

ABSTRACT

The Integration Imperative and Cumulative Impacts: Understanding and responding to the environment, community and health impacts of changing landscapes and waterways

Margot W. Parkes

Canada Research Chair in Health, Ecosystems and Society; Associate Professor, School of Health Sciences, Cross-appointed, Northern Medical Program, University of Northern British Columbia, Canada

margot.parkes@unbc.ca

Calls for integration of knowledge are not new. They reflect an ongoing and fertile tension in response to complexity: a need to disaggregate our understanding into manageable parts, and a corresponding imperative to put things back together, to address whole, interrelated systems that influence our personal, public and planetary health. This 'integration imperative' poses opportunities and challenges across academic disciplines, policy sectors, and knowledge cultures, as well as fueling respect and recognition for the precedents and ongoing leadership of Indigenous knowledge. The need for integrative understanding and responses becomes especially relevant when seeking to understand and respond to the cumulative determinants of health, in relation to social *and* ecosystem change, over space and time. For the health sector, this involves pathways of influence that extend beyond the typical purview of health, where 'upstream' includes places, waterways, landscapes and drivers of change, that are well outside our direct gaze or traditional spheres of influence. This presentation explores these themes in relation to a five-year international research project, based in Canada and engaged in Australia and New Zealand, known as the ECHO (Environment, Community, Health Observatory) Network. The project focuses on working together across sectors to understand and respond to the cumulative health, environment and community impacts of natural resource management. The research prioritises learning about a new generation of tools and processes that local, regional and international partners are using to "take notice for action", as a means to respond to the integration imperative and the cumulative determinants of health impact.



The Integration Imperative & Cumulative Impacts:

Understanding and responding to the environment, community and health impacts of changing landscapes and waterways

Margot W Parkes^{1, 2}

1: Canada Research Chair in Health Ecosystems & Society, Associate Professor, School of Health Sciences; Cross-appointed Northern Medical Program, UNBC

2: Co-lead: ECHO (Environment, Community, Health Observatory) Network
Canada, New Zealand, Australia

Presentation to:
One Health Aotearoa: 3rd Symposium
November 29, 2017



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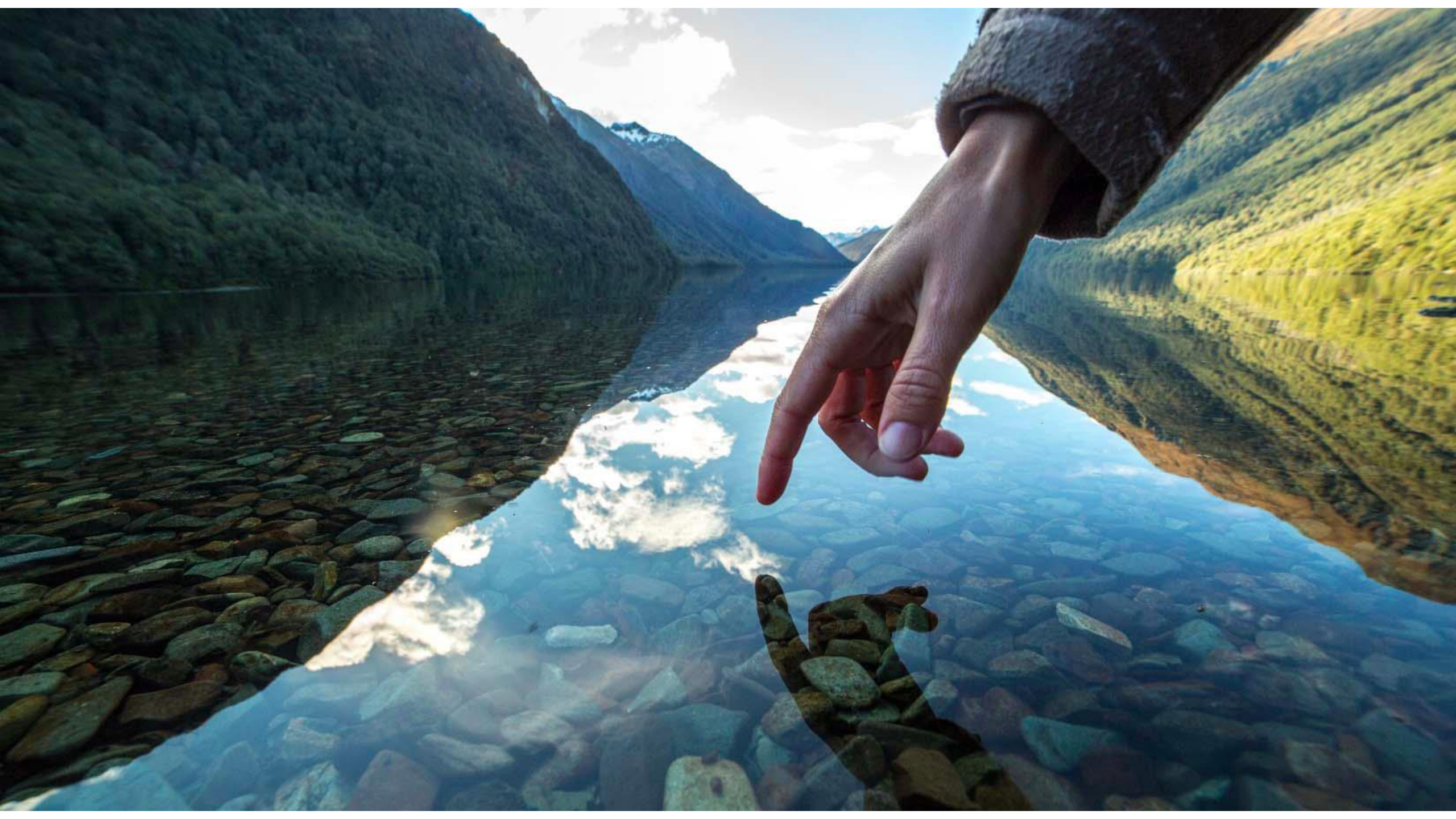
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The Integration Imperative & Cumulative Impacts



The Integrations Imperative and Cumulative Impacts:
Understanding and responding to impacts in landscapes and waterways



CONCEPTS

Integration of Knowledges

Doing the same things better?

Doing better things?

CONFLUENCE

Cumulative Impacts in Landscapes & Waterways

Moving From 'hazards to 'home'...

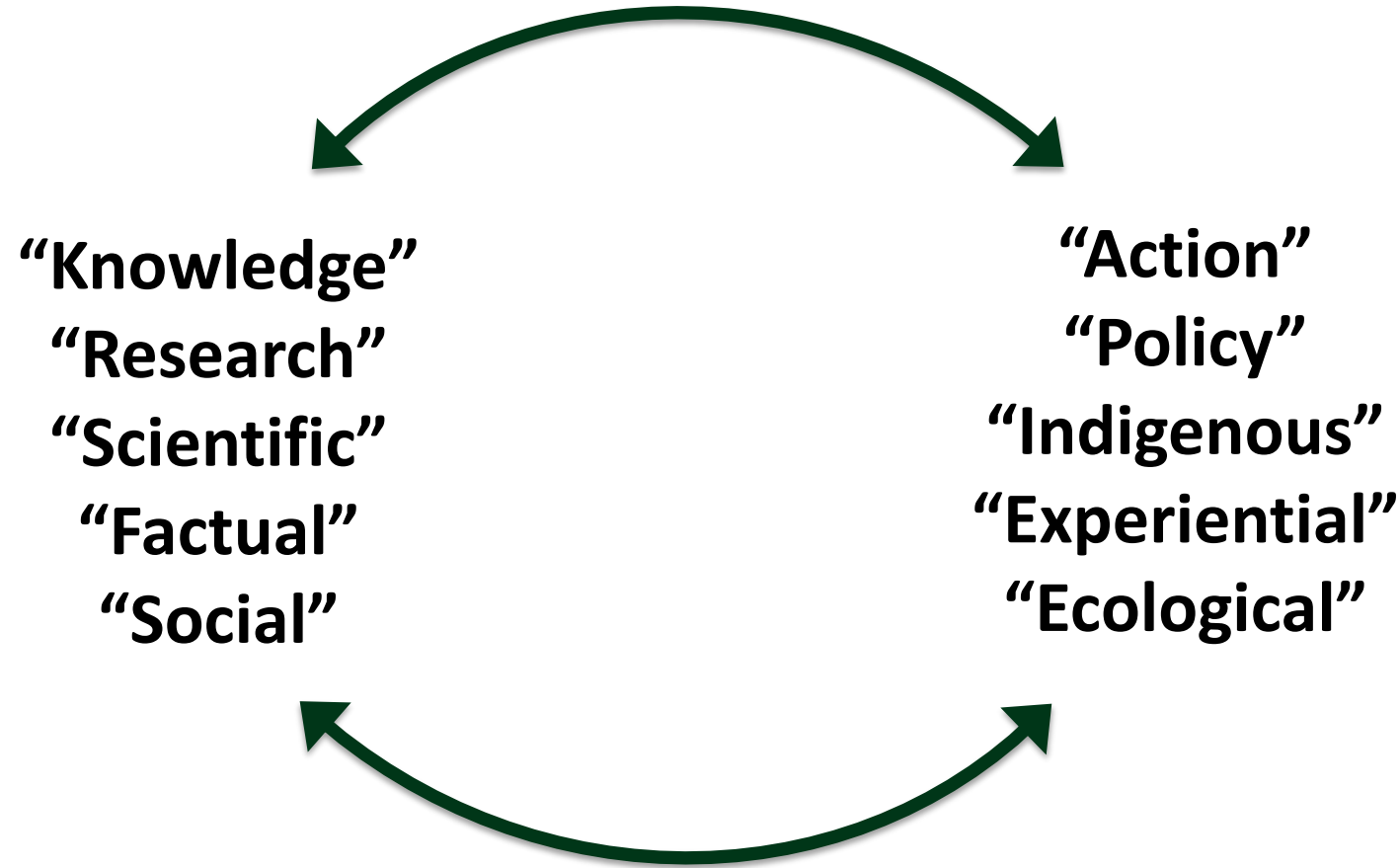
CAPACITY

'Next- generation' understanding and response

How to strengthen capacity for this work?

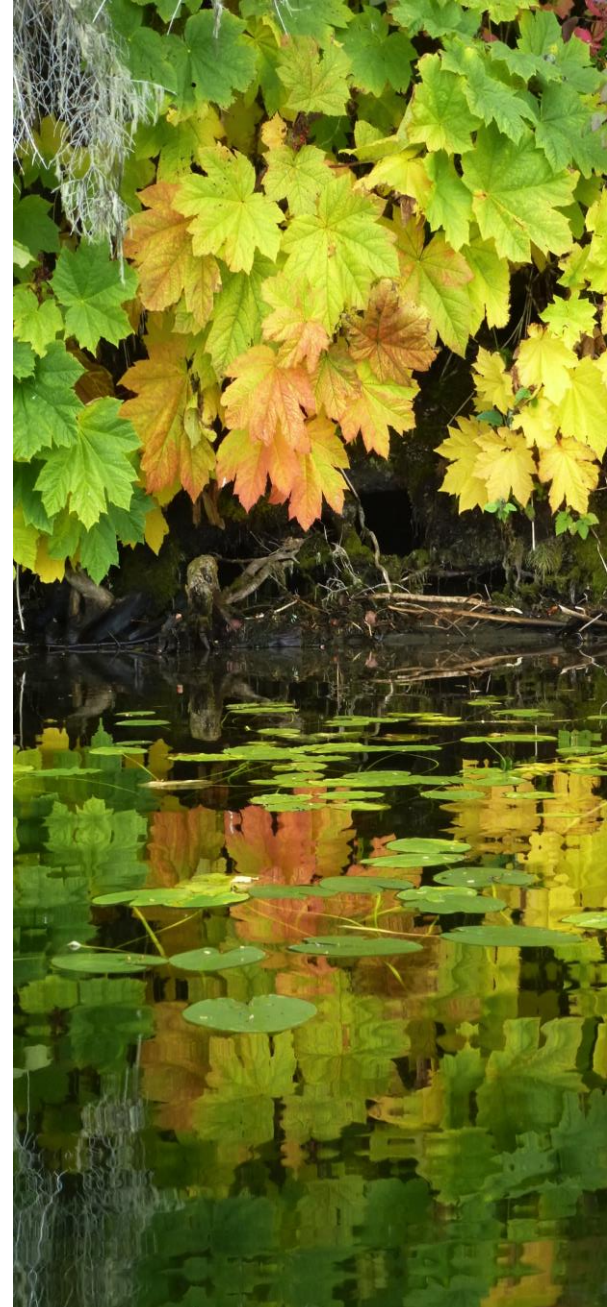
Lead? Convene? Support? Listen?

