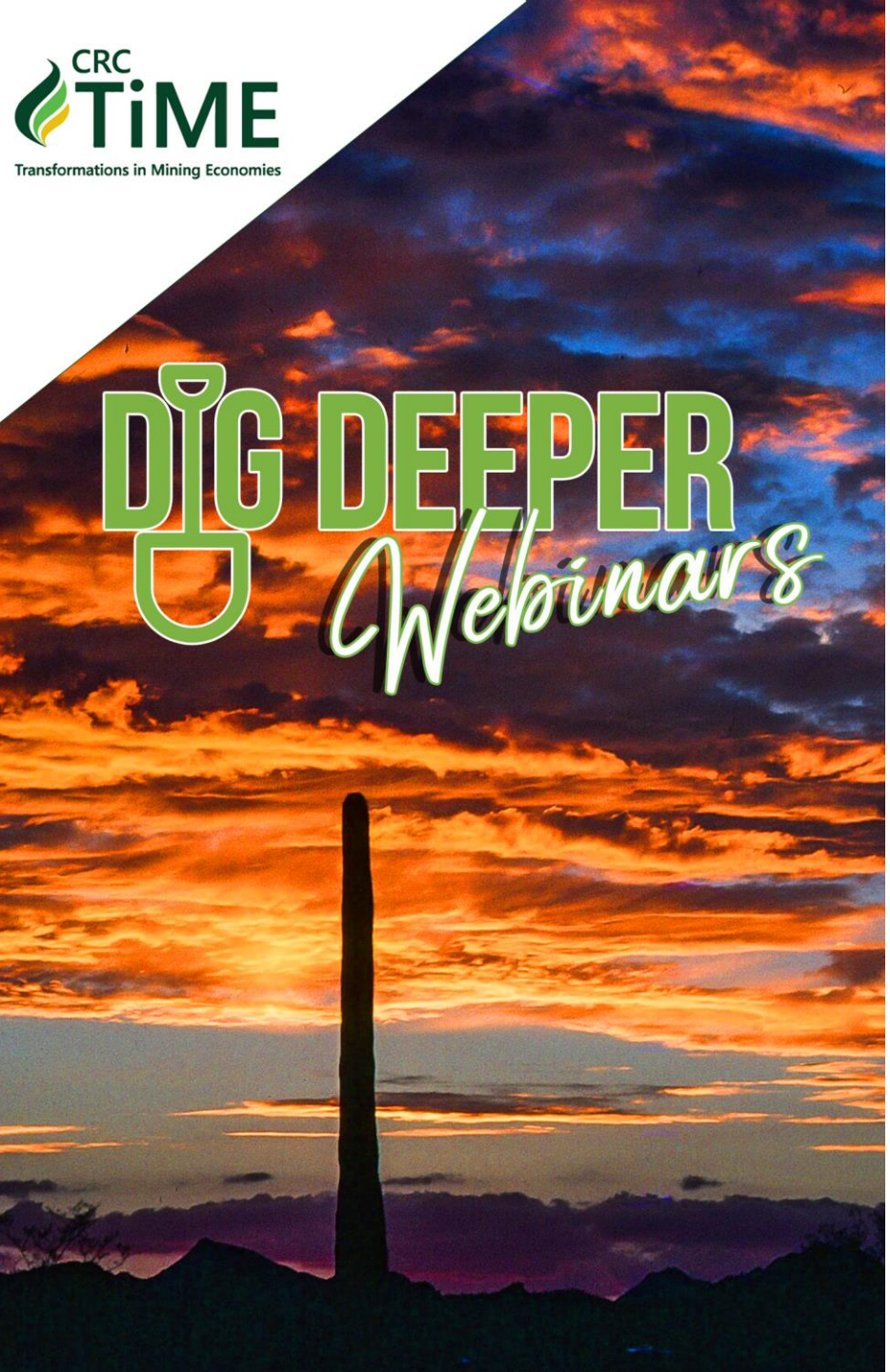

TRANSFORMING DISPARATE APPROACHES TO REMOTE SENSING & MONITORING TO INDUSTRY BEST PRACTICE

PROJECT 3.2 | RENEE BARTOLO | 8 JULY 2022

CRC TiME
Transformations in Mining Economies

The Team

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The Problem:
Application of remote sensing & monitoring lacks rigour and adoption in the wider industry

- Need for consistent approaches to acquiring, analysing and reporting outcomes, and to adapt to the rapid technological change in remote sensing and monitoring capabilities.
- Government regulators also need confidence that outputs from remote sensing are accurate and will sufficiently meet regulatory requirements.

