MASSEY UNIVERSITY
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UNIVERSITY OF NEW ZEALAND

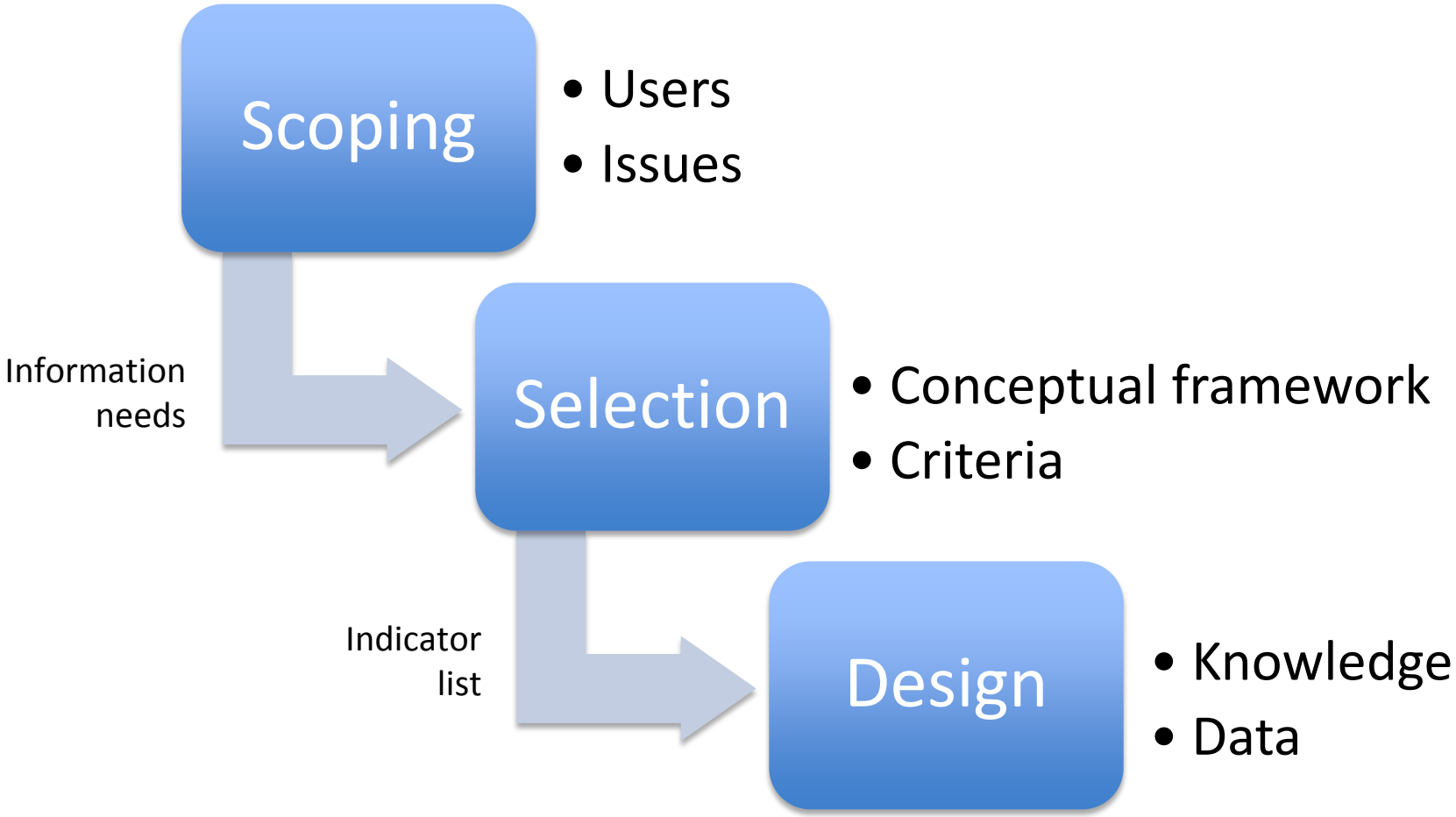
ehinz
Environmental Health
Indicators New Zealand

