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DANIEL K. INOUE ASIA-PACIFIC CENTER FOR SECURITY STUDIES

Dealing with Complexity: Pandemics' Impact on Environmental Security And Crisis Management



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Agenda

Part One: The Pandemic and Crisis Management

Part Two: The Environmental Intersection: Ways ahead

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Part Two: The Environmental Intersection: Ways ahead

The dilemma: Infectious diseases are low-touch



Image credit: Verywell / Catherine Song

The dilemma: Infectious diseases are low-touch Human security is high-touch



Image credit: Lyle Aspinall/Calgary Sun/QMI Agency

Thesis: The Security Sector must embrace the dilemma and integrate it into our practices

Starting point: (Some) Environmental crises

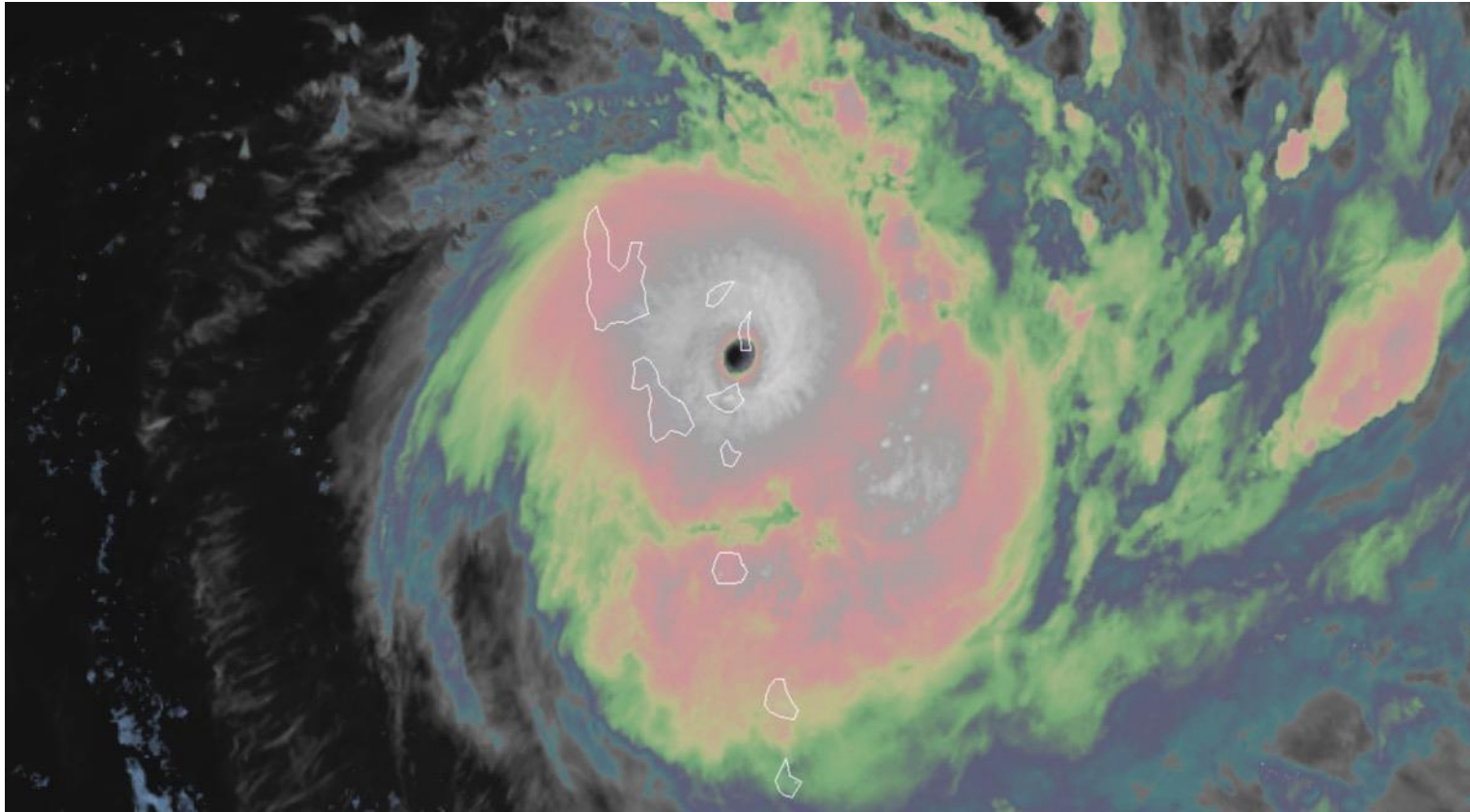
• Phenomena

- Extreme weather
 - Hurricanes / cyclones/ typhoons
 - Increased precipitation
 - Drought
 - Heat waves
- Sea level rise