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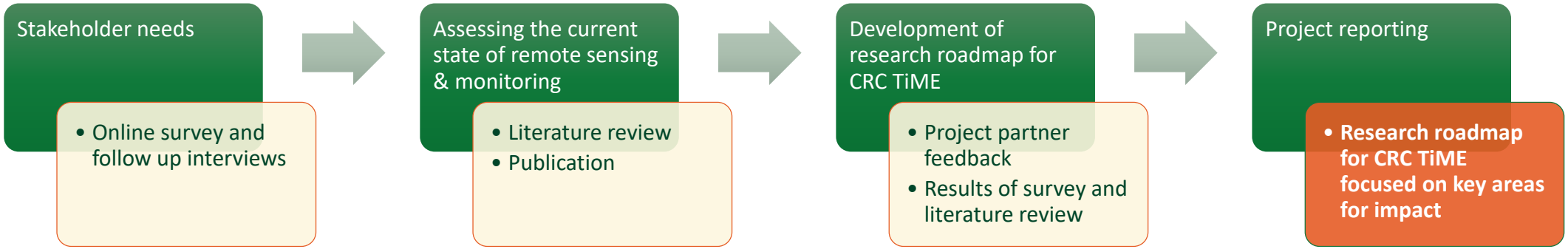
The Research Process



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Top 2-5 Key Findings

Identified issues with current monitoring practices	Australian mining industry under represented in the scientific literature	Minimum set of standards for remote sensing and monitoring on mined land
• Industry survey and follow up interviews	• International literature demonstrates remote sensing & monitoring are useful to the mining industry	• Framework for regulators and flexibility for the mining industry

Identified issues with current monitoring practices

- Logistic issues
- Mine capability & uptake
- Regulation, compliance & governance,
- Need for consistency across sectors

Australian mining industry under represented in the literature

- **Australian industry appears to be under-represented in the global scientific literature** relating to remote sensing of the mined environment.
- The international scientific literature demonstrates that remote sensing is useful to the mining industry but **provides little insight on how the Australian mining industry is using remote sensing** because **very little is being published**.

KEY RESEARCH AREAS TO IMPROVE CURRENT MONITORING PRACTICES

- Highest importance to monitor – vegetation composition, erosion (landform) and tailings
- Legally important – infrastructure, erosion (landform) and fauna
- Socially important – air pollution, noise and dust
- Ecologically important – fauna, litter/organic matter, vegetation composition
- Should be monitored differently – fauna, vegetation structure/composition, slope stability
- Standardise monitoring protocols that use best practise across a arrange of areas

Minimum set of standards for remote sensing and monitoring on mined land

1. **Minimum set of standards**

- framework for regulators, as well as enabling mine sites to have flexibility to choose what monitoring information they provide.
- standards for image processing
- data governance and quality assurance

2. Continuous improvement in

- remote sensing research
- technological change
- ecosystem trajectories monitoring

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How can Industry use these Findings?

