



# Genomic Surveillance Strategy

For pathogens with epidemic  
or pandemic potential

25 November 2021

## Genomic surveillance



**COVID-19 demonstrated the critical role of genomic surveillance.**

Genomic surveillance is used to monitor the evolution and circulation of pathogens and understand public health implications.

Sequencing and bioinformatics are rapidly evolving technologies: the next frontier in pathogen surveillance .

Countries can use genomic surveillance in their end -to-end systems for early pandemic & epidemic detection and response.



# SARS-CoV-2 Genomic Surveillance 'Use Case'

Track virus evolution and circulation



Assess for public health risks 'VOI/VOC'

Increased transmissibility

More severe clinical course

Failed diagnostic detection

Escape to natural/vaccine-derived immunity

Decreased susceptibility to therapeutics



Update countermeasures when needed

Vaccine composition

Diagnostic assays

Therapeutics

Public health & social measures

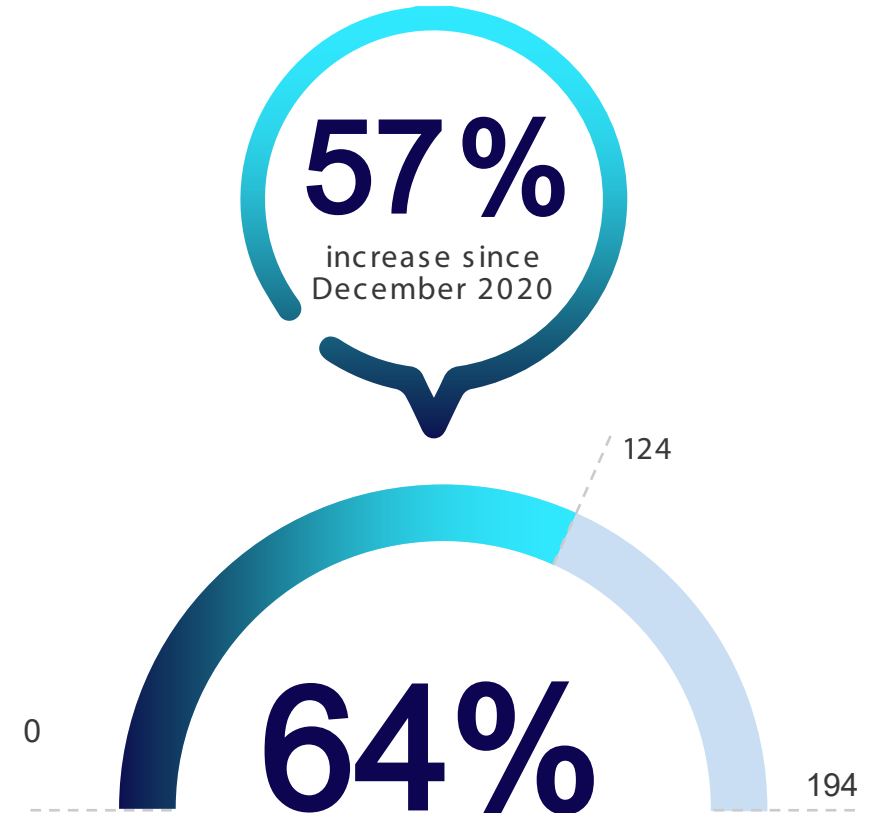


## Gains made in 2021



### Sharing SARS-CoV-2 genetic sequence data

- In September 2021, 124 Member States (64%) shared sequencing data through a public mechanism.
- Since December 2020, **there has been an increase of 45 Member States, a 57% increase in 10 months**.



September 2021: Member States sharing SARS-CoV-2 genomic sequences publicly

# SARS-CoV-2 sequencing capability

**11%**  
increase in March  
to October 2021



The designations employed and the presentation of the material in this publication do not imply the expression of any opinion WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

