

ONE HEALTH & THE FUTURE OF CYANOBACTERIA MANAGEMENT

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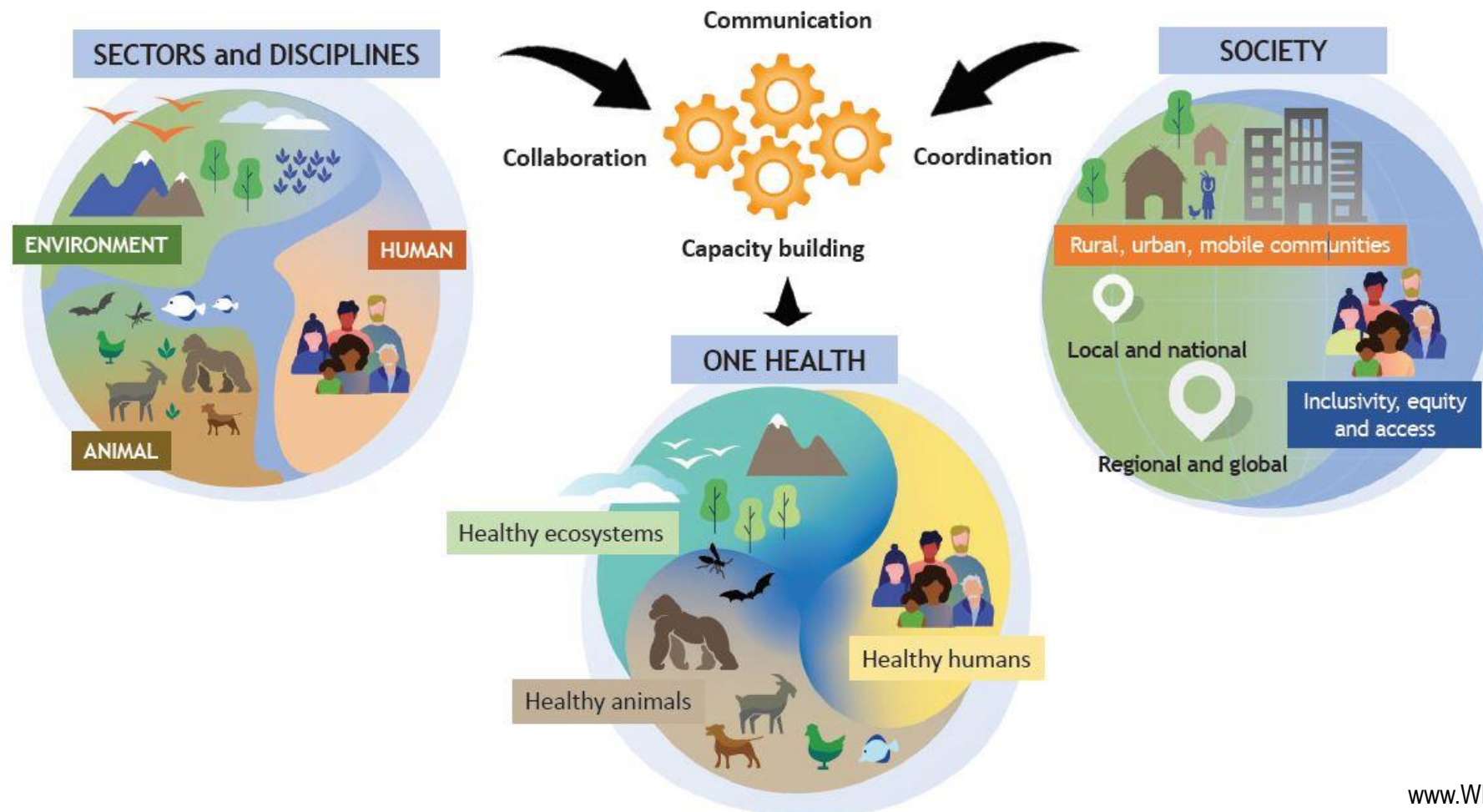
MONASH UNIVERSITY recognises that its Australian campuses are located on the unceded lands of the people of the Kulin nations, and pays its respects to their Elders, past and present.