METHODOLOGY & BORDER HEALTH INDICATOR DEVELOPMENT

Sarah Jefferies

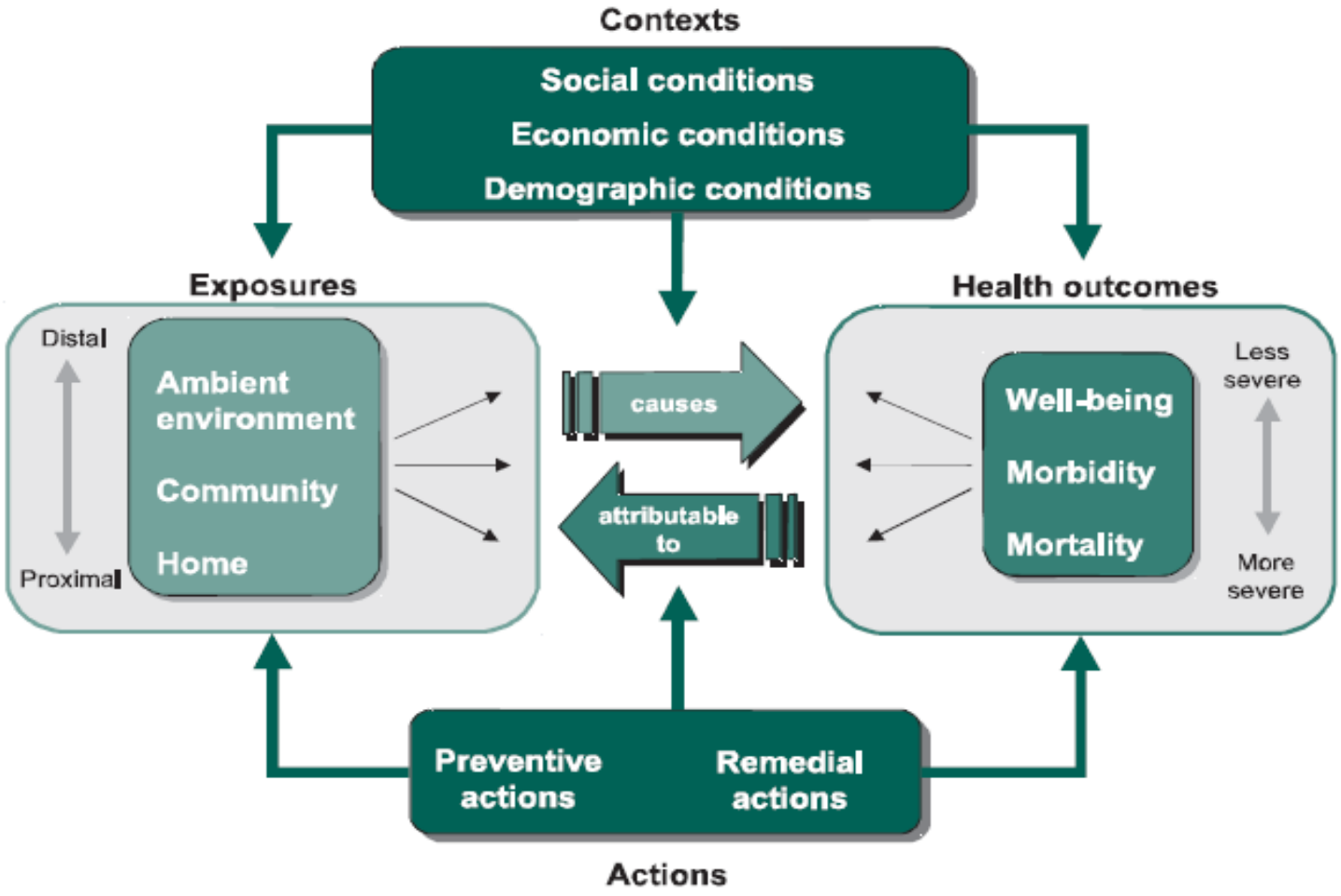
26th September 2016

OVERVIEW



World Health Organization. Making a difference: Indicators to Improve Children's Environmental Health: prepared by David Briggs. Geneva: WHO; 2003

