Transformation of Global Healthcare Systems Towards Sustainable Health Resilience

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Framework For Health System Resilience

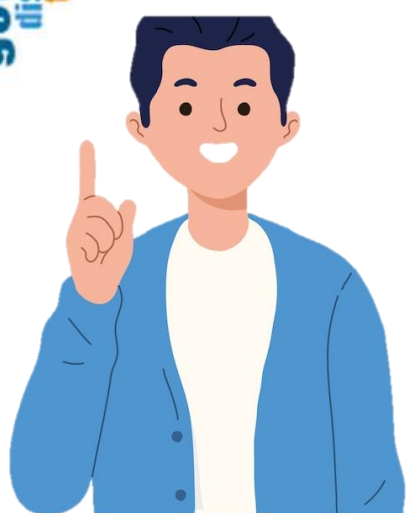


Figure:
Word Clouds of Key Challenges in the UK (Weimann & Weimann, 2022)

Resilience

Resilience is related to **processes and skills** that result in **good individual and community health outcomes** in spite of **negative events, serious threats and hazards.** (WHO, 2017)

https://newsinhealth.nih.gov/2022/04/nurture-your-resilience

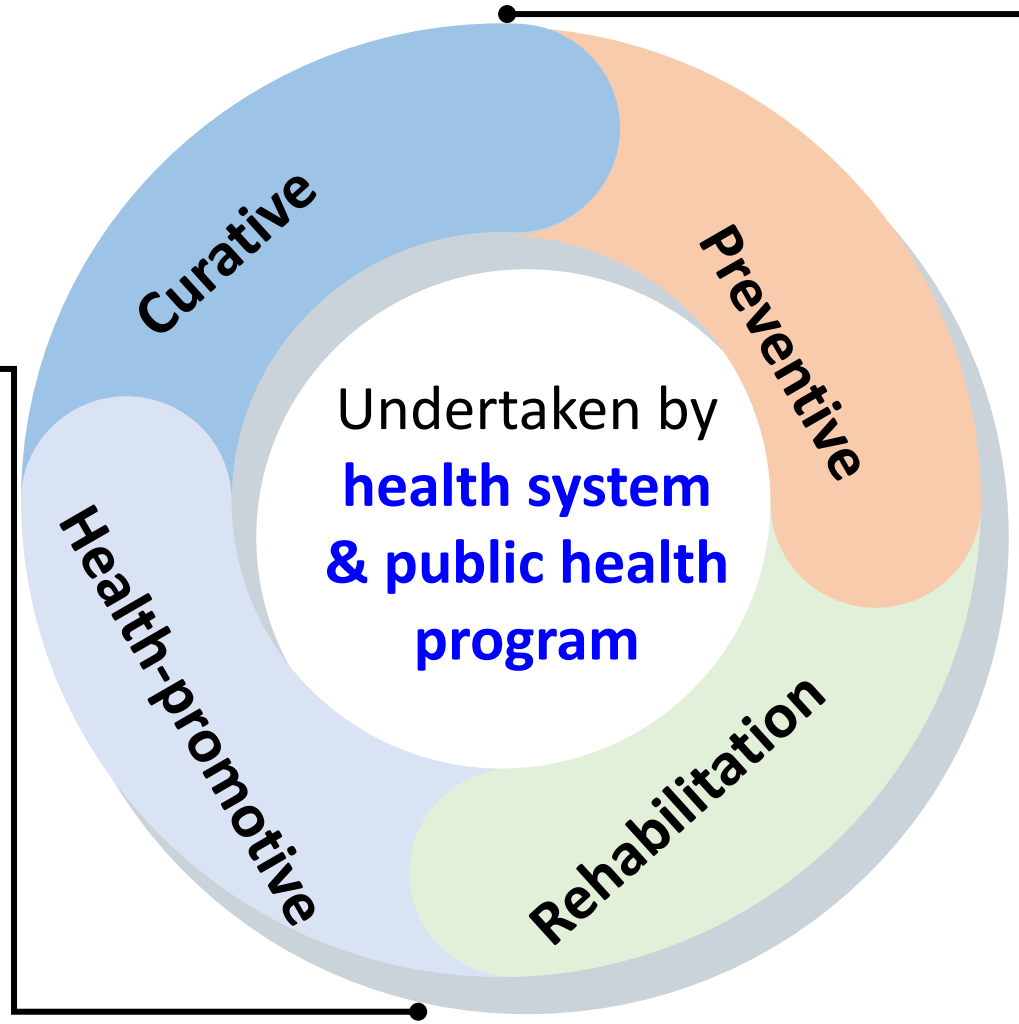
Importance of Resilience in SDGs

Resilience is a key factor in the SDGs and a central mechanism for making progress in pursuing the sustainable development agenda (WHO, 2017).

https://www.freepik.com/free-photo/front-view-hand-with-ecnomy-concept_8356828.htm

Role of public health program in building resilience

Strengthening resilience forms part of effective practices in:

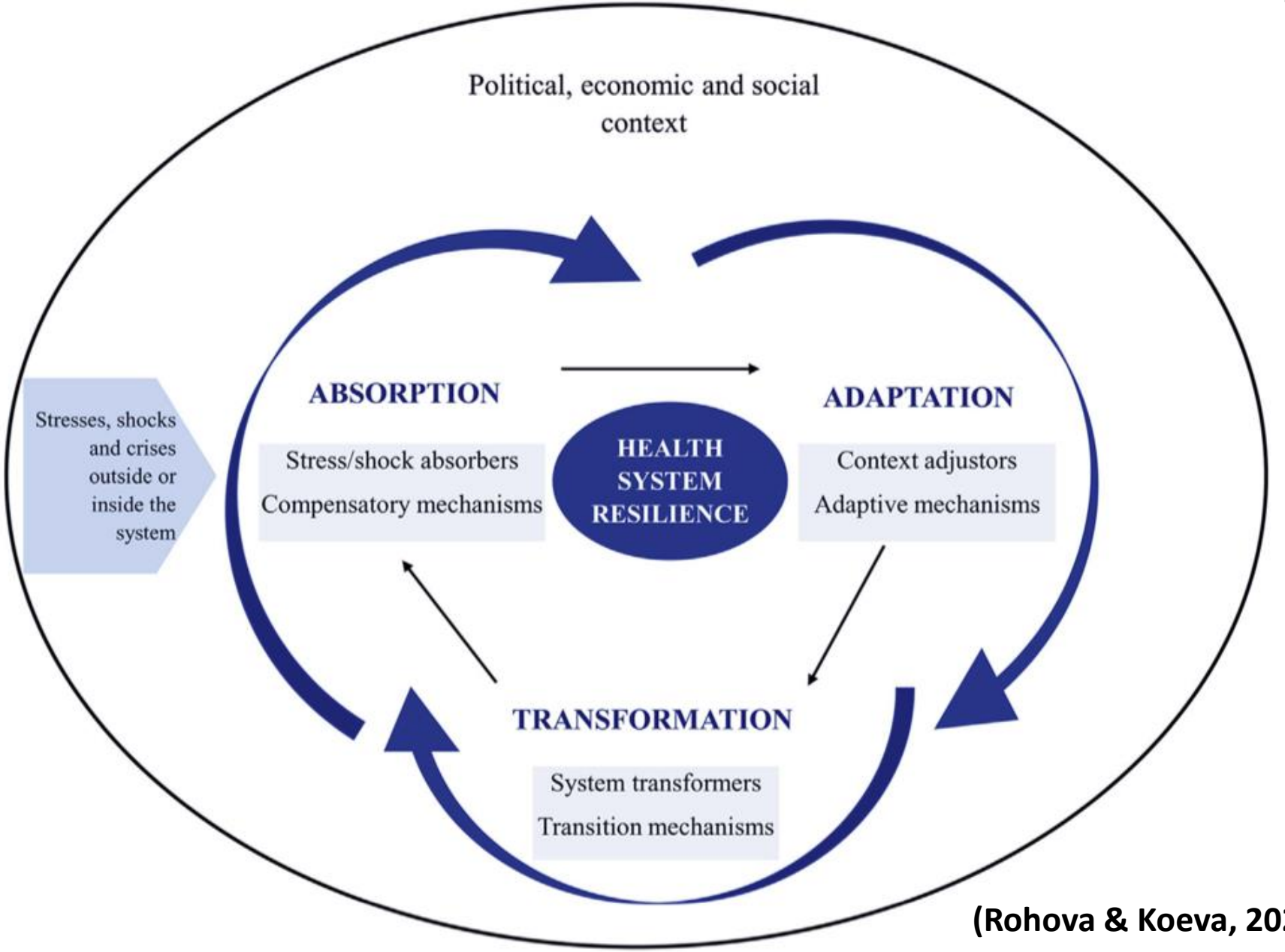


Augmenting people's control over their lives and destinies is perhaps the most important impact that health systems and public health can have in strengthening resilience. This is crucial for effective :

- Prevention
- Rehabilitation
- Healing Process

(WHO, 2017)

Framework For Health System Resilience



(Rohova & Koeva, 2021)

Framework For Health System Resilience

Resilience is commonly understood to be the capacity to recover quickly from difficulties (toughness) or, in reference to materials, the ability of a substance or object to spring back into shape (elasticity)

https://www.freepik.com/free-vector/resilience-concept-illustration_44955469.htm

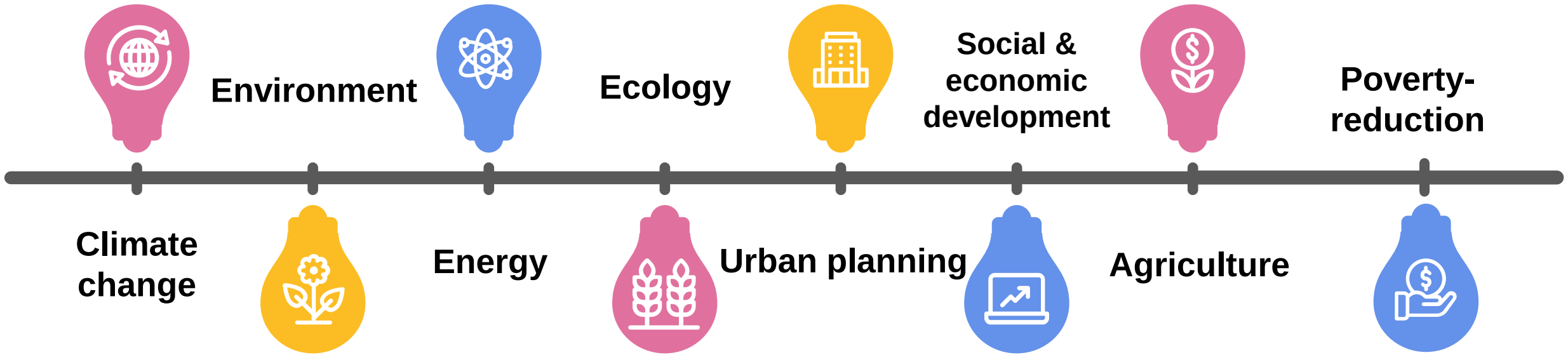
The application of the concept of resilience is far from **new and relates to multiple areas**, ranging from **physics to human psychology**.

Over the **past two decades**, the concept has become relevant and more researched in relation to **societal response to health emergencies and major societal shocks**

(Thomas et al., 2020)

Importance of resilience in other policy sectors beyond health

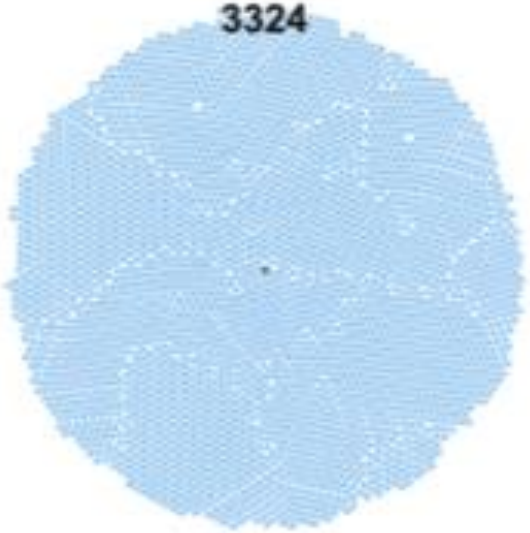
Resilience frameworks are important and increasingly used in various policy sectors; in particular field:



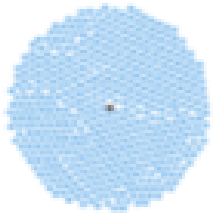
(WHO, 2017)

Doctor : Patient Ratio

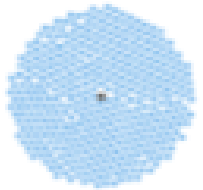
Africa:
3324



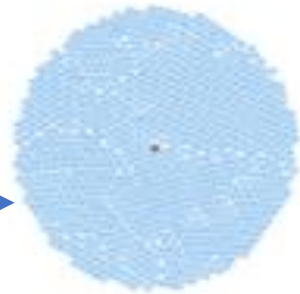
Western Pacific:
533



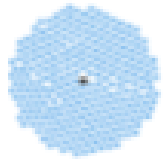
Americas:
417



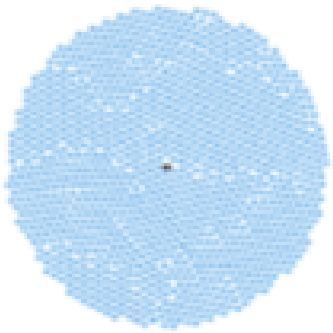
Eastern Mediterranean:
989



Europe:
293



South-East Asia:
1239



Each dot represents one person

(Zhang et al., 2020)

https://www.freepik.com/free-vector/medical-health-professionals-amid-coronavirus-outbreak-vector_34380886.htm

Most common negative events, serious threats and hazards

Disaster

Disaster

- **A disaster** is a **sudden, calamitous event** that **seriously disrupts the functioning** of a **community or society** and causes **human, material, and economic or environmental losses** that **exceed the community's or society's ability to cope using its own resources**.