DEFINING ONE HEALTH

One Health is an integrated, unifying approach that aims to sustainably balance & optimize the health of people, animals & ecosystems

- Mobilizes multiple sectors, disciplines and communities;
- Addresses collective need for clean water, energy and air, safe & food;
- Actions on climate change & SDGs

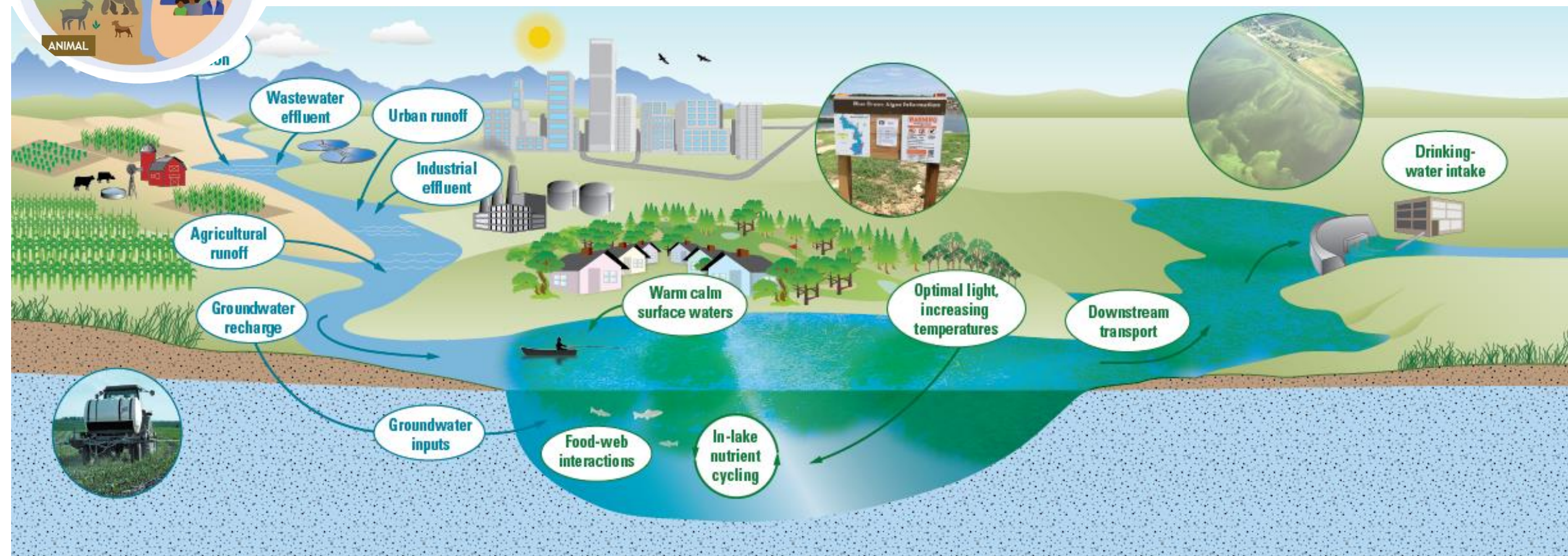