MULTIPLE EXPOSURES – MULTIPLE EFFECTS



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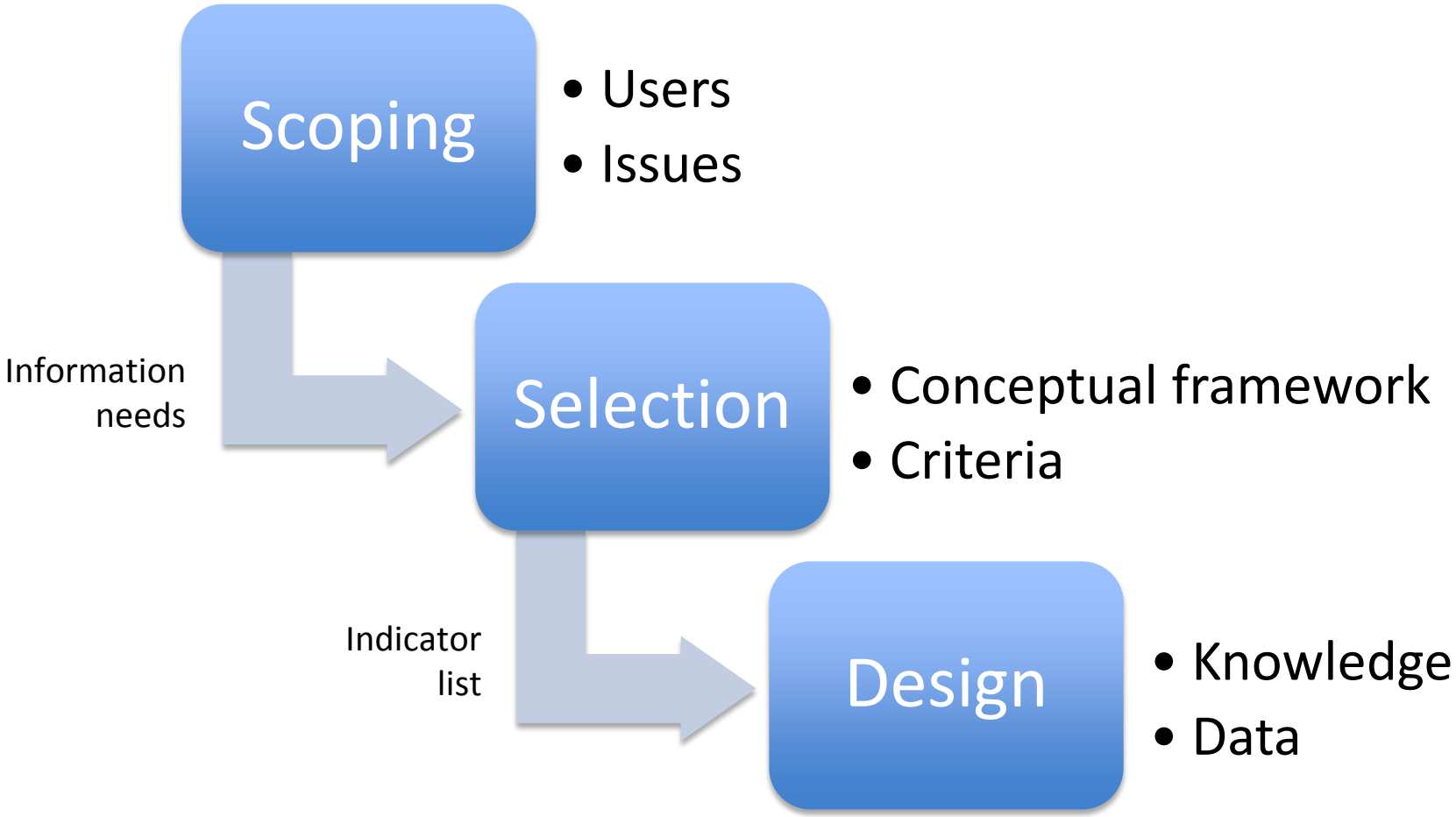