Calls for integration are not new....



A demand for "both/and" thinking

Integrative approaches often demand working in the spaces "in between"



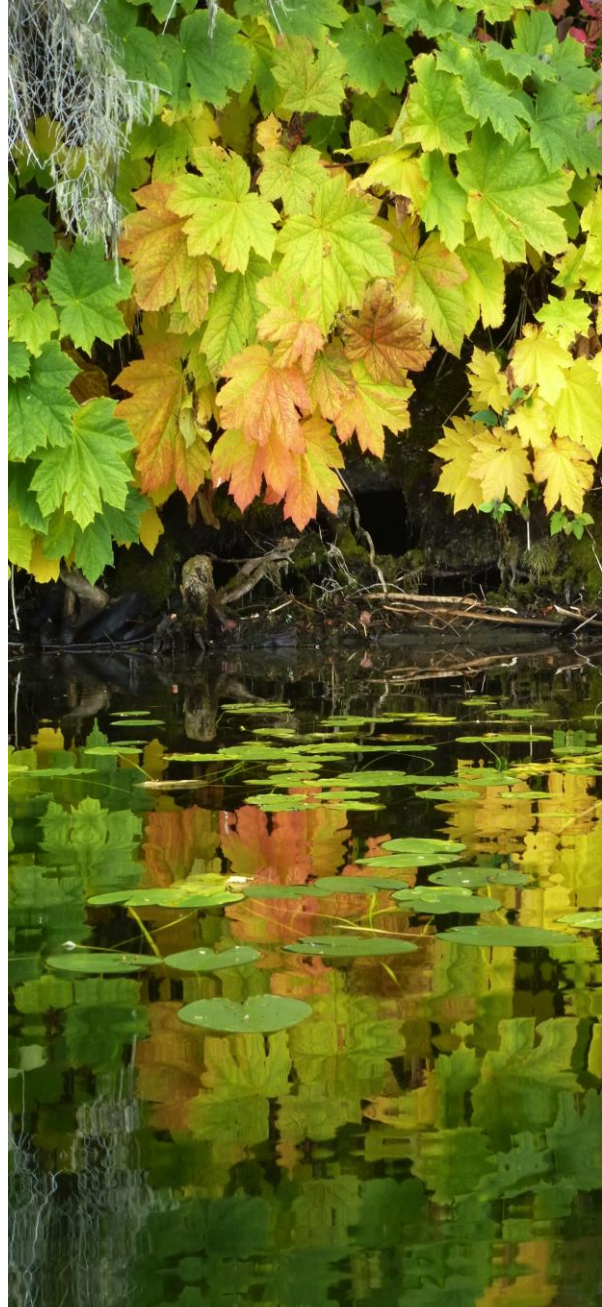
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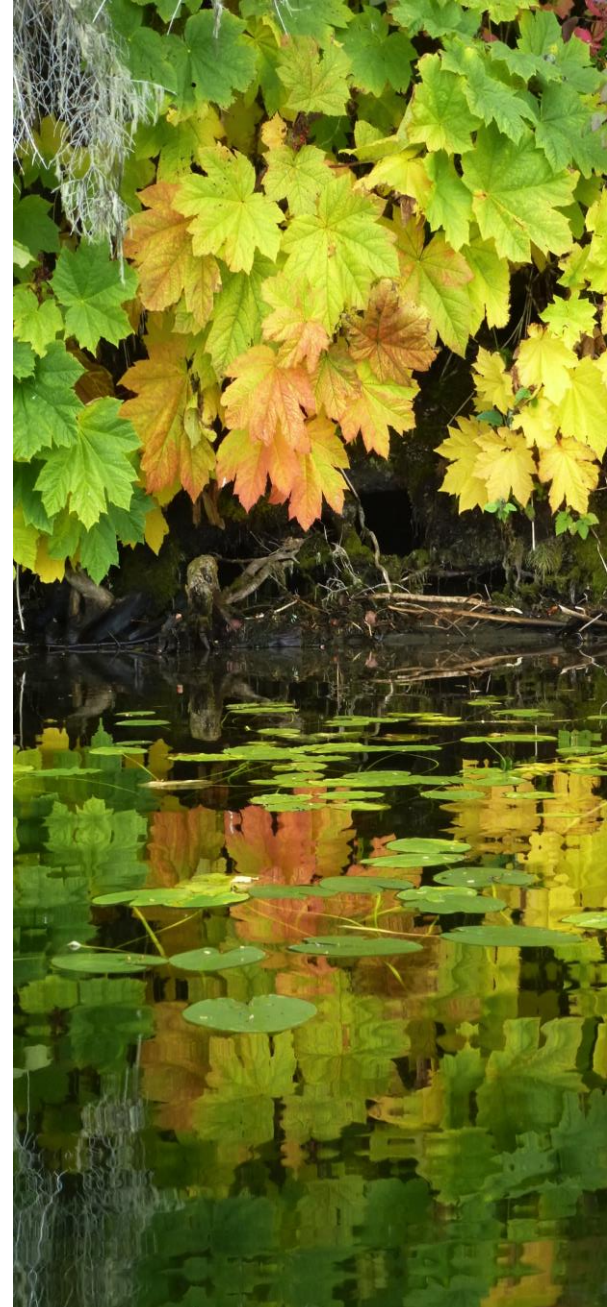
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CONCEPTS

Calls for integration are not new....

Buse, C. et al., (forthcoming 2018). **A public health guide to field developments linking ecosystems, environments and health in the Anthropocene.**

Journal of Epidemiology & Community Health.

Overview of field developments

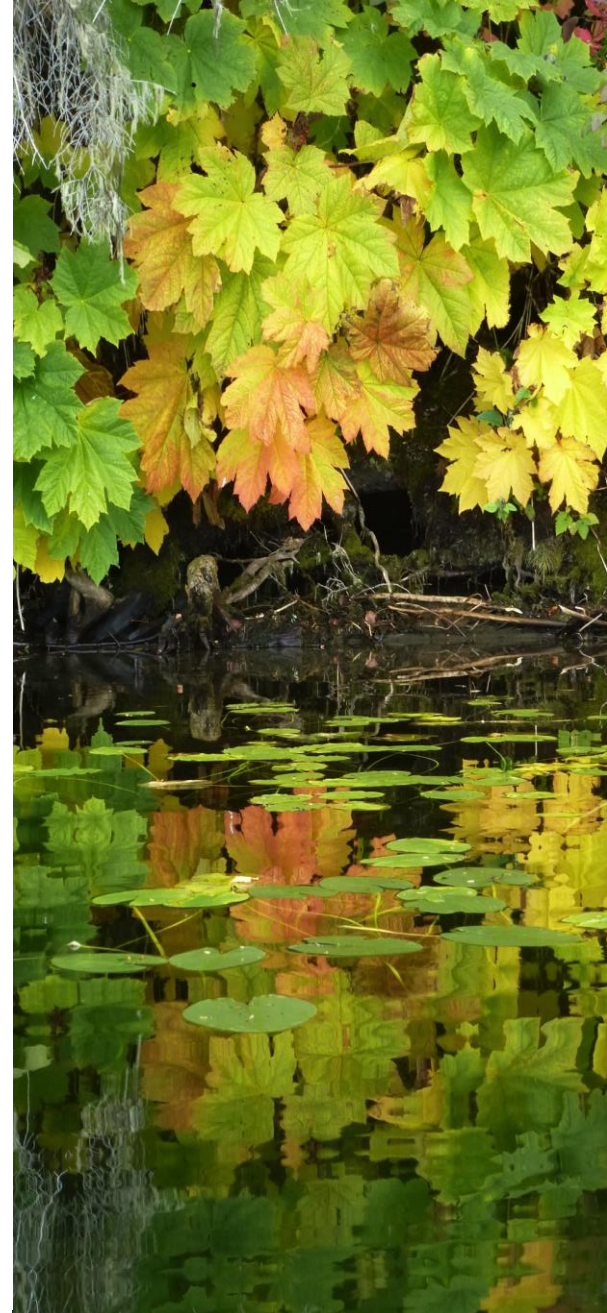
1. Occupational and Environmental Health
2. Political Ecology of Health
3. Environmental Justice
4. Ecohealth
5. One Health
6. Ecological Public Health
7. Planetary Health

*??
variable
relationships
with
Indigenous
leadership
and
precedents
??*

A demand for “both/and” thinking

Integrative approaches often demand working in the spaces “in between”

CONCEPTS



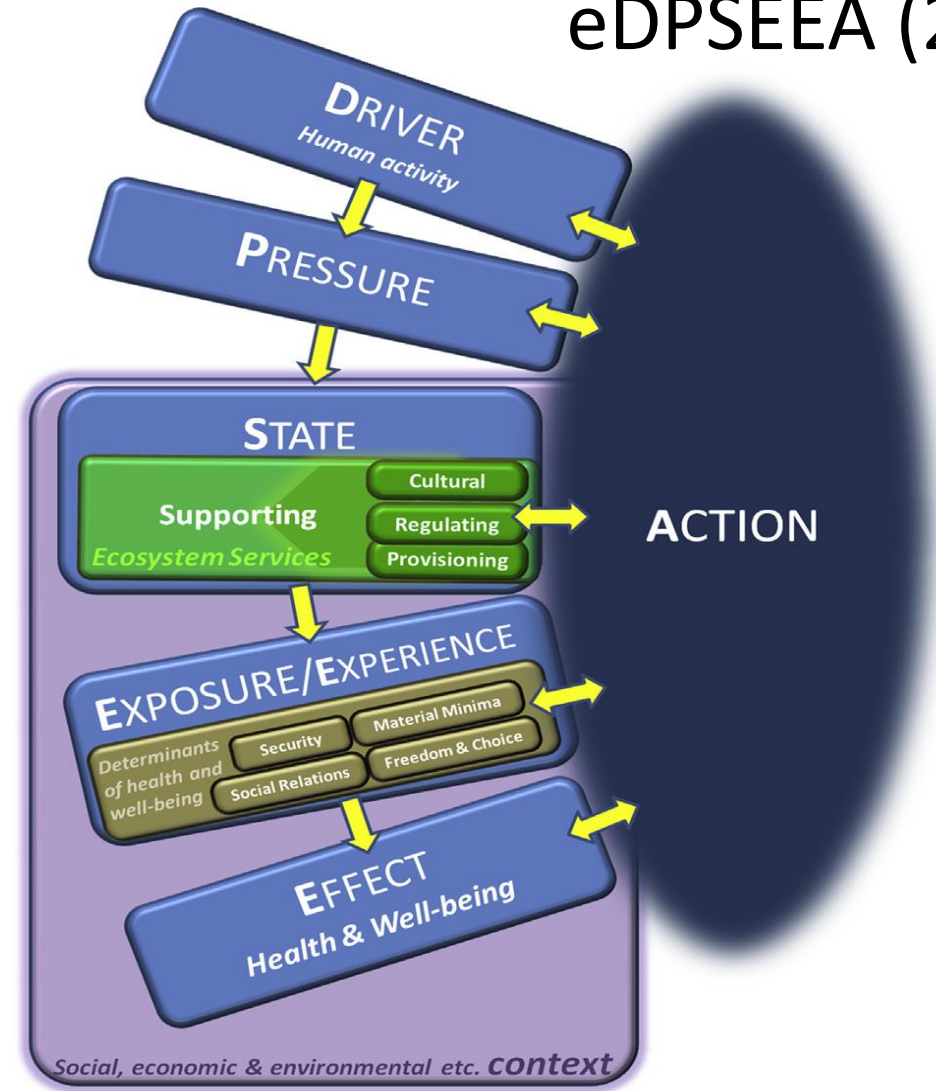
Calls for integration are not new....

they reflect:

...an ongoing and fertile tension in response to complexity: a need to disaggregate our understanding into manageable parts...

eDPSEEA (2010)

Fig. 1 - Ecosystem-enriched DPSEEA (eDPSEEA) a conceptual framework for an integrated assessment of human and ecosystem health and ecosystem service provision.