CYANOBACTERIA AS A ONE HEALTH ISSUE

SECTORS and DISCIPLINES



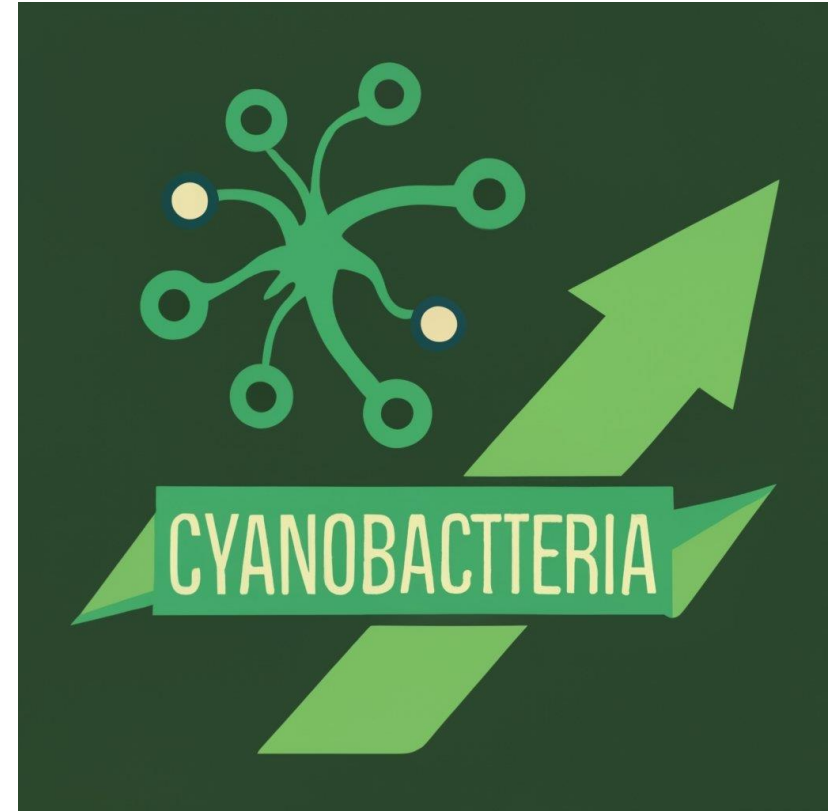
Effects across sectors



AN INTERPLAY OF MULTI-SECTORIAL FACTORS

Physical and chemical factors contribute to CyanoHABs:

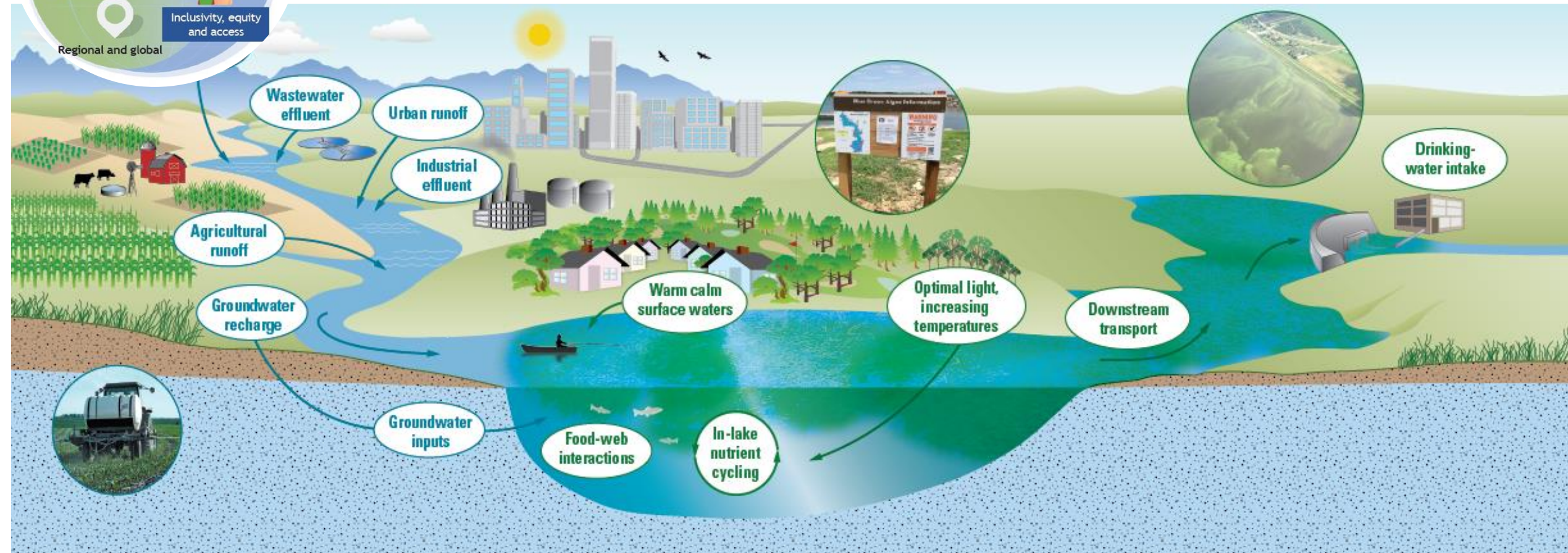
- Light;
- Water temperature;
- Flow & vertical mixing;
- pH;
- Nutrient loading;
- Trace metals