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SELECTION CRITERIA

- Available data
- Scientifically valid
- Sensitive
- Consistent
- Comparable
- Sound measurement
- Intelligible
- Able to be disaggregated
- Timely
- Public health impact

Statistics New Zealand. Good Practice Guidelines for the Development and Reporting of Indicators. Advisory Committee on Official Statistics; 2009

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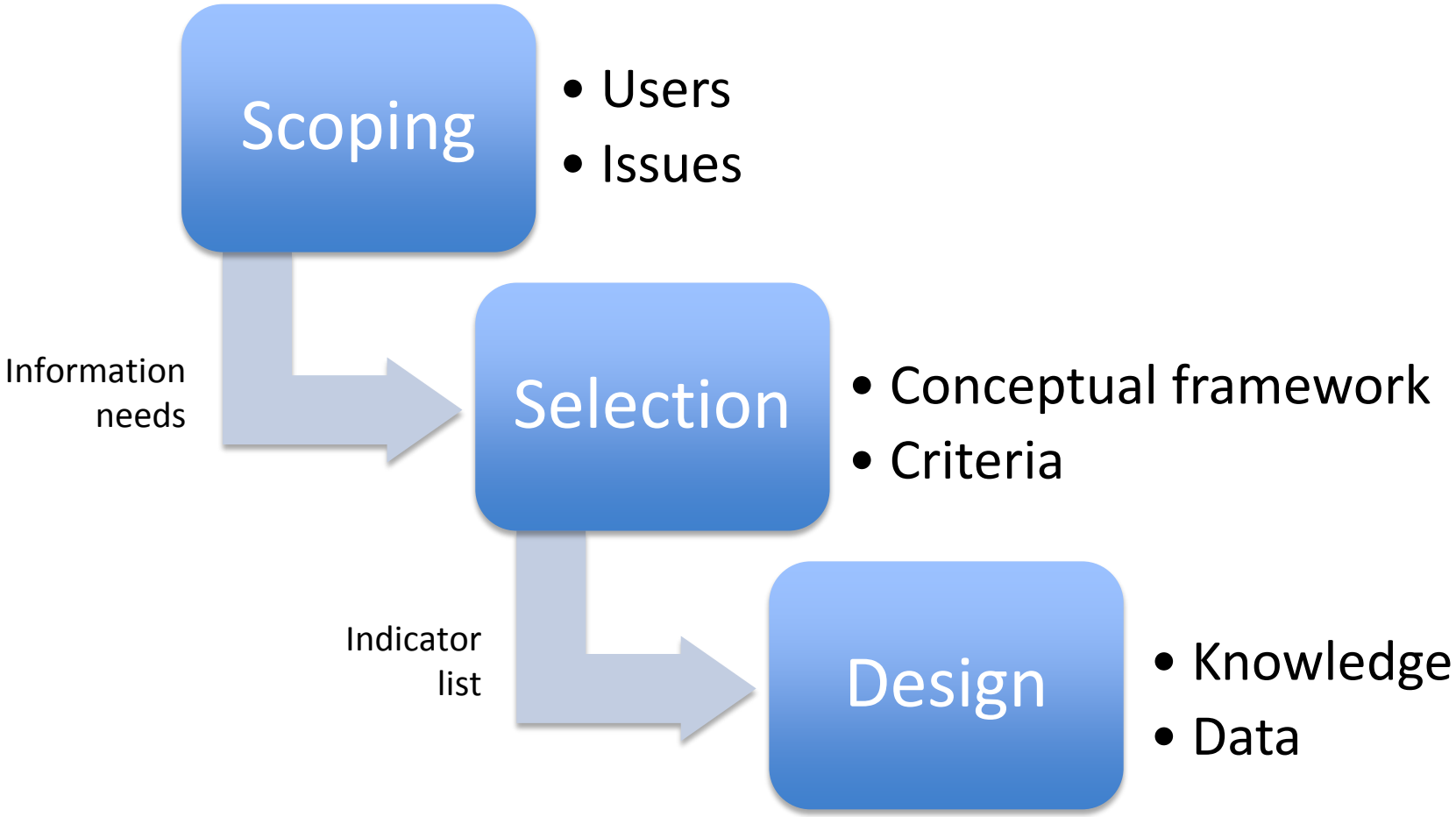

