Danggu Geikie Gorge in the Kimberley, Western Australia. *David Foster/Alamy stock photo*

Northern Australia Environmental Resources Hub

National Environmental Science Programme

Scenario planning for WA's Fitzroy River catchment

Wrap-up factsheet

Exploring alternative development futures for the Martuwarra (Fitzroy River) catchment through participatory scenario planning

There are various development plans for the Fitzroy River catchment in Western Australia's Kimberley region. Proposals for new developments include irrigated agriculture, increasing livestock production, carbon farming, extraction of mineral resources, nature and cultural tourism and many others. But how do we balance increased productivity, traditional uses and nature conservation? We are at an intersection where major decisions (from local to national levels) will be made regarding the future use of land and water resources. This requires a conversation about different development pathways for the region.

Making good decisions requires exploring possible development options and having a sound understanding of their social, economic and environmental outcomes. It also requires identifying the broader social, economic and political environment that could facilitate or hamper different development options.

A critical examination of the possible futures of the region can support effective planning for development and conservation of the region's nationally and globally significant cultural and natural values.

To support these discussions, this project guided a participatory scenario planning exercise to construct

Important information about the scenario planning process

- Participants didn't talk about what they predict *will* happen or what they believe *should* happen, only about what they think *could* happen.
- Participants did not have to agree on creating a shared vision about the future development of the catchment.
- Participants were encouraged to think not only about futures that they accept, but those that they reject.
- The process aimed to facilitate seeing development from the point of view of others that may have opposite or diverging perspectives and thus was a learning process for everyone.
- Throughout the process, participants became aware of and critically reviewed the way they think about the past, present and future of development in the region.
- Ultimately, the scenario planning process was about working together cooperatively and creatively to have a better understanding of how alternative futures may unfold.

and assess the outcomes of alternative development scenarios. Major components of this exercise included exchanging views about development, imagining possible futures and exploring their potential outcomes. This information sheet explains key aspects of the scenario planning process and main outputs of the process.

Goal of scenario planning

The scenario planning exercise aimed to create a shared space for constructive and objective conversations about the future development of the Fitzroy River catchment. Through this process the project contributed to developing common understandings about different development options for the region and systematically explored the possibilities, as well as the potential outcomes, of different development trajectories.

What are scenarios?

Scenarios are narratives or stories that consider how alternative futures might unfold. In this case, they allowed Traditional Owners and stakeholders of the region to consider and discuss their perceptions and aspirations for the future, as well as explore opportunities and risks associated with different pathways. Examples are the environmental, social and economic outcomes associated with alternative land and water use options. The main goal of creating the scenarios was to help everyone understand key uncertainties about the future, as well as opening up thinking about the need for change.[1]

Why scenario planning?