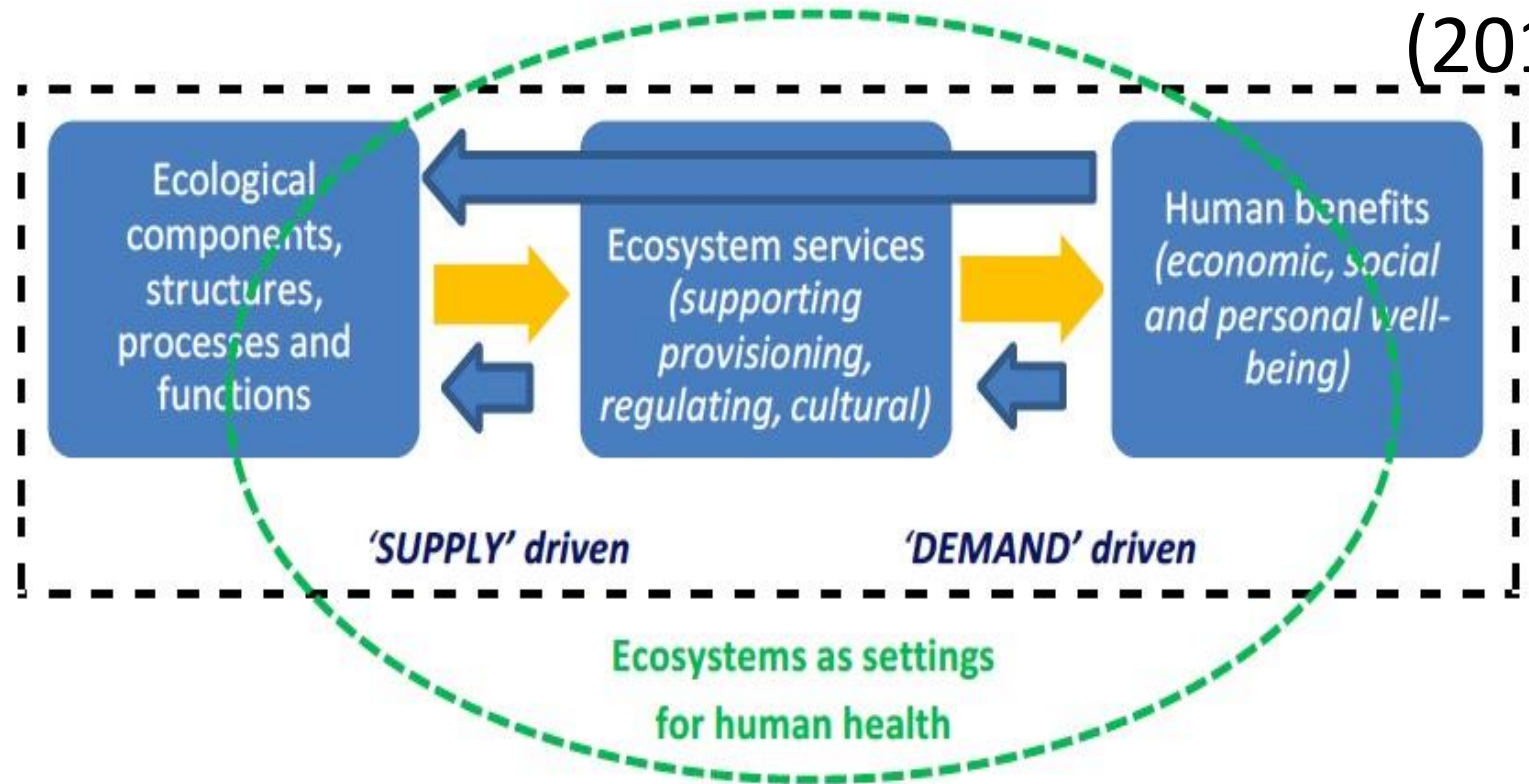
Reis, S., et al (2015). Integrating health and environmental impact analysis. *Public Health*, 129(10), 1383–1389.

CONCEPTS

***Calls for integration are not new....
they reflect:***

***... a corresponding
imperative to **put
things back together,**
to address whole,
interrelated systems
that influence our
personal, public and
planetary health...***

Ecosystems as settings for health
(2016)



Ecosystems as settings for human health and well-being.

A broad conceptual model showing the relationship between ecological integrity, ecosystem services, and the benefits that humans derive.

Adapted from Fig 2: Parkes, M. W., & Horwitz, P. (2016). Ecology and Ecosystems as Foundational for Health. Ch 2. In H. Frumkin (Ed.), *Environmental Health: From Global to Local* (3rd Edition). Jossey-Bass.

CONCEPTS

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Prism Framework for Health and Sustainability (2003, 2010, 2016)

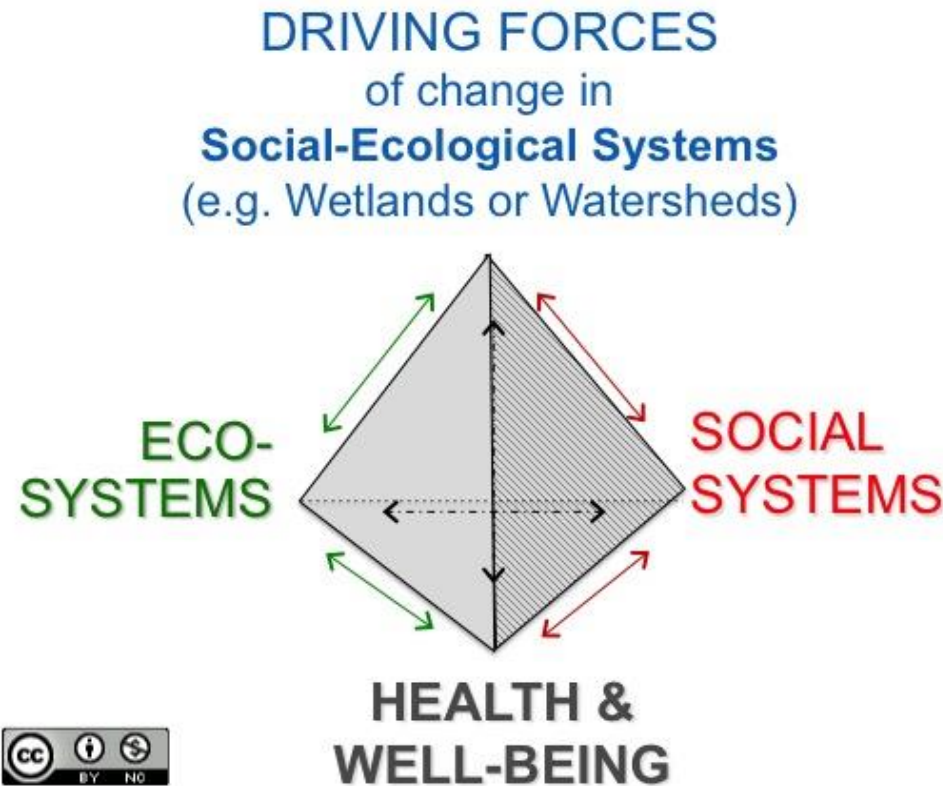


Figure 1: The Prism Framework for Health and Sustainability adapted to the Land-Water-Health Nexus

Parkes, M. W. (2016). Pacific connections for health, ecosystems and society: new approaches to the land-water-health nexus. *Reviews on Environmental Health*, 31(1), 125–130. <https://doi.org/doi:10.1515/reveh-2015-0067>

CONCEPTS

Calls for integration are not new....

A 'cascade of effects and impacts' (2016)

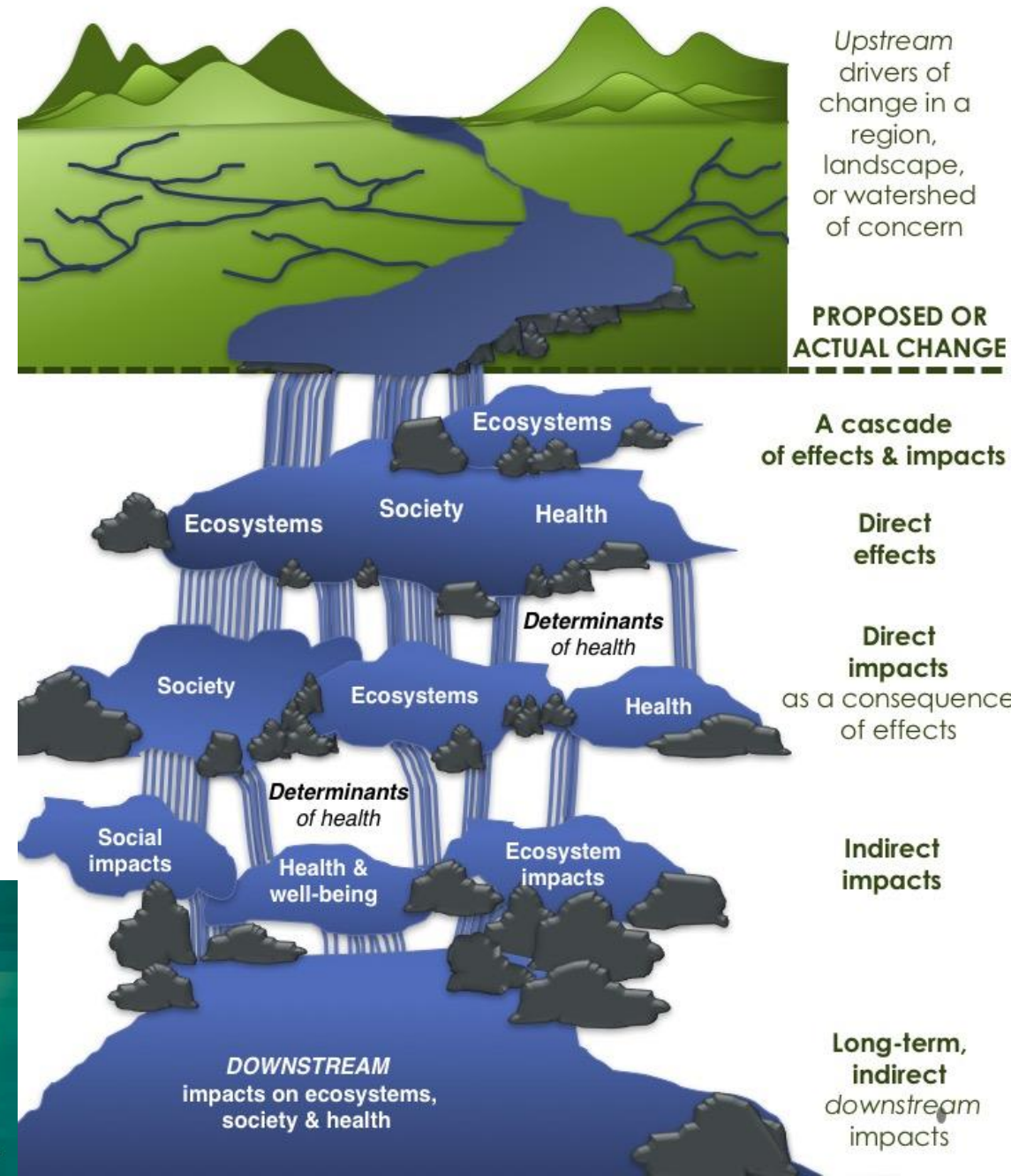
- Direct effects
- Direct impacts (as a consequence of effects)
- Indirect Impacts
- Long-term indirect (downstream) impacts

over space and time

(Cumulative health impacts of changing landscapes and waterways)

Adapted from Figure 5.2. Parkes (2016) Chapter 5 in
Gillingham et al. (2016). *The Integration Imperative: Cumulative
Environmental, Community and Health Impacts of Multiple
Natural Resource Developments*. Springer International
Publishing AG.)