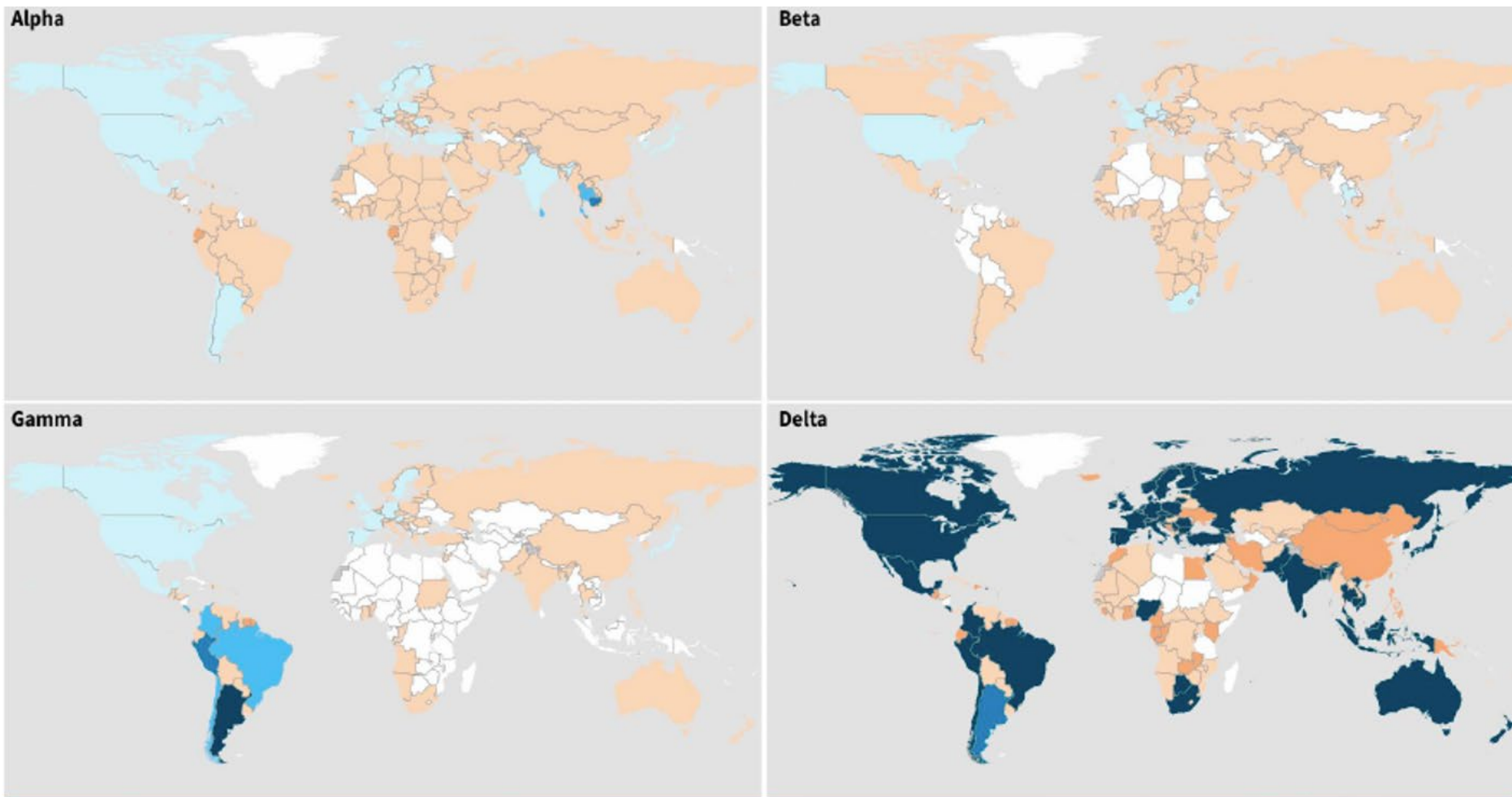
[1] All references to Kosovo in this document should be understood to be in the context of the United Nations Security Council

whatssoever on the part of its frontiers or boundaries.

I resolution 1244 (1999).

Data Source: World Health Organization  
Map Production: WHO Health Emergencies Programme  
Request ID: COVID19\_45

# Monitoring SARS-CoV-2 virus circulation in last 60 days: timely geographically - representative data remain limited



\*Prevalence calculated as a proportion of VOC sequences among total sequences uploaded to GISAID with sample collection dates within the past 60 days prior to the latest date of collection, excluding low coverage sequences, limited to countries with  $\geq 100$  total sequences in the same period. Countries assigned by location of sample collection.

\*\*Includes both official reports to WHO and unofficial reports of VOC detections.