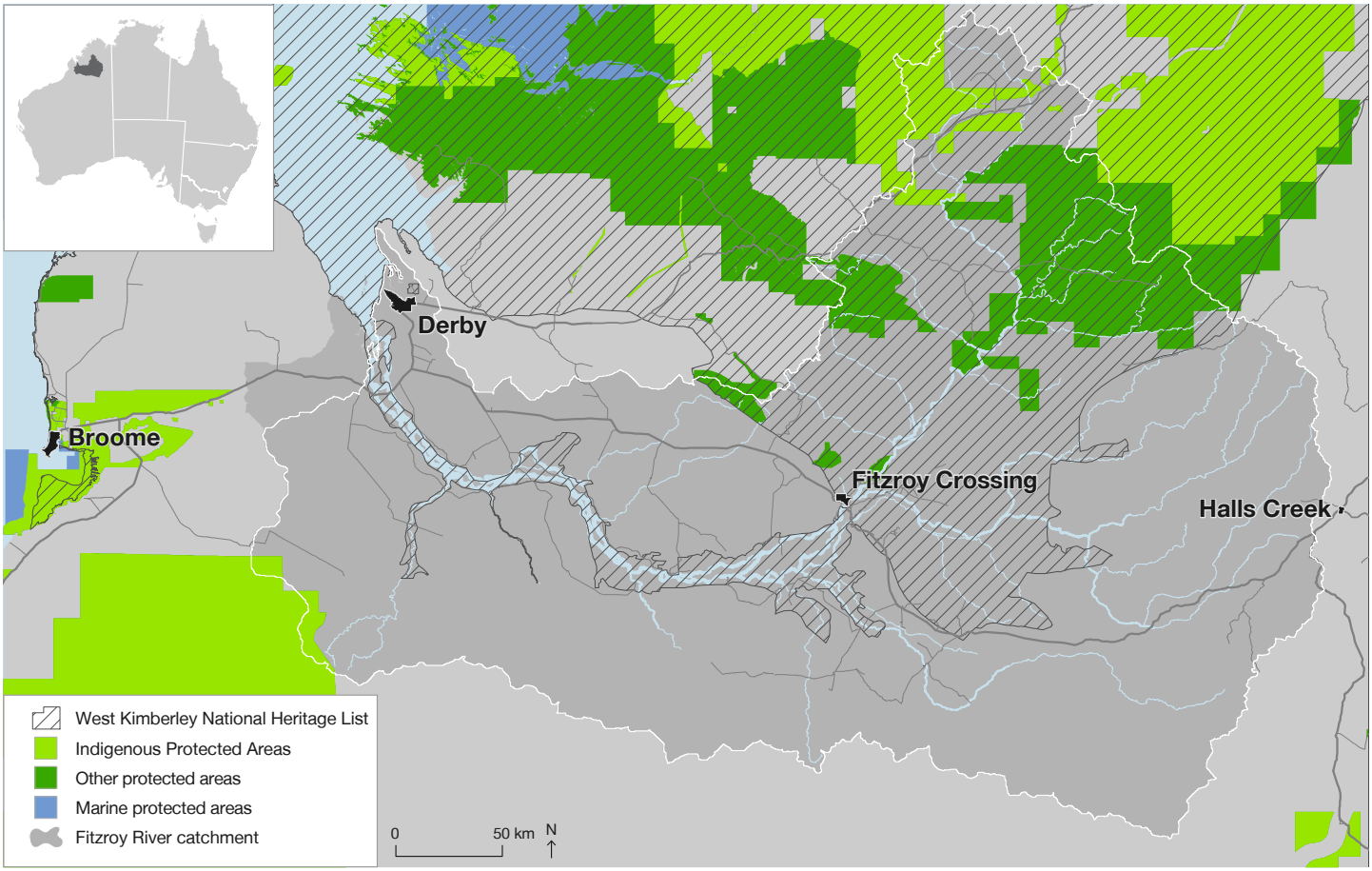
Constructing scenarios allows people with diverging opinions to see the world from the point of view of those with different perspectives. In this project, they allowed participants to think not only about scenarios that they accept, but those that they reject. The process also aimed to change understandings and intentions, create empathy and build trust, which together can lead to changes in individual and collective actions that will shape the future.

Participatory scenario planning is useful when different people and organisations see the situation they are in as unacceptable, unstable or unsustainable (now or in the future), but disagree over what the future should look like. In this case, it was clear that individual groups could not transform the situation on their own or by working only with allies or like-minded people. Finally, the broader social, economic and political system was too complex, had too many interest groups and was too highly unpredictable for a single group or individual to understand and shape.

> *Through scenarios, people can see possible futures they are not willing to accept because they continue an unacceptable present, destroy an acceptable present, or fail to realize the potential of the present.*[2]

Who participated?

Following the identification of key interest groups in the region and discussions with local organisations,



The Fitzroy River catchment in the Kimberley region, Western Australia.

There are many options for development in the Fitzroy River catchment.

researchers assembled a scenario planning team. The team included people with varied backgrounds who understand the perspectives of one or more key groups (e.g. Traditional Owners, pastoralists, government, mining industry) and organisations with a stake in the region. It included people from organisations making or influencing decisions about land use and management in the catchment. The team included people with knowledge and expertise in areas such as the cultural and natural values in the catchment, land-use planning, agriculture, water management, tourism, mining, enterprise planning and service provision, among others. The team was small enough to allow effective discussions, thus workshops were limited to 40 people (30 organisations), including five researchers, two professional facilitators and the Regional Research Coordinator.