• Potential impacts

- Freshwater access
- Food security
- Infrastructure destruction
- Disease outbreaks
- Migration

Case study: Cyclone Harold in Solomon Islands, Vanuatu and Fiji



Matthew Cappucci.
April 6, 2020. ["Beastly Cyclone Harold slams into Vanuatu at Category 5 intensity."](#)
[Washington Post](#)

Harold's onslaught on Pentecost Island, Vanuatu, as captured by the Japanese satellite Himawari-8. (RAMMB/CIRA/JMA)

Case study: Cyclone Harold in Solomon Islands, Vanuatu and Fiji

"Given this virus struck Fiji in cyclone season, we knew from the start we had to weatherproof our Covid-19 containment efforts to the very real possibility of a severe storm striking," the government wrote. Bainimarama said those measures included virus-proofing shelters.

"Our evacuation centres are safe, they are sanitised and monitored to ensure they do not surpass capacity," he said in a social media post reported by Reuters. "Those under quarantine due to the threat of coronavirus will not mix with others."

P.M. Frank
Bainimarama quoted
in: [Olivia Rosane. 8
April 2020.](#)
["Cyclone Harold
Batters Fiji, Tonga
Could Be Next," in
EcoWatch.](#)

Case study: Tornadoes in the U.S.

The Washington Post

As tornado outbreak looms, meteorologists say to put shelter above coronavirus concerns

In advance of this weekend's anticipated onslaught of vicious weather, the American Meteorological Society, the scientific organization representing about 12,000 meteorologists, is seeking to prevent people from avoiding tornado shelters due to coronavirus fears.

“Do not let the virus prevent you from seeking refuge from a tornado,” wrote the AMS in a [public statement](#) released Thursday afternoon. “

[Matthew Cappucci, 11 April 2020](#)

Case study: Mediterranean refugees in Italy

The Washington Post

“Italy blocks access to ships rescuing migrants during pandemic”

-- Miriam Berger. Live Updates.
[Washington Post 8 April 2020](#)



“An Italian Red Cross agent wearing protective suit and mask puts a bracelet to a child as migrants rescued in the Mediterranean disembark from the Sea Watch NGO's ship on February 27, 2020, in the port of Messina, Sicily”

Source: [AlJazeera 8 Apr 2020](#). Image: [Giovanni Isolino/AFP](#)

Case study: Florida (USA) prepares for hurricane season during COVID-19 Epidemic

- Above average hurricane season predicted (June 1 – Nov 30)
- COVID 19 expected to peak in May, continue in June, revive in September
- The National Hurricane Conference and the Florida Governor's Hurricane Conference were both canceled
- A dilemma: Stay at home (COVID) vs. Evacuate to shelters (major hurricane)
- Evacuees, will require additional buses, shelters to keep folks a safe distance apart
- “How do you jam a bunch of people into an emergency operations center?”
- COVID 19 response is depleting resources needed for hurricane response

Source: Kimberly Miller. 2020. “A pandemic meets hurricane season in Florida: What could go wrong?” in *Palm Beach Post* (April 3), as posted in [USAToday.com](https://www.usatoday.com)

Expectations: Climate related crises

- Typhoons** Expect more intense storms (wind & rain, Cat 4&5)¹
- Precipitation** Heavy rainfall and snowfall events (which increase the risk of flooding) becoming more frequent.²
- Drought** Climate warming increases evaporation on land, which can worsen drought and create conditions more prone to wildfire and a longer wildfire season.²
- Heat waves** “Heatwaves and extremely hot days, are becoming more likely.”²
- Sea level rise** Increased flooding with coastal storms¹

1 U.S. NOAA GFDL. Feb 25, 2020, [“Global Warming and Hurricanes: An Overview of Current Research Results”](#)

2 The Royal Society and the US National Academy of Sciences. [“Climate Change Evidence & Causes: Update 2020.”](#)

Expectations: Future pandemics

“Infectious diseases haven’t vanished. In fact, there are more new ones now than ever: the number of new infectious diseases like Sars, HIV and Covid-19 has increased by nearly fourfold over the past century. Since 1980 alone, the number of outbreaks per year has more than tripled.”

