CONTRIBUTION OF SYSTEM THINKING IN URBAN DISASTER RISK REDUCTION

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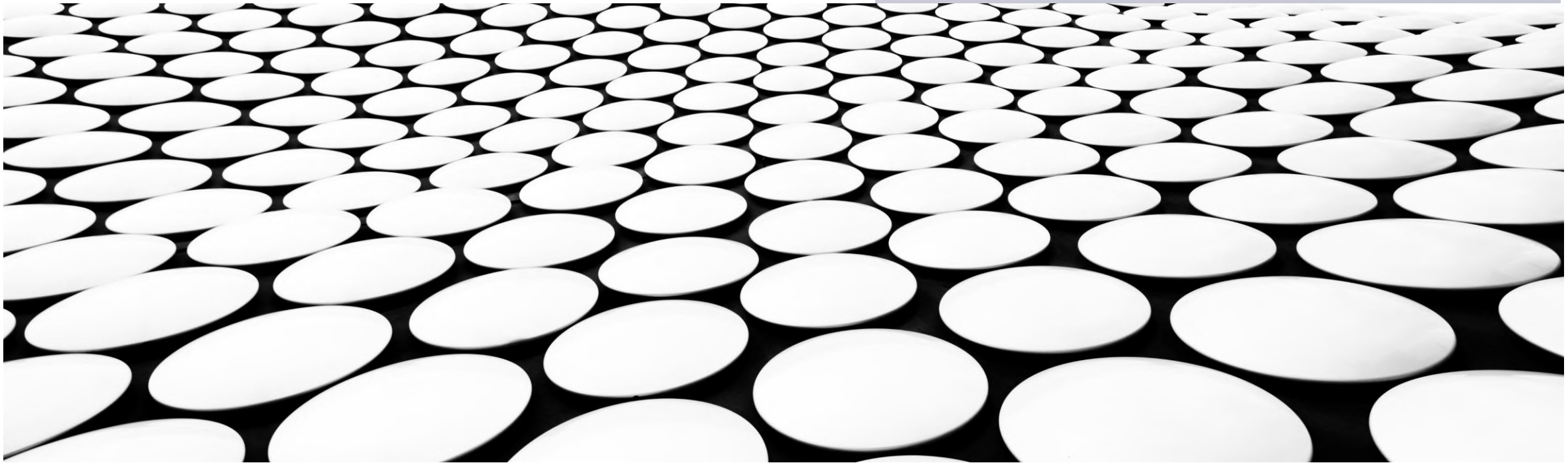
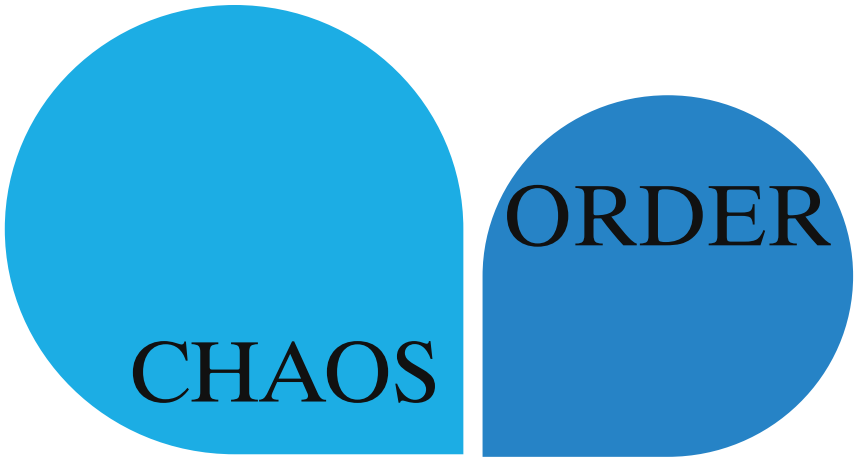
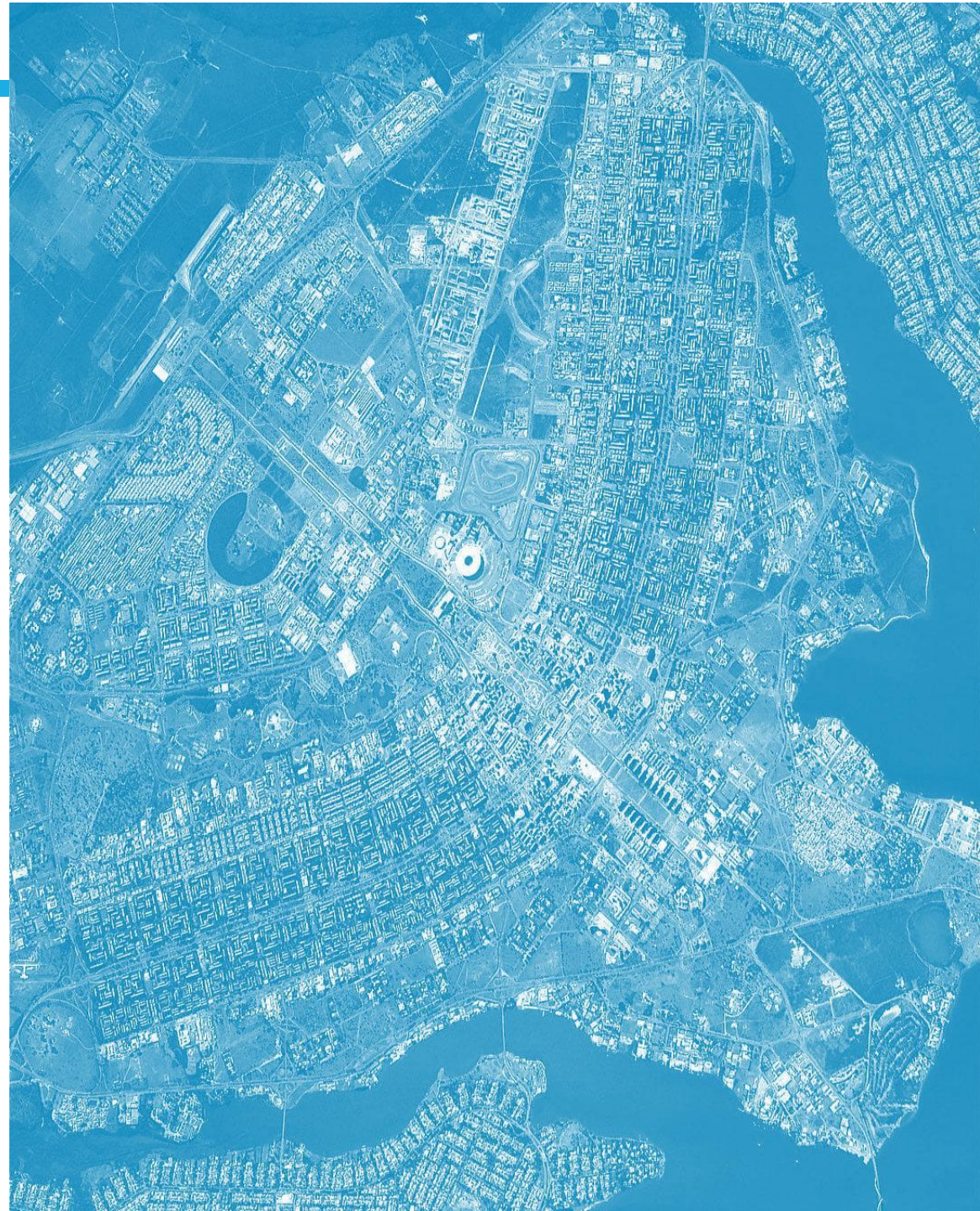