CYANOBACTERIA AS A ONE HEALTH ISSUE

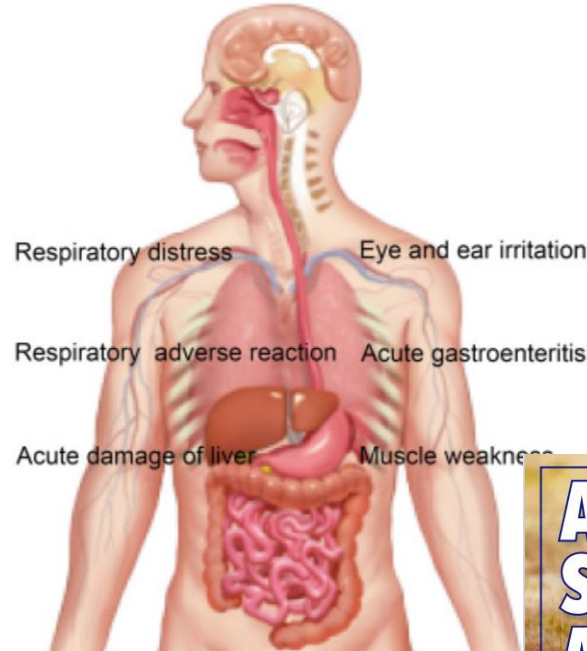


Effects across scales



CYANOBACTERIA AS A ONE HEALTH ISSUE

Effects of cyanobacteria bloom on human body



<https://doi.org/10.3390/toxins14100658>



www.science20.com



Effects health status across sectors

Animal Safety Alert

Cyanobacterial blooms can be deadly for pets and livestock.

Cyanobacteria (CyanoHABs) are microscopic organisms found naturally in all types of water. Sometimes cyanobacteria rapidly grow, or bloom. They can have various colors like green, blue, red, or brown. Cyanobacterial blooms are mostly found in fresh water, such as lakes, rivers, and streams.

Signs of a cyanobacterial bloom

<p>Foam, scum, mats, or paint-like streaks on the water's surface.</p>	<p>Benthic blooms grow up from sediment, and attach to rocks.</p>
<p>As the bloom dies off, it may smell like rotting plants.</p>	<p>Cyanobacteria bloom more often in late summer and fall but can bloom anytime.</p>