What were the main stages and outputs of the scenario planning process?

The scenario planning process included sharing views on development, exploring alternative development options, creating narratives of possible futures, creating land-use maps that represent these narratives, and assessing their potential outcomes. The process provided opportunities to share knowledge and ideas, including with people with diverging perspectives.

Initially, researchers interviewed scenario team members to gather information about their main concerns and aspirations around development in the region, as well as to discuss expectations, perceptions and suggestions regarding the research process. Following that, team members participated in three workshops, one for each main stage of the scenario planning process. Each workshop, conducted in the region, involved two to three full days of work.

Creating shared understandings of the situation

The first workshop involved a series of activities to help scenario team members get to know each other, strengthen relationships, and build trust – all critical elements of the participatory scenario planning approach. This work built on a review of existing planning exercises and relevant literature, as well as on the interviews with team members. Researchers presented a summary of their findings as a starting point for conversations during the first workshop. This supported participants in creating shared understandings of what is happening in the system they are part of and which they want to shape.

An important goal of the workshop was to create a 'common language' to discuss what development in the region could mean and to build shared understandings of what is happening in the region that could shape development. This included a discussion about the diverse views on development. Before exploring the future, the group looked back into the past. They created a timeline for the Fitzroy, identifying the events and forces that have shaped how the catchment looks today and could drive development in the future.

Exploring and understanding development pathways

Also during the first workshop, the team identified the driving forces that can cause major shifts in development trajectories in the region. This included identifying and unpacking drivers of land-use change (e.g. policies, markets) and discussing their relevance to the catchment, strength, and possible variations. Finally, the group discussed the main development initiatives (e.g. irrigated agriculture, nature and cultural tourism, mining, carbon farming) that could happen in the catchment and identified additional initiatives for consideration during the next workshop.

Creating stories about the future

During the second workshop, the team built on outputs from the first workshop to develop the structure of four possible futures for the region. During the workshop, the team identified the drivers with the potential to cause major shifts in terms of the extent of land use change in the next 30 years. The group also identified the most uncertain drivers in terms of how they will play out in the future and thus could shift development in very different directions. Finally, participants described possible end-states of the most influential and uncertain drivers to define the main variations of scenarios, and identified four possible futures (Figure 1).

