Multisectoral coordination mechanisms                           | C10.1. RCCE system for emergencies   |
| C2.3. Advocacy for IHR implementation                                 | C10.2. Risk communication  |
| C3. Financing   | C10.3. Community engagement  |
| C3.1. Financing for IHR implementation                                | C11. Points of entry (PoEs) and border health  |
| C3.2. Financing for public health emergency response                  | Section 1. Information by type of PoE  |
| C4. Laboratory  | Section 2. Core capacities at PoEs and international travel-related measures                   |
| C4.1. Specimen referral and transport system                          | C11.1. Core capacity requirements at all times for PoEs (airports, ports and ground crossings) |
| C4.2. Implementation of a laboratory biosafety and biosecurity regime | C11.2. Public health response at PoEs  |
| C4.3. Laboratory quality system                                       | C11.3. Risk-based approach to international travel-related measures                            |
| C4.4. Laboratory testing capacity modalities                          |  |
| C4.5. Effective national diagnostic network                           |  |
| C5. Surveillance  | C12. Zoonotic diseases   |
| C5.1. Early warning surveillance function                             | C12.1. One Health collaborative efforts across sectors on activities to address zoonoses       |
| C5.2. Event management  | C13. Food safety   |
| C6. Human resources   | C13.1. Multisectoral collaboration mechanism for food safety events                            |
| C6.1. Human resources for implementation of IHR                       | C14. Chemical events   |
| C6.2. Workforce surge during a public health event                    | C14.1. Resources for detection and alert   |
| C7. Health emergency management                                       | C15. Radiation emergencies   |
| C7.1. Planning for health emergencies                                 | C15.1. Capacity and resources  |
| C7.2. Management of health emergency response                         |  |
| C7.3. Emergency logistic and supply chain management                  |  |
| C8. Health services provision   |  |
| C8.1. Case management   |  |
| C8.2. Utilization of health services                                  |  |
| C8.3. Continuity of essential health services (EHS)                   |  |

# Current Status of Capacities

IHR Score per capacity All WHO regions 2022 (Updated on 12-08-2023)

N=186 (based on 186 countries that have submitted reports using SPAR tool format)

AFRO AMRO EMRO EURO SEARO WPRO Global Average



# Current financing by World Bank's Pandemic Fund

**Projects funding Status:** It must be noted that out of 133 applications considered eligible from 179 applications received by the Pandemic Fund, established by the World Bank, around 98 applications had an One Health component. Amongst the 19 project proposals granted, all the projects have explicit one health objectives or significant one health components. **In other words, out of 35 proposals which do not have a one health component, even one project is not sanctioned by the Pandemic Fund.** Infact, Secretariat has used a special "one health" tag to easily identify project proposals with one health component in it.

30. **Roles and Responsibilities of Implementing Entities.** Without prejudice to the provisions of the Financial Procedures Agreements, the roles and responsibilities of each Implementing Entity include:

- a) administering the FIF funds transferred to it, including the use of funds and activities carried out therewith, in accordance with (i) its applicable policies and procedures and (ii) the provisions of the Financial Procedures Agreement and the applicable terms and condition under which Allocations to the Implementing Entity have been approved, including the applicable provisions of this Governance Framework and the Operations Manual;
- b) conducting discussions with Beneficiaries of the FIF on projects and activities that can benefit from FIF support, as appropriate;

11

inclusive, multi-stakeholder processes that engage communities and civil transparency and good governance.

- **Priorities:** The first Call for Proposals will prioritize high-impact investments in: i) comprehensive disease surveillance and early warning; ii) laboratory systems; and iii) human resources and public health and community workforce capacity, in line with relevant JEE targets, National Action Plans for Health Security, One Health and related national and regional health and community systems strengthening plans, as applicable, as well as with the Pandemic Fund's Results Framework, which will be made available online. Financing is intended for projects that will help strengthen core capacities in one or more of these three priority areas, which present the promise of generating a visible impact in terms of prevention and preparedness to effectively detect and respond to disease outbreaks.

# Other challenges

Secondly, addressing environmental issues has implications for sustainable development. **This is an issue of distributive justice.** Thus

We must address **development divide.** **WGPR mandated** the same as well.

We cannot **avoid Common But Differentiated Responsibilities in this context,** both in principle and operational terms.

We cannot **undermine sovereign rights over biological resources, access and benefit sharing obligations,** and scope of benefits.

## V. ENHANCING GLOBAL PREPAREDNESS AND RESPONSE TO HEALTH EMERGENCIES INCLUDING THROUGH A ONE HEALTH APPROACH

35. The WGPR expressed an interest in the application of a One Health approach that would yield significant benefits for the international community to reduce the risks posed by emerging diseases of zoonotic origin in the future, recognizing that diseases of zoonotic origin are among the most likely sources of future health emergencies, including pandemics.