- Though often caused by nature, disasters can have human origins.

https://www.ifrc.org/our-work/disasters-climate-and-crises/what-disaster

Types of disasters: Definition of hazard

- **Natural hazards** are naturally occurring physical phenomena caused either by rapid or slow onset:
  - **geophysical** (earthquakes, landslides, tsunamis and volcanic activity),
  - **hydrological** (avalanches and floods),
  - **climatological** (extreme temperatures, drought and wildfires), meteorological (cyclones and storms/wave surges)
  - **biological** (disease epidemics and insect/animal plagues).

https://www.ifrc.org/our-work/disasters-climate-and-crises/what-disaster

Types of disasters: Definition of hazard

- **Technological** or **man-made hazards**

➢ **Complex emergencies /conflicts, famine, displaced populations, industrial accidents and transport accidents**

➢ Are events that are **caused by humans** and occur in or close to human settlements.

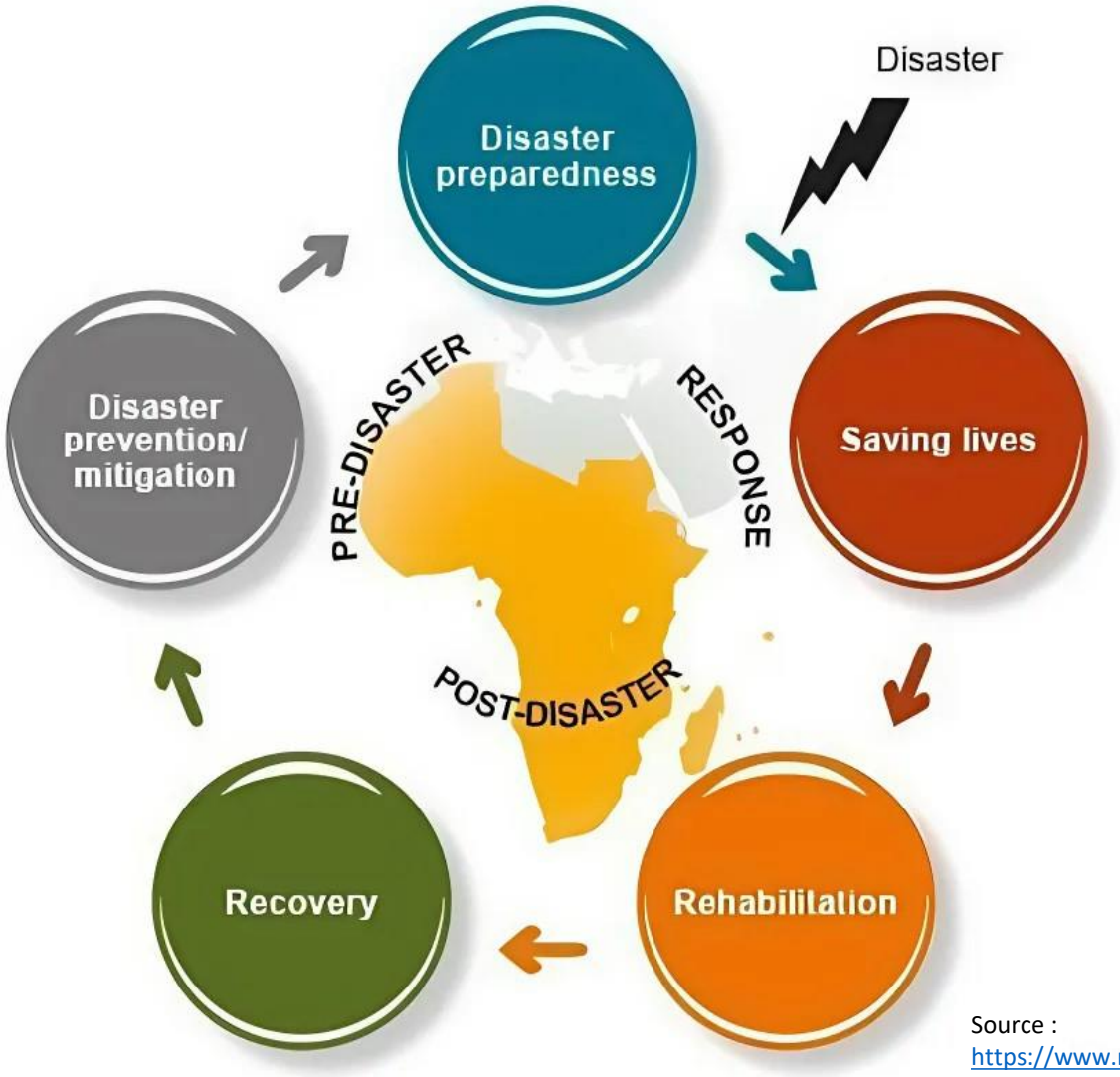
➢ This can include **environmental degradation, pollution and accidents.**

https://www.ifrc.org/our-work/disasters-climate-and-crises/what-disaster

Four Disaster Paradigm

Disaster Narrative	Security is about	Security referent
Hazard	Reducing probability	Infrastructure
Risk	Reducing probability X impact	Floodplain/Polder
Vulnerability	Reducing probability X impact X Vulnerability & increasing Capacity	Community/Groups
Resilience	Increasing adaptivity/ Resilience	Systems

Disaster risk management cycle: WHO/AFRO



Source : https://www.researchgate.net/publication/332846829_Technologies_in_Disaster_Risk_Management?_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6Il9kaXJlY3QiLCJwYWdlIjoiX2RpcmVjdCJ9fQ

Resilience as a dynamic objective for health system strengthening in the State of Health (Thomas, et.al 2020)

Ensuring long-term stability of resources

The capacity to protect or generate the necessary and adequate financial resources, as well as physical, human and information (knowledge) resources to address any upcoming major challenges, such as economic or fiscal crises, public health crises, demographic changes or new technologies.

Responding efficiently

The ability to manage the health system with limited resources, through achieving efficiencies, while not sacrificing key priorities, benefits, access or entitlements

The presence of sufficient resources is necessary, but a health system that is able to withstand shocks to supply or demand must be able to best use the resources it has available.

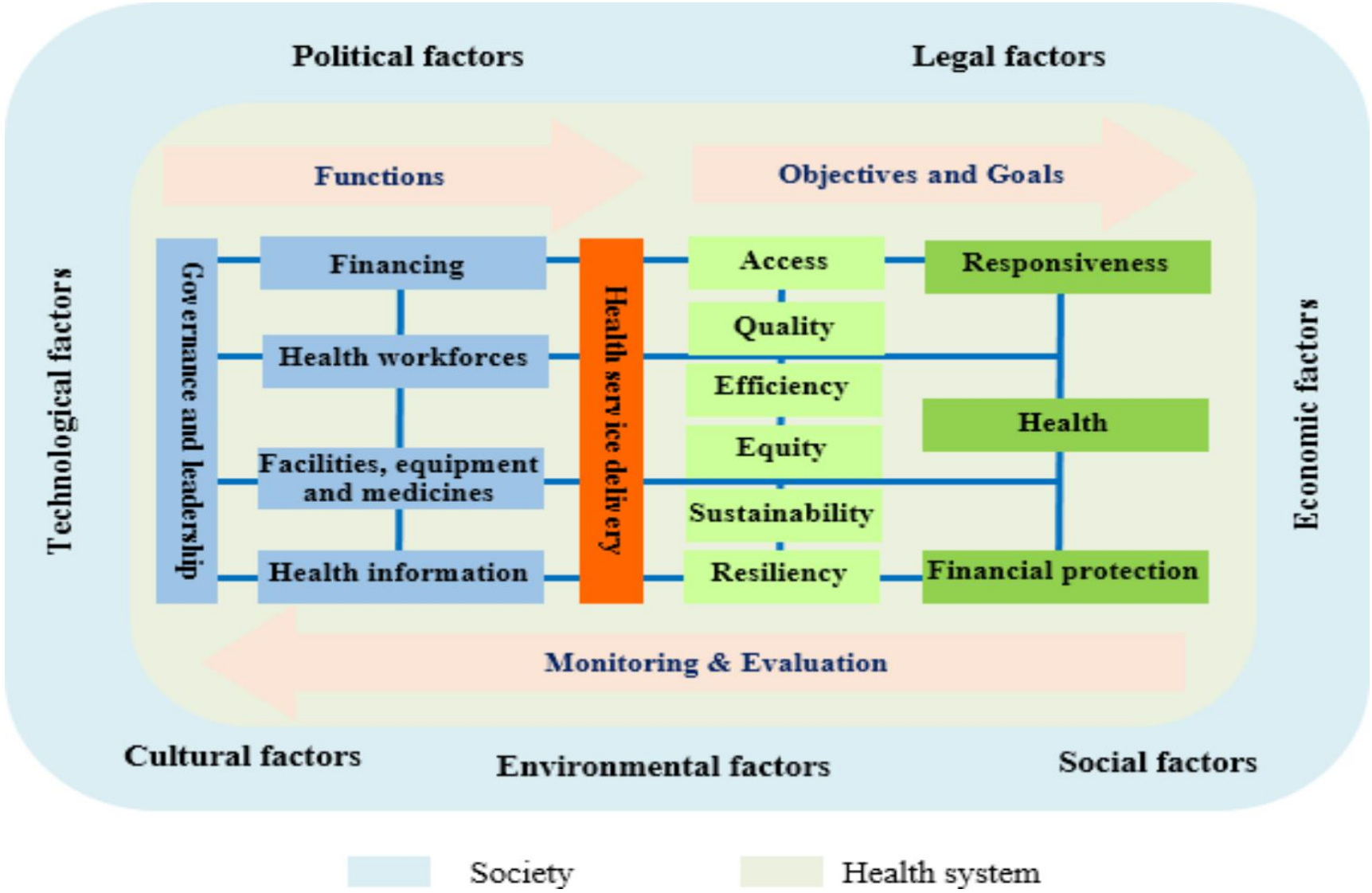
This: **Resilient Health System**

Strengthening governance

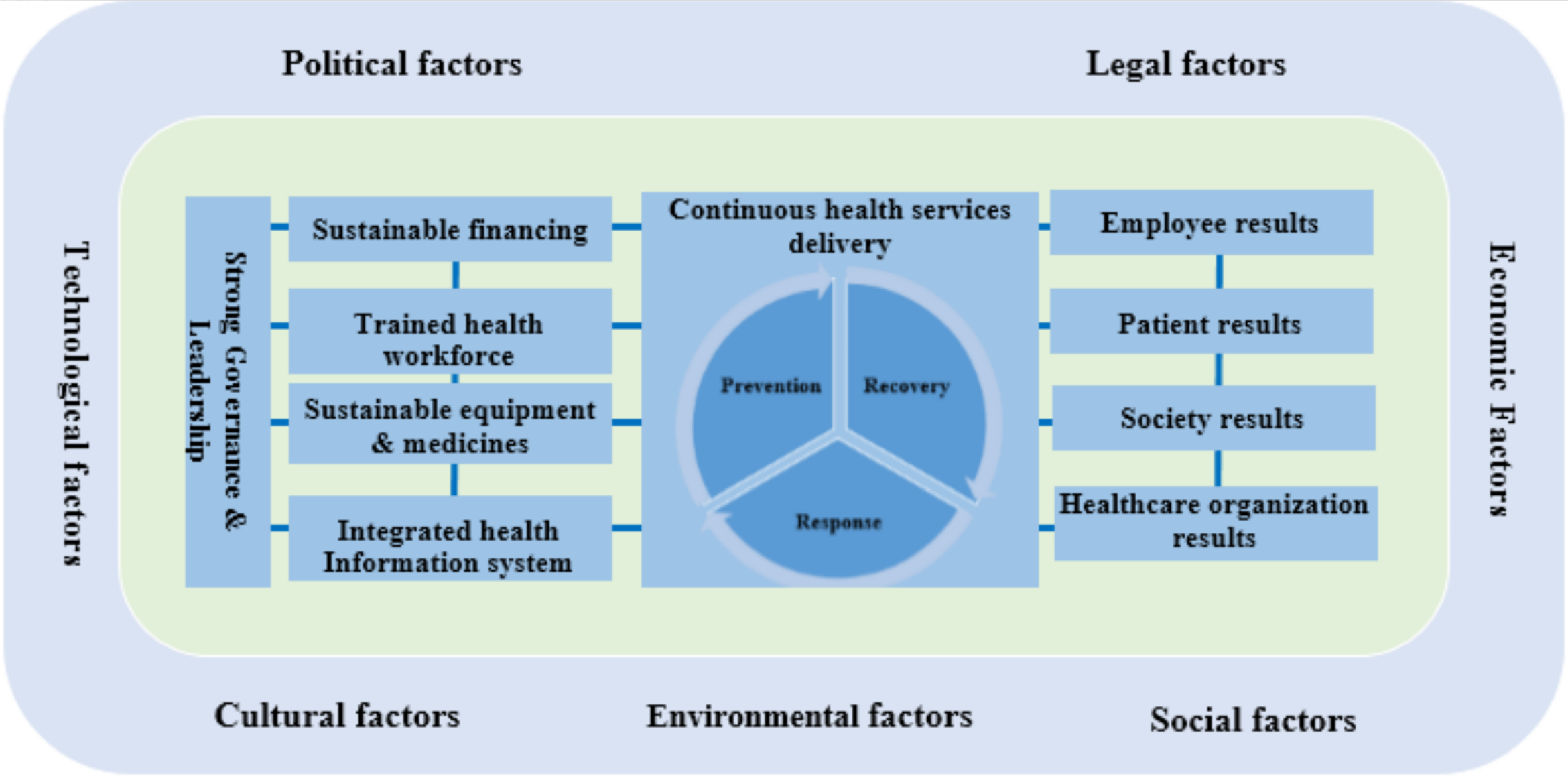
The capacity to steer the system in order to adapt it quickly to new objectives and priorities, and to respond to major challenges through key governance tools:

- Ability to formulate long-term health strategy
- Ensure accountability
- transparency and stakeholder involvement
- As well as use evidence for monitoring and performance evaluation

A conceptual model for health system management



Conceptual model of a resilient health system to climate change



(Mosadeghrad et al., 2023)

Health System Response

THREATS…

To health

- Ecological (ecosystem harm, climate change)
- Socio-economic inequalities

To health System

- Capacity to function (workforce, medical supply, infrastructure)
- Shift in disease pattern

HEALTH SYSTEM RESPONSES

Adapt

- **Identify and adapt to shifting risk**
- **Prioritize resilience and social responsibility in health performance**

Build Resilience

Mitigate

- **Reduce emission without reducing quality**
- **Drive the development and adoption of low carbon tech and practices**

Build Health

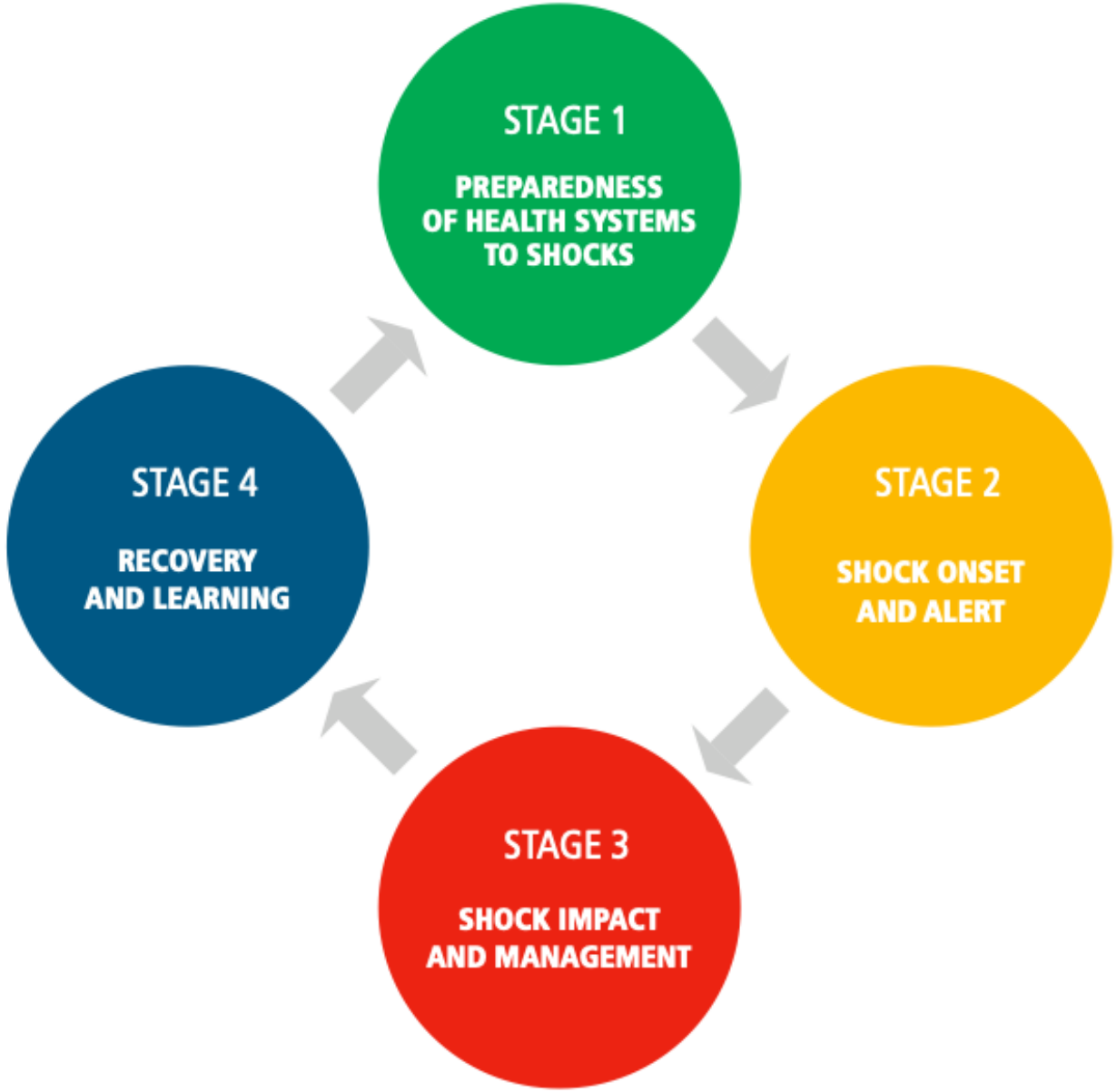
Lead

- **Partner with client communities and healthcare workforce in low carbon care**
- **Build cross-sectoral partnerships and advocate for change**

Build Capacity

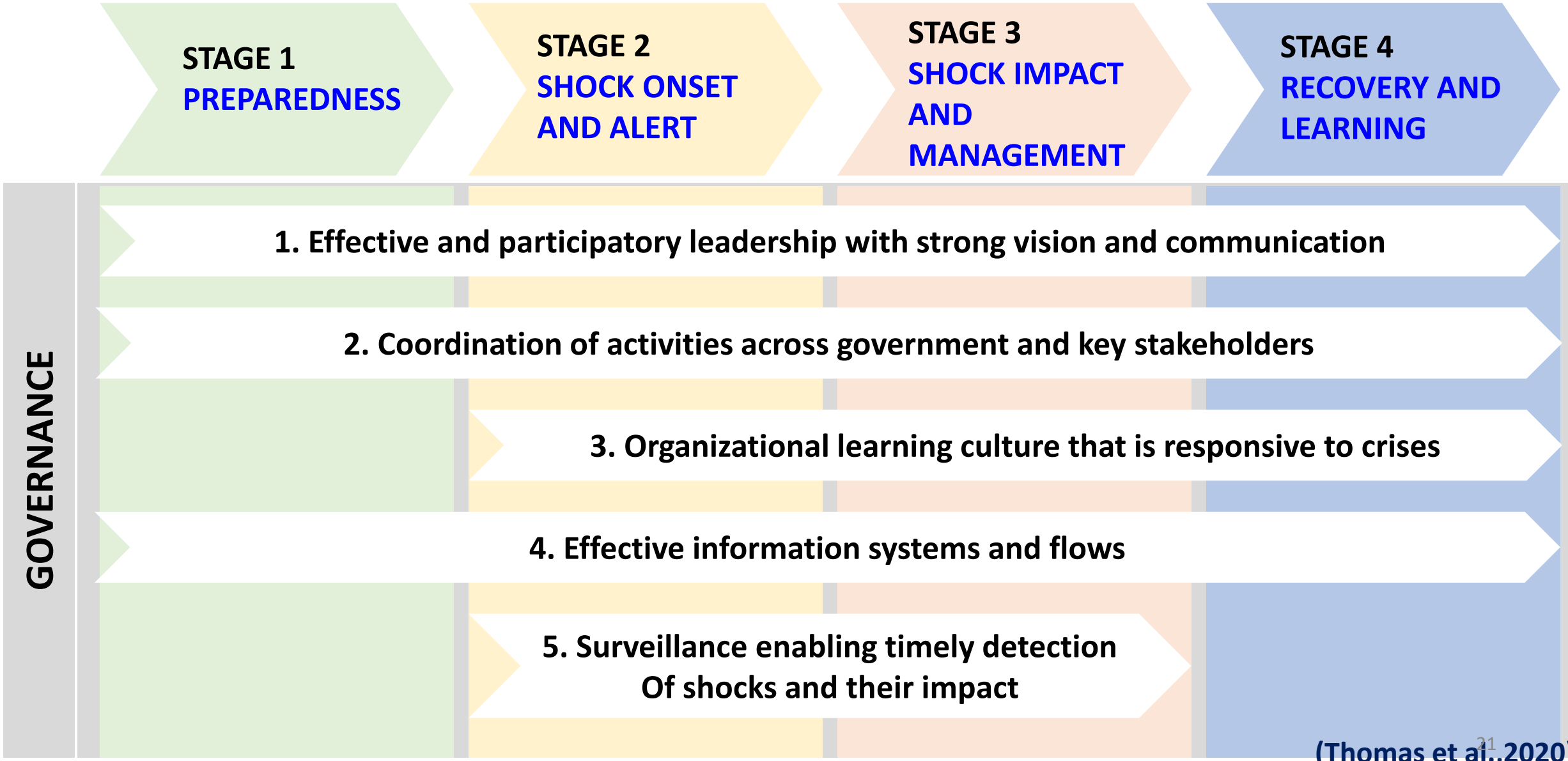
(Miller & Xie, 2020)

Resilience at different stages of the shock cycle



(Thomas et al., 2020)

Strategies to Strengthen Resilience by Health System Function and Stage in The Shock Cycle



(Thomas et al.,2020)

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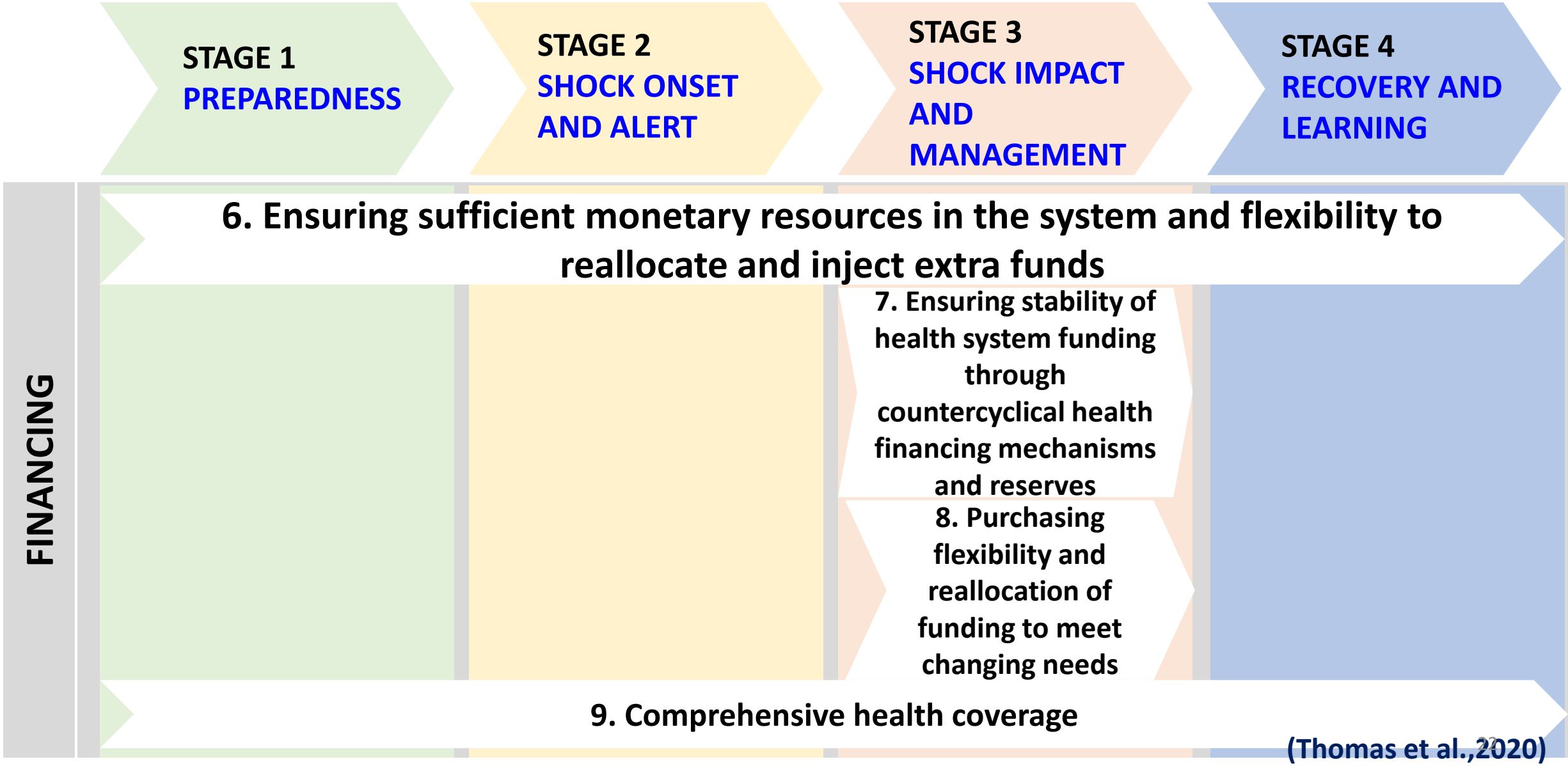