- More people, more urban, more livestock
- Global travel
- Antibiotic resistance
- Climate change and vectors
- Anti-vaccination ideologies

Source: [Bryan Walsh. 25 March 2020. “Covid-19: The history of pandemics, in BBCFuture](#)

Expectations: Climate change and disease

“According to a report by the [World Health Organization \(WHO\)](#), ‘Climate change, one of the global environmental changes now underway, is anticipated to have a wide range of impacts upon the occurrence of infectious disease in human populations.’

It is possible to summarize the mechanisms through which it might influence the spread of viral disease as follows:

- insect vectors
- animal hosts
- human behavior
- the immune system”

Expectations: Climate change and disease

- **Insect vectors** May lead to emerging infectious diseases
- **Animal hosts** “Climate change may shift habitats and bring wildlife, crops, livestock, and humans into contact with pathogens to which they have had less exposure and immunity.”
- **Human behavior** ”If crops fail and livestock perishes due to increased flooding, droughts, heatwaves, or pests, hunger may drive people to hunt and eat more wild animals. Something similar may have led to the emergence of Ebola.”
- **The immune system** May be impacted by temperature changes

Source: [J. Kingsland. April 3, 2020. “How might climate change affect the spread of viruses?” in *Medical News Today*](#)

Expectations: Environmental pollution and disease

Air Pollution Can Worsen the Death Rate from COVID-19

Harvard University T.H. Chan School of Public Health study:

“A small increase in long-term exposure to PM_{2.5} leads to a large increase in COVID-19 death rate, with the magnitude of increase 20 times that observed for PM_{2.5} and all-cause mortality.”

Source: [Xiao Wu et al. April 5, 2020. “Exposure to air pollution and COVID-19 mortality in the United States” Available at Harvard.edu](#)

Bottom Line:

Expect more natural disasters

Expect more epidemics

Prepare for their convergence

Part One: The Pandemic and Crisis Management

Discussion: How will this convergence impact the Philippines (2020-2040)?

Agenda

Part One: The Pandemic and Crisis Management

Part Two: The Environmental Intersection: Ways ahead

The incentive for strategic thinking at the environmental intersection

“But if our society looks the same after the defeat of Covid-19, it will be a Pyrrhic victory. We can expect a sequel, and not just one sequel, but many, until we reach the finale: climate catastrophe. If our fumbling of the coronavirus is a preview of how the United States will handle that disaster, then we are doomed.”

[Viet Thanh Nguyen. 2020. “The Ideas That Won’t Survive the Coronavirus,” *New York Times* \(April 10\).](#)