Cities evolve through a combination of





DISASTER RISK REDUCTION (SENDAI FRAMEWORK 2015)

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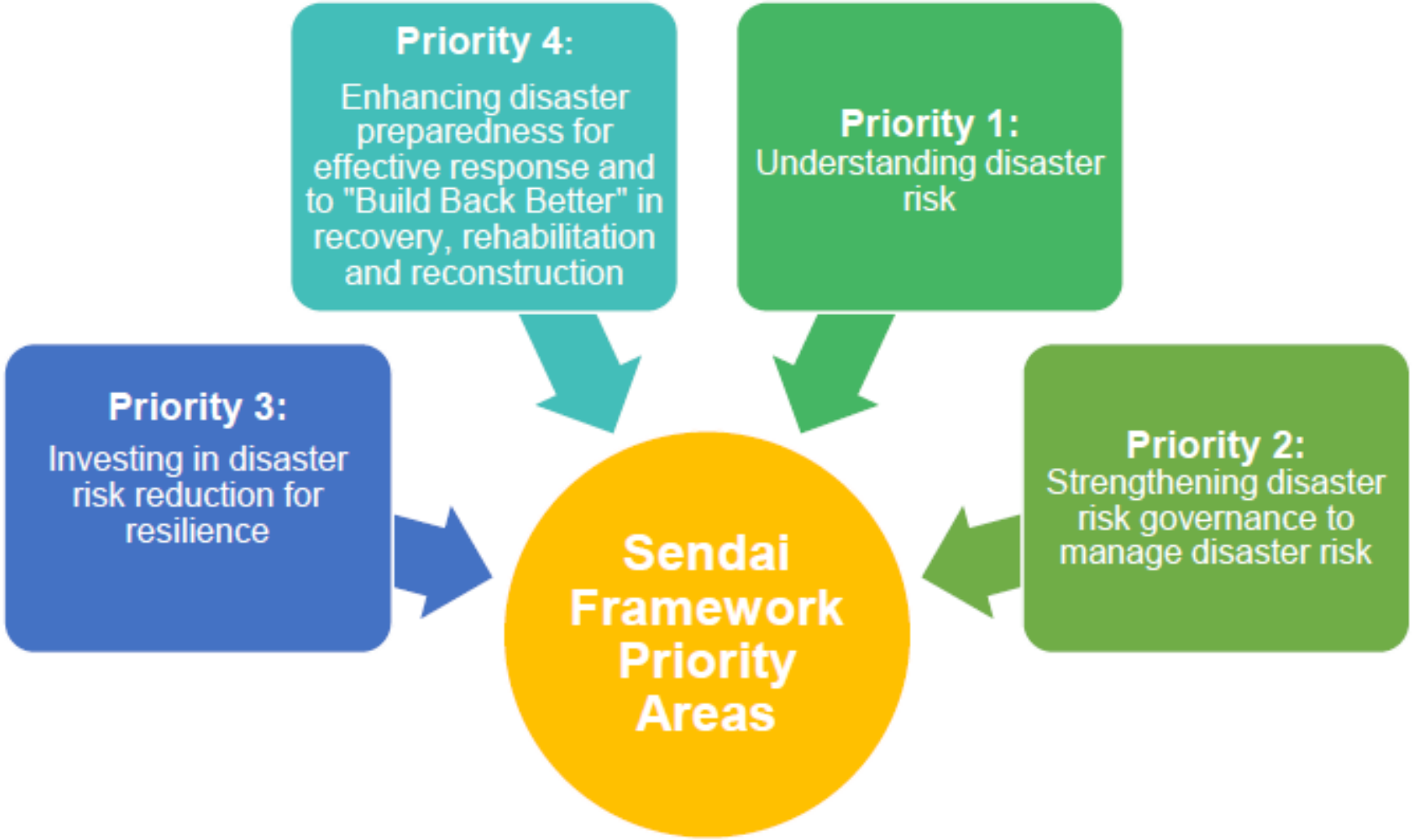

