

People working with technology in remote communities

Ourplace

Number 29

BUSH TECHS

Disinfecting a water tank

Renewable Energy in remote communities



Integrated Technical Services

Karrayili - Adult Education in