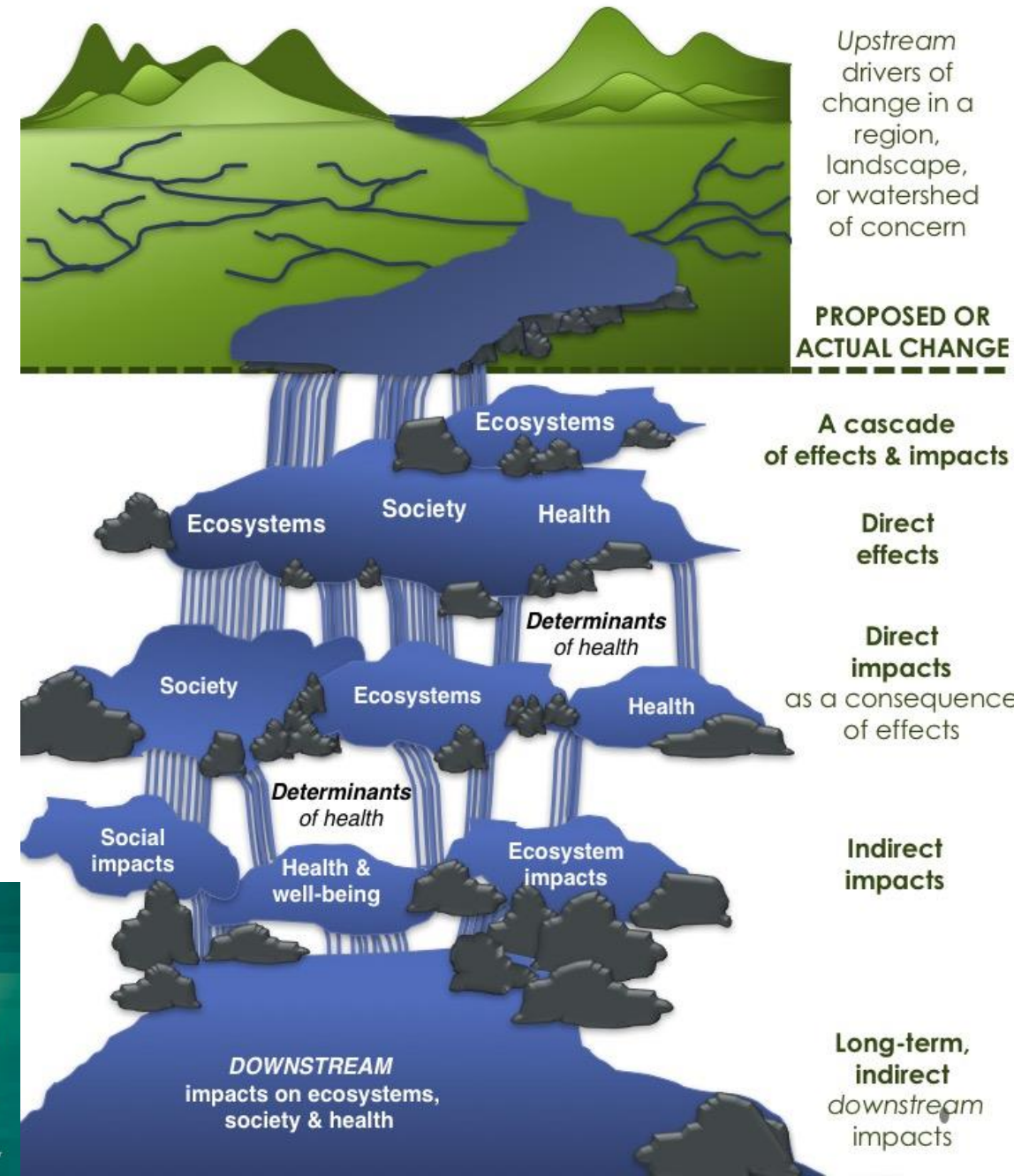
CONCEPTS



Calls for integration are not new....

*This 'integration imperative' poses **opportunities and challenges across academic disciplines, policy sectors, and knowledge cultures**, as well as fueling respect and recognition for the precedents and ongoing leadership of Indigenous knowledge...*

CONCEPTS



Calls for integration are not new....

This ‘integration imperative’ poses opportunities and challenges across academic disciplines, policy sectors, and knowledge cultures, as well as fueling respect and recognition for the precedents and ongoing leadership of Indigenous knowledge.

A demand for “both/and” thinking

BOTH doing the same things better? AND doing better things?



The Integration Imperative & Cumulative Impacts



The Integrations Imperative and Cumulative Impacts:
Understanding and responding to impacts in landscapes and waterways



CONCEPTS

Integration of Knowledges

Doing the same things better?

Doing better things?

CONFLUENCE

Cumulative Impacts in Landscapes & Waterways

Moving From 'hazards to 'home'...

CAPACITY

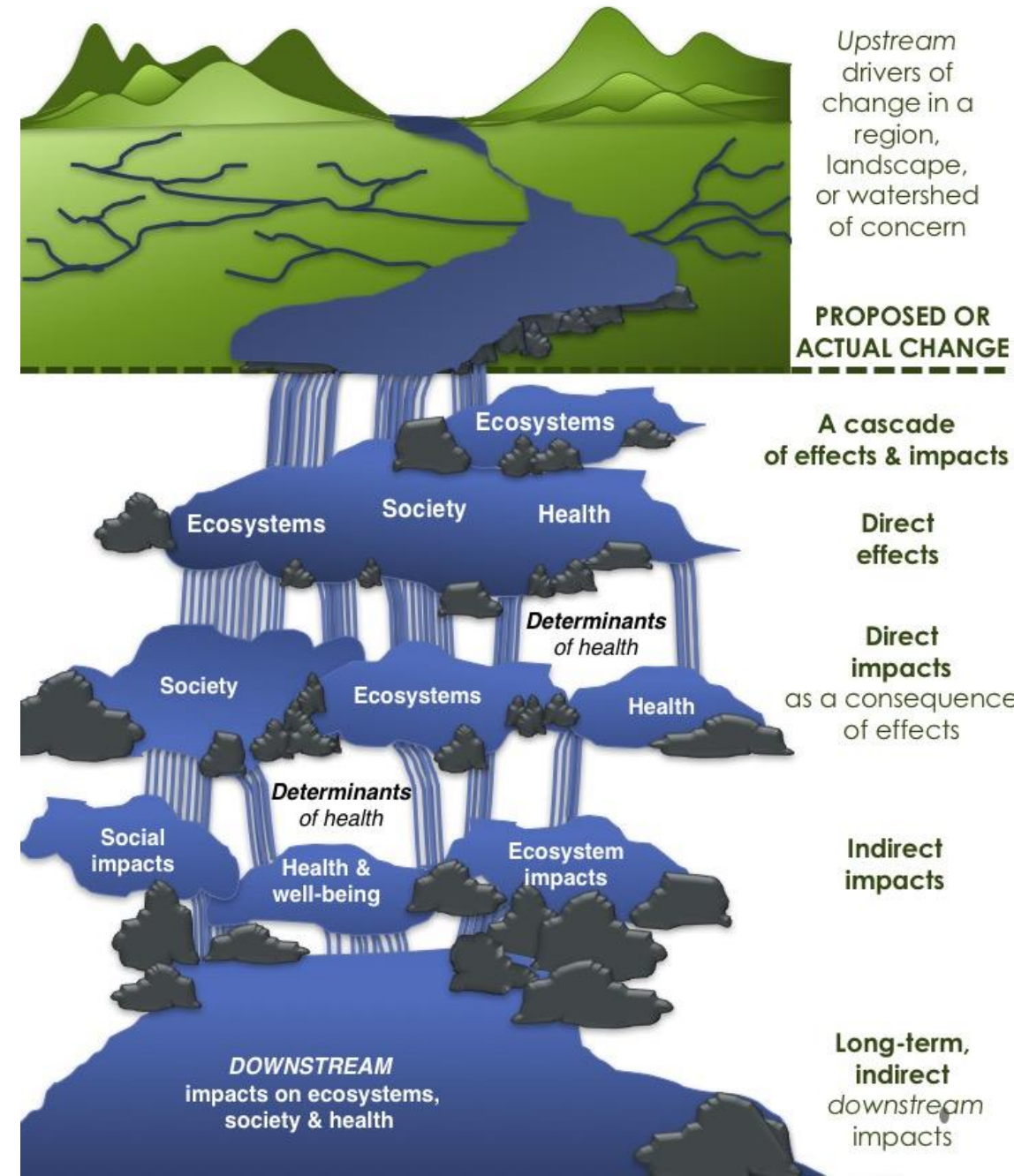
'Next- generation' understanding and response

How to strengthen capacity for this work?

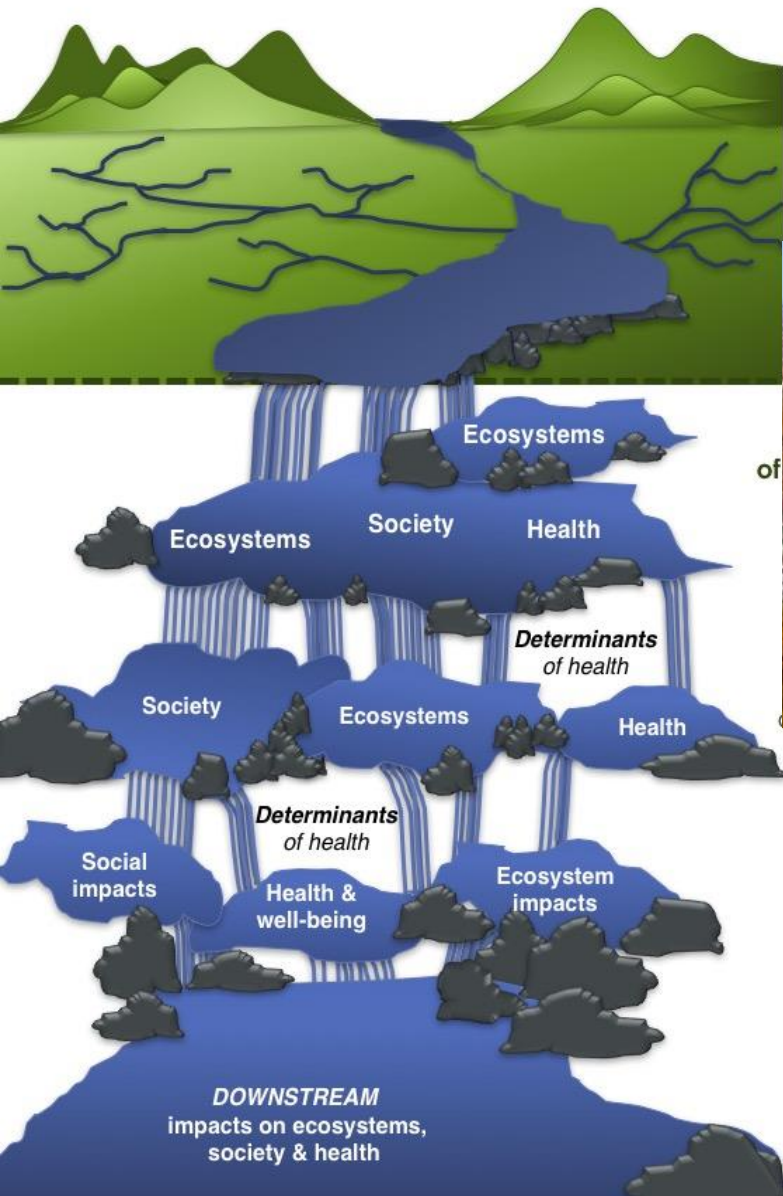
Lead? Convene? Support? Listen?

Cumulative Impacts and the Integration Imperative....