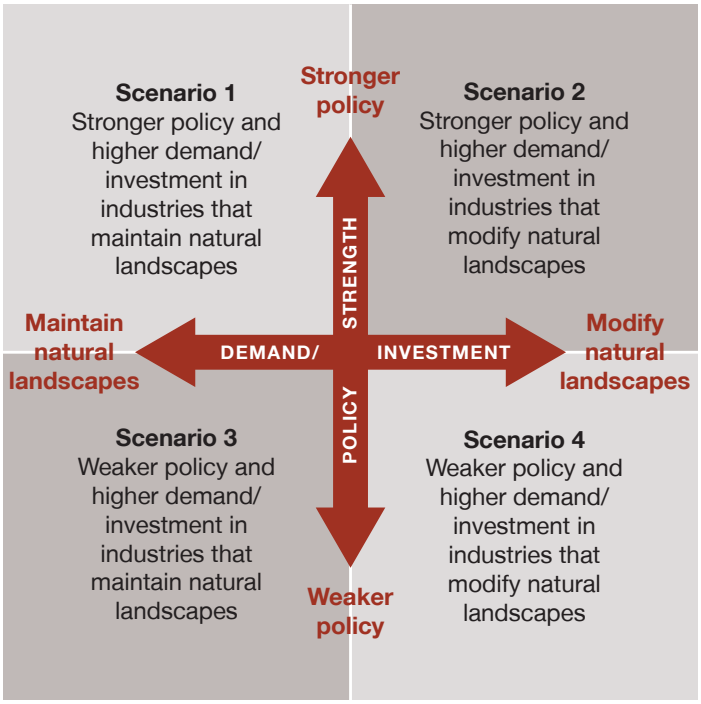


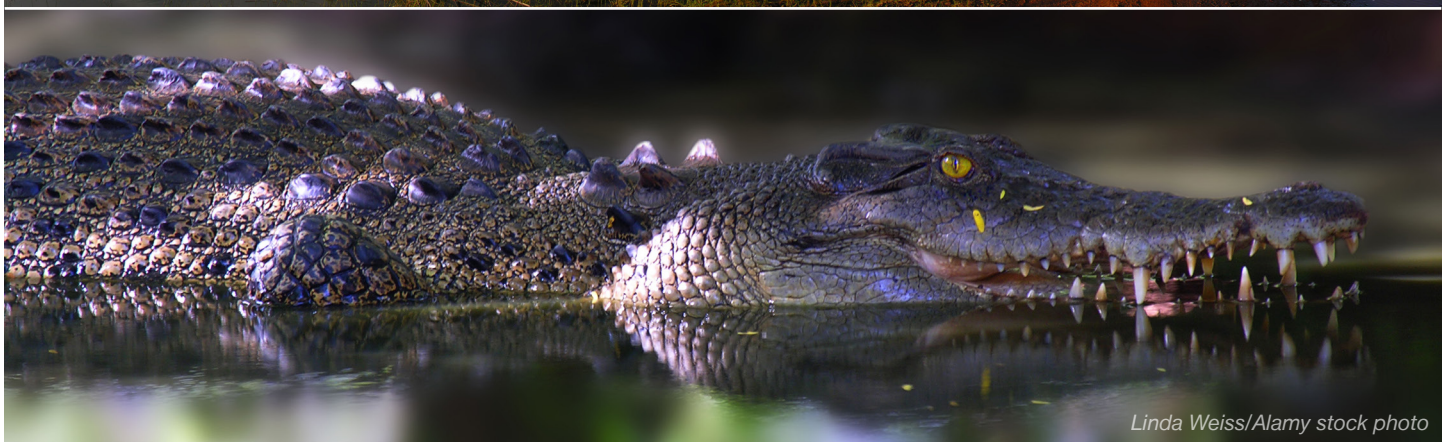
Figure 1. Logic of the four scenarios defined based on variations for two primary drivers: policy strength and major demand-investment.

> *Shared stories can open up thinking and possibly shape future decisions.*

Fleshing out, mapping and illustrating scenarios

Based on the logic of scenarios created by the team, researchers worked with scenario team members to create logical, possible and distinguishable narratives for each scenario. Researchers used these narratives and computer mapping tools to represent each scenario spatially. This was informed and guided by published research and information provided by team members. The land-use maps describe one possible configuration of selected development initiatives across the catchment for each scenario. During the third workshop, the maps and

The project team thanks all of those who participated in the scenario planning process throughout various different workshops and meetings across the Fitzroy River catchment.



Top: Danggu Geikie Gorge on the Fitzroy River. Middle: Camballin Flats, Kimberley, Western Australia. Bottom: Saltwater crocodile, Kimberley, Western Australia.

the process followed to create them were presented and future improvements discussed.

Researchers also created summaries of the overall patterns of land and water uses, and the broad socioeconomic conditions associated with each scenario (e.g. in terms of policies and collaboration). These summaries included information about selected biophysical and socioeconomic indicators describing key features of industries such as type of development, used land surface, gross value, direct employment for Aboriginal/non-Aboriginal people, surface and groundwater use, etc.

In addition to the land-use maps, researchers created graphical representations of the scenarios to convey key differences and to highlight major land-use changes associated with different development pathways (see a summary of the four scenarios on the next page).