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Proportion of VOC among total sequences\*

- 0.501 - 1.000
- 0.101 - 0.500
- 0.011 - 0.100
- >0.000 - 0.010

- VOC detected, too few sequences to estimate proportion
- No new VOC sequences, VOC previously reported\*\*
- No presence of VOC reported to WHO
- Not applicable



## Challenges exist



Access and equity

Capabilities

Analysis and technical fragmentation

Connectivity and information sharing

Sustainability and scalability



## Global recommendations



### IHR Emergency Committee for COVID - 19 (2021)

- January
  - July
  - October
- } called for State Parties to strengthen genomic surveillance strategies, including timely and representative genomic surveillance data.

### Independent Panel for Pandemic Preparedness and Response report to the 74th World Health Assembly (May 2021)

- Recommended regular funding for the delivery of specific global public goods including genomic sequencing as part of pandemic preparedness .

### World Health Assembly Resolution 74.7 (May 2021)

- “Urges Member States to increase their capacity to detect new threats, including through laboratory techniques, such as genomic sequencing .”



## Way forward



### **Global genomic surveillance strategy for pathogens with pandemic and epidemic potential**



Countries have different objectives, capacities, capabilities and use cases for genomics.

WHO is developing the strategy recognizing the landscape, the need for global coherence to best support countries in their surveillance objectives, and to ensure interoperability for global surveillance objectives.

Unifying high -level framework

Country -focused

Pathogen agnostic

Builds on partnerships & existing capacities

Fills gaps and addresses barriers

Embeds in broader surveillance architecture

Provides 'intelligence' for public health action

## Global strategy goal and objectives



**Genomic surveillance is strengthened and scaled for quality, timely and appropriate public health actions within local to global surveillance systems**



### Objective 1

Improve access to tools for better geographic representation



### Objective 2

Strengthen the workforce to deliver at speed, scale and quality



### Objective 3

Enhance data utility for streamlined local to global public health decision making



### Objective 4

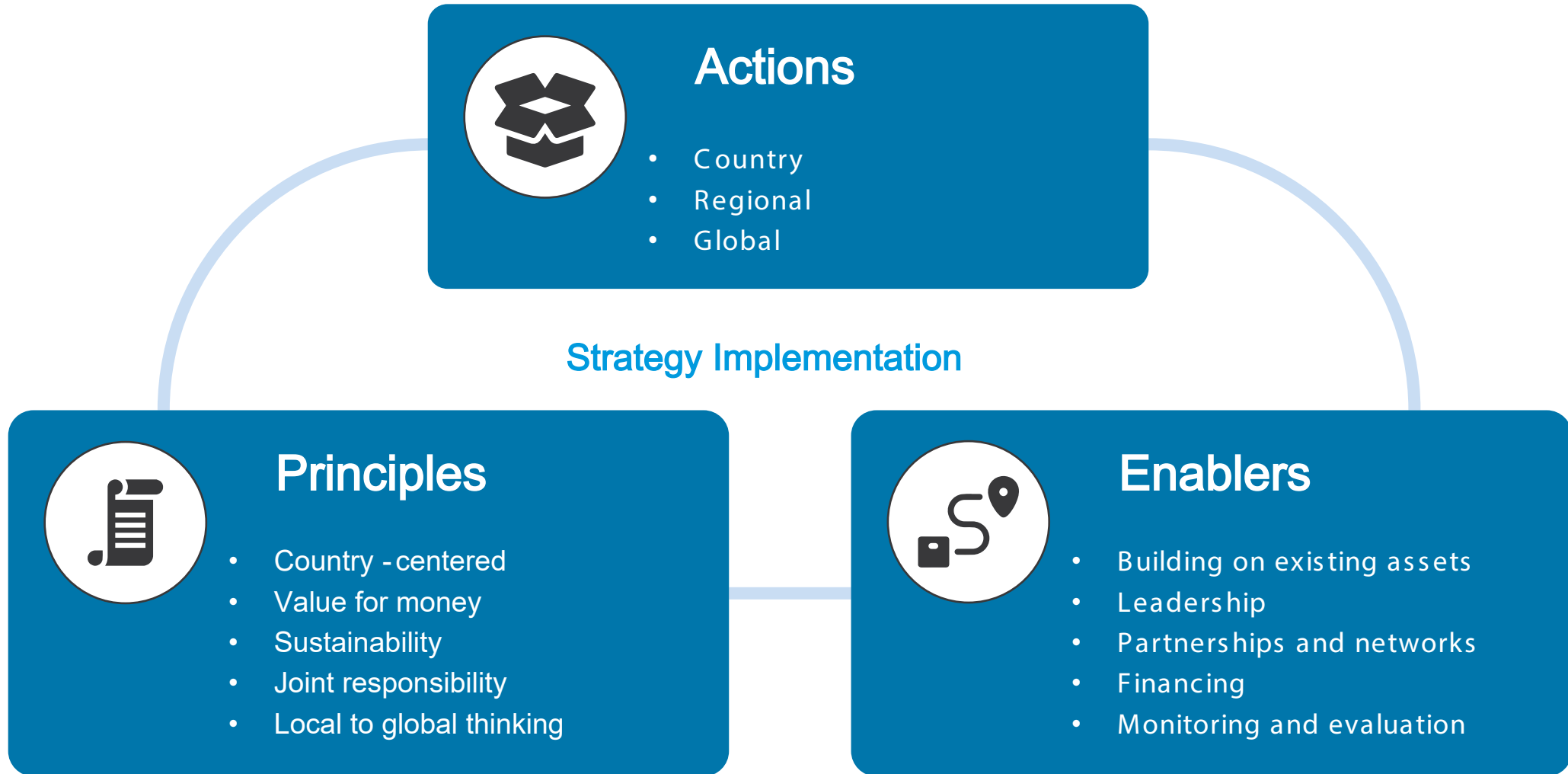
Maximize connectivity for timely value - add in the broader surveillance architecture