*The need for integrative understanding and responses becomes especially relevant when seeking to understand and respond to the **cumulative determinants of health, in relation to social and ecosystem change, over space and time...***

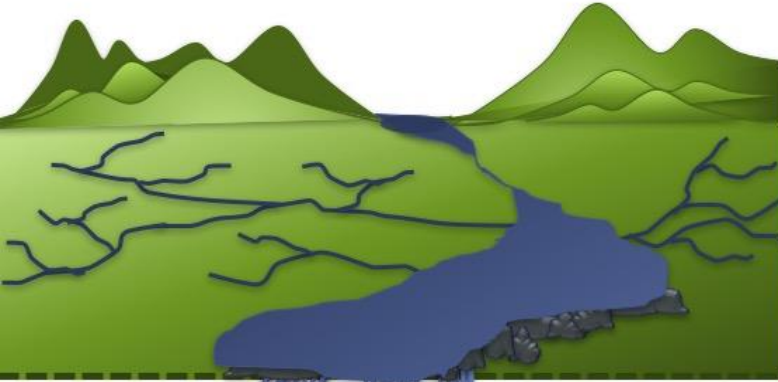


Where is “Health”



Where is “Health”?

environment → ecosystems?
hazards → home?



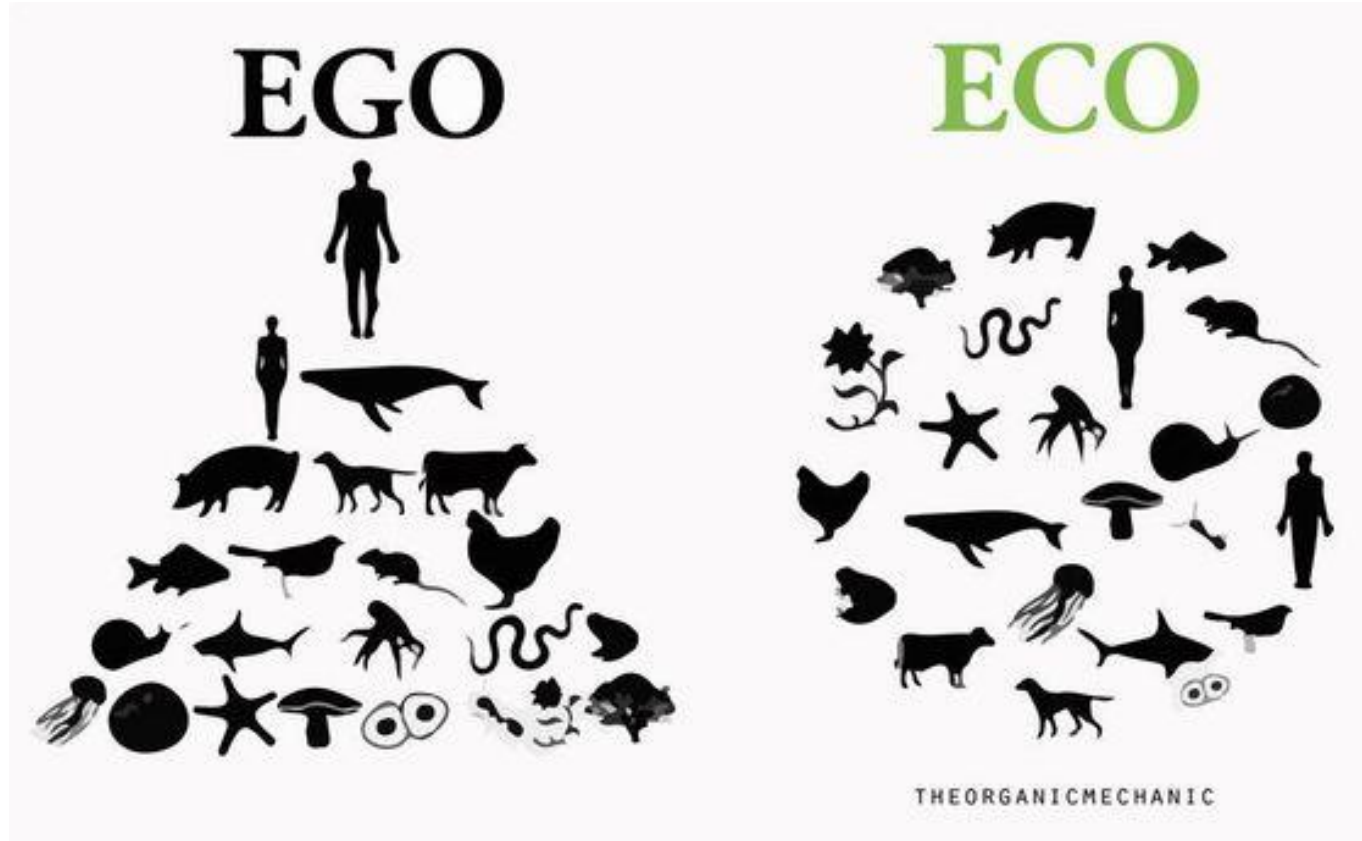
Economy?... Ecology...? Social-Ecological Systems? Ecosocial?



*Words beginning with eco origins are derived from the greek word for house (oikos) and the latin word for household (oeco)

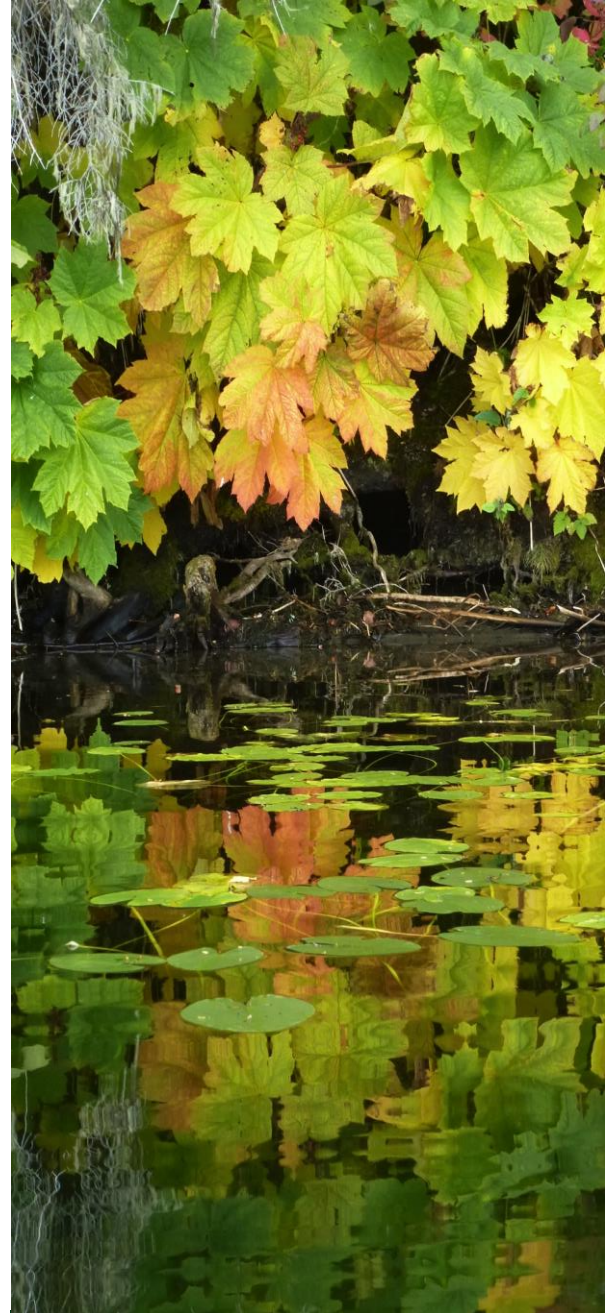
Cumulative Impacts and the Integration Imperative....

Ecology & ecosystems not only influence health, but also our ways of thinking, relating and doing...



Orienting to 'living systems'... ecosystems... Whenua... Te Tai Ao...
as guides to integration

Moving from 'hazards' to 'home'



CONFLUENCE

Ecosystem services support the “settings” for human health and well-being

Need to acknowledge negative and positive pathways (across scales)

Ecosystems Services provide;

1. core contribution to personal hydration
2. core contribution to personal nutrition and microbiomes
3. sites of exposure to pollution or toxicants
4. sites of exposure to infectious diseases
5. sites of physical hazards
6. settings for psychosocial well-being
7. places where people derive their livelihoods
8. lifestyle places that enrich people's lives, enable them to cope, and to help others
9. sites where medicinal products can be derived

Sustain life

Exposures
to hazards

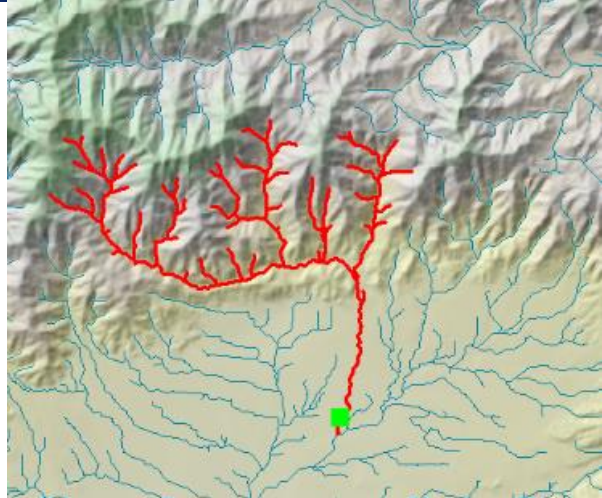
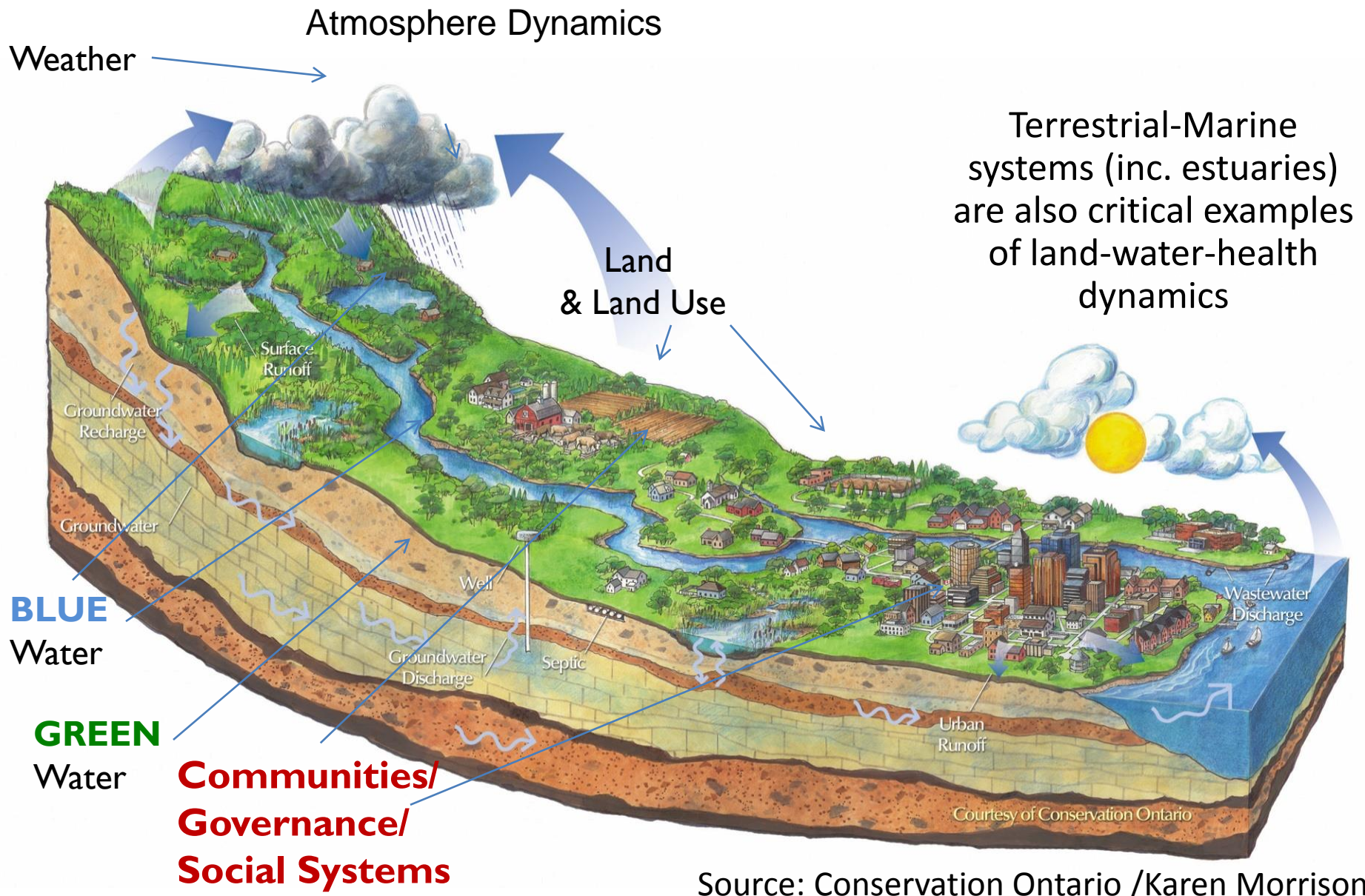
Benefits of
our 'home'