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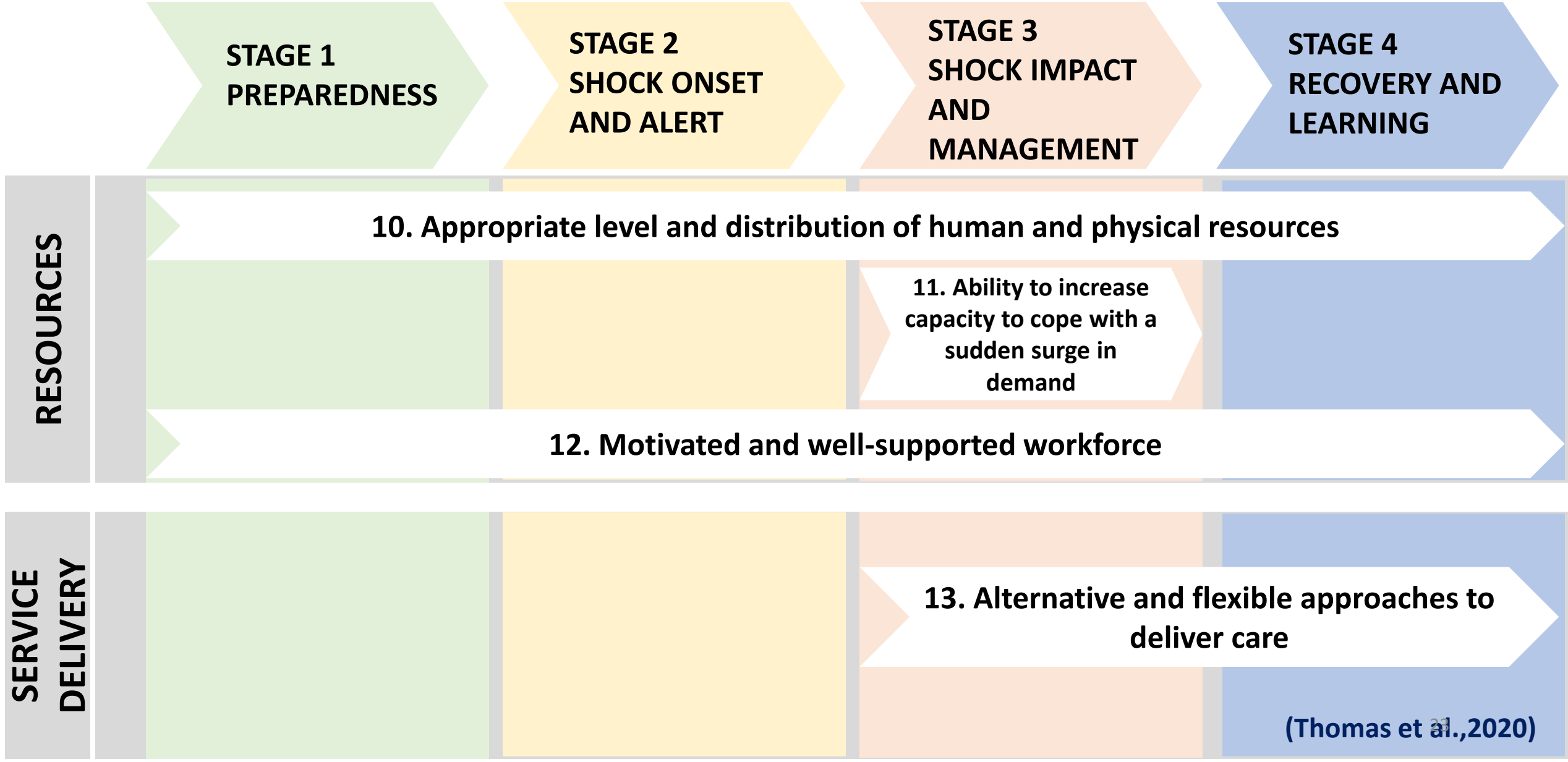
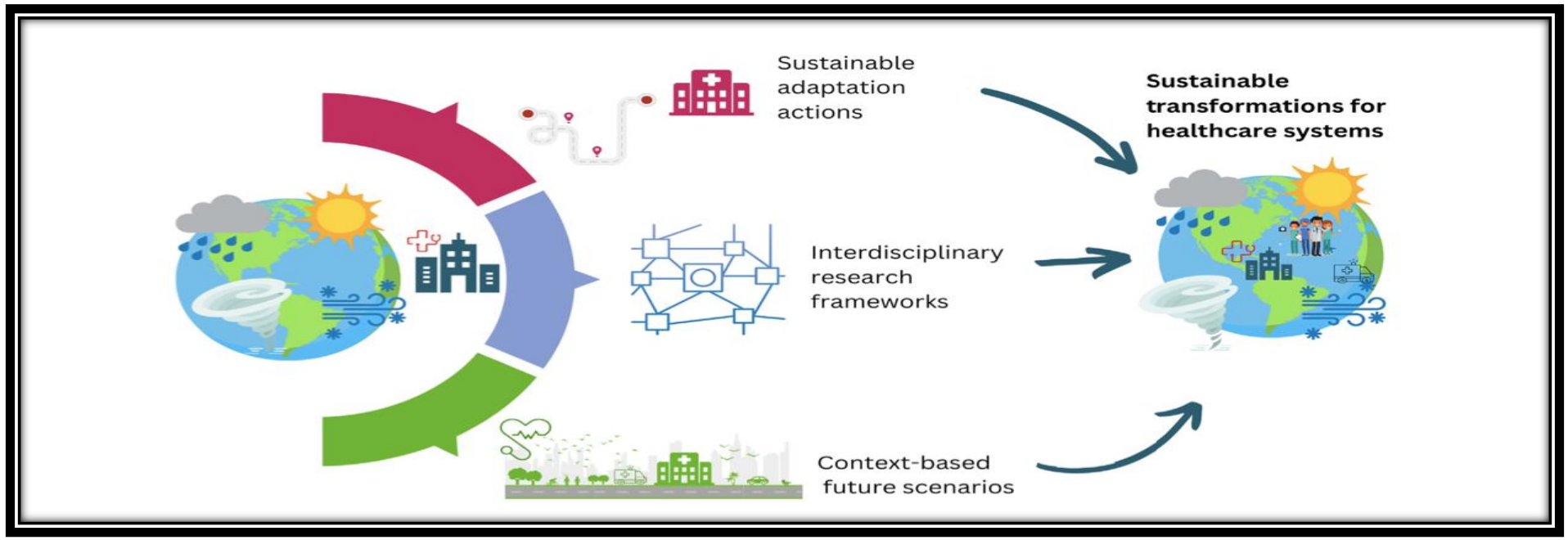


(Thomas et al.,2020)

Sustainable Transformations for Healthcare System in Changing Climate

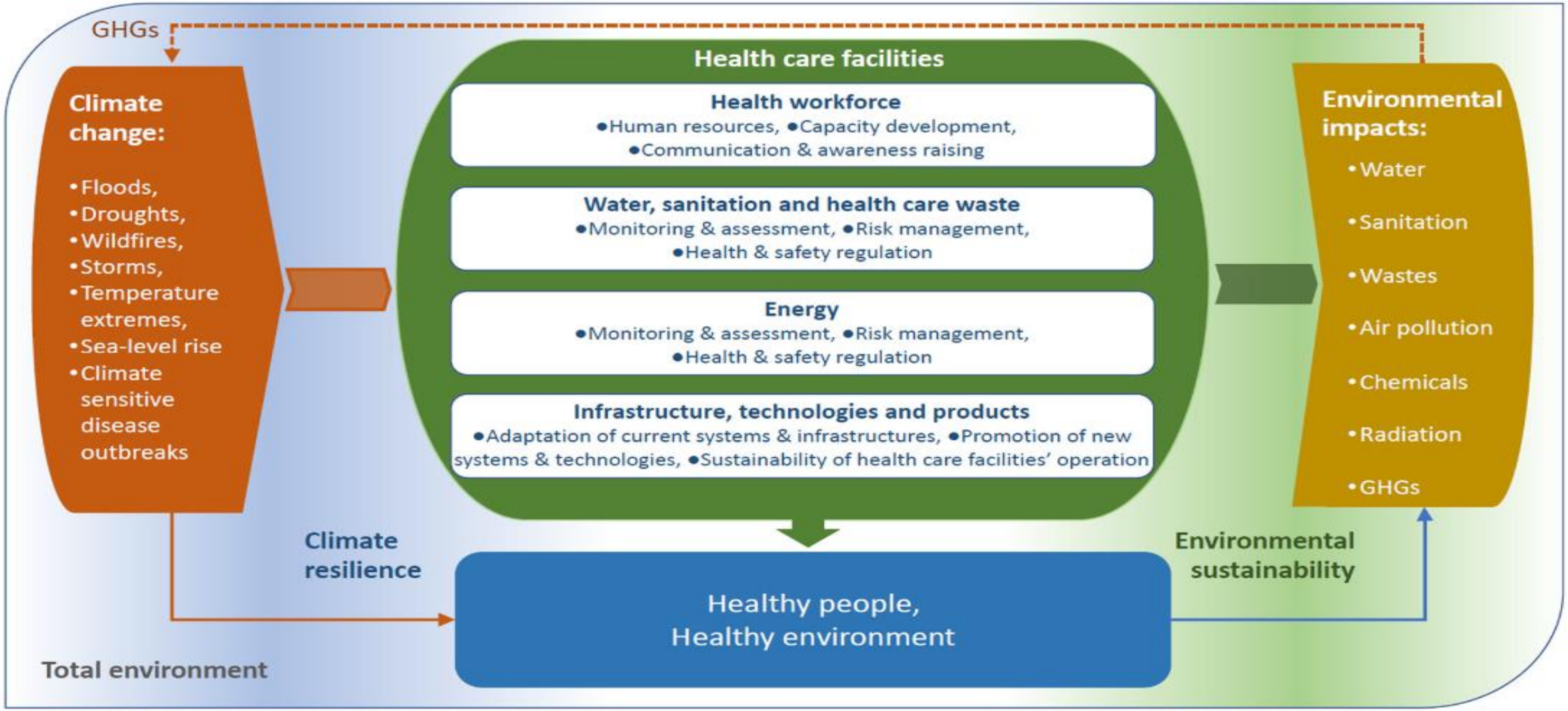


Scholars across medical, social and natural science can contribute to address this challenge developing

(1) sustainable adaptation actions, (2) interdisciplinary research frameworks, (3) context-based future scenarios.