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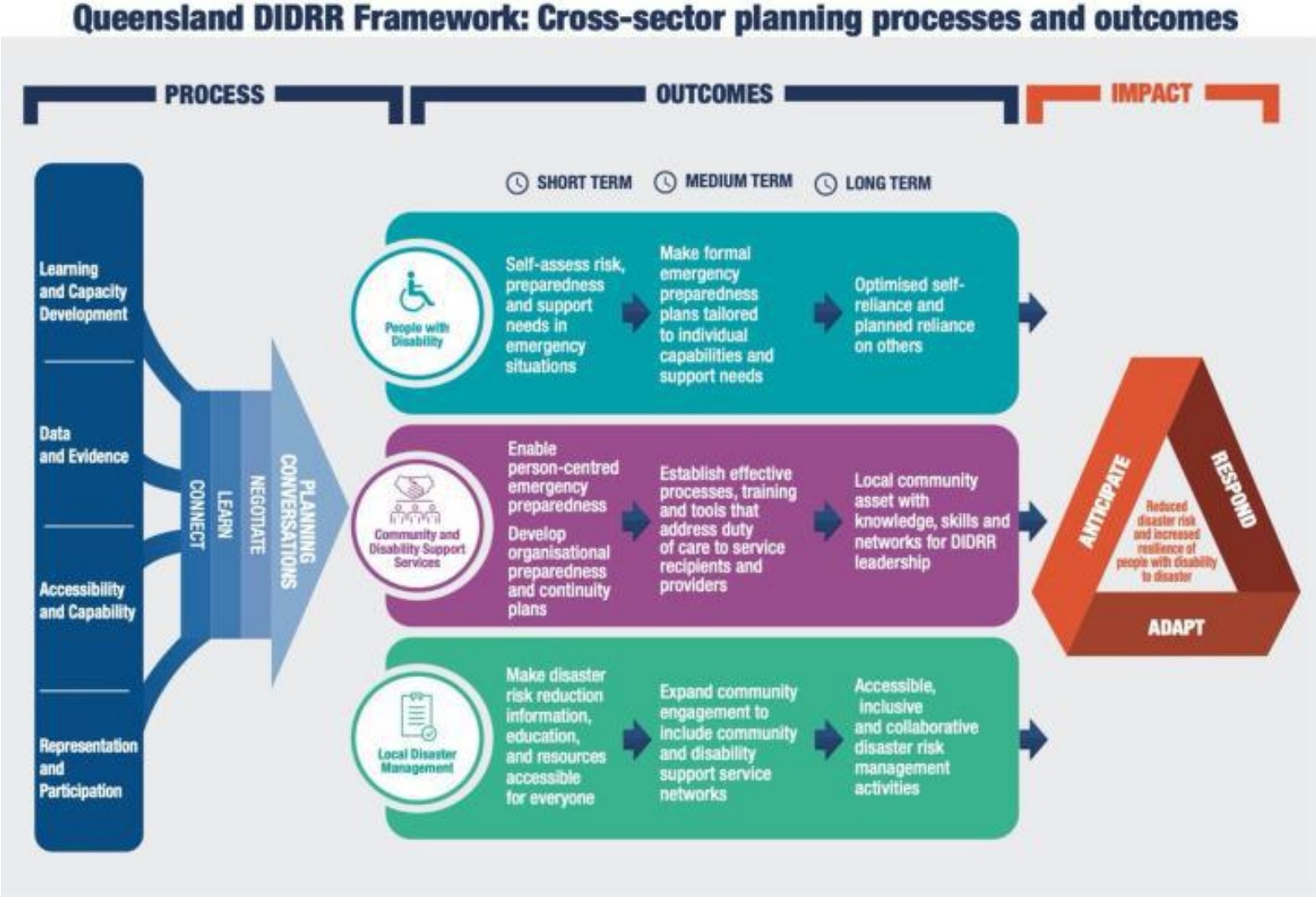
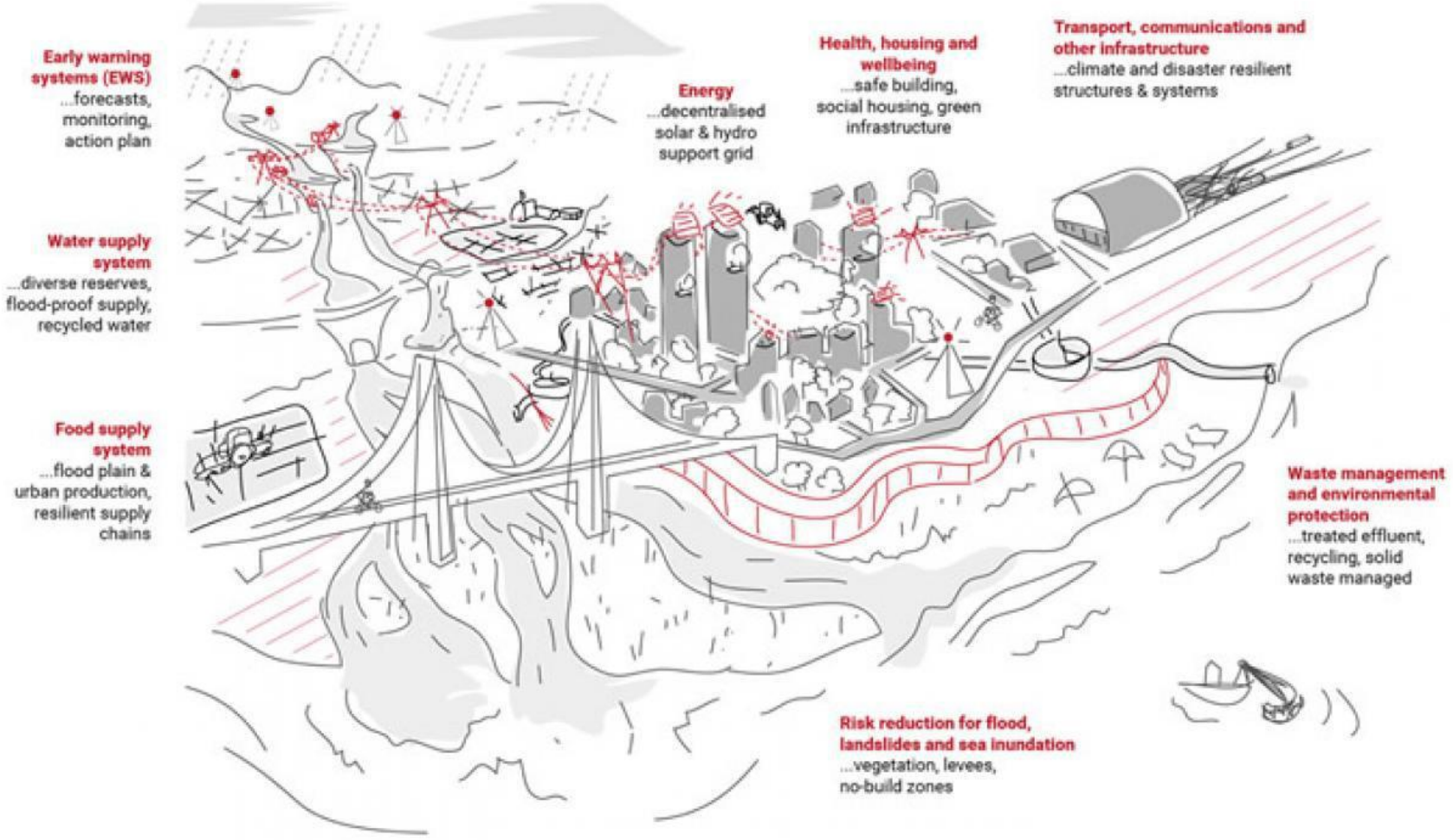


COMPLEXITY OF DISASTER RISK REDUCTION

- Different Aspects
- Different Scales
- Different Timing
- Different Actors
- Different Nature
- Different Causes
- Different Impacts
- Different Processes
- Different Functions