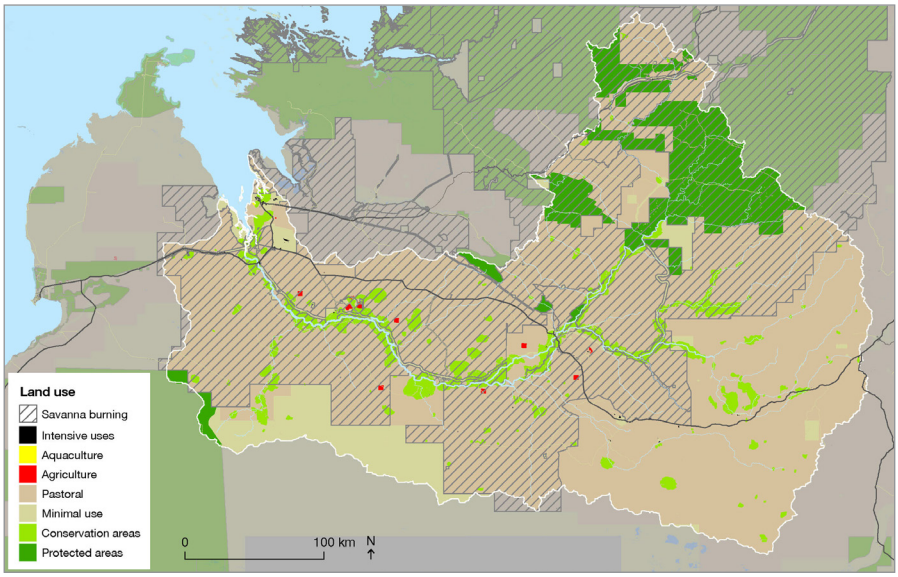
Assessing the outcomes of scenarios

Before the scenario assessment workshops, researchers worked with Traditional Owners and an Aboriginal interpreter to do a cultural translation of the material that was used to undertake the scenario assessment with Traditional Owners. The scenario assessment aimed to understand how changes associated with future scenarios could affect (positively or negatively) different aspects of the wellbeing of people who live in the catchment.

To inform the assessment, participants explored and discussed possible changes in landscapes, land-use maps, and socioeconomic indicators under alternative scenarios. Participants also looked at the illustrations of scenarios to help assess the impacts of alternative scenarios on their wellbeing.

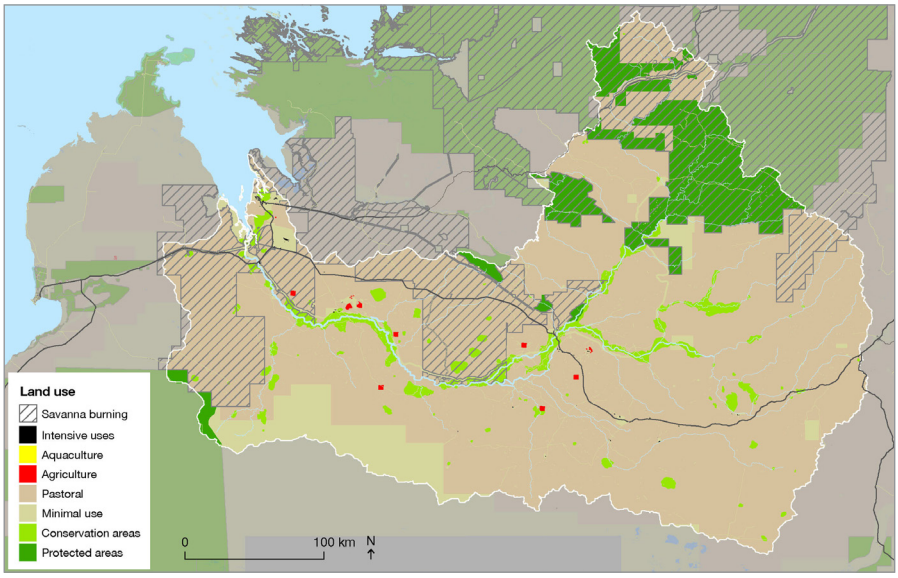
Scenario 1

- land use dominated by grazing natural vegetation
- better land and water management, including cattle control and reduced overgrazing
- better access to Country, including for recreation, subsistence and cultural activities
- extensive investment in carbon farming using savanna burning (less wrong-way fire)
- large increase in the number and extent of new conservation areas (17%), managed through joint management
- large (100%) increase in cultural- and nature-based tourism (85% Indigenous enterprises)
- one new small-scale coastal barramundi farm
- similar level of resource extraction (low impact)
- six new medium-scale irrigated agriculture based on groundwater (100 GL, 2.9% of recharge).