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SCOPING

USERS

- Central Government
- Local Government
- Border agencies
- Interested individuals

BORDER HEALTH

- Priorities: Exotic human infectious diseases; Vector-borne diseases & mosquito movement
- Challenges: Large scope, data limitations

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SCOPING

USERS

- Central Government
- Local Government
- Border agencies
- Interested individuals

PURPOSES

- To identify priority border health issues, and populations vulnerable to these
- To monitor the effectiveness of New Zealand's border health protection policies and activities
- To support border health decision-makers

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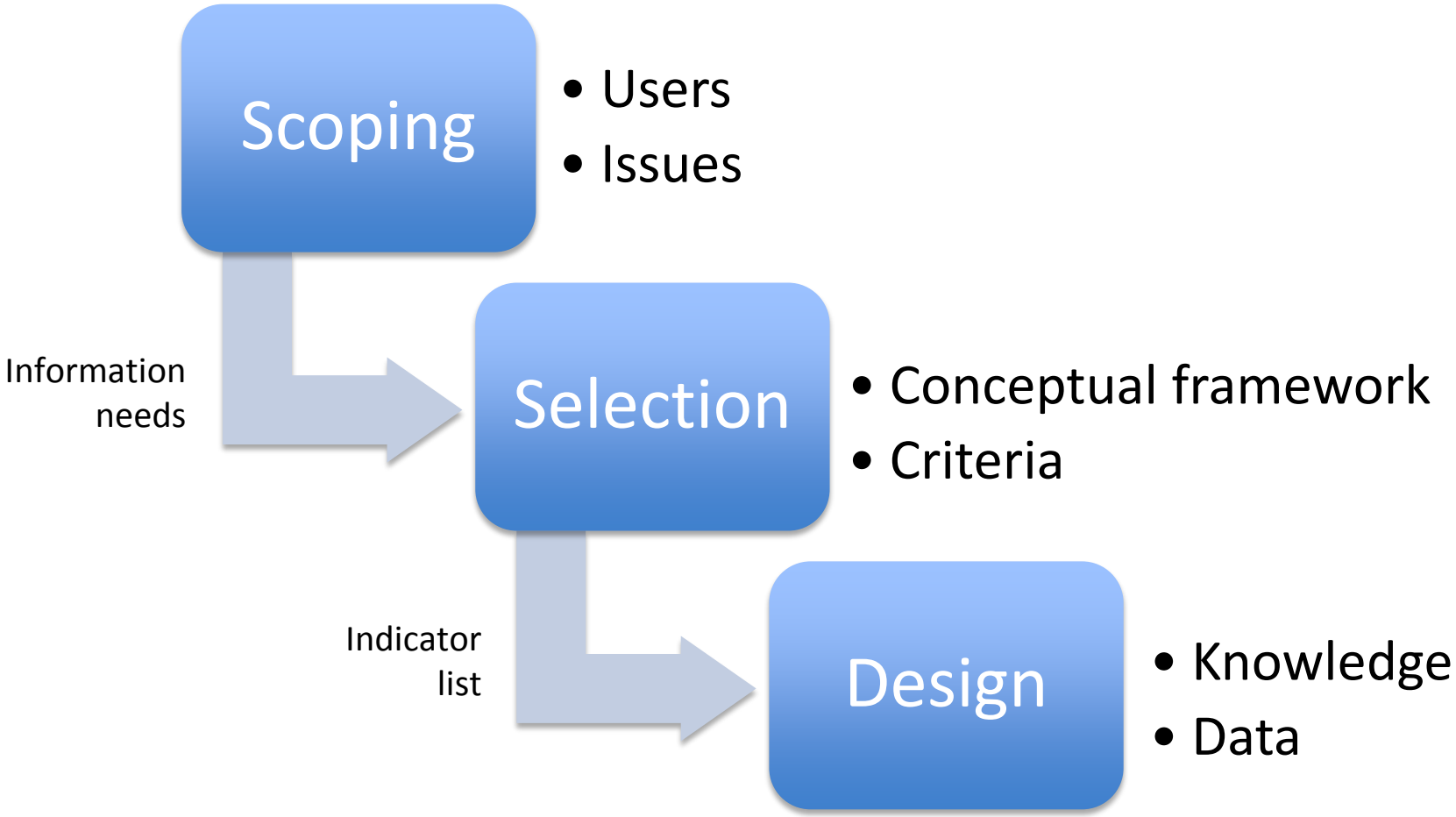