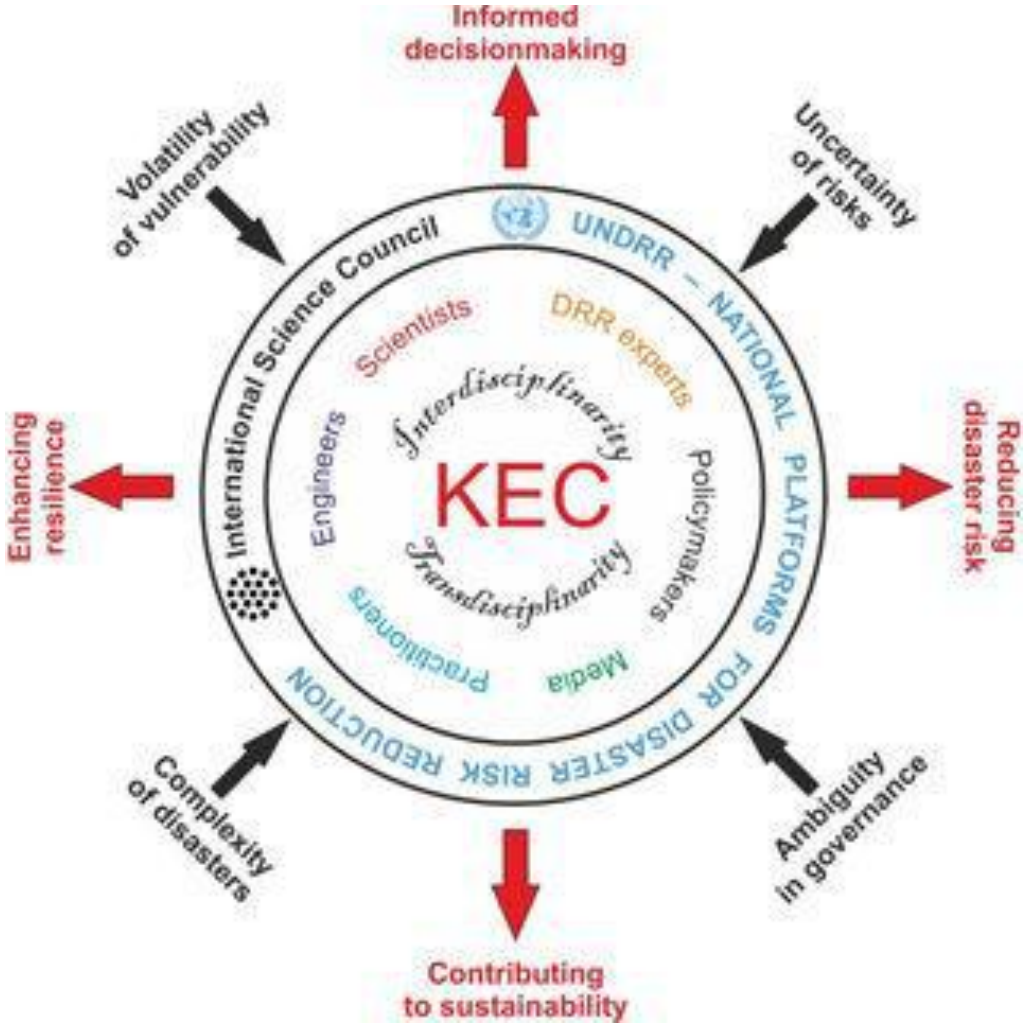


COMPLEXITY OF DISASTER RISK REDUCTION

(Source: UNDRR 2019)

