

Select Committee on Adopting Artificial Intelligence (AI)
Answers to questions on notice
Climate Change, Energy, the Environment and Water Portfolio

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Senator Shoebridge asked:

Senator SHOEBRIDGE: Thanks for that. Dr Bartolo, is the work you're doing in Kakadu on the Healthy Country partnership in your bailiwick?

Dr Bartolo: I think you're referring to Healthy Country AI, which was done in partnership with CSIRO and Microsoft.

Senator SHOEBRIDGE: Yes.

Dr Bartolo: That's not operational at the moment. It has not been carried forward, as far as we're aware.

Senator SHOEBRIDGE: When did it operate?

Dr Bartolo: It was trialled and tested under the National Environmental Science Program, in the last round. I can't give you the exact year right now, but it was a few years ago.

Dr Pirzl: I think it was somewhere around 2019.

Senator SHOEBRIDGE: So it was just for one year?

Dr Pirzl: I don't have those details in front of me, about the duration of it, but it was around the 2019-20 period.

Mr Sullivan: That's in a program that's not operated by Parks Australia.

Senator SHOEBRIDGE: It was done in conjunction with Indigenous rangers and Bininj co-researchers, according to the website. Do you know what has happened to the Indigenous knowledge that was put into that program—what, if any, protections there were for it and what, if any, constraints there were on Microsoft's use of it? Was any of that considered in that program?

Dr Pirzl: Again, as Mr Sullivan said, it's not a program that we, in Parks, ran; it was run on parks, in conjunction with Kakadu. My understanding is that the work incorporated First Nations input into the design of the work and that the data handling had different layers of access. Data access was constrained according to different access levels, with First Nations knowledge having a particular restricted access within that. That's my understanding, but, again, I don't have the details.

Senator SHOEBRIDGE: You say it was run on parks, not in Parks. Are you saying that Parks didn't have a role in approving, assessing or reviewing it?

Dr Pirzl: I wasn't with Parks at that time. I would have to take that and have a look at it.

Renee, do you have any knowledge of that process?

Dr Bartolo: Yes. To be able to do research on park they have to have a research permit, and it goes through a consultation process. There was traditional owner approval for that project.

Senator SHOEBRIDGE: My understanding—and, again, I'm going off the website—is that data was collected, labelled and interpreted using a combination of business knowledge, Microsoft artificial intelligence, Custom Vision AI from drone footage, data visualisation and scientific research. You've had a case study in using these different systems in combination with Indigenous cultural knowledge. Were there any learnings from that about how to protect First Nations knowledge—how to ensure that it's not incorporated into a large learning model

and how to ensure that data sovereignty for First Nations peoples is respected? Do you know whether there were any learnings?

Dr Bartolo: Our approach has been with our AI work. We've taken what they had done with that project and moved it forward. The way that we engage is directly with First Nations ranger groups that Parks is involved with. In terms of Indigenous cultural and intellectual property, everything is done from those aspects, as well as the whole-of-government Indigenous data governance. We work in direct partnership. Our model is that the IP belongs to the First Nations groups that we're working with. There are cultural databases that Parks manage, where information from this is collected and stored at appropriate levels. The technology is at a stage where we can set up different groups of access in terms of the AI components. We can also develop tooling directly with First Nations ranger groups that's accessible for them to use, and then they own that tooling. It's a slightly different approach to the previous project that you were talking about.

Senator SHOEBRIDGE: If you could, on notice, provide as much detail as you can about what happened to Indigenous cultural knowledge in that prior project, the extent to which it was or wasn't shared with Microsoft or any other third party and what, if any, learnings have come from that, I'd appreciate that. I understand you can't do it at the table here.

Mr Sullivan: Perhaps I'll take that back to the program owners, which would have been inside DOE at that stage—

Senator SHOEBRIDGE: Perhaps, if that is a useful way of doing it, but I understand Dr Bartolo says your agency has taken learnings from it as well, so you must have some knowledge of it, unless I misunderstood the answer.

Mr Sullivan: We'll take it on notice and do the best we can. I was offering to try and get more—

Senator SHOEBRIDGE: I think that's useful as well, but I'm also interested in what learnings and knowledge your agency took, because you were having a lot of that direct contact with First Nations rangers and you're developing these other databases. I think there are two aspects to it; that's all I'm saying to you.

Mr Sullivan: Where I was going was the opportunities to compare and contrast the approach from 2019-20, under the National Environmental Science Program, with what we're doing in a day-to-day sense now, whether that be in Uluru, the Tiwi Islands or Kakadu.

Senator SHOEBRIDGE: I think that's what my question was getting to.

Answer:

Project duration

The Healthy Country Artificial Intelligence (AI) research project was delivered under the department's National Environmental Science Program's (NESP) Northern Australia Environmental Resources Hub (NAEHR). The project duration was just over 2.5 years (November 2018 – June 2021).

- Kakadu National Park was a collaborator and end user in the project.