CONFLUENCE

Catchments & Ecosystems as 'settings' for Health & Well-being

Cumulative Health Impacts of changing Landscapes & Waterways



CONFLUENCE

Catchments & Ecosystems as ‘settings’ for Health & Well-being

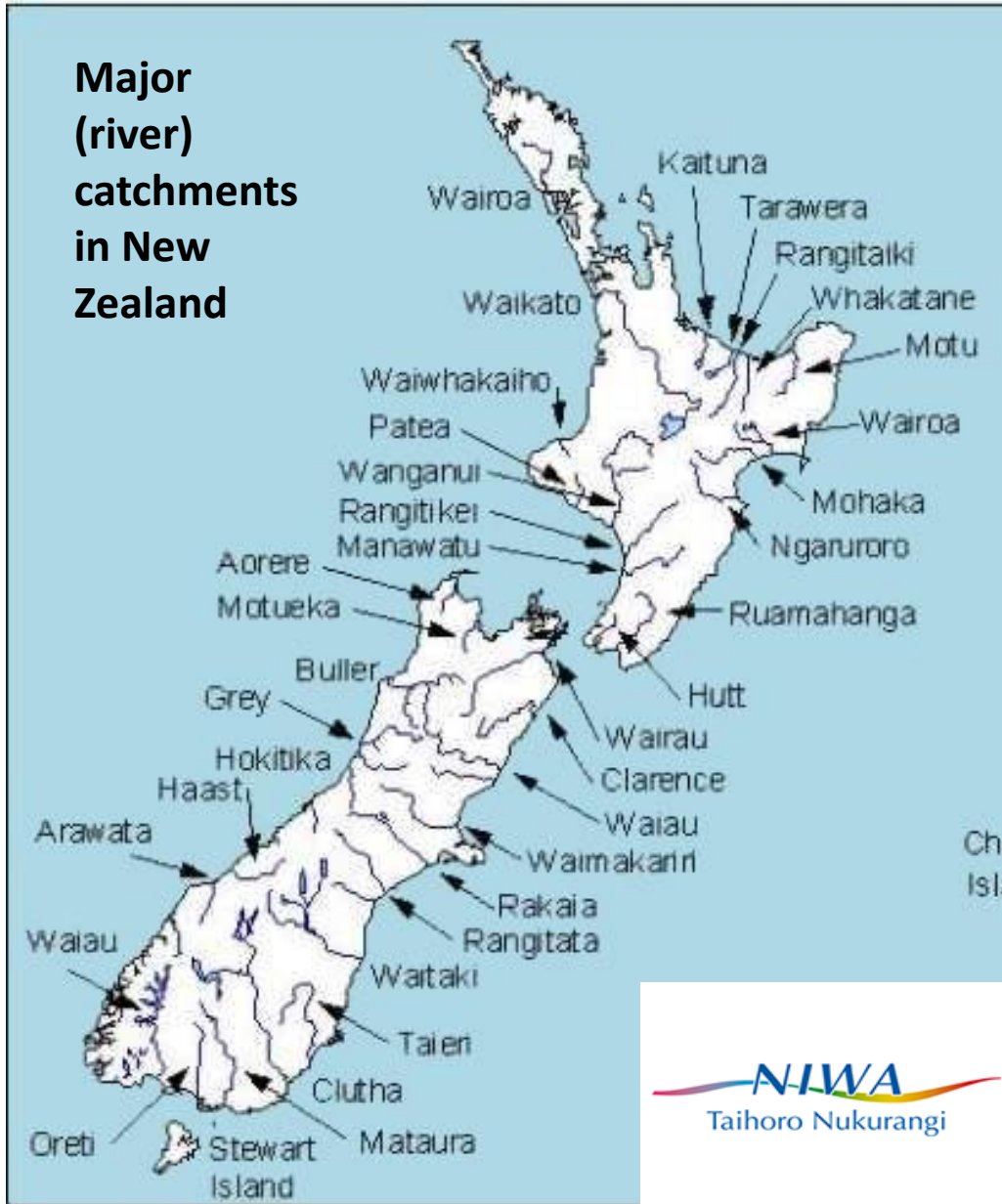
Cumulative Health Impacts of changing Landscapes & Waterways

District Health boards and their (catchment) boundaries



<http://www.health.govt.nz>

Major (river) catchments in New Zealand



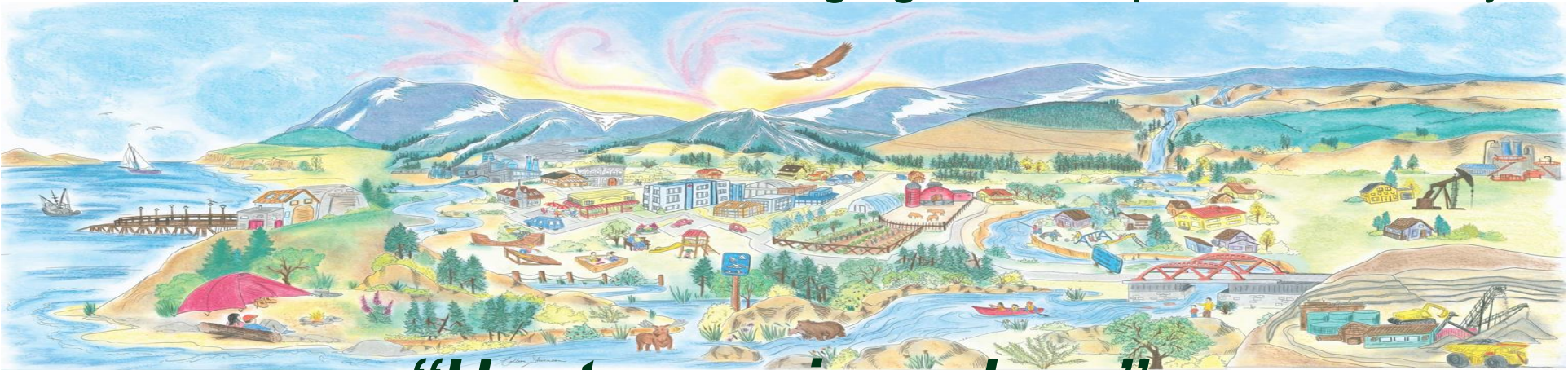
CONFLUENCE

Catchments & Ecosystems as ‘settings’ for Health & Well-being

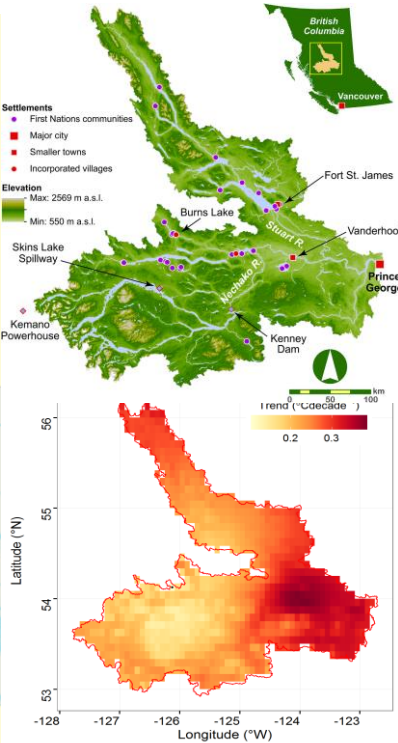
Cumulative Health Impacts of changing Landscapes & Waterways



CONFLUENCE

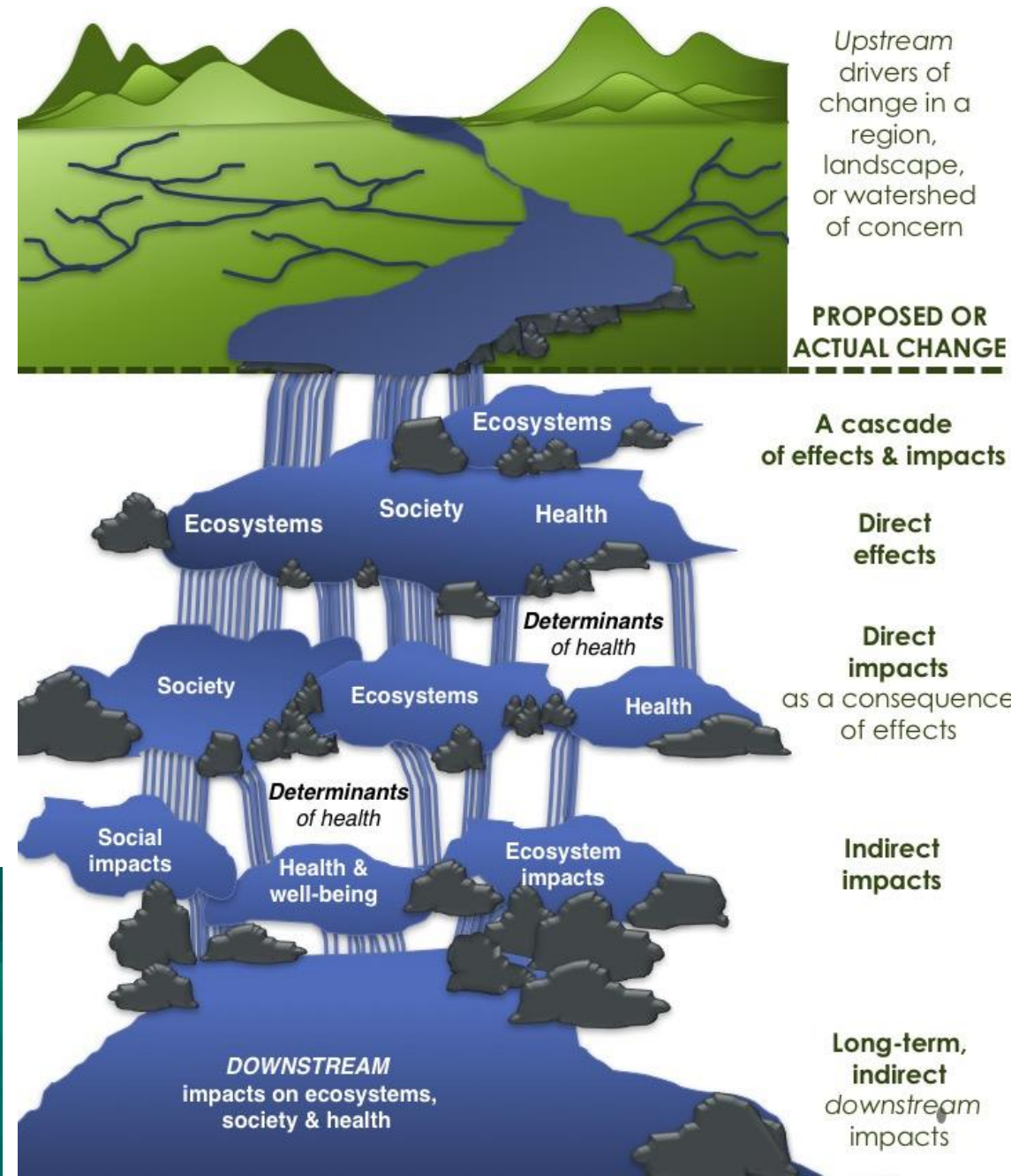
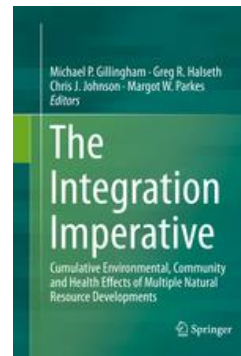


“Upstream is a place”



Cumulative Impacts and the Integration Imperative....