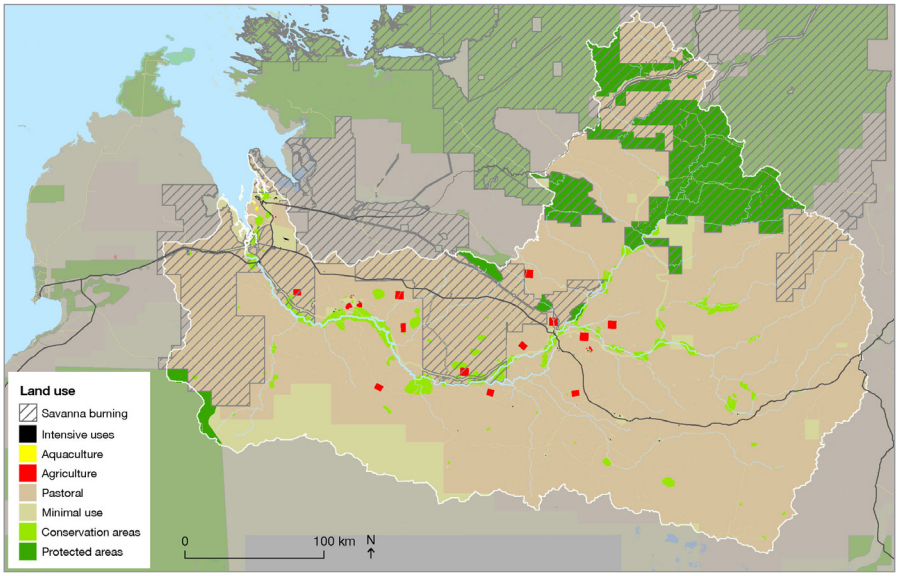
Scenario 3

- land use dominated by grazing natural vegetation
- land and water management – including cattle control and reduced overgrazing – does not improve
- access to Country remains limited, including for recreation, subsistence and cultural activities
- moderate carbon farming using savanna burning (some improvement vs wrong-way fire)
- moderate increase in the number and extent of conservation areas (14%), with limited joint management with Traditional Owners
- little (10%) increase in cultural- and nature-based tourism (65% Indigenous)
- no coastal barramundi farms
- similar level of resource extraction (some impacts)
- six 1000-ha stand and graze farms (6,000 ha) based on groundwater (110 GL, 3.1% of recharge).



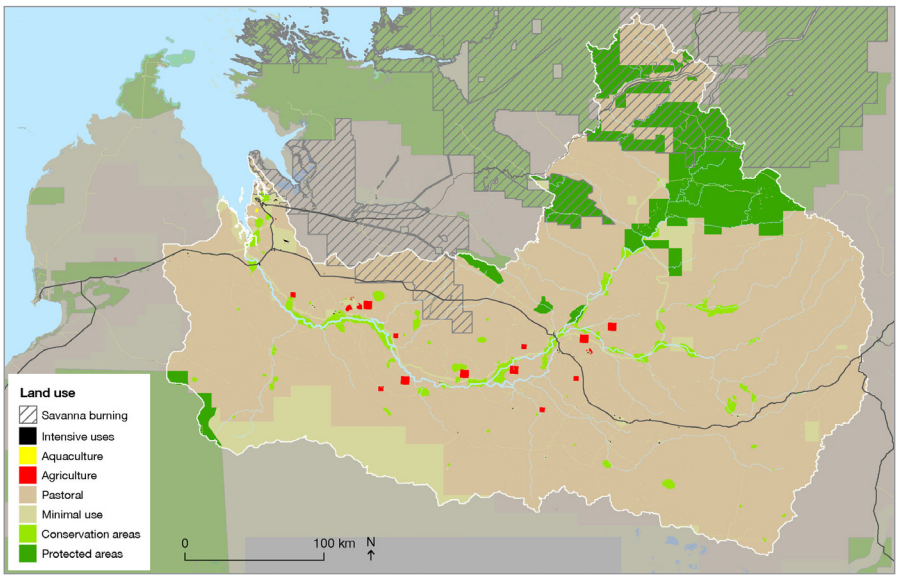
Scenario 2

- land use dominated by grazing natural vegetation
- better land and water management, including cattle control and reduced overgrazing
- better access to Country, including for recreation, subsistence and cultural activities
- extensive carbon farming using savanna burning (less wrong-way fire)
- medium increase in the number and extent of new conservation areas (13%), including joint management
- medium (50%) increase in cultural- and nature-based tourism (75% Indigenous businesses)
- two new small-scale coastal barramundi farms
- medium increase in resource extraction (low impact)
- 12,000 ha of irrigated rotation system (groundwater: 120 GL, 3.4% of recharge) and 18,000 ha of Rhodes grass (300 GL, 6.1% of median discharge).