### Objective 5

Maintain a readiness posture for emergencies

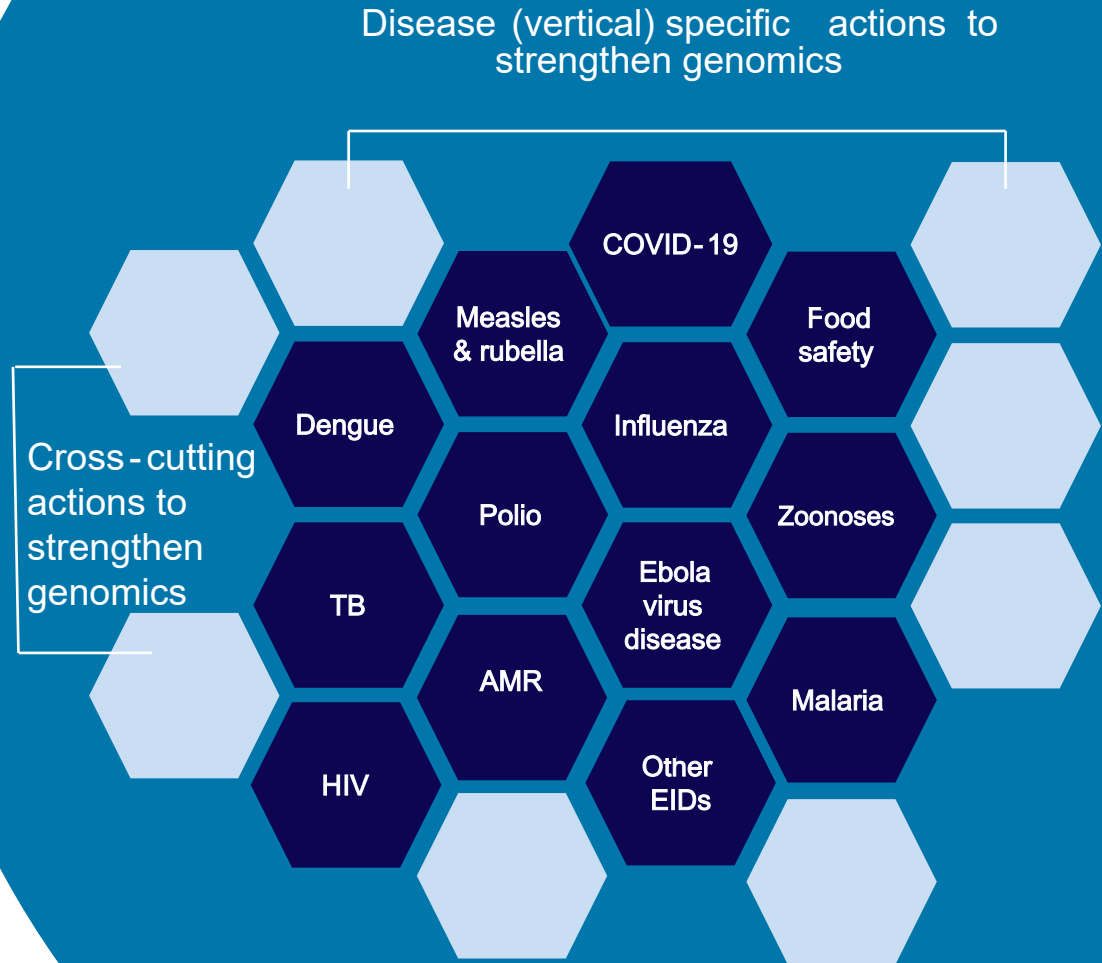
# From strategy to implementation



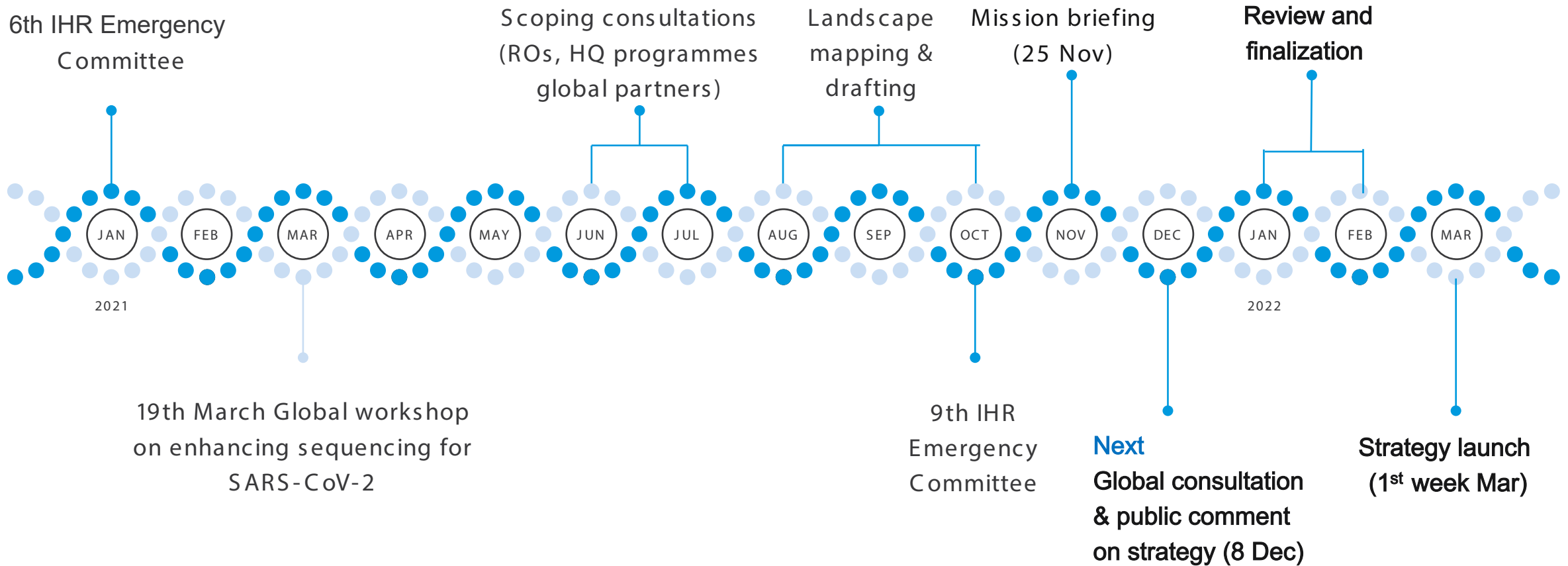
## Cross-cutting approach



Strategy encourages countries to strengthen cross-cutting genomic surveillance capacities to support all vertical priority disease 'use cases.'



# Strategy development – 2021/22





**Providing quality molecular epidemiology intelligence for use by country , regional and global stakeholders**

*Better Data. Better Analytics. Better Decisions.*

# Request for engagement

## 1. Encourage stakeholder participation in global strategy development:

- Join global consultation (8 Dec)
- Submit online feedback on consultation draft of the strategy (1 - 15 Dec)

## 2. Consider role of genomic surveillance in country preparedness & response:

- Review within national strategies
- Strengthen capacities: work plan with WHO Country Office (e.g. GPW13 Output 2.2.1)

## 3. Support global and other country efforts using existing strengths:

- Address acute SARS - CoV-2 needs for timely geographically representative data availability
- Engage in strategy roll out



# Thank you

For more information or to engage in the strategy development, contact country or regional offices, or email [pathogenomics@who.int](mailto:pathogenomics@who.int)