*For the health sector, this involves **pathways of influence that extend beyond the typical purview of health, where ‘upstream’ includes places, waterways, landscapes and drivers of change, that are well outside our direct gaze or traditional spheres of influence.***



Cumulative Impacts and the Integration Imperative....

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The Integration Imperative & Cumulative Impacts



The Integrations Imperative and Cumulative Impacts:
Understanding and responding to impacts in landscapes and waterways



CONCEPTS

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Doing the same things better?

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Cumulative Impacts in Landscapes & Waterways

Moving From 'hazards to 'home'...

CAPACITY

'Next- generation' understanding and response

How to strengthen capacity for this work?

Lead? Convene? Support? Listen?

{{ECHO}}

Environment, Community,
Health Observatory Network
Strengthening intersectoral
capacity to understand and
respond to health impacts of
resource development



CAPACITY (?)

Fostering “next generation” understanding and response

*... A five-year international research project: the ECHO
(Environment, Community, Health Observatory) Network.*

*... Working together across sectors to understand and respond
to the cumulative health, environment and community
impacts of natural resource management (focused on
resource extraction and development).*

*... learning about a new generation of tools and processes
that local, regional and international partners are using to
“**take notice for action**”, as a means to respond to the
integration imperative and the cumulative determinants of
health impact.”*

CAPACITY

{{ECHO}}

Environment, Community,
Health Observatory Network

Strengthening intersectoral
capacity to understand and
respond to health impacts of
resource development



CAPACITY

The Environment, Community, Health Observatory (ECHO) Network seeks to:

1. create and operate an Environment, Community, Health Observatory (ECHO) that strengthens intersectoral capacity **to understand and respond to health impacts of resource development**, and
2. use the ECHO platform to help regional programs make critical decisions on cumulative determinants of health **that cannot be achieved by the health sector alone.**

{{ECHO}}

Environment, Community,
Health Observatory Network
Strengthening intersectoral
capacity to understand and
respond to health impacts of
resource development



CAPACITY

Réseau ECHO Network

Funded by: CIHR Environmental Health Signature Initiative:
Intersectoral Prevention Research

Contacts:

- **UNBC Co-Leads:** Margot Parkes and Henry Harder
- **Northern Health ‘Knowledge User’ Lead:** Sandra Allison
- **Research Manager:** Diana.Kutzner@unbc.ca
- **60 team members:** Researchers, Research Partners, Collaborators, across Canada (+ NZ and Australia)
- Project links /website information updated at:
 - <https://ecohealthkta.net/health-resource-development/echo/>



CIHR IRSC

Canadian Institutes of Health Research
Instituts de recherche en santé du Canada



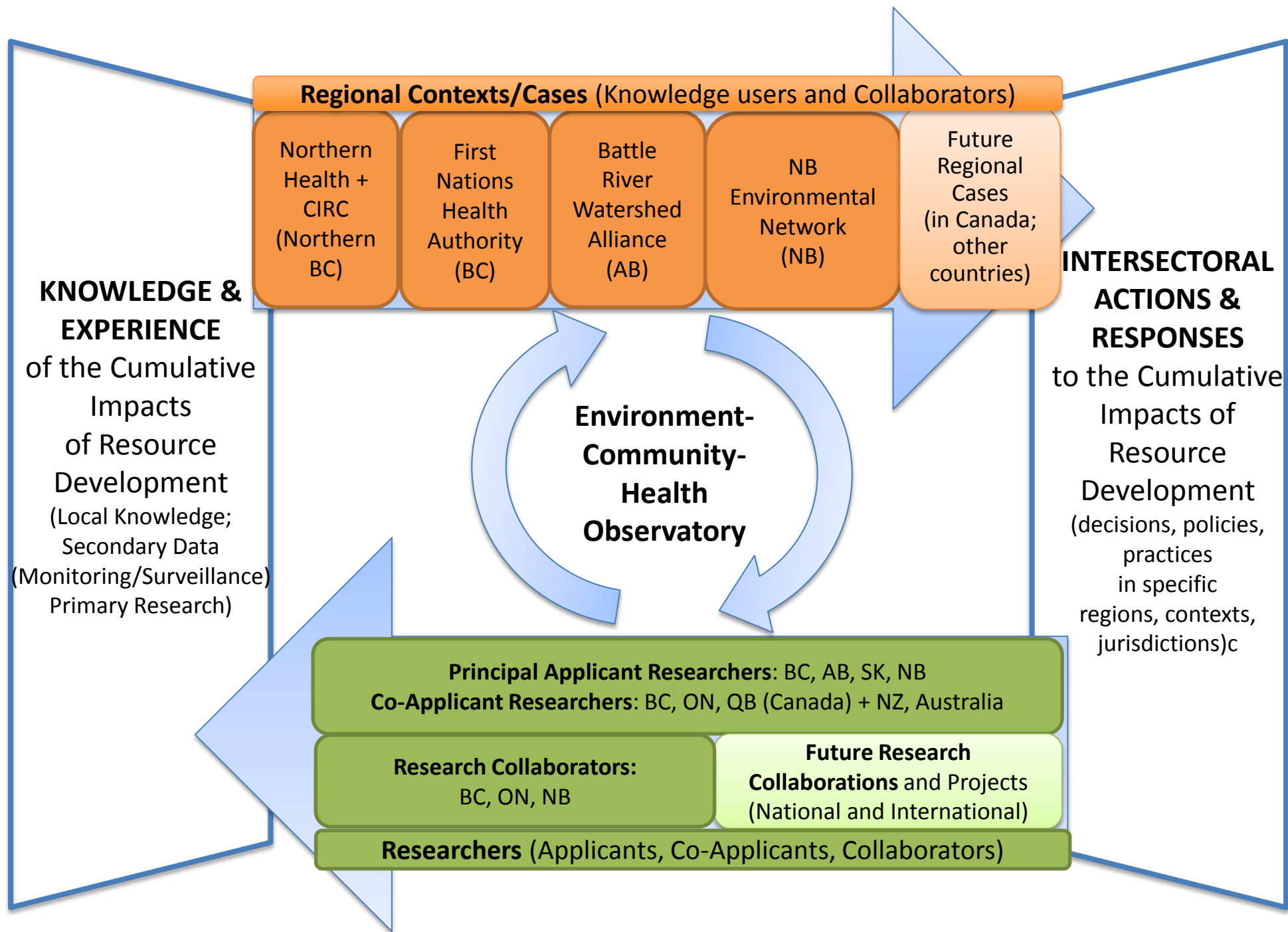
“Way-dell-tu-ih” (Dakelh, Carrier Territory)

{{ECHO}}

Environment, Community,
Health Observatory Network



CAPACITY



{{ECHO}}

Environment, Community,
Health Observatory Network

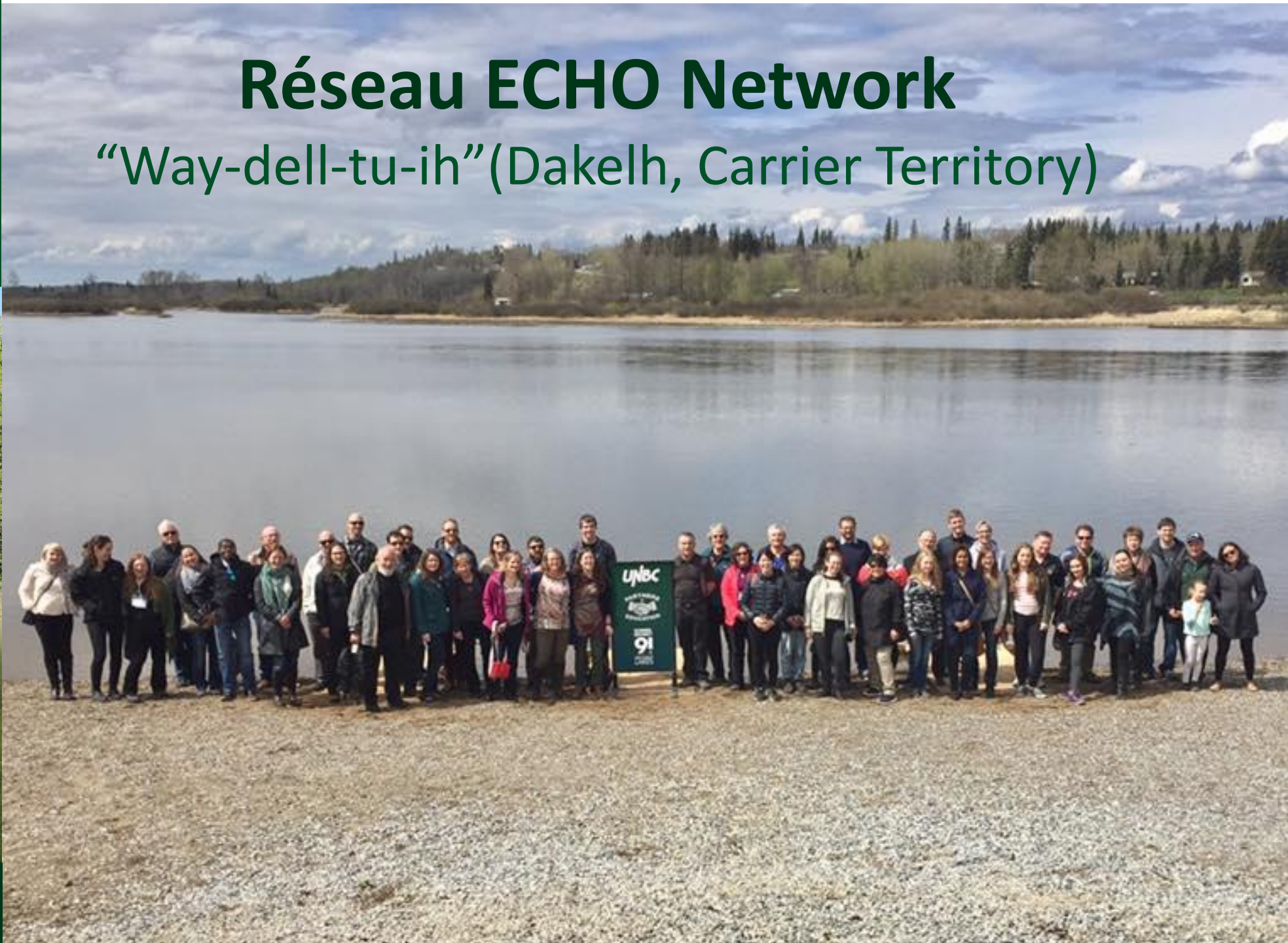
Strengthening intersectoral
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CAPACITY

Réseau ECHO Network

“Way-dell-tu-ih” (Dakelh, Carrier Territory)