Crisis Management in a Complex Environment Demands Strategic Thinking

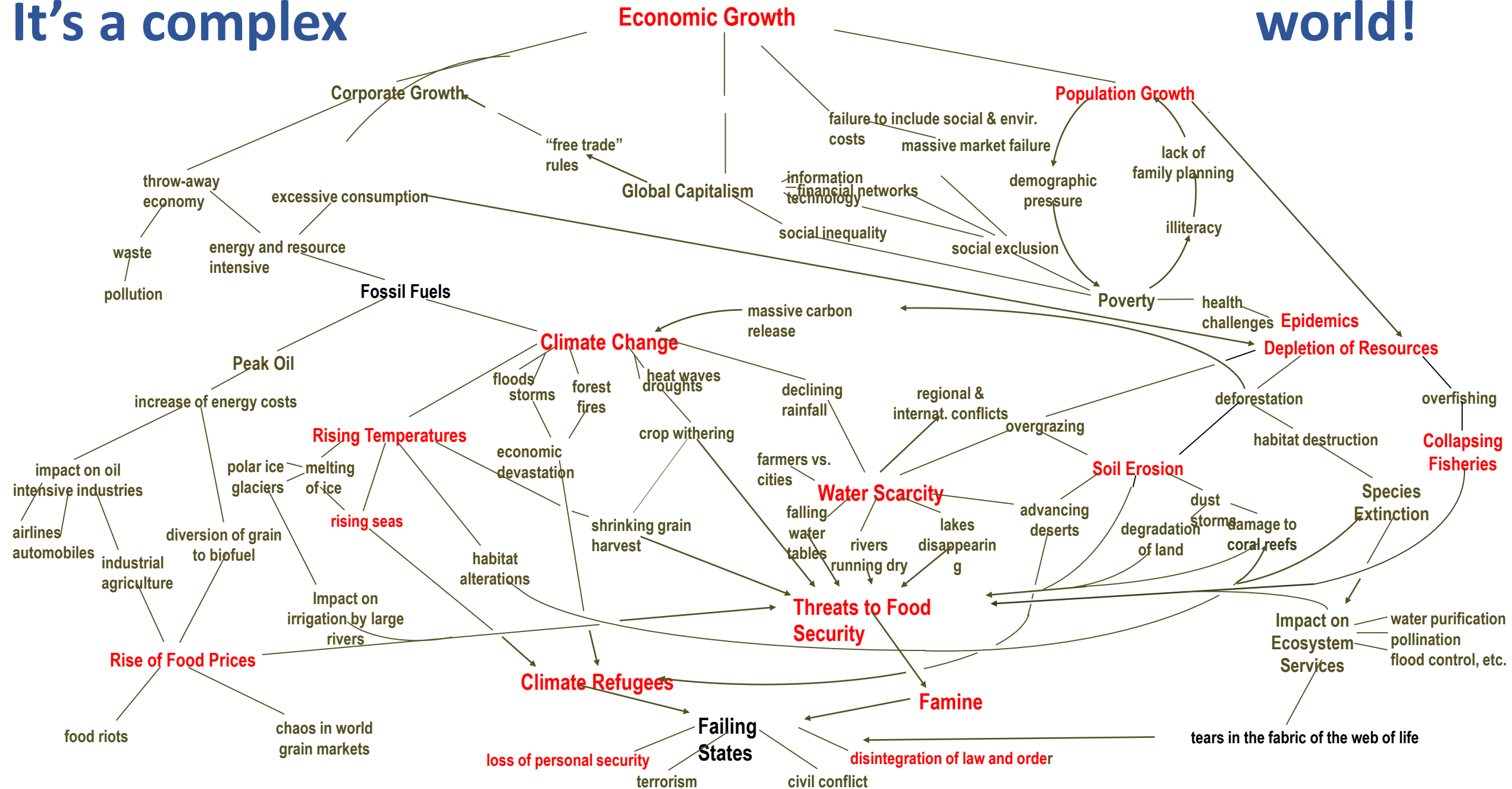
- In a crisis the status quo of a socio-environmental system has been disrupted.
- An effective crisis manager must:
 - Comprehend the system.
 - Understand connections between the present, the *status quo ante* (the past) and possible futures.
 - Formulate an intent – e.g., to restore, to mitigate, to adapt, to improve.
 - Be hypothesis driven – use scenarios to test “what if ... ?”
 - Take advantage of contextual factors or events that may arise.