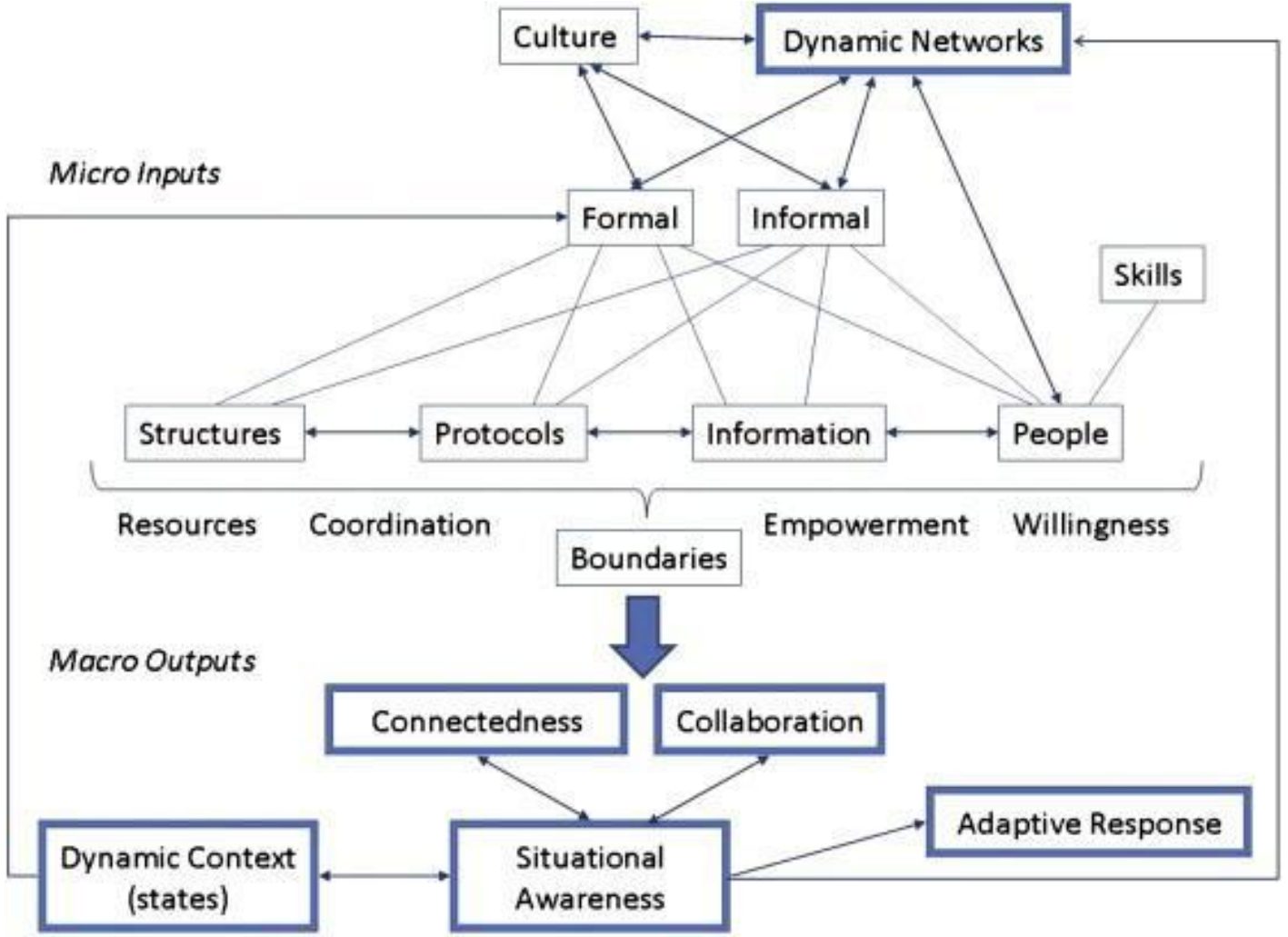
COMPLEXITY OF DISASTER RISK REDUCTION

- Uncertainty
- Ambiguity
- Complexity
- Volatility



COMPLEXITY OF DISASTER RISK REDUCTION

- Connections
- Relationships
- Linkages



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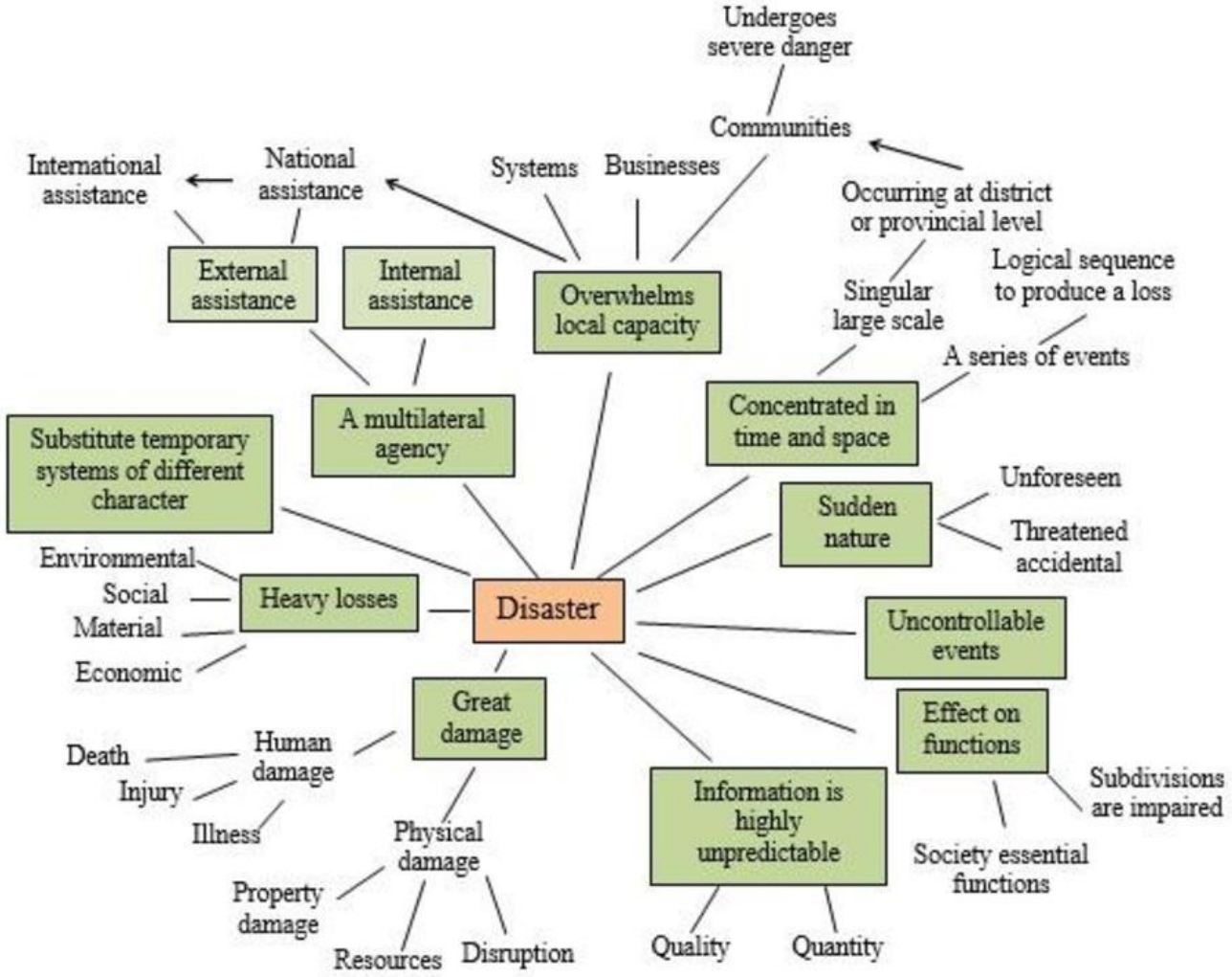
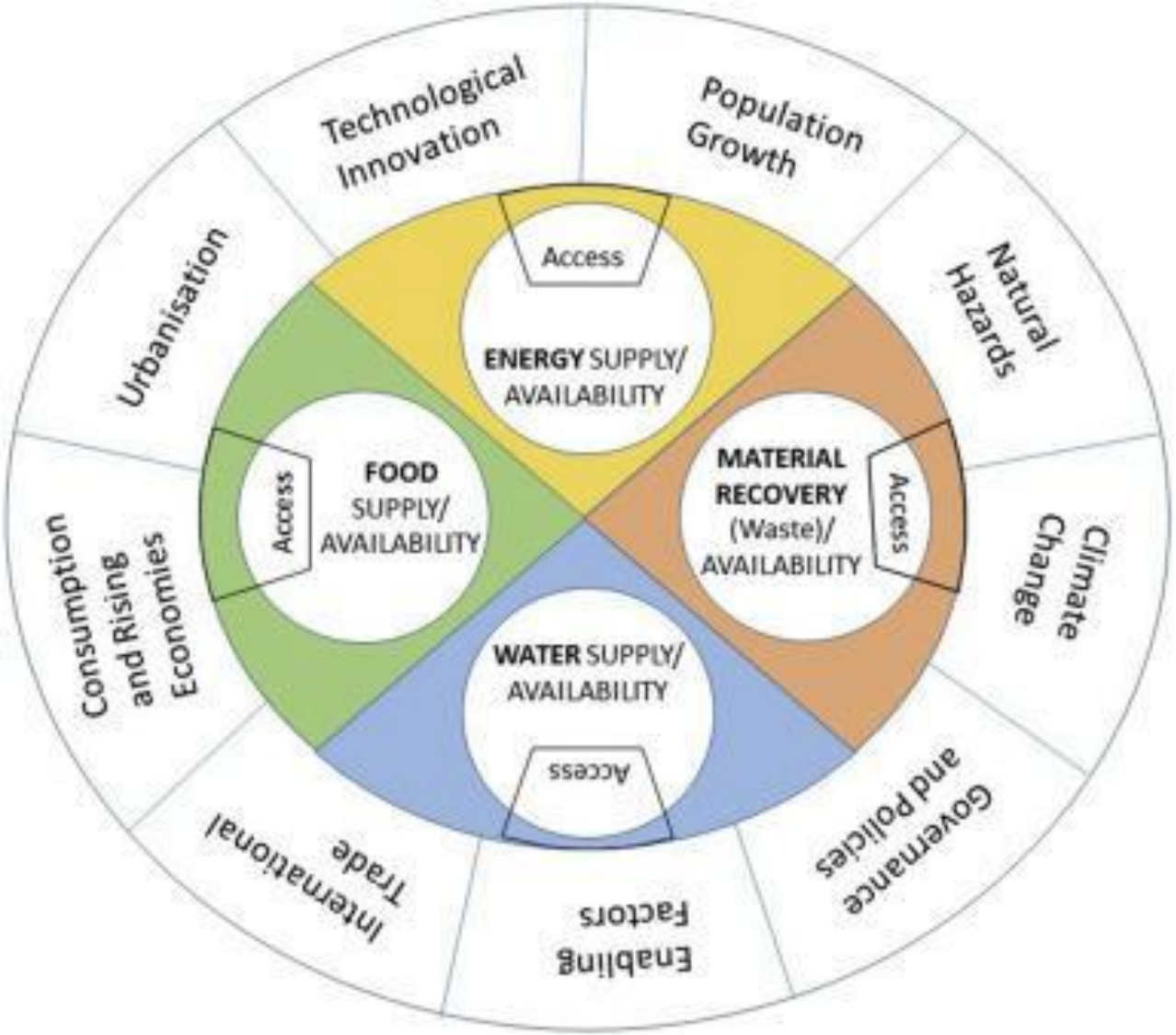