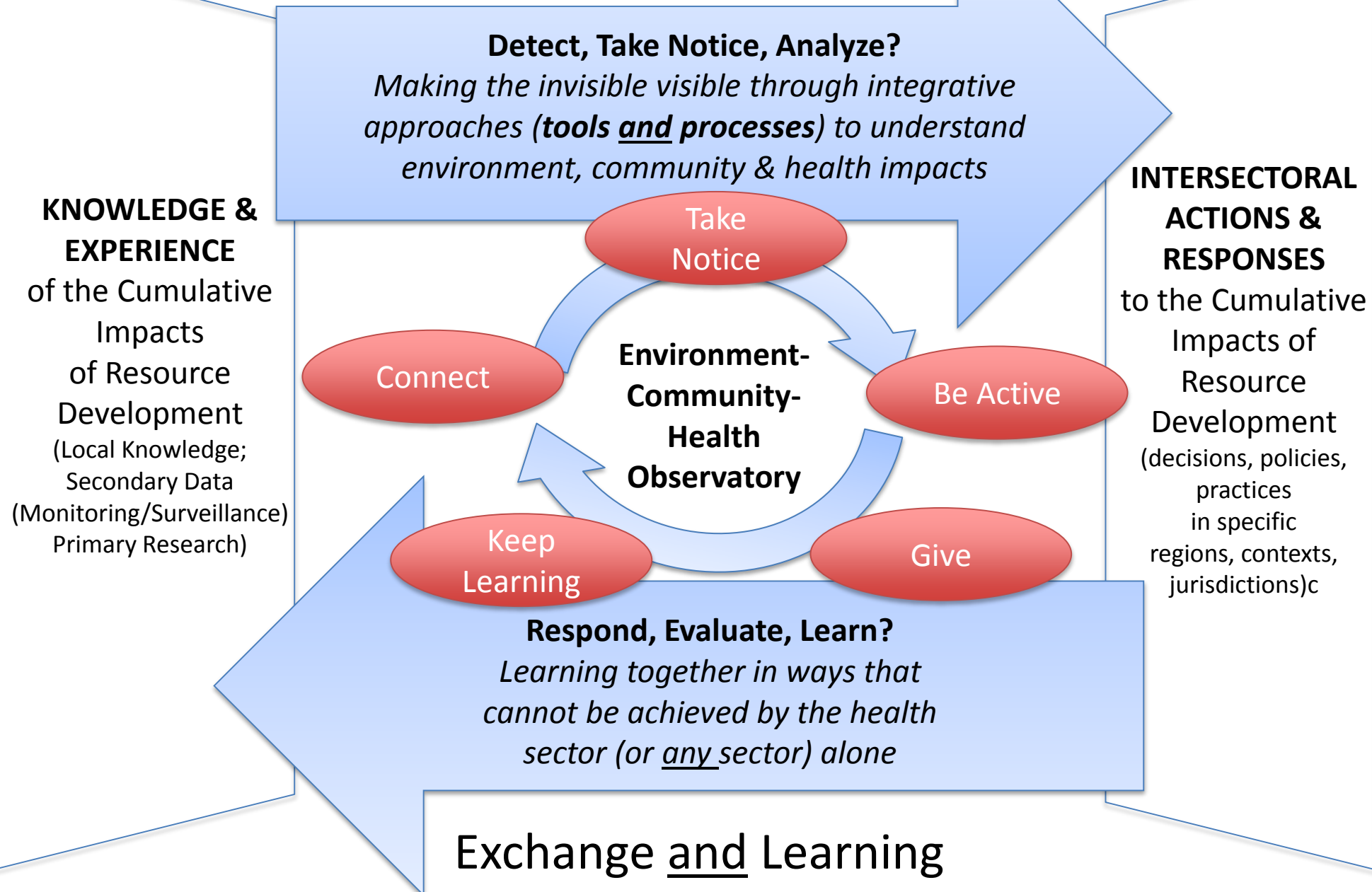
{{ECHO}}

**Environment, Community,
Health Observatory Network**
Strengthening intersectoral
capacity to understand and
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resource development



CAPACITY

Tools and Process





Nechako, BC

Bella Bella (BC)

Battle River (AB)

Waitaki (NZ)

Cogagne (NB)

Peel Harvey (AUS)

Regional Contexts/Cases (Knowledge users and Collaborators)

Northern
Health +
CIRC
(Northern
BC)

First
Nations
Health
Authority
(BC)

Battle
River
Watershed
Alliance
(AB)

NB
Environmental
Network
(NB)

Future
Regional
Cases
(in Canada;
other
countries)

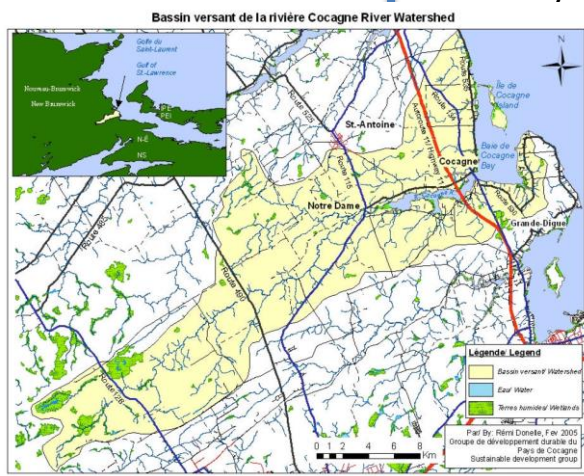
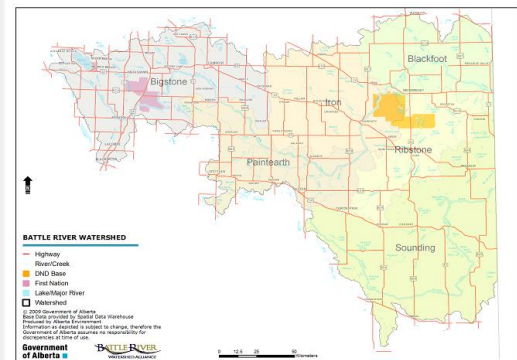
**KNOWLEDGE &
EXPERIENCE**
of the Cumulative
Impacts
of Resource
Development
(Local Knowledge;
Secondary Data
(Monitoring/Surveillance)
Primary Research)

**Environment-
Community-
Health
Observatory**

**INTERSECTORAL
ACTIONS &
RESPONSES**
to the Cumulative
Impacts of
Resource
Development
(decisions, policies,
practices
in specific
regions, contexts,
jurisdictions)c

See Your Watershed

This map shows the Alberta portion of the Battle River and Sounding Creek watersheds. The Battle River watershed is broken into 5 sub-watersheds, pictured below.

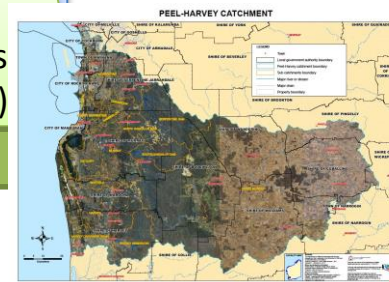


Principal Applicant Researchers: BC, AB, SK, NB
Co-Applicant Researchers: BC, ON, QB (Canada) + NZ, Australia

Research Collaborators:
BC, ON, NB

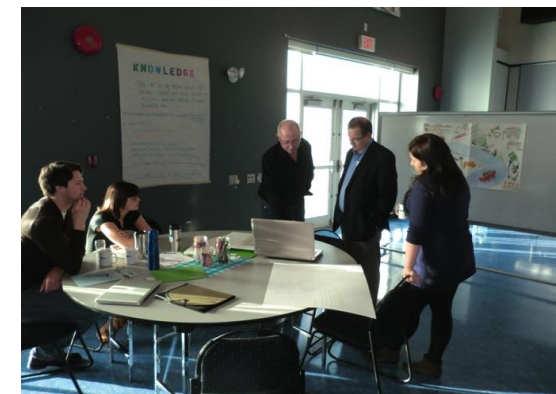
**Future Research
Collaborations and Projects**
(National and International)

Researchers (Applicants, Co-Applicants, Collaborators)





The Integrations Imperative and Cumulative Impacts:
Understanding and responding to impacts in landscapes and waterways



CAPACITY?

**‘Next- generation’
understanding
and response**

*How to strengthen
capacity for this
work?*

*Lead? Convene?
Support? Listen?*

ECOHEALTH

15 - 18 August 2018, Cali Colombia



15 - 18 August, Cali Colombia, South America
Intercontinental Hotel, Host University of Valle



Saskatoon
CANADA 22-25 June
2018



THE 5TH INTERNATIONAL
ONE HEALTH PLATFORM
ne health
CONGRESS

June 22-25, 2018,
Saskatoon, Canada.

*Ngā Pae o te
Māramatanga*
International Indigenous
Research Conference
Tāmaki Makaurau
13-16 Nov 2018



23rd World Conference on Health Promotion, April 2019

Waiora: Promoting Planetary Health and Sustainable Development.

<http://www.iuhpe2019.com>



May 29-31, 2018,
University of Edinburgh.

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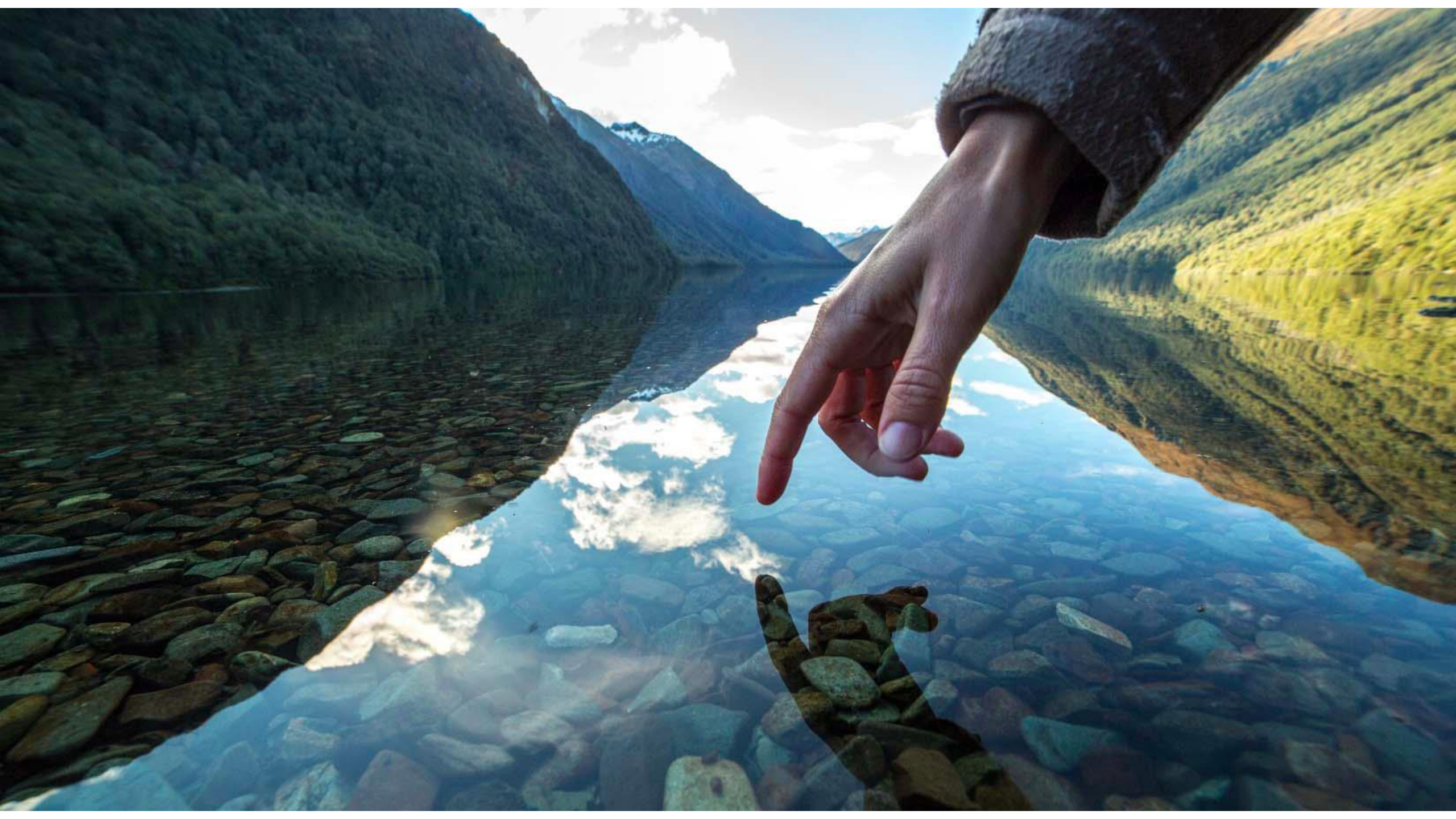
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