- Optimise the utility of the data and price and how that relates to a) completion criteria and b) management actions (maintenance drivers).
- Research - Sampling framework for on the ground (verification of data):

a) Traditional Owner involvement

b) *In situ* sensor integration

c) Statistically robust

d) Life of mine- how you change what you monitor and how to conduct it (e.g. post closure remote sensing)

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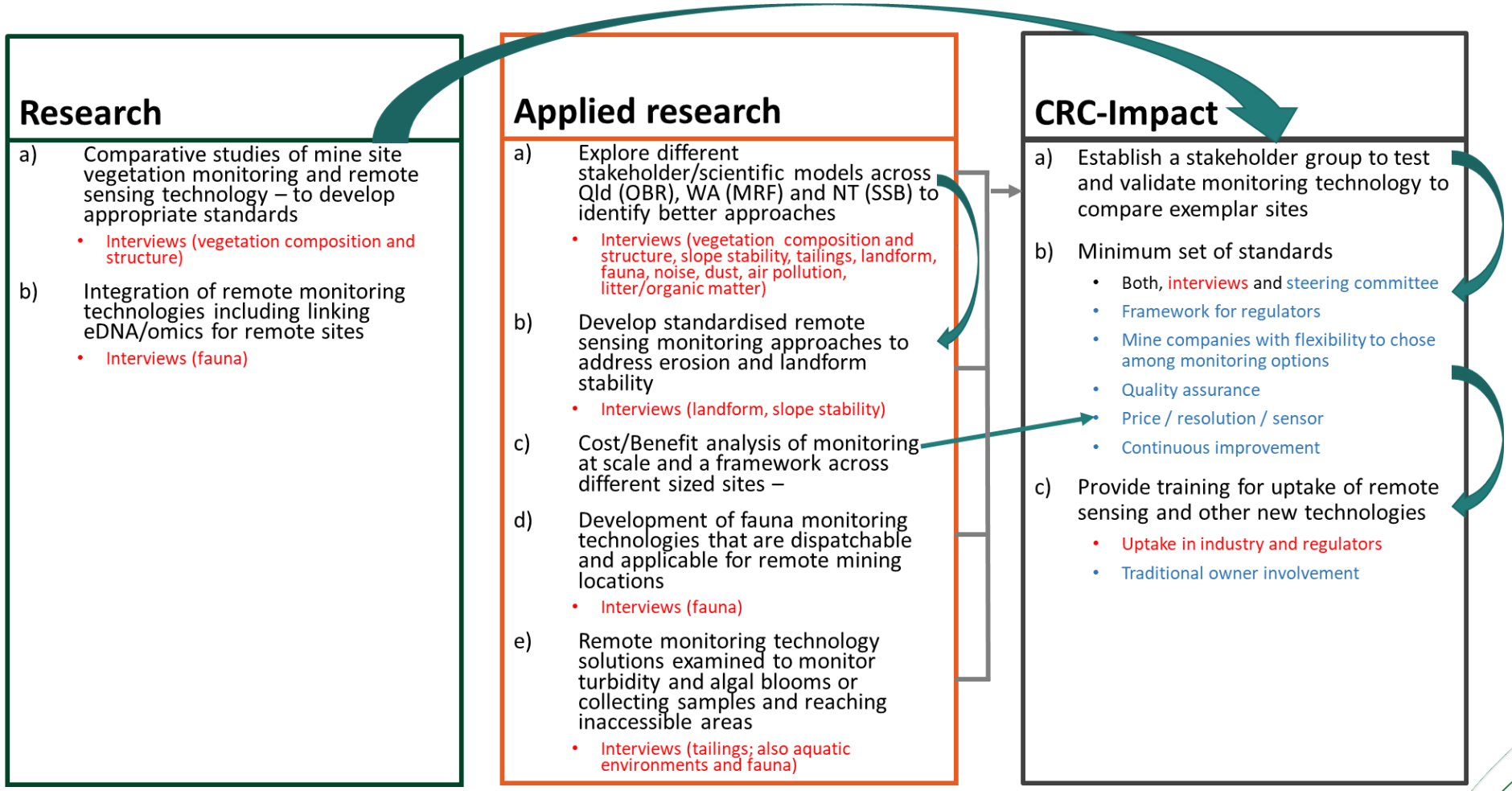
Implications



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Savanna (Kakadu National Park)

Flying Height: 40m

Can identify tree species and trees under canopy


Can identify tree species (resprouts)

Potential for nutrient cycling indices

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THANK YOU

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