How to Think Strategically

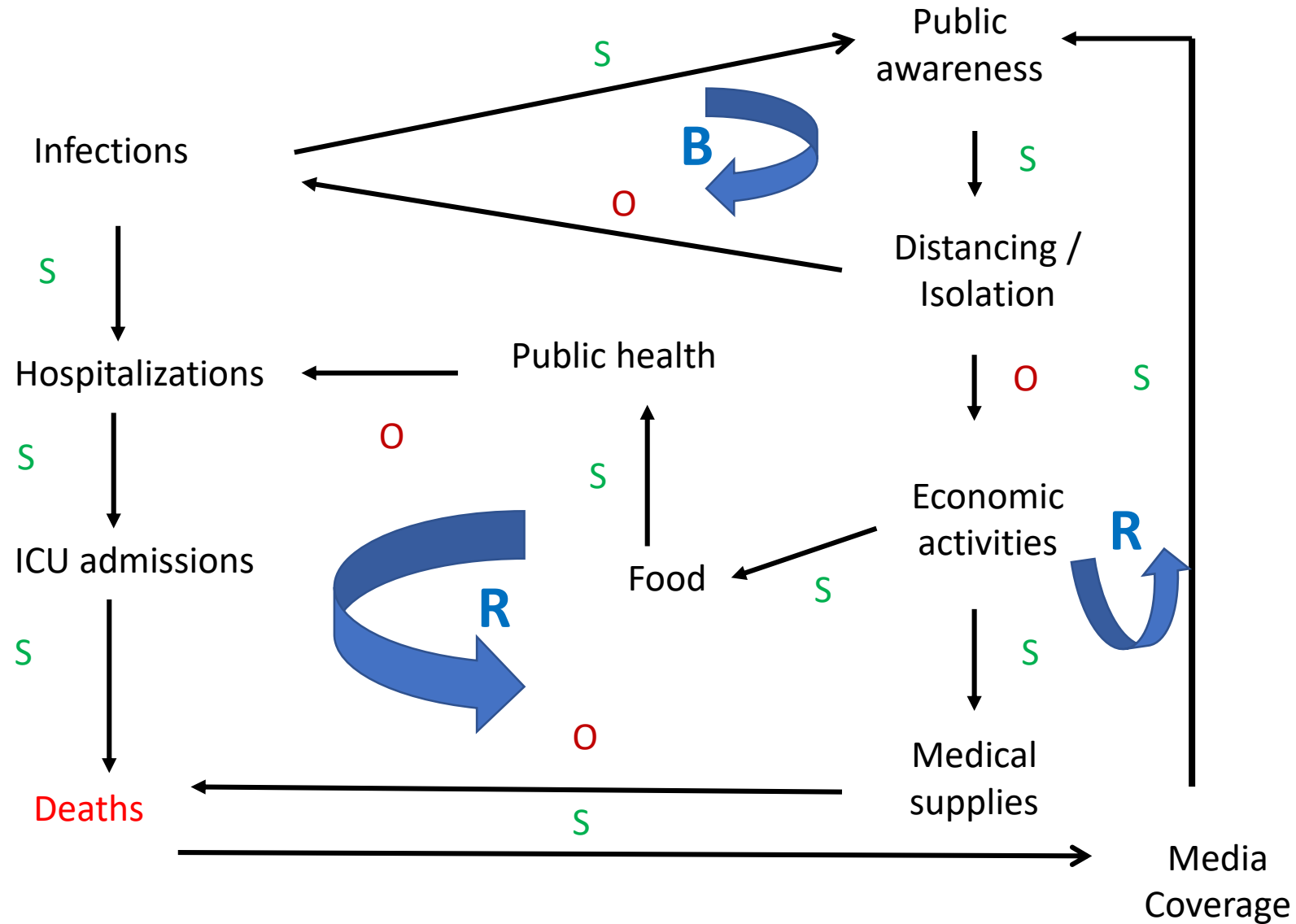
- **Identify the problem.**
- Use a systems approach to **understand the problem** in its historical context
- **Forecast possible scenarios** over time.
- Given the problem, the system, the context and