SYSTEMS THINKING AND CITIES

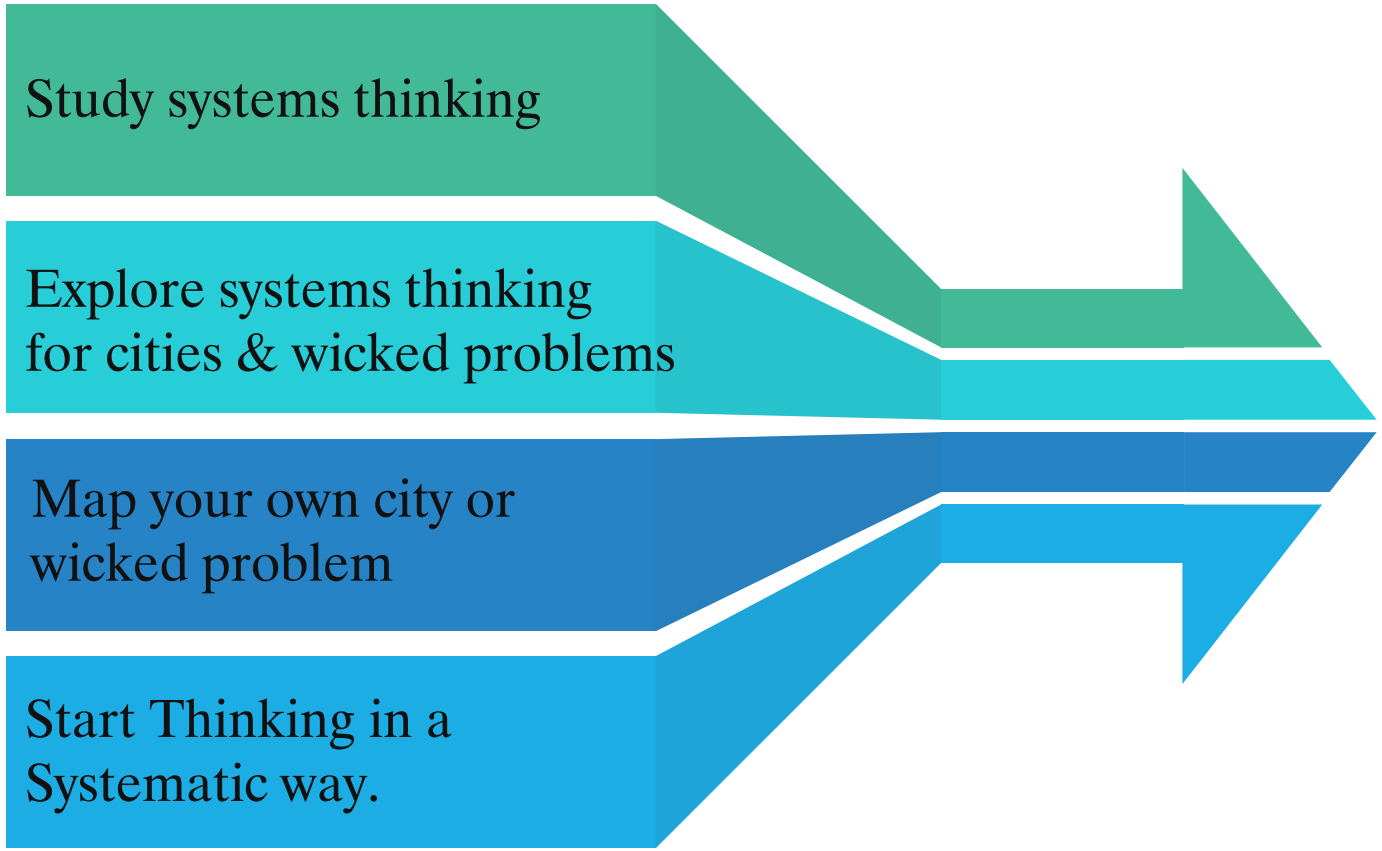
Cities across the globe face unprecedented challenges.
Our difficulty in perceiving the complex and unpredictable dynamics of these problems, limits our ability to make better decisions.
Systems thinking, and its potential to help us address complexity, offers an alternative approach to traditional, top down, sectoral, urban decision making.

SYSTEMS THINKING AND CITIES

A nexus approach through enhanced dialogue, collaboration and coordination is needed to ensure that co-benefits and trade-offs are considered and that appropriate safeguards are put in place.
System way of thinking provides an informed and transparent framework for determining and resolving trade-offs across sectors and with other policy areas such as climate and biodiversity.



4 STEPS TO START PRACTICING SYSTEMS THINKING FOR CITIES



SYSTEMS THINKING FOR CITIES

SYSTEM THINKING IN URBAN DISASTER GOVERNANCE

- A system is an interconnected set of elements that is coherently organized in a way that achieves something

- A system [is] (a) a set of units or elements interconnected so that changes in some elements or their relations produce changes in other parts of the system, and (b) the entire system exhibits properties and behaviors that are different from those of the parts.

The managers of urban systems require the capacity to shift "**from seeing parts to seeing wholes, from seeing people as helpless reactors to seeing them as active participants in shaping their reality, from reacting to the present to creating the future.**"

SYSTEM THINKING IN URBAN DISASTER GOVERNANCE

•A systems perspective to urban governance is a lens by which we might see more clearly through the fog of change, and potentially better manage the complex cause and effect relationships between social and ecological phenomena.

THE CITIES ARE:

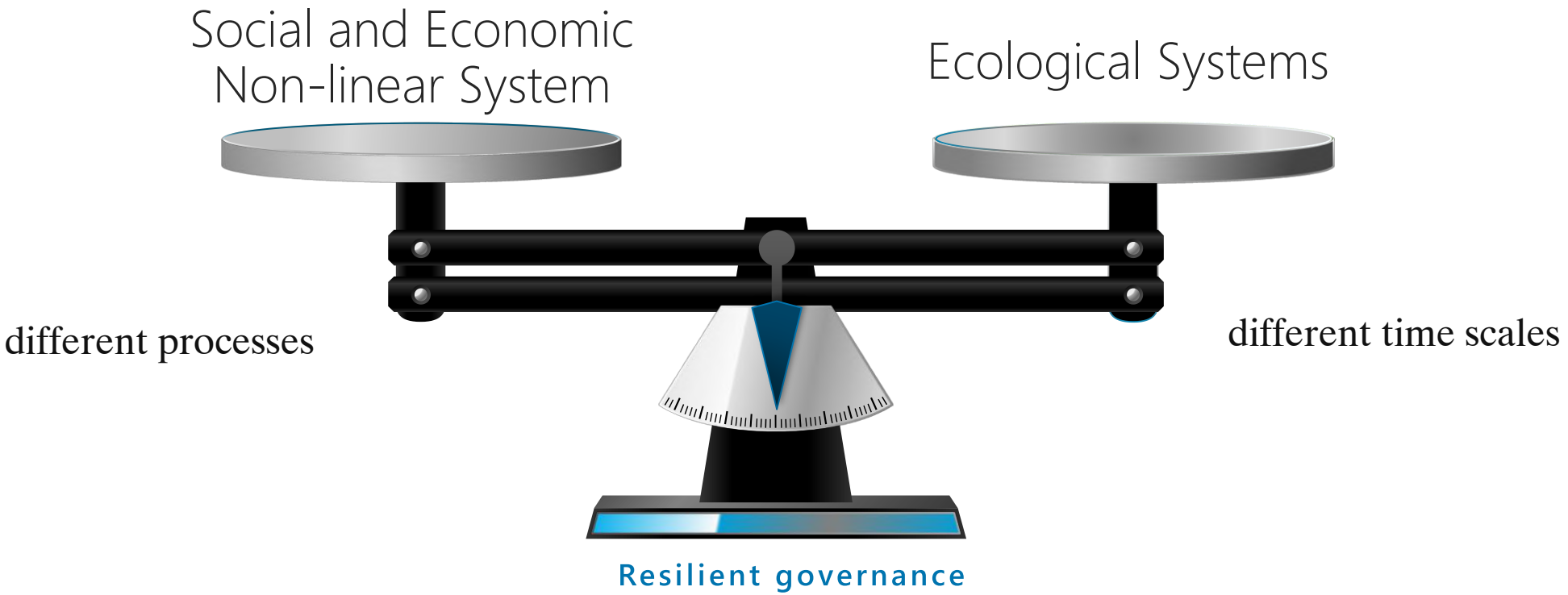
self-organizing, nonlinear, feedback systems [and] are inherently unpredictable [so] . . . we can never fully understand our world, not in the way our reductionist science has led us to expect.