36. In this regard, the INB could consider discussing the One Health concept, while avoiding duplication of processes and mechanisms. This could include new and/or strengthening of existing platforms, surveillance, furthering multisectoral partnerships and promoting specific countermeasures in line with the One Health approach. **Discussion of the One Health approach should take into due consideration inequities existing within and between countries and the need to prioritize addressing these concerns.**

## CBD Decision 15/29. Biodiversity and health

1. Encourages Parties and their subnational and local governments, and invites other Governments, in accordance with national circumstances and priorities, where appropriate, and relevant stakeholders:

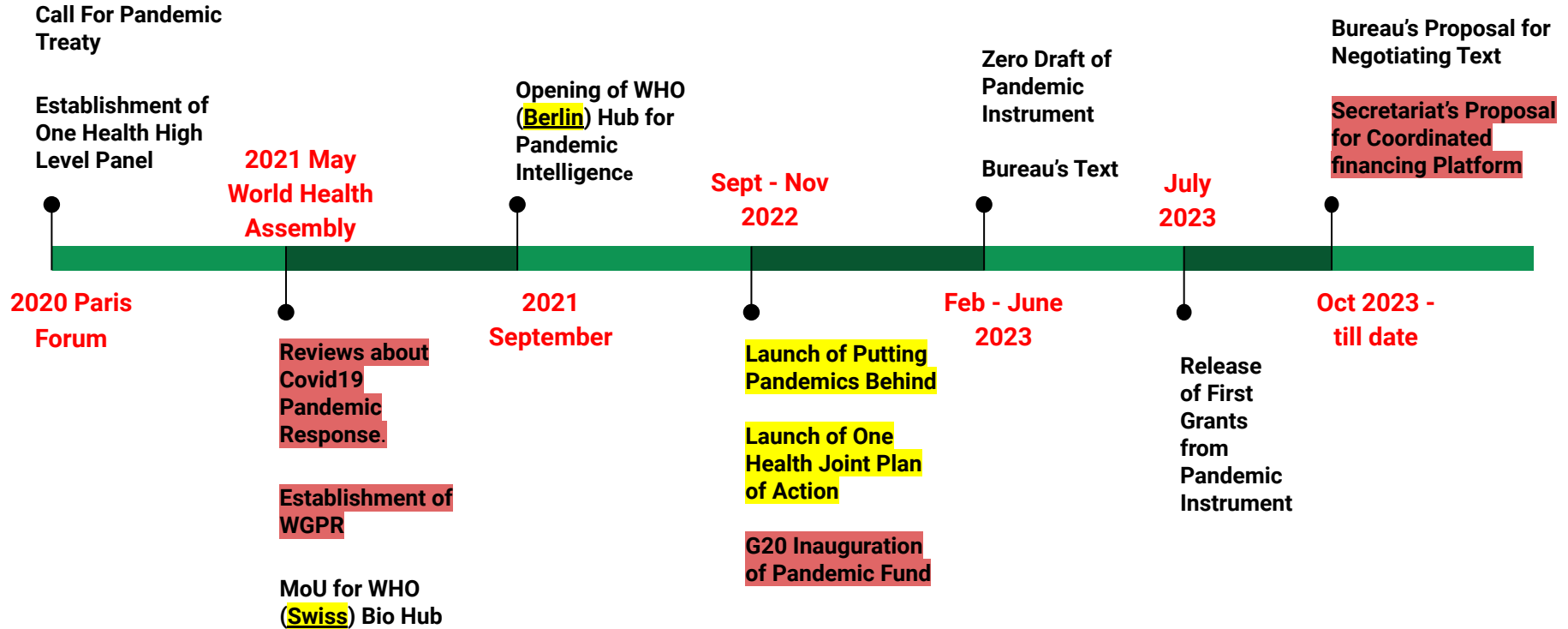
(d) To strengthen compliance with international and national provisions on access and benefit-sharing **in order to enhance the fair and equitable sharing of benefits arising from the utilization of genetic resources,** as well as the fair and equitable sharing of benefits arising from the use of digital sequence information on genetic resources, **in the relevant health sectors.**

2. Invites the Quadripartite for One Health, the One Health High-Level Expert Panel, and other relevant expert groups and initiatives:

(a) To take into account in their work **the linkages between health and biodiversity,** the need for the One Health approach, among other holistic approaches, pursuant to decisions XIII/6 and 14/4 **recognizing social determinants of health and socioeconomic inequities between developing and developed countries, particularly health inequalities, as well as equity and solidarity.**



# Some interesting timelines



# Take note that CBD COP Decision 15/29 did not welcome OHHLEP definition

*Taking note* of the definition of One Health by the One Health High-Level Expert Panel:

“One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent. The approach mobilizes multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate change, and contributing to sustainable development.”

*Noting that this definition has not been discussed or agreed by* the Conference of the Parties or by the Conference of the Parties serving as the meetings of the Parties to the Cartagena and Nagoya Protocols,