the scenarios, **assess the opportunities** to influence or manage the system to achieve your intended outcome.
- **Reiterate.** Formulate hypotheses (If...then) and test them against the system and scenarios.

It's a complex

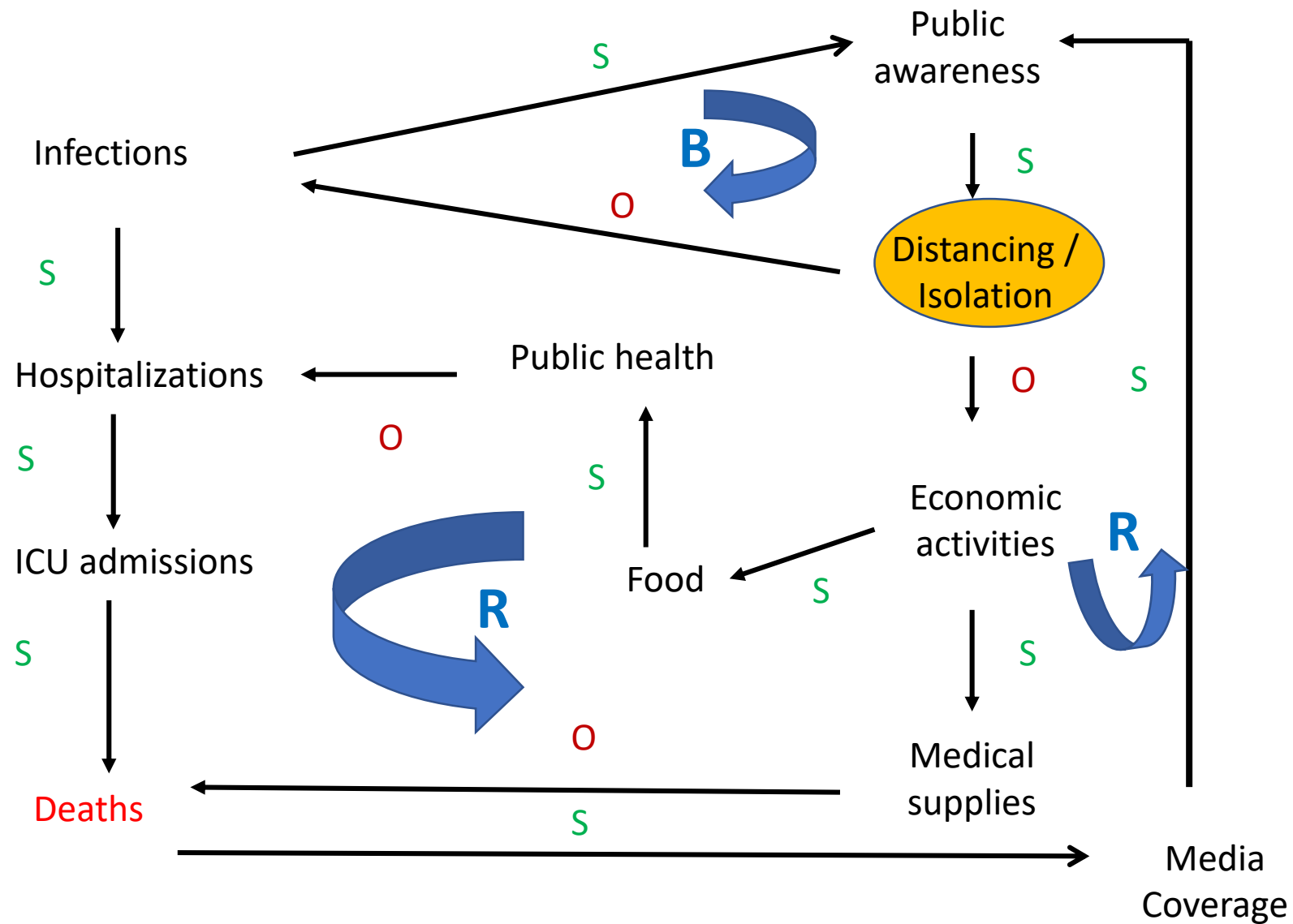
world!