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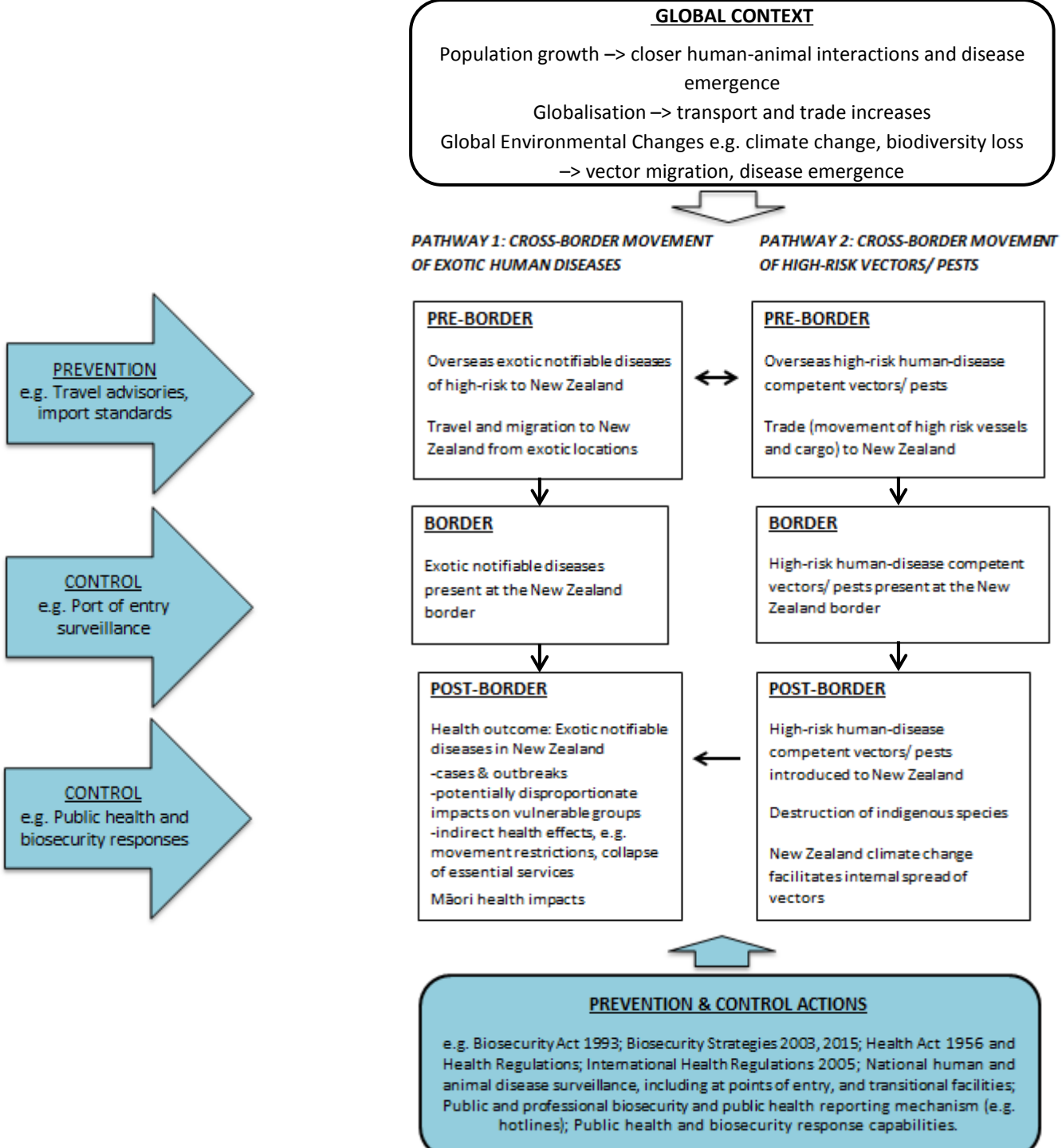
GLOBAL CONTEXT
Population growth –> closer human-animal interactions and disease emergence
Globalisation –> transport and trade increases
Global Environmental Changes e.g. climate change, biodiversity loss –> vector migration, disease emergence
PATHWAY 1: CROSS-BORDER MOVEMENT OF EXOTIC HUMAN DISEASES
PATHWAY 2: CROSS-BORDER MOVEMENT OF HIGH-RISK VECTORS/ PESTS
PREVENTION
e.g. Travel advisories, import standards
CONTROL
e.g. Port of entry surveillance
CONTROL
e.g. Public health and biosecurity responses
PRE-BORDER
Overseas exotic notifiable diseases of high-risk to New Zealand
Travel and migration to New Zealand from exotic locations
PRE-BORDER
Overseas high-risk human-disease competent vectors/ pests
Trade (movement of high risk vessels and cargo) to New Zealand
BORDER
Exotic notifiable diseases present at the New Zealand border
BORDER
High-risk human-disease competent vectors/ pests present at the New Zealand border
POST-BORDER
Health outcome: Exotic notifiable diseases in New Zealand
-cases & outbreaks
-potentially disproportionate impacts on vulnerable groups
-indirect health effects, e.g. movement restrictions, collapse of essential services
Māori health impacts
POST-BORDER
High-risk human-disease competent vectors/ pests introduced to New Zealand
Destruction of indigenous species
New Zealand climate change facilitates internal spread of vectors
PREVENTION & CONTROL ACTIONS
e.g. Biosecurity Act 1993; Biosecurity Strategies 2003, 2015; Health Act 1956 and Health Regulations; International Health Regulations 2005; National human and animal disease surveillance, including at points of entry, and transitional facilities; Public and professional biosecurity and public health reporting mechanism (e.g. hotlines); Public health and biosecurity response capabilities.