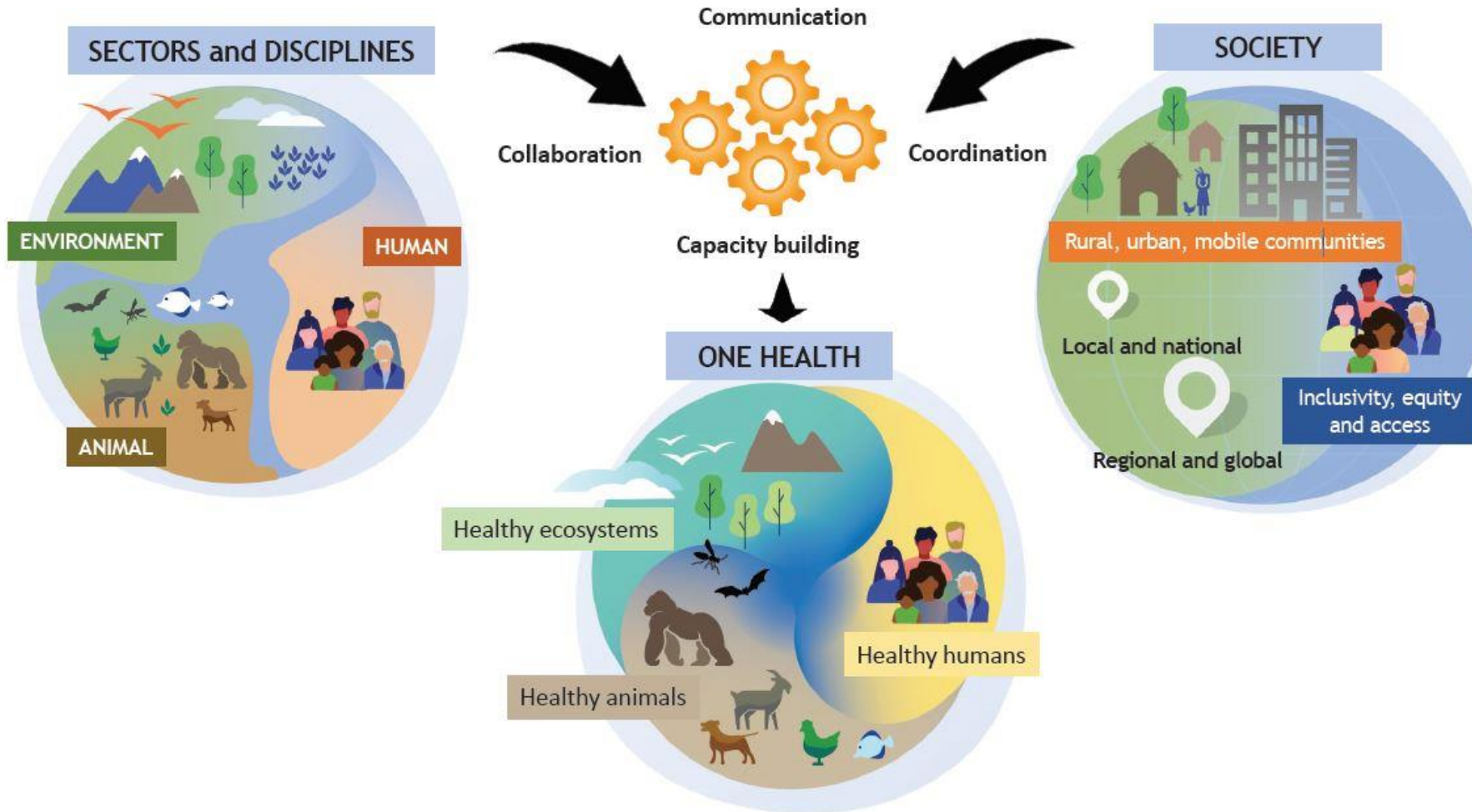
You cannot tell if a cyanobacterial bloom is toxic just by looking at it. When in doubt, keep animals out!

For more information **SCAN HERE**

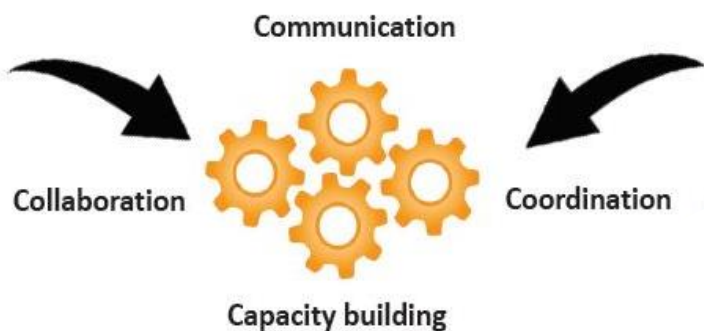
ISLAND DEPARTMENT OF ENVIRONMENTAL GOVERNANCE

ISLAND DEPARTMENT OF HEALTH & WELFARE DIVISION OF PUBLIC HEALTH

DEFINING ONE HEALTH



CROSS-SECTORIAL NEEDS IN CYANOBACTERIA



Short Term

- Rapid monitoring tools
- Multi-sector management strategies
 - Treatment, control, removal
 - Without increasing health risks
- Site & cross-sector risk assessments
 - Animal, human
 - Food chain – bioresource
 - Ecosystems

Long Term

- Affect of climate change
- Species adaptation
- Microbial dysbiosis leading to CyanoHABs
- Quantitative models
 - Health effects
 - Outcomes of mitigation
 - Economic benefits