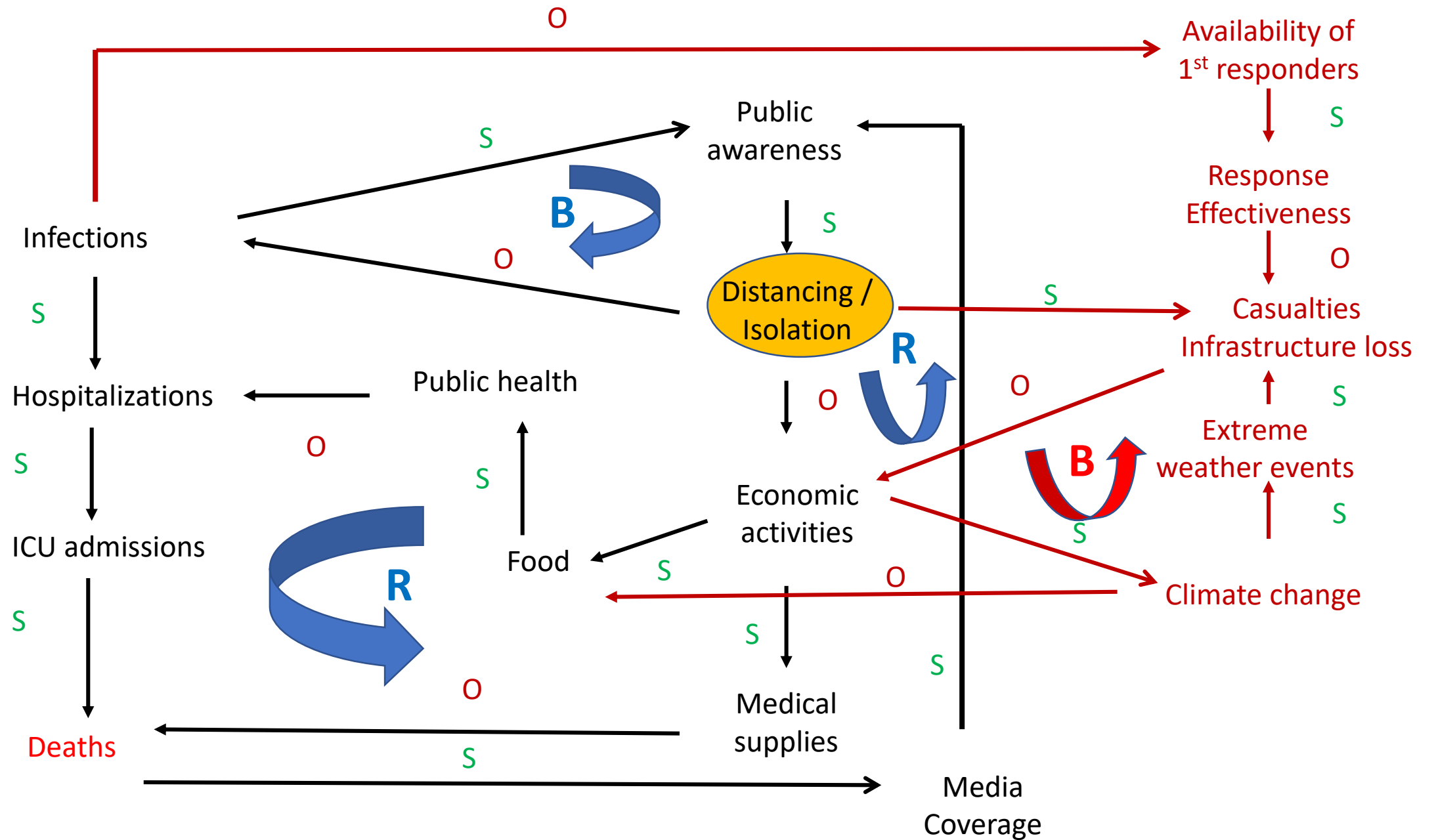


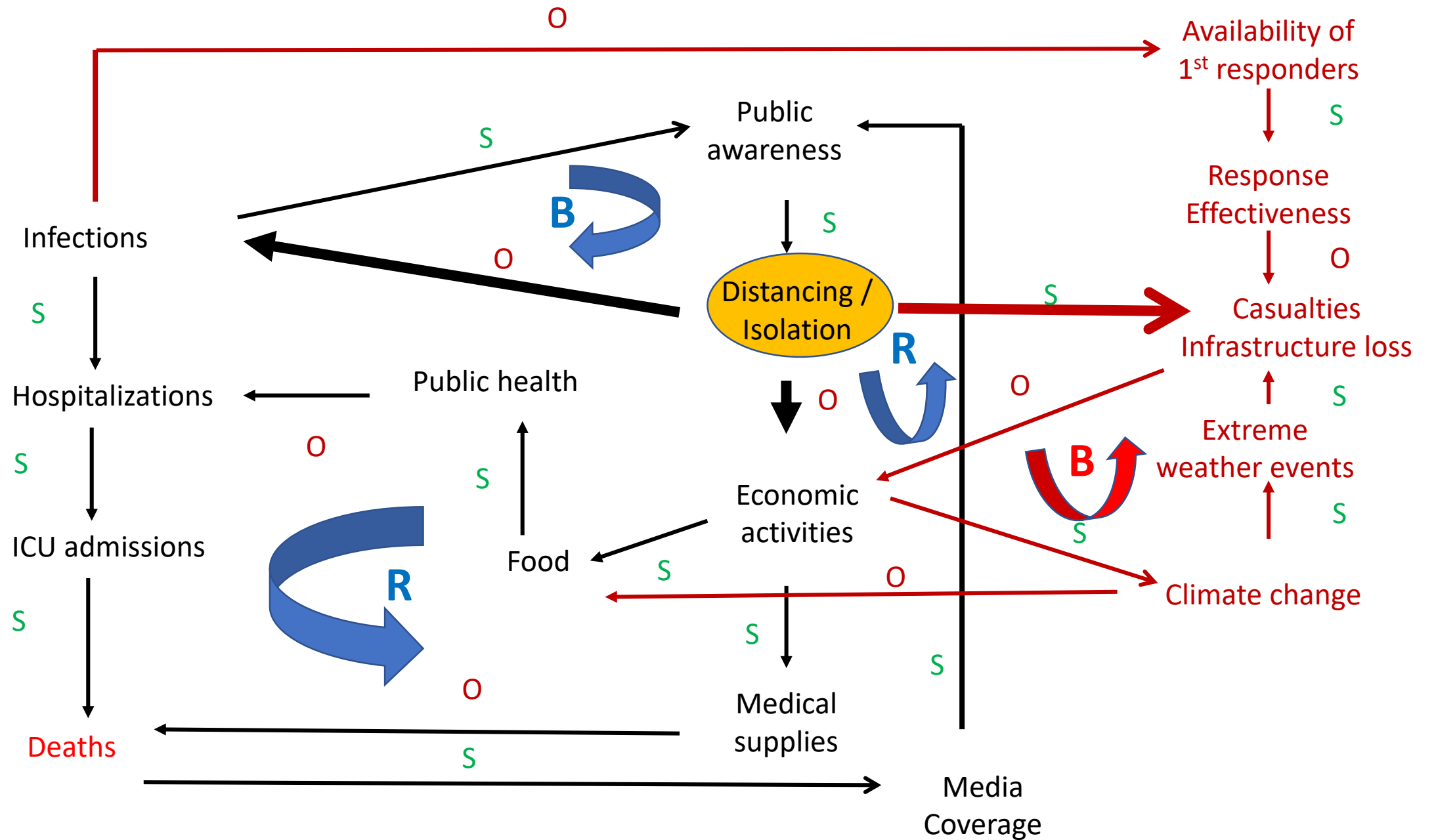
Source: Modified from Interconnectedness of World Problems. A Conceptual Map by Fritjof Capra.



First thoughts toward a systems approach to the pandemic – environmental intersection







Some strategic thinking examples:

Robots and Infectious disease epidemics

- Disinfection
 - Non-contact UV surface disinfection
 - Detection / disinfection of high touch areas
- Delivering medications & food
- Measuring vital signs
 - Mobile temperature reading
 - Assisted nasal swabbing
- Virtual presence / telemedicine

Source: Yang et al. 25 Mar 2020. "Combating COVID-19—The role of robotics in managing public health and infectious diseases," [ScienceRobotics 5:40](#).



Image: [EFT Trends, Mar 30, 2020](#)

Robots and natural disaster response

- Aerial reconnaissance / delivery
- Search & rescue

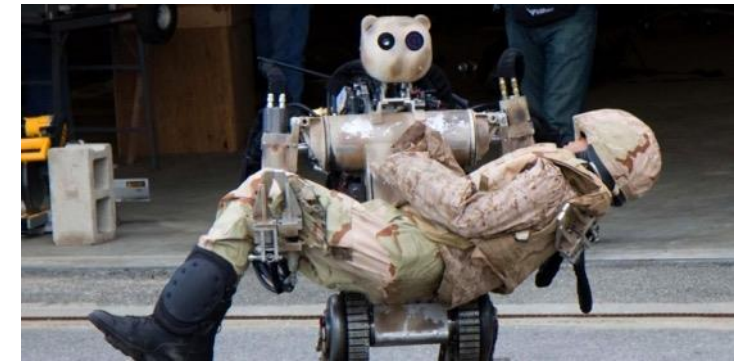


Image: [AFCEA. Signal, Jul 1, 2016](#)

Some strategic thinking examples:

Is pandemic a security sector issue?

“U.N. Security Council meets virtually to discuss pandemic amid standoff”

“China has consequently urged taking no action as it says the pandemic is not within the Security Council’s mandate. The United States has countered that it indeed is — and, in a jab at China, insisted that the origins of the novel coronavirus in Wuhan be referenced in any ensuing statement.”

Miriam Berger, 10 April 2020. “Coronavirus Live Updates.” *Washington Post*

Some strategic thinking examples:

Managing risks

“Pandemic brings mass vaccinations to a halt”

“[Global health organizations] could either continue to support mass vaccination campaigns in poor countries but risk that they would inadvertently help spread COVID-19—or recommend their suspension, inevitably triggering an upsurge of many other infectious diseases. In the end, they chose the latter, and mass vaccination campaigns against a host of diseases are now grinding to a halt in many countries.”

-- Leslie Roberts. 10 April 2020. *Science* 368:6487, pp. 116-7

Some strategic thinking examples:

Need for new global cooperation

“Future pandemics can be prevented, but that’ll rely on unprecedented global cooperation”

- Create a global early warning system, like systems for tsunamis and earthquakes
- Strengthen public health systems worldwide
- Minimize risks of spillovers -- Protect natural habitats from human encroachment and create buffer zones around protected areas

Source: [Michael C. Lu. April 17, 2020. Washington Post](#)

Some Ways Ahead?

(Can be tested as scenarios through strategic thinking)

- Integrate health professionals into all crisis management planning
- Review all crisis management plans and SOPs for epidemic resilience
- Consider creation of a new, specialized, dedicated military branch – Disaster Response Corps
- Research, development and investment in applied robotics for crisis response.
- Application of artificial intelligence to analysis of complex environments and interactions.
- Encourage and facilitate international collaboration for more timely response
- **Your ideas.....**

Part Two: The Environmental Intersection: Ways ahead

Discussion: How should the Philippines plan and adapt to meet the new environment (2020-2040)?



Mahalo for your kokua!