Scenario 4

- land use dominated by grazing natural vegetation
- land and water management – including cattle control and reduced overgrazing – does not improve
- access to Country remains limited, including for recreation, subsistence and cultural activities
- small-scale carbon farming using savanna burning (little improvement vs wrong-way fire)
- low increase in number and extent of conservation areas (12%), limited joint management with Traditional Owners
- modest (25%) increase in cultural- and nature-based tourism (65% Indigenous)
- one new small-scale coastal barramundi farm
- high increase of resource extraction (higher impact)
- 6,000 ha of groundwater (110 GL, 3.1% of recharge) and 18,000 ha off-stream (360 GL, 7.3% of median discharge) irrigated Rhodes grass.



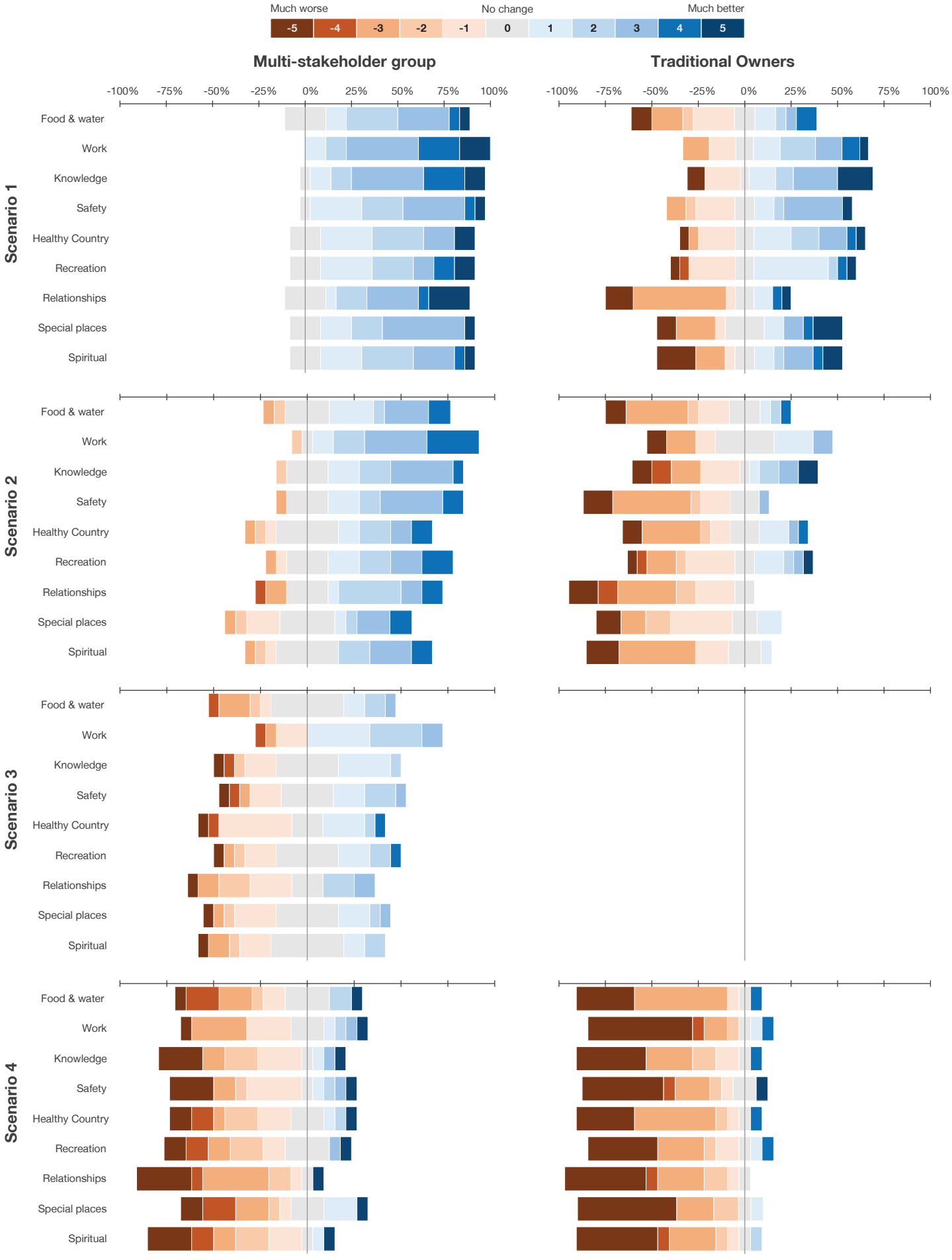


Figure 3. Participants' ratings of scenarios per workshop. The diverging bars show the percentage of participants that rated positively (blue tones, right), negatively (orange tones, left), or neutrally (grey, centre) the changes in each wellbeing category for each scenario. Different tones of orange or blue correspond to the level of decline or improvement, respectively. The width of each segment corresponds with the percentage of participants that rated the change. Scenario 3 was not assessed during the workshop with Traditional Owners. Source: Kiatkoski Kim et al. (in review).

The last stage of the project involved discussing and assessing the possible outcomes of alternative scenarios. To do this, the scenario team systematically explored the potential impact of scenarios on people's wellbeing in two workshops: a multi-stakeholder workshop with the team who developed the scenarios, and a workshop with nine Traditional Owner groups from the catchment. Researchers asked participants to describe how people currently satisfy nine categories of wellbeing in the catchment including, for example, having enough food and water to drink, strong family and community relationships, and knowledge of country and culture. Then, participants scored the worsening or improvement of each wellbeing category in each scenario against the current situation. To inform the assessment, participants explored and discussed possible changes in landscapes, land-use maps, and socioeconomic indicators under alternative