MEETING UNMET NEEDS





Biobank

Training & Education

FAIR Data



Laboratory



Data

Community of Practice

Certification & Standardisation



Field



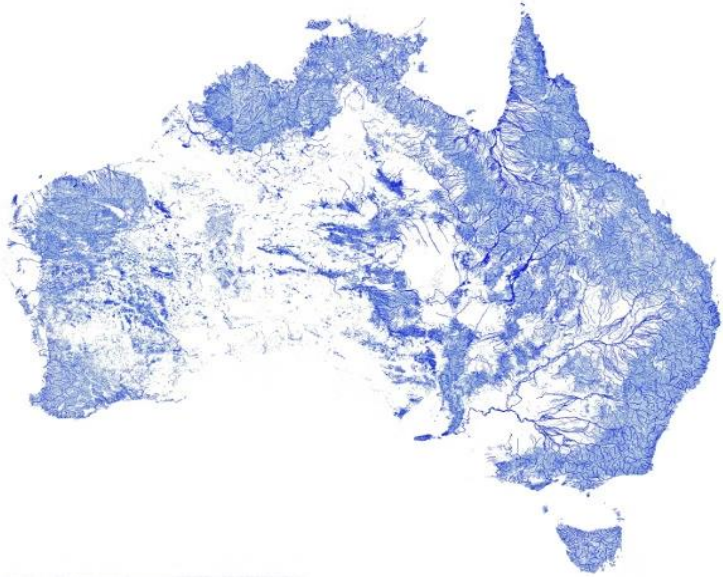
Environmental Public Health Initiative

MRFF funded multidisciplinary, multi-partner framework for enabling *surveillance, reporting & collaboration*

Shared Resource Network



Biobank



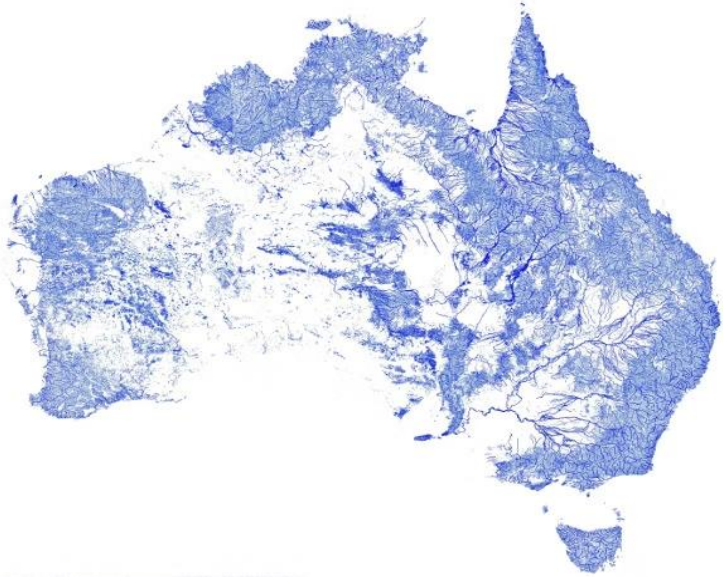
Resource Sharing & Preventing Duplication of Effort

- Quality annotated samples
 - Associated meta data
- Release & share structures
 - Respecting contributors
 - Supporting research
 - Supporting collaboration
- Partnerships to impact
 - Bringing research & industry together

Shared Resource Network



Data



Data Platform

- Quality controlled sample specific data resource
 - Environmental data
- Linked to biorepository
- Data share agreements
 - Sensitive data protected

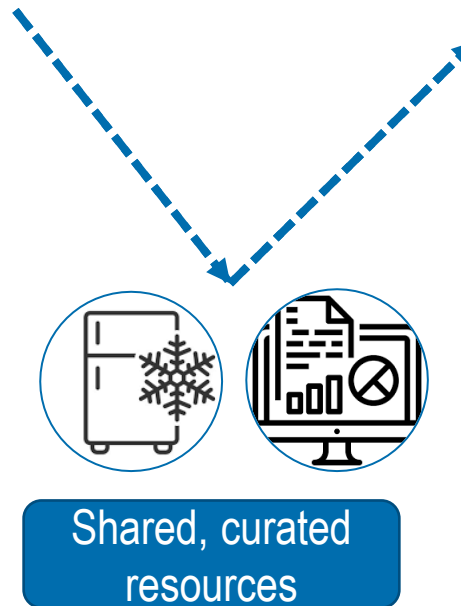
MEETING CROSS-SECTORIAL NEEDS IN CYANOBACTERIA