SYSTEM THINKING IN URBAN DISASTER GOVERNANCE

The application of systems analysis is no panacea, but it does offer at least six possibilities to improve urban governance.

1. First, in confronting an overwhelming cacophony of raw data, systems analysis can help governments organize information in order to distinguish the ecological signals from the noise.
2. Second, the data necessary to understand resource flows and the larger ecological context of a city can be deployed to educate a citizenry to understand its behavior and its environment
3. Systems analysis can help, third, to improve planning and forecasting.
4. Fourth, the tools of systems analysis can help to improve the quality of urban decision-making.
5. Fifth, systems analysis can improve organizational behavior.
6. Finally, systems thinking can lead to greater realism and precautionary public policies for the simple reason that most systems are nonlinear and therefore inherently unpredictable.

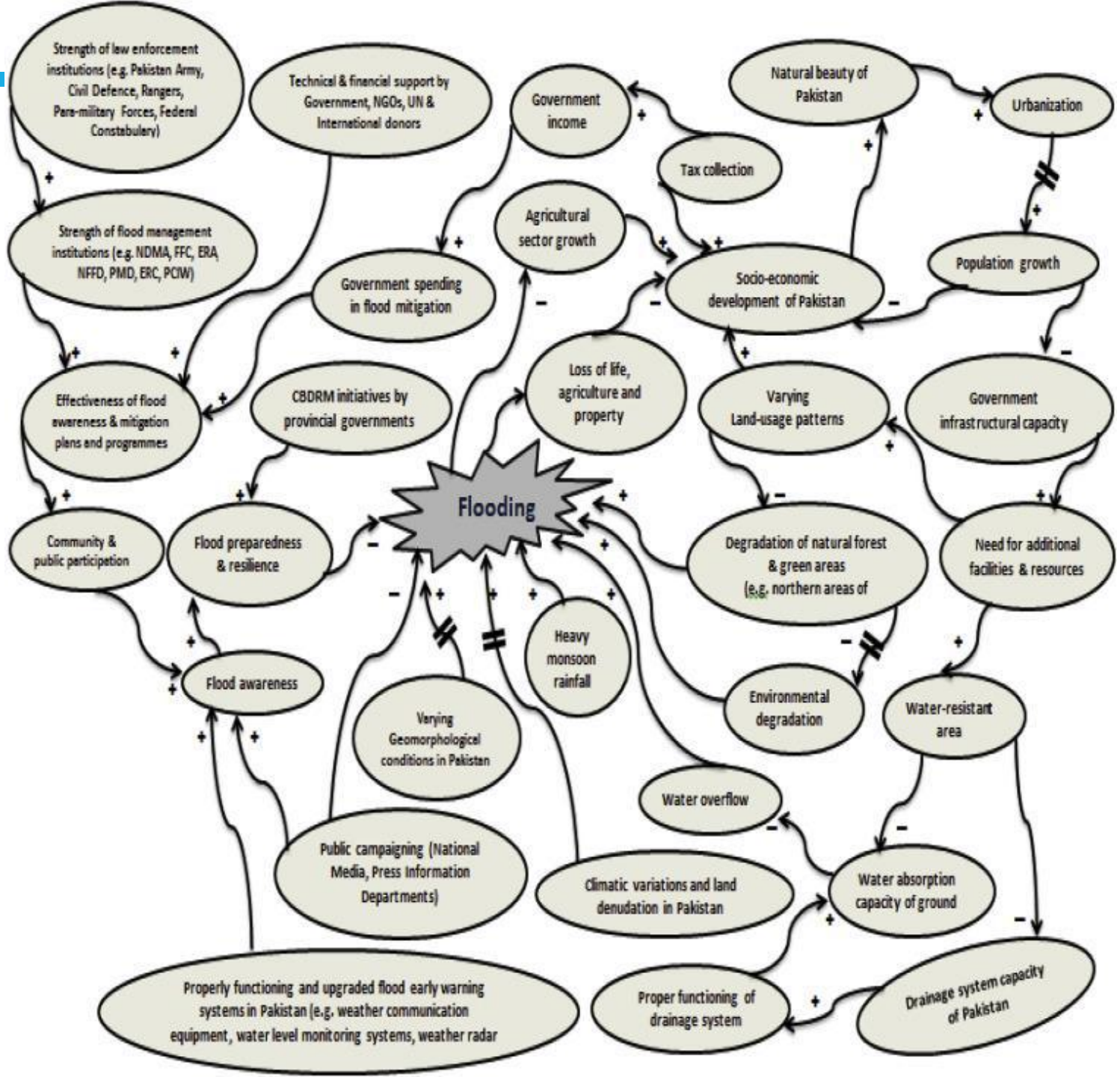
SYSTEM THINKING IN URBAN DISASTER GOVERNANCE



Systems perspectives and management tools can help us better deal with the complexities of interacting non-linear systems.

System thinking help us:

- To better understand the risk
- To better manage preparedness activities
- To better find the priority area for investing
- To better strengthen the governance