(Raffetti et al., 2024)

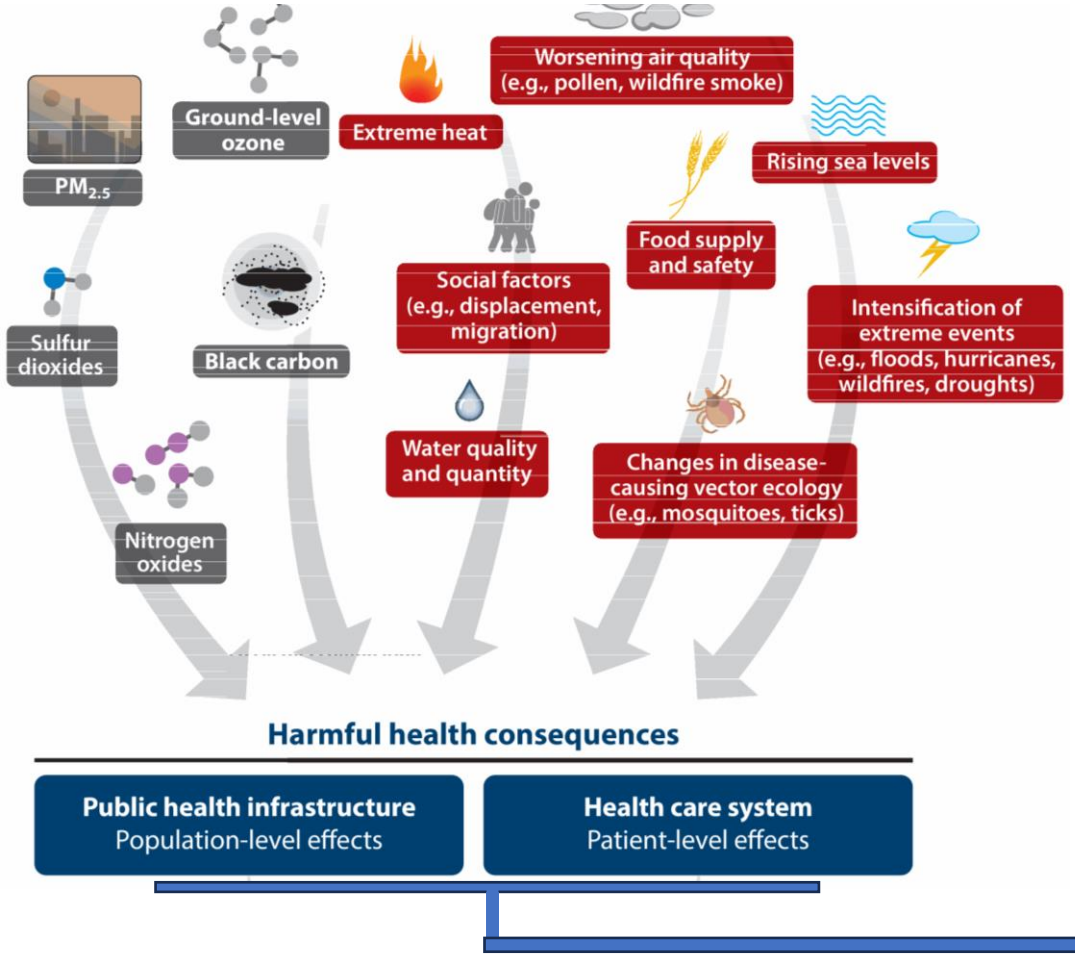
Framework for Building Climate Resilient and Environmentally Sustainable Health Care Facilities



(Corvalan Et Al., 2020)

Sustainable & Resilient Healthcare in The Face of Changing Climate

1. CLIMATE IS CHANGING HEALTH AND CARE NEEDS



Decreased health care access

- Health care infrastructure damage and closure
- Mismatch of number and geographic location of health professionals

Higher health care costs

- Increased illness
- Higher utilization
- Shifts in financial burdens between health care facilities, payers, patients

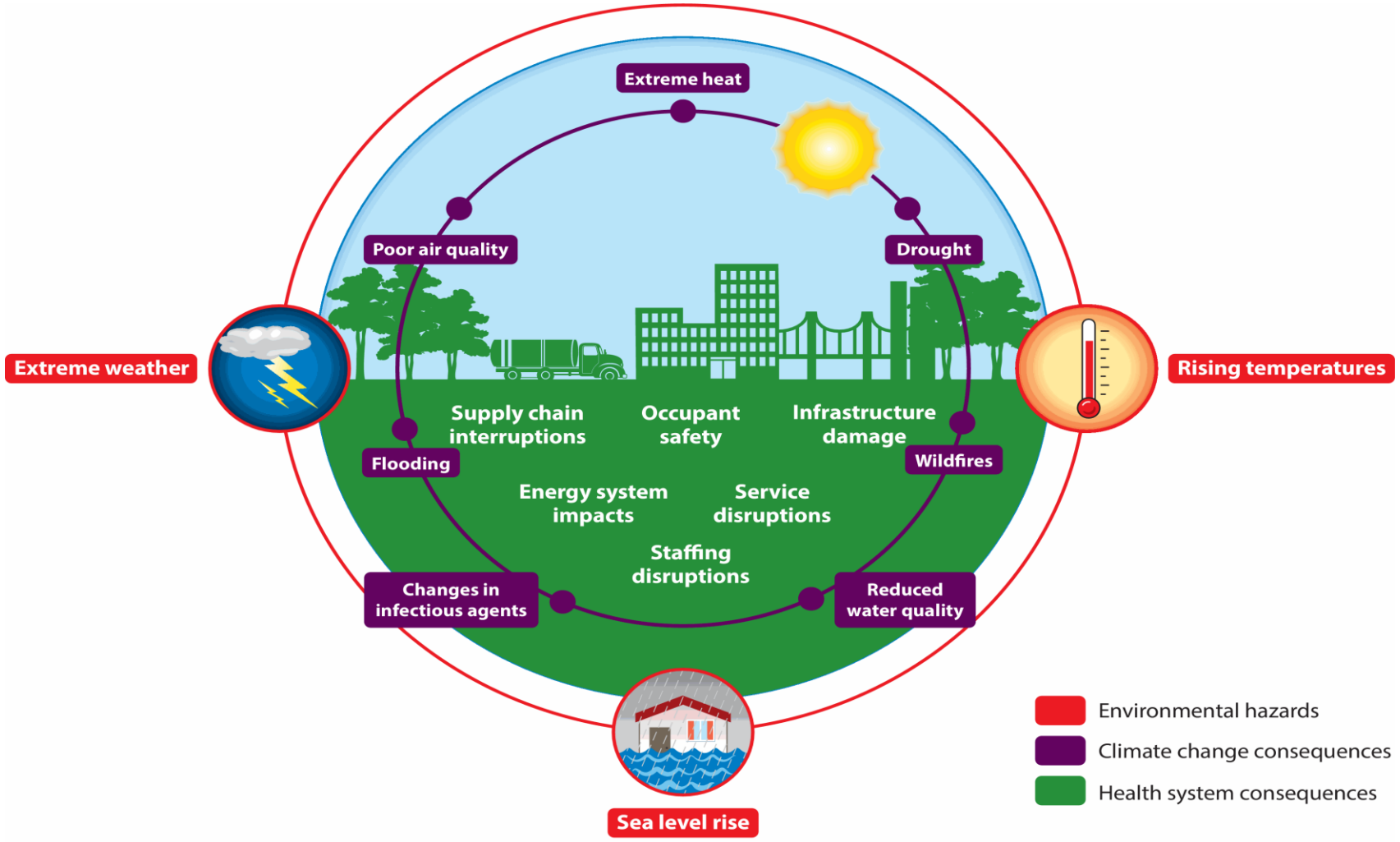
Lower health care quality

- Rising emergency department and hospital overcrowding
- Disruptions to health care delivery
- Care challenges for displaced populations

Worse health outcomes and decreased health equity

(Sherman et al.,2024)

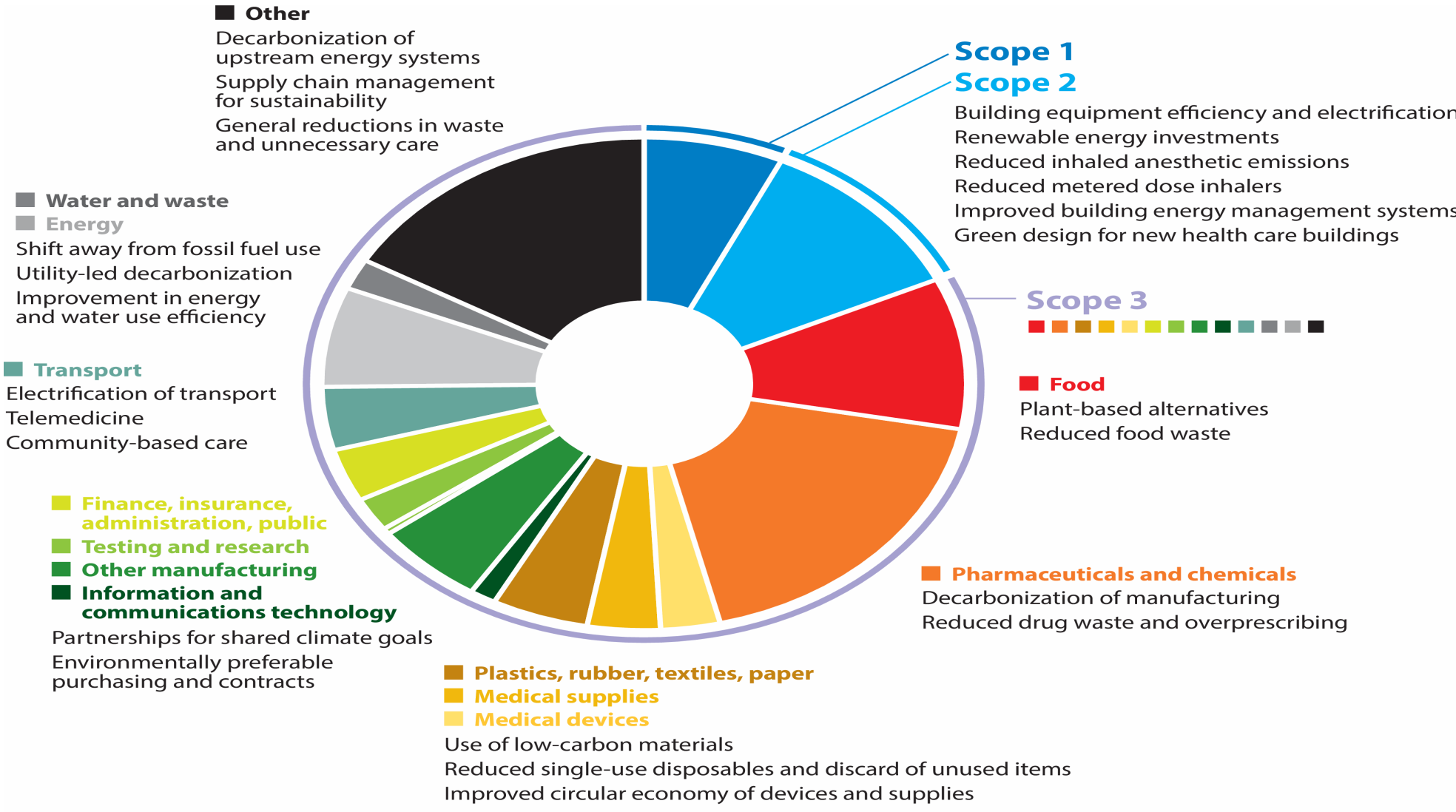
2. Health System Emergency Preparedness in A Changing Climate

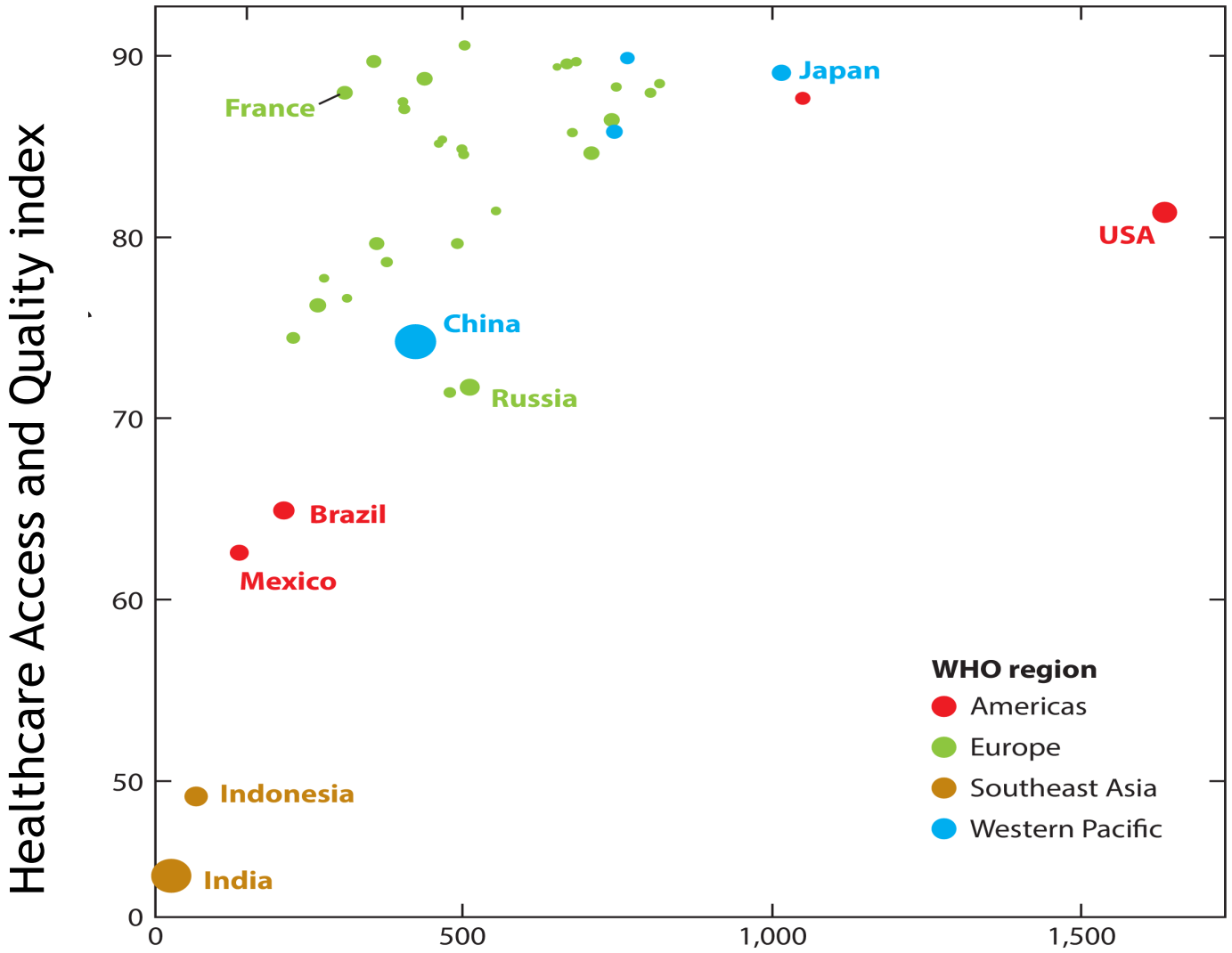


Climate impacts on health and health systems, including altered disease burden and structural risks.
(Sherman et al., 2024)

Health Care Emissions Sources and Potential Interventions

(Sherman et al.,2024)





Per capita health care greenhouse gas emissions in 2017 versus national Healthcare Access and Quality Index.