Short Term

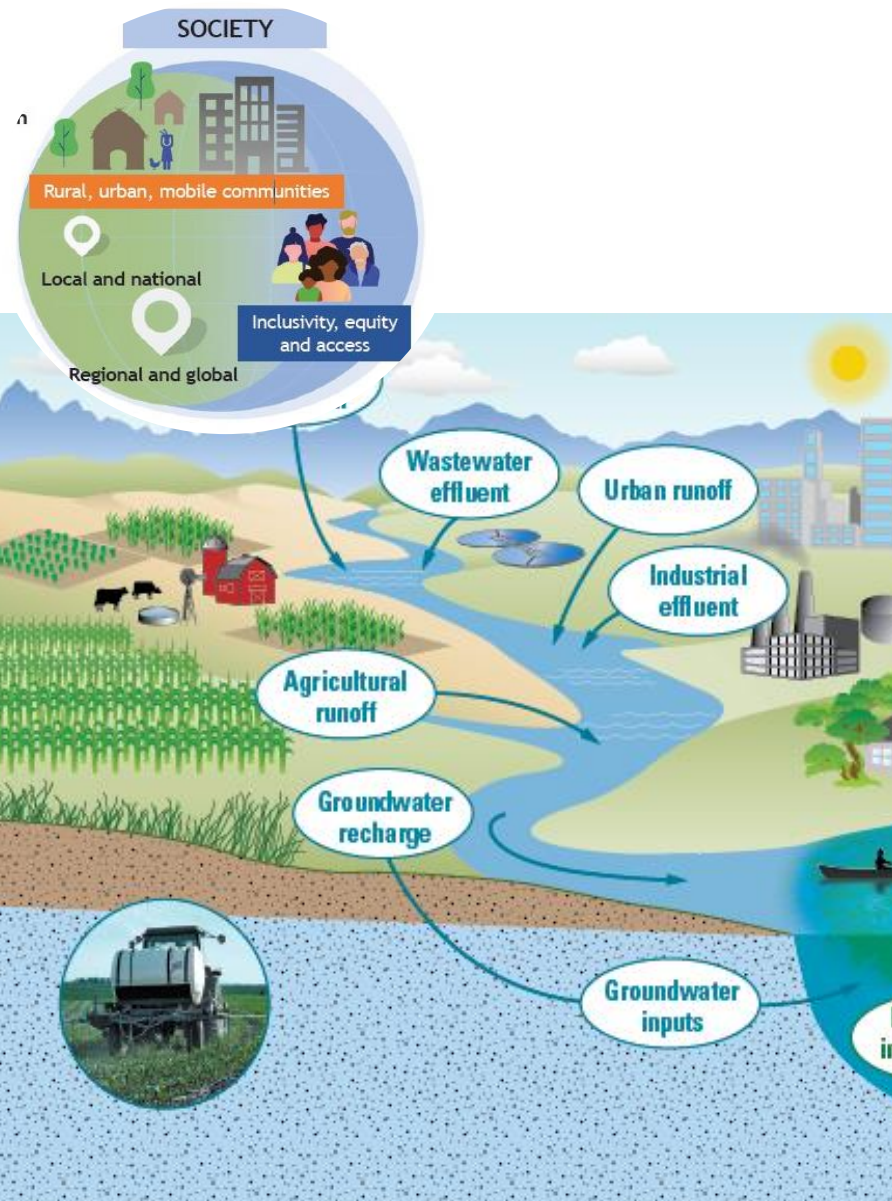
- Rapid monitoring tools
- Multi-sector management strategies
- Site & cross-sector risk assessments

Long Term

- Affect of climate change
- Species adaptation
- Microbial dysbiosis leading to CyanoHABs
- Quantitative models



CYANOBACTERIA AS A ONE HEALTH ISSUE



THANK YOU

Program Investigators

- Dr Rebekah Henry – Program Director & Public Health
- Dr Arash Zamyadi – Partnerships
- Prof. Mellisa Southy – Biobanking Victoria
- Dr. Fiona Barker – Data sharing & resources
- Prof. David Powell – Data infrastructure
- Prof. David McCarthy – Field monitoring
- Prof. Karin Leder – Clinical pathways

Program Team Leads

- Dr Kert Tsang – One Water Biobank
- Ms. Georgia Lynch – One Water Laboratory
- Dr. Fiona Lynch – ISO 9001 Certification
- Mr Timothy Lim – NGS Source Tracking



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ThermoFisher
SCIENTIFIC



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