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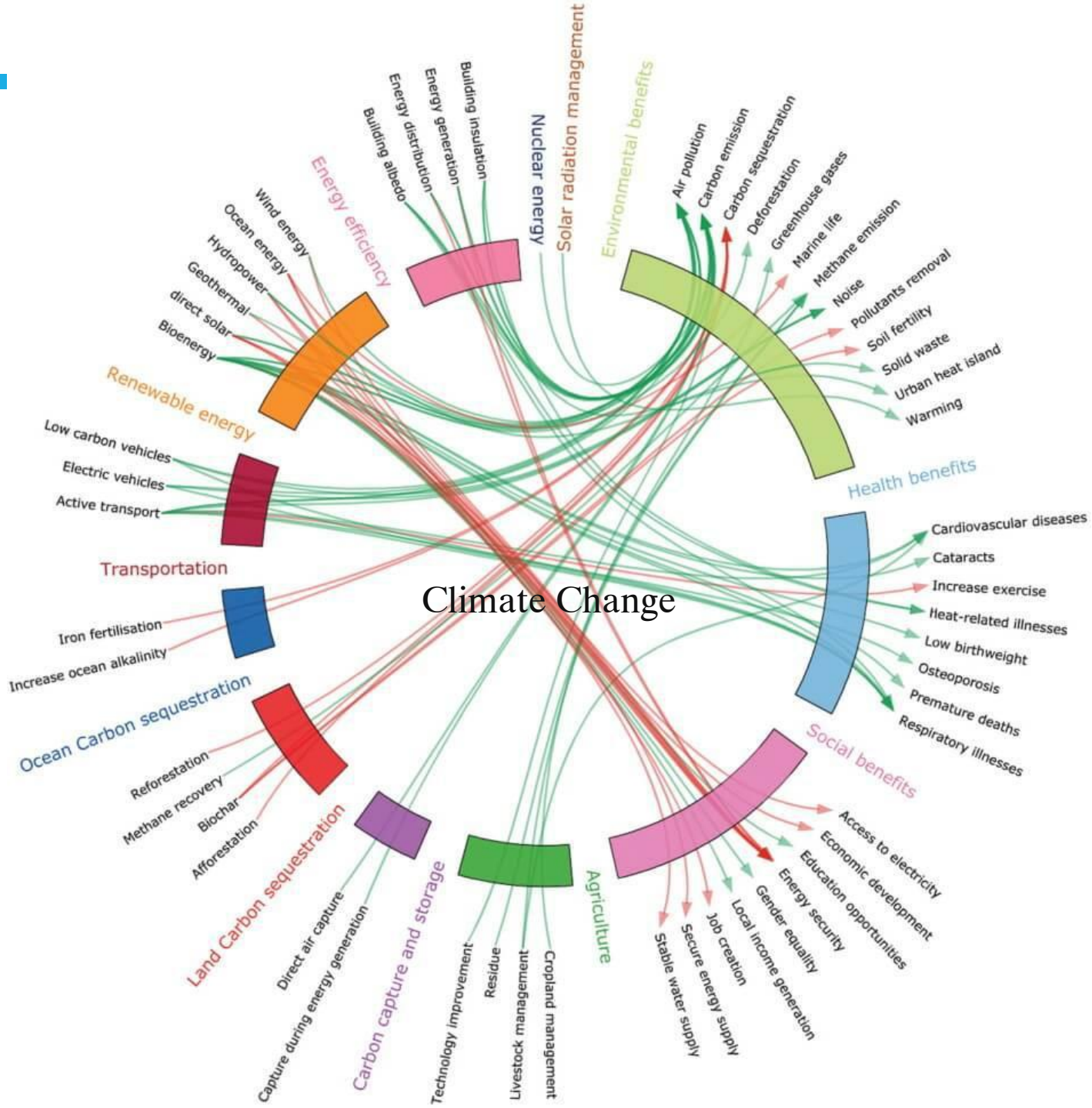
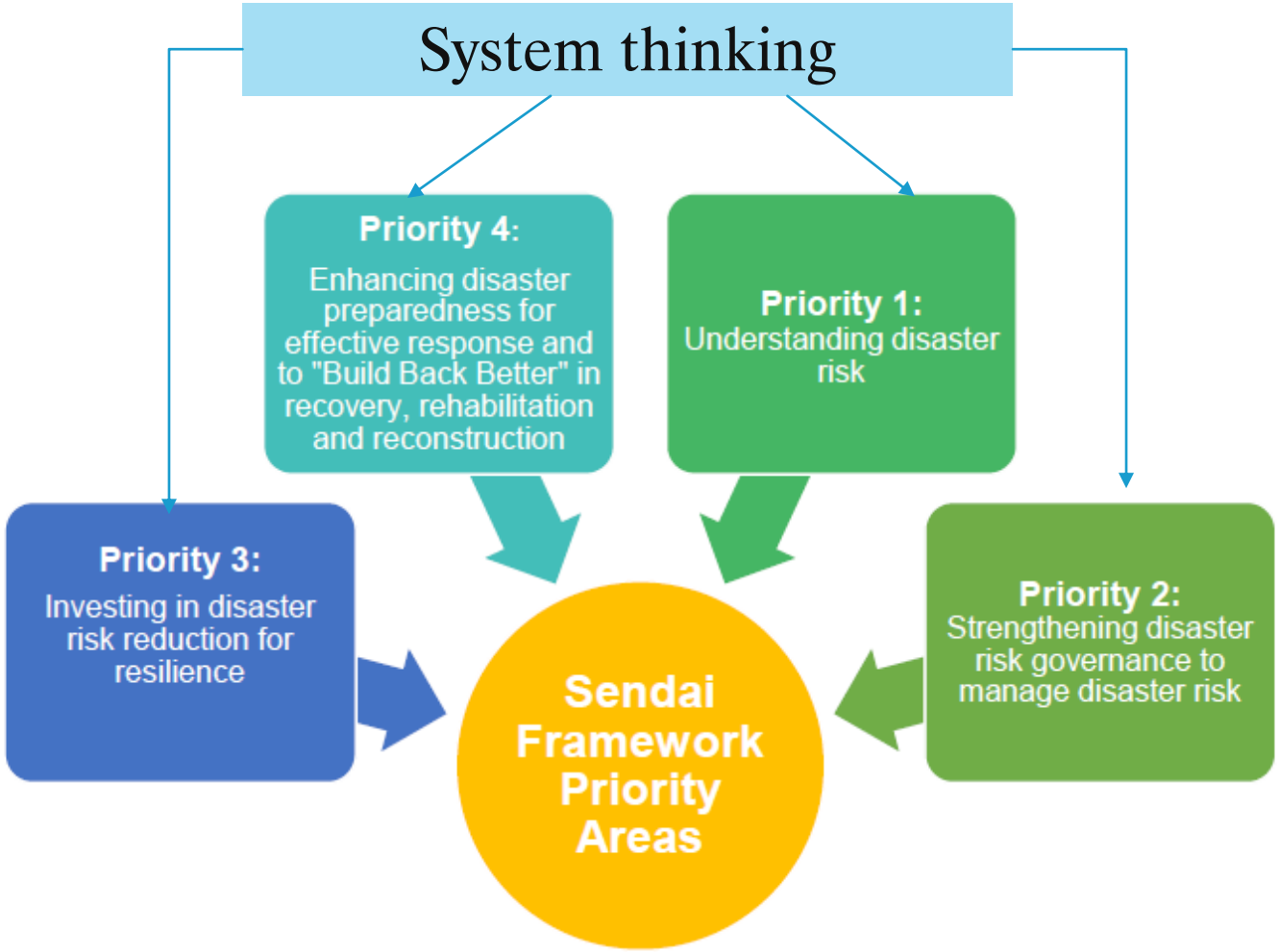


SYSTEM THINKING IN URBAN DISASTER GOVERNANCE



SYSTEM THINKING IN URBAN DISASTER GOVERNANCE

Systems analysis is not magic

it cannot tell us what to model or what's worth doing and what's not.

It won't tell us anything that lies outside our paradigms, worldviews, or the light of our particular campfire.

It is, after all, only a tool and will do no more than what it is asked to do

it is only a tool to clarify the consequences of our actions, identify our options, and extend our foresight a bit. And those are not small gains.

THANK YOU FOR YOUR ATTENTION