Abbreviation:
kgCO2e, kilograms of carbon dioxide equivalent.
(Sherman et al., 2024)

The Health System as an Adaptive Complex System, and its Interdependencies to Other Systems,
Grey Boxes Indicate Shocks or Stress to Health System (Copeland et al.,2023)

- State & Government
- National health Authorities
- NGOs
- Private Sector

Governance Networks

Sociao-Economic System

- Communities
- Economic Stresses & Shock

- Build Environment
- Transport & Logistics
- Energy
- Water, Sanitation, Hygiene

Infrastructure

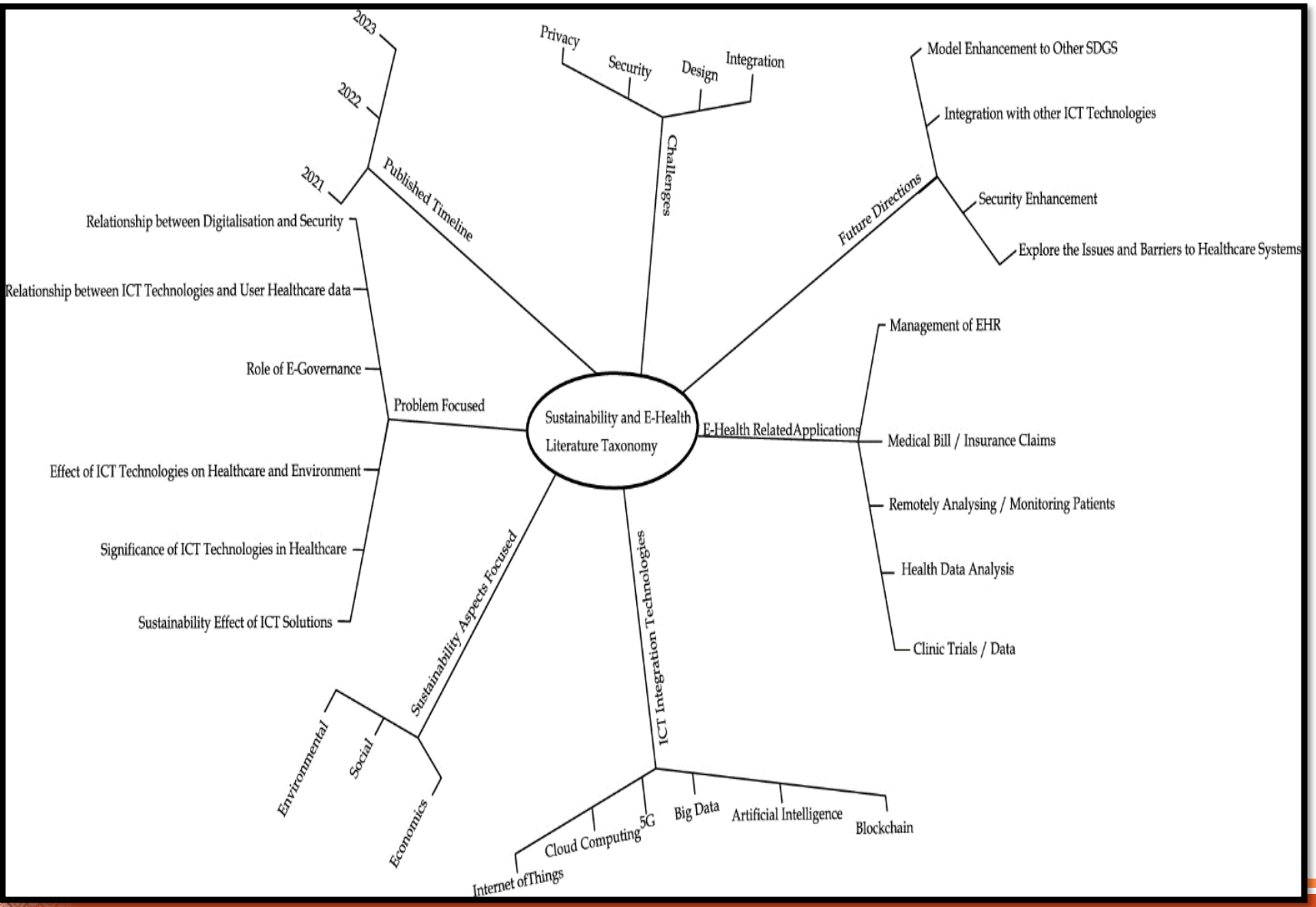
Socio-Environmental System

- Sudden Onset Disaster
- Slow Onset Disaster
- Loss of Biodiversity

- Public Health Authorities
- Secondary & Specialty Care
- Primary Care
- Community Actors

Healthcare System

Digital Transformation in Healthcare

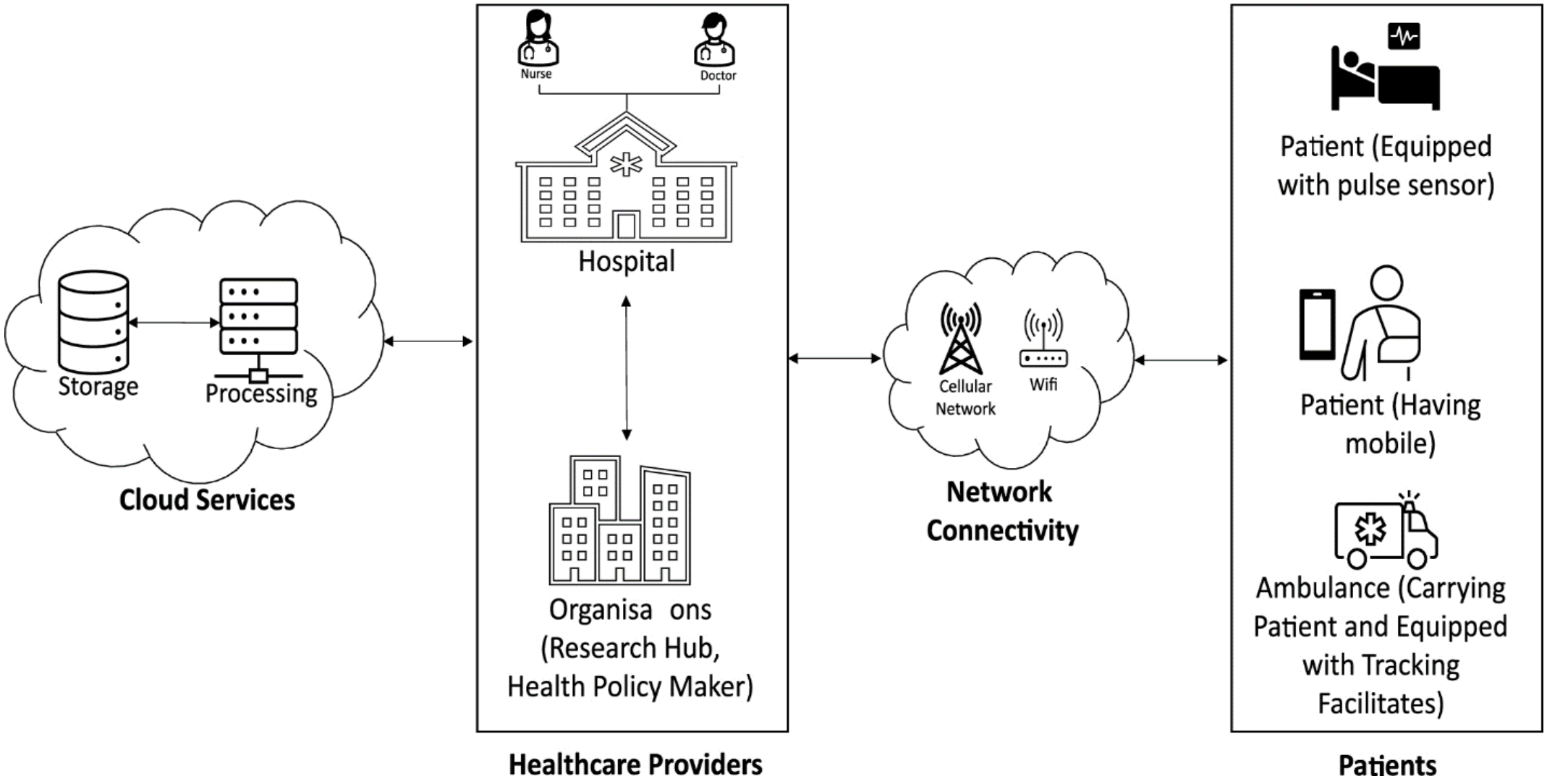


Taxonomy of **digitalization and sustainability perspectives** based on the

- published timeline,
- problem focused,
- sustainability focused,
- ICT integration
- technologies,
- challenges,
- applications, and
- future directions

(Hameed et al., 2024)

E-Health Architecture (Hamed et al.,2024)



Steps for a Successful Digital Transformation Implementation (Sepetis, et al.,2024)

1. Determine Digital Trigger

Knowledge in tirggers' & inducers's type

2. Determine Digital Drivers

Determine of digital technologies to leverage, skill and capabilities required, other resource impacting required and Demonstration of strong digital leadership traits

3. Establish Digital Driver

Establishment of digital innovation fuctional structure and Creation of digital innovation implementation structure

4. Determine Impact

Definition and Determination of expected customer, realized customer, expected organizational, realized organization on facing the impacts and measure of impact

5. Determine Transformed areas

Determination of transformation opportunities, Identication of target transforming areas, Building digital transformation initiatives

6. Develop Digital Vision

Perform digital present awareness, Formualtion of digital future, Development of specific digital survey and Establishment of a digital communication strategy

7. Cultivate digital culture

Ensure shared conceptualization of digital transformation, Exibit strong organizational leadership traits, Adopts good governance practices

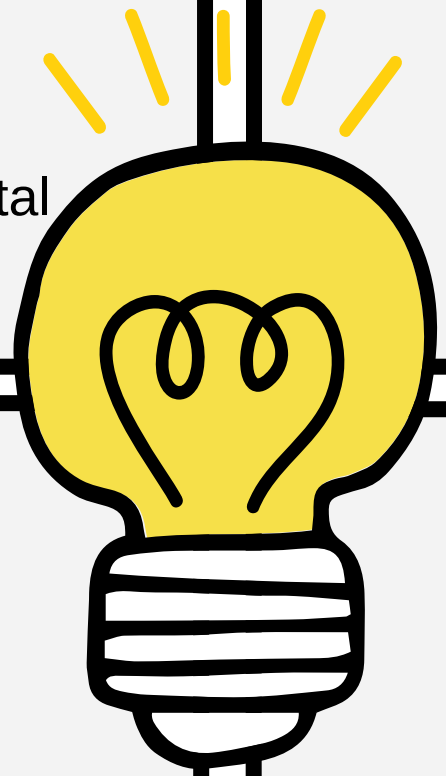
Factors for Digital Transformation (Sepetis, et al, 2024)

Succes factors

- Supportive culture
- Well-manage transformation activities
- Leverage knowledge
- Engagement
- Grow IS capabilities
- Develop dynamic capabilities & digital business strategy
- Align business and IS

Driver

- Customer behaviour and expectations
- Digital shifts in the industry
- Changing competitive lanscape
- Regulative changes



Objective

- Ensure digital readiness
- Digitally enhance products
- Embrace product innovation
- Develop new bussiness models
- Improve digital channels
- Increase customer satisfaction and dialogue

Implications

- Reformed IS Organzation
- New business models
- Effects on outcome and performance

The Nature of Strategic Response, Determined by The Type and Severity of The Shock