scenarios. Participants also looked at the illustrations of scenarios to help assess the impacts of alternative scenarios on their wellbeing. Participants' scores varied significantly, but they followed a similar pattern in both workshops (Figure 3). Scenarios with strong policies that protect important values in the region were generally (but not always) associated with potential wellbeing improvement. Scenario 2, with increased large-scale irrigation, was scored mostly positively by the multi-stakeholder group, and mostly negatively in the Traditional Owners' workshop.

Researchers identified different discourses that help to explain these results: (a) scenarios with large-scale agriculture, or with poorly regulated development, would increase the money circulating in the region, and benefits would trickle down to local communities through employment, enhancing most wellbeing categories; and (b) such modes of development might create jobs but could negatively impact other areas of wellbeing, potentially affecting culturally or environmentally significant places and increasing social inequities. Preceding economic analyses support the view that conventional pathways through established economies based around current models of large-scale agriculture, mining and retail, do not 'trickle down' to Indigenous households. This is an important consideration to have in mind given the structural disadvantage already faced by Indigenous groups in Australia.

Pastoral land and irrigated agriculture in the Fitzroy River catchment.

We wish to acknowledge the Traditional Owners and Custodians of the Martuwarra (Fitzroy River) catchment, the Bunuba, Giniyjawarrni Yoowaniya Riwi, Gooniyandi, Jaru, Kurungal, Ngarrawanji, Nyikina Mangala, Warrwa, Yi-Martuwarra Ngurrara, Wilinggin, Yungngora, and Yurriyangem Taam peoples.

1. Peterson et al. 2003. Scenario planning: a tool for conservation in an uncertain world. Conservation Biology 17(2): 358-366
2. Kahane. 2012. Transformative scenario planning: Working together to change the future. Berrett-Koehler.

Further information

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This factsheet and further information are available from the project webpage at nespnorthern.edu.au/projects/nesp/multi-objective-planning-northern-australia

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