Protection of Indigenous knowledge and data

- The Healthy Country AI [project report](#) outlines the protocols adopted for protecting Indigenous knowledge and data. Further details on the protection of Indigenous knowledge and data included:
 - Applying Indigenous led co-designed research frameworks and developing these to be fit-for-purpose for Indigenous people in the park.

- The Bininj/Mungguy Research Steering Committee (RSC) comprised of Elders representing the clan in the park was established to oversight the project and direct on ground research activities.
- Indigenous data and consent protocols were implemented throughout the project: research agreement drafted in consultation with the RSC; human ethics approval (CSIRO, reference number 050/18) and Charles Darwin University (reference number H18055); and a project communications agreement for all participants in the project outlining who and what projects details could be communicated more widely.
- Co-design of AI (details can be [accessed here](#)) and the use of digital technologies for data collection (e.g. drones) was indigenous-led and governed by Traditional Owners. Indigenous-led protocols for the use of drones on Jaowyn Country in Kakadu National Park were developed (publication can be [accessed here](#)). These protocols, which include data management, provide a framework for Indigenous-led use of innovative technologies.
- Following Responsible AI and ethical data governance practices at the time, different levels of access were applied to the AI platform developed in the project. There were three rings of data governance (management and access) applied: Traditional Owners, Elders and rangers comprise the first ring (innermost) and identify data that can be made available to the second and third ring of users; the second ring can be accessed by researchers and collaboration partners; and the third ring (outermost) can be accessed by the public.
- The AI model and data collected during the project (drone and AI data) were removed from the CSIRO IT infrastructure (including CSIRO's Microsoft Azure subscription). The model and data are in the process of being provided to Kakadu National Park.
 - Data cannot be included in a large learning model unless it is made available to do so.
- The code base for developing a user's own AI model, based on the Healthy Country AI Kakadu National Park project, is available online through Microsoft's open-source projects and samples Github repositories and was archived on 16 February 2024.
 - The repository is now read-only (no further development of code), although people can still access the code base.
 - No data is available in the repository.
 - Indigenous cultural knowledge relating to the Bininj/Mungguy seasonal calendar is part of the coding framework and consent was provided for this to be publicly available with the aim of making it available for other Indigenous groups.
- Microsoft is unable to use the data collected during the Healthy Country AI project on Kakadu National Park and the company has no direct access to it.
 - Through Microsoft's enterprise agreement with users (customers) of their products, access to data in the Microsoft cloud is only provided through permission of the user and by raising requests for support.
 - Microsoft audits their access to user data only with the permission of the user.
 - Access to the CSIRO Microsoft Azure subscription for Microsoft's engineers collaborating in the project was controlled by a CSIRO project team member. This access to the subscription was removed when the project was completed.

Parks Australia's role in project governance

- The project was approved by the Kakadu Board of Management (which includes Traditional Owner board members) and a research permit was issued by Kakadu National Park.
- Parks Australia staff have reviewed the project outputs and outcomes in collaboration with some NESP project team members and have used the learnings and recently developed Responsible AI, ethics and Indigenous data governance frameworks in new projects that have been commenced.

Project learnings

- Project learnings on co-production from the NESP team have been published and can be [accessed here](#).
- The digital dashboard included a 'sharing science and Indigenous knowledge' indicator to monitor and communicate the coproduction approach and impact and enable Elders to provide feedback to the project team on the coproduction process.
- Social benefits (e.g. number of jobs and training opportunities for Bininj) of two-way learning (western science and Indigenous knowledge) could be tracked through the digital dashboard.
- Indigenous cultural practices for the sharing of knowledge and information need to be built into future data systems.
- Knowledge sharing is as important as healthy Country. The digital dashboard enabled ethical and collaborative approaches enabling others on park to trust the information.
- The RSC was critical in providing the forum for Traditional Owners to direct the research and respond to new knowledge as it was generated.
- Bininj/Mungguy must be involved to guide the way information is used in AI settings, otherwise unintended outcomes may occur.
- Sustaining Indigenous-led use of AI and associated data collection technologies requires ongoing engagement and capability building. Parks Australia now has internal expertise and capability, through the Office of the Chief Remote Pilot (OCRP) to continue the work undertaken in the NESP project and broaden this to other protected areas.
- Through the commencement of projects using drones and AI in Uluru-Kata Tjuta National Park and Kakadu National Park, Parks Australia is building capability of Indigenous rangers to facilitate and undertake the work to deliver the projects.
- Building on the learnings from the Healthy Country AI project, Parks Australia is taking an approach to design data collection, AI models, and tools led by the Indigenous rangers. These outputs will be accessible through the ITC infrastructure provided by the department/Parks Australia that is fit for purpose. The data will belong to the Indigenous groups for the Country it was collected on.
- Digital permissions and encryption of data is being explored to ensure Indigenous data governance and ethics is implicit and that access to data is restricted to those with the appropriate permissions.
- Parks Australia is also investigating diversifying providers of cloud services to mitigate any potential single-point failures.

- The department (OCRP) is a partner in an Australian Public Service Commission APS Capability Reinvestment Fund project 'First Nations Drone Policy'. The project is considering data sovereignty in the design of policy specific to drone use on Country.