01	Preparedness	Related to how vulnerable a system is to various disturbances
02	Shock onset & alert	The focus is on timely identification of the onset and type of the shock
03	Shock Impact & Management	The system absorbs the shock and, where necessary, adapts and transforms to ensure that health system goals are still achieved
04	Recovery & learning	The return to some kind of normality but there may still be changes as a legacy of the shock

The strategies for strengthening health system resilience or a resilient response to a shock

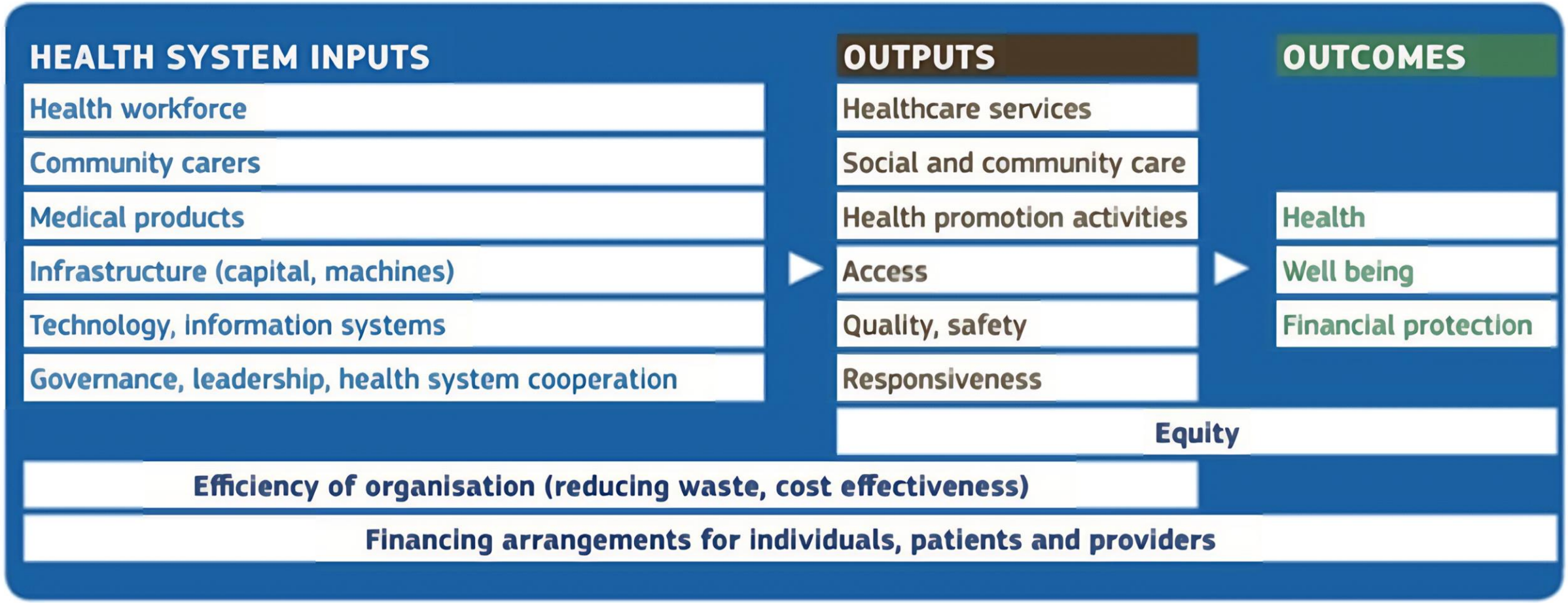
1. Effective and participatory leadership with a strong vision and communication
2. Coordination of activities across government and key stakeholders
3. Organizational learning culture that is responsive to crises
4. Effective information systems and flows
5. Surveillance enabling timely detection of shocks and their impact
6. Ensuring sufficient monetary resources in the system and flexibility to reallocate and inject extra funds
7. Ensuring stability of health system funding through countercyclical health financing mechanisms and reserves

(Thomas et al., 2020)

The strategies for strengthening health system resilience or a resilient response to a shock

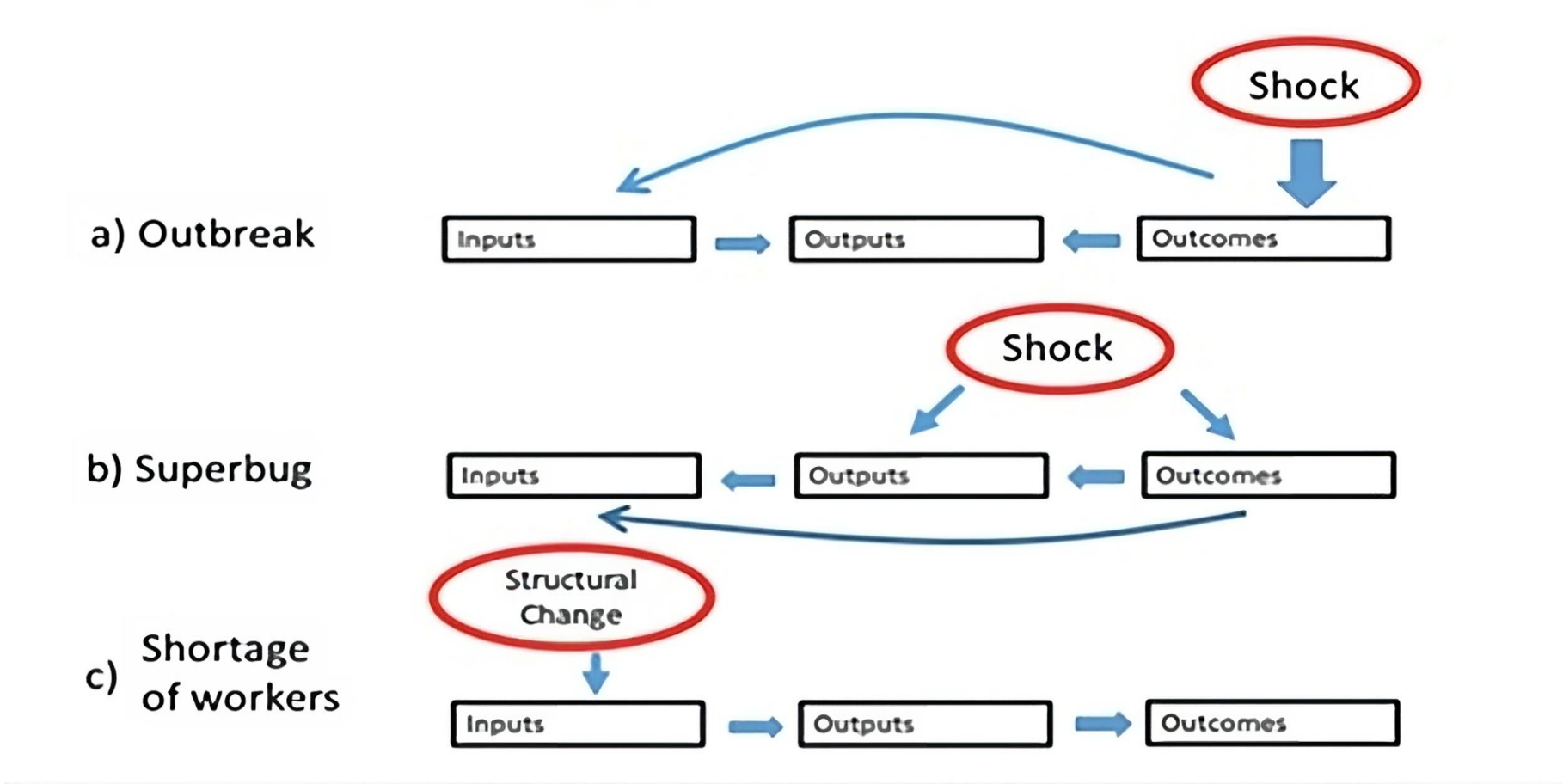
8. Purchasing flexibility and reallocation of funding to meet changing needs
9. Comprehensive health coverage
10. Appropriate level and distribution of human and physical resources
11. Ability to increase capacity to cope with a sudden surge in demand
12. Motivated and well-supported workforce
13. Alternative and flexible approaches to deliver care

Multi-dimensional Health and Social Care Systems (MHSCS) conceptual



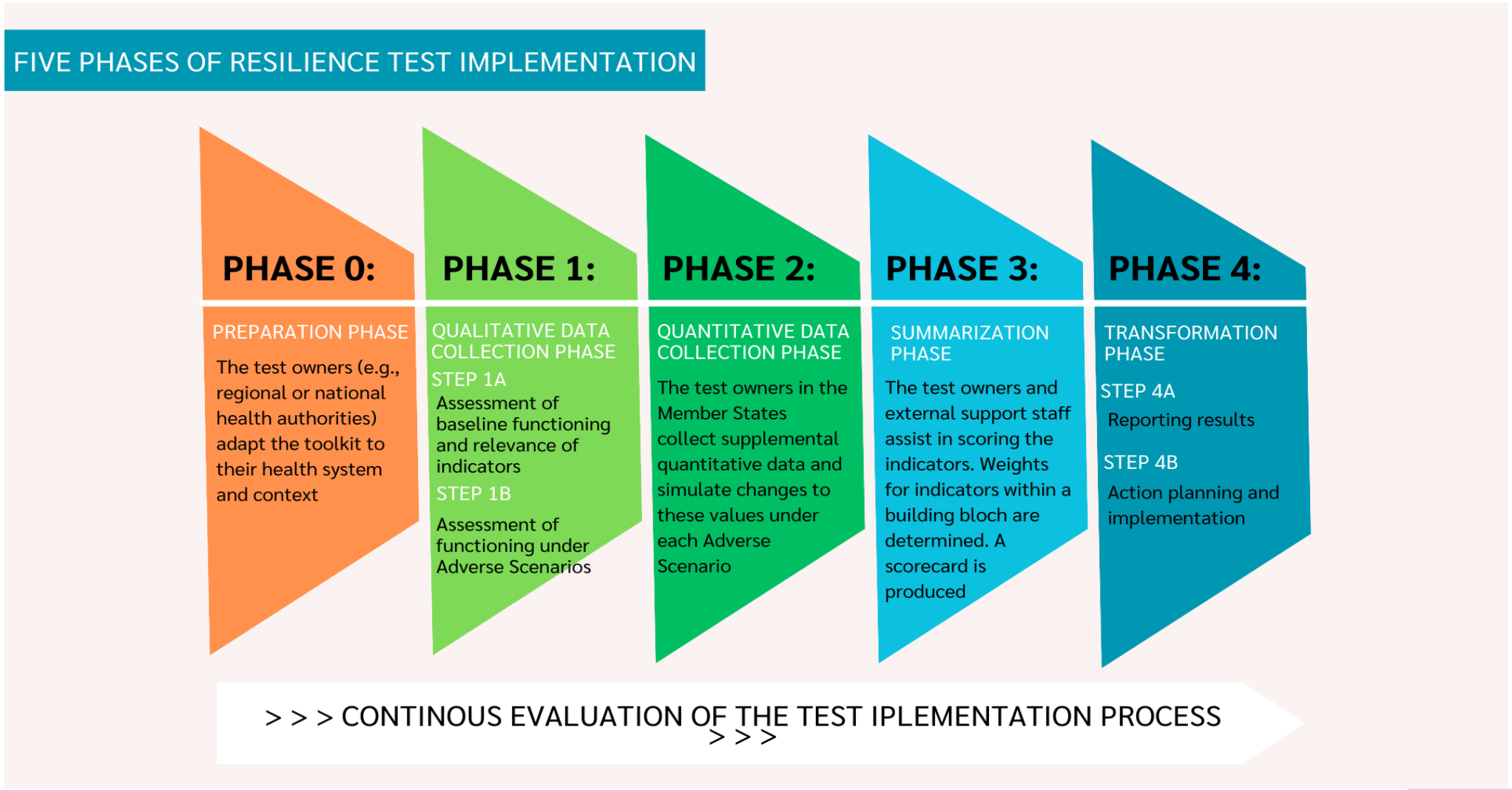
(Rogers et al., 2021)

Hypothetical responses of a health system to example shocks or structural changes labelled



(Rogers et al., 2021)