SELECTION

Indicator	Definition	Data source(s)	Environmental Health Indicator Selection Criteria									
			Available data	Scientifically valid	Sensitive	Consistent	Comparable	Methodologically sound measurement	Intelligible and easily interpreted	Able to be disaggregated	Timely	Public health impact
The Cross-Border Movement of Exotic Human Diseases												
Post-border health outcome: Imported exotic notifiable diseases in New Zealand												
Public Health Emergencies of International Concern (PHEIC) in New Zealand, and other priority exotic infectious disease of concern detected in New Zealand	Annual incidence of diseases classified as PHEICs and priority notifiable respiratory and vector-borne diseases (VBD) imported in to New Zealand (by DHB, ethnicity, origins of disease)	EpiSurv (ESR)	Y	Y	Y	Y	Y*	Y	Y	Y	Y	Y
Post-border exposure/ Māori health indicator: New Zealand indigenous species affected by exotic pests												
The presence and impact of exotic pests on New Zealand's indigenous species	Occurrence of invasive marine organisms, plants and animals; Impact of pests on indigenous species	Te taiao indicators (Statistics NZ and MfE)	Y	Y	N – trends not shown	Y	N/A	Y	Y	Y	Variable	Does not represent problem complexity
Border exposure/action: Exotic notifiable diseases intercepted at the New Zealand border												
Exotic disease events at the New Zealand border	Number of infectious disease responses by	Annual Border Health Return	Y	Y	N	N	?	N	Y	Y	Y	Y

SELECTION

Human pathway

- **Post-border**: Annual frequency of border health priority disease notifications in New Zealand
- **Pre-border**: Annual overseas distribution of border health priority disease outbreaks, with focus on the Asia-Pacific

Vector pathway

- **Post-border**: Annual number of exotic mosquito species known to be established in New Zealand
- **Border**: Annual frequency of high-risk pests intercepted at New Zealand's border

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Overseas Infectious Diseases of Priority Concern

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HIGHLIGHTS:

- The number of international diseases of particular border health concern to New Zealand increased, 2011-15.
- Polio and Ebola Virus Disease were each alerted as a 'Public Health Emergency of International Concern' by the World Health Organization in 2014 and 2015.
- Four types of serious respiratory virus were reported between 2011 and 2015.
- Mosquito-borne diseases spread internationally, 2011-15.

Overseas exotic diseases are harmful to New Zealand's health

High-risk exotic diseases, potentially harmful to New Zealand's health, are those which:

- spread easily
- New Zealand people are particularly vulnerable to (e.g. non-immune)
- can cause severe illness
- are difficult to treat

Exotic diseases overseas can be spread to New Zealand by New Zealand travellers, visitors and immigrants. International air travel can spread diseases very quickly across borders. Monitoring high-risk exotic diseases overseas is therefore important. It can tell us about the possible exposures of New Zealand travellers, visitors and immigrants to diseases, and help target our disease prevention and control work.

Table 1: Reported distribution of Ebola and Polio, 2011-15

Year	Ebola	Polio
2011	Africa: Uganda	Africa: Chad, Cote d'Ivoire Asia: China, Pakistan
2012	Africa: Uganda, Democratic Republic of Congo	Africa: Niger
2013		Africa: Cameroon, Kenya, Somalia, South Sudan Middle East: Syrian Arab Republic
2014*	Africa: Guinea, Liberia, Mali, Sierra Leone, Democratic Republic of Congo, Nigeria Americas: USA Europe: Spain, UK,	Africa: Cameroon, Equatorial Guinea, Madagascar, South Sudan Middle East: Iraq, Syrian Arab Republic
2015*	Europe: Italy	Asia: Lao People's Democratic Republic, Myanmar

*Years Ebola and Polio were alerted as a 'Public Health Emergency of International Concern'. Source: WHO 2016a

Two diseases were alerted as a 'Public Health Emergency of International Concern' between 2011-15

Polio and Ebola Virus Disease were each classified as a 'Public Health Emergency of International Concern' by the WHO during 2014 and 2015 (WHO 2016a). There were no alerts between 2011 and 2013.

Ebola Virus Disease can cause fever, internal bleeding and death. It is transmitted from animals (e.g. bats in parts of Africa) before spreading between humans. A large outbreak began in 2014 and affected more than 28,000 people in West Africa (CDC 2016a). A few cases were imported to high-income countries (Table 1) but disease spread within these countries was rare (WHO 2016a). Before 2014, outbreaks were small and contained within remote African areas (WHO 2016b). Increasing population size, movement, urbanisation, and less developed public health capacities in West Africa, contributed to the recent emergency.

Polio is a viral disease which can cause severe neurological disability and sometimes death. It is preventable, and there is a global goal to eradicate it from the world using the polio vaccine (WHO 2016c). Between 2011 and 2014, the international spread of polio increased (WHO 2016a). Key regions affected were Africa, the Middle East, and Asia (Table 1).

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Kia ora