Five phases of resilience test implementation



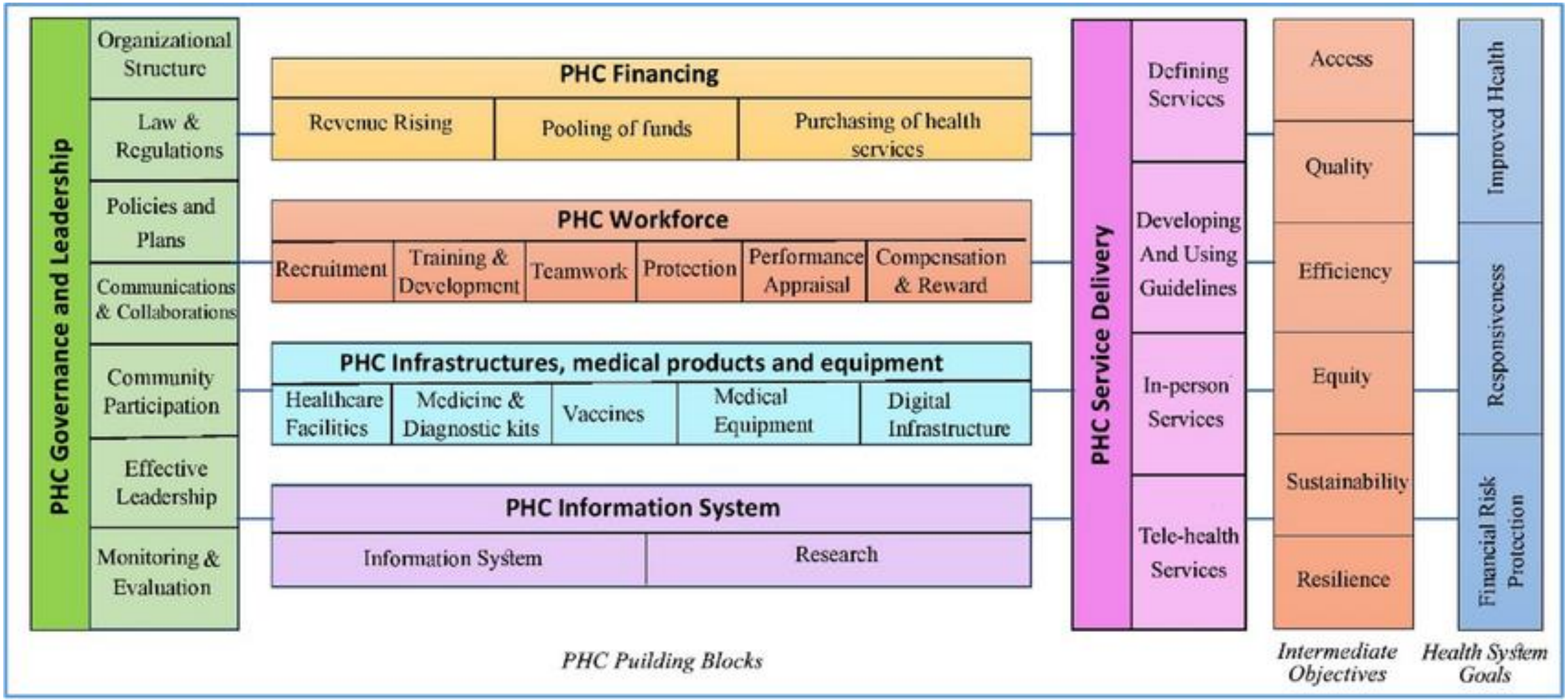
(Rogers et al., 2021)

Concern by specific stakeholder type as related to the super-bug ‘what if’ scenario to be used for further customization

Type of Stakeholder	Issues to Consider to Customize the Scenario for Certain Stakeholders
Hospital managers Senior clinicians	- Is it possible, given funding and capacity constraints, to interrupt activity for cleaning? - What are the consequences for different key stakeholder groups in the various scenarios? - Is there flexibility in finding alternative treatment settings, including use of ambulatory settings or primary care? - Is it necessary to implement new training for health workers or new processes, or do existing processes, such as cleaning, just need to be enforced? - What issues need to be considered regarding presentation of the situation to the public need?
Managers Clinicians Political decision makers Patient groups	- Might the closure of hospitals affect some groups more than others? - Which patient groups might be most affected? - What mitigating measures are needed?
Political decision makers Hospital managers Clinicians	- Should each hospital develop its own communication plan or should decisions be centralized in some way? - Who leads or coordinates efforts in this respect? - What information should be released to the public?

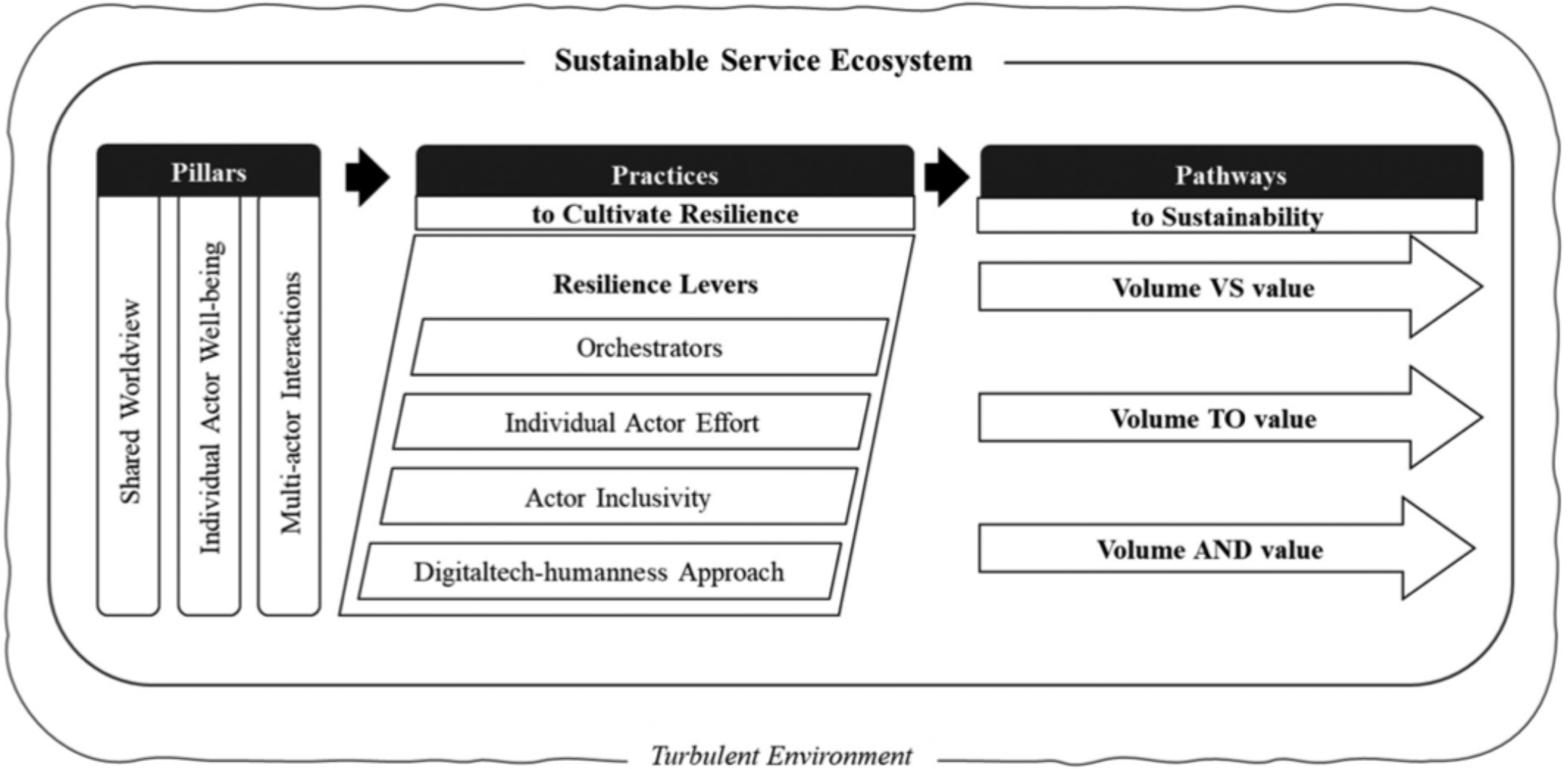
(Rogers et al., 2021)

A model for strengthening the resilience of the primary health care system



(Mosadeghrad et al., 2024)

Cultivating resilience for sustainable service ecosystems conceptual framework



(McColl-Kennedy et al., 2023)

Framework of strategies for managing the crisis

Segment	Strategies
Transformation	• Strengthening the primary care system • Strengthening community care systems • Formalizing the referral pathway
Absorption	• Restricting waste of existing resources • Reallocation of resources and utilization of existing resource • Adapting evidence-based policies • Securing resources
Resilience	• Interconnected institutions to share resources and work collectively during crisis • Multiskilled human resources pool or ability to shift skills • Policies to plan for future shocks • Reserve resources to counter shocks
Adaption	• Capacity building of workforce • Modifying guidelines • Revenue generation through public private partnership (PPP) and offering courses and services • Improving information systems

(Dissanayaka, 2023)

Recommendations for building resilience and seeking integration between promoting universal health coverage (UHC) and ensuring health security

01 **Recovery and transformation of national health systems through investment in the essential public health functions and the foundations of the health system, with a focus on primary healthcare and the incorporation of health security.**

02 **All-hazards emergency risk management, to ensure and accelerate the sustainable implementation of the International Health Regulations.**

03 **Whole-of-government approach to ensure community engagement and whole-of-society involvement.**

(Araja, 2022)

Recommendations emergent

Working multisectorally/intersectorally

- Ensure interventions are identified across sectors – not only the health sector
- Explore how to make the humanitarian-development nexus practical and implementable

Moving from fragmentation to integration

- Identify best practices in implementing key health activities across the building blocks that will improve resilience in health systems

Ensuring implementation and knowledge exchange

- Document best practices in resilience (and peer exchange to share lessons)

Rethinking antifragility and resilience

- Rethink the approach to building resilient systems, options for monitoring resilience and interventions for fostering antifragility

(Tumusiime et al., 2020)

Recommendation

Key Recommendation

1. Strengthen knowledge base on, and preparedness for, compound and systemic risks
2. Repurpose and redesign global institutions for the complexities of the 21st century
3. Advance toward smart, evidence-based, adaptive, good governance arrangements at all levels
4. Partnerships key to sustainability solutions
5. Create a pervasive, sustainable knowledge society
6. Reset economic infrastructure and development for sustainability
7. “Sustainable and resilient” have to be the new “mantra” for development
8. Harness the new consciousness in society

(Leena Srivastava et al., 2021)

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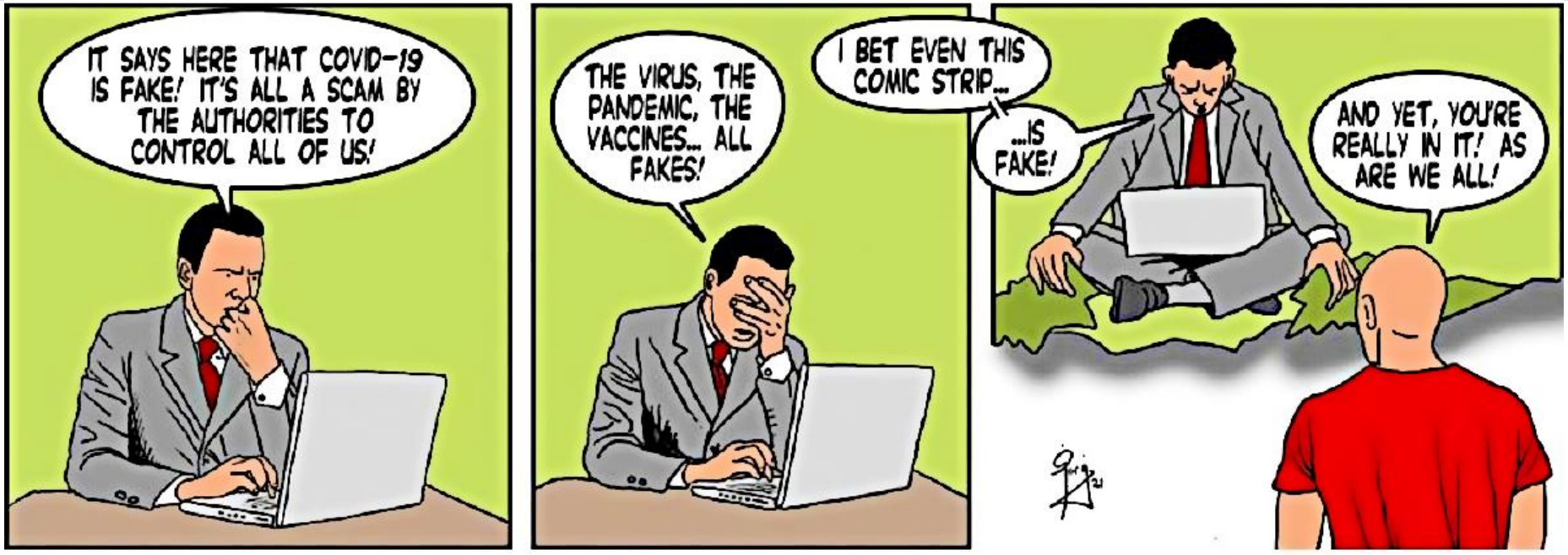
THANK YOU


IT SAYS HERE THAT COVID-19 IS FAKE! IT'S ALL A SCAM BY THE AUTHORITIES TO CONTROL ALL OF US!
THE VIRUS, THE PANDEMIC, THE VACCINES... ALL FAKES!
I BET EVEN THIS COMIC STRIP...
...IS FAKE!
AND YET, YOU'RE REALLY IN IT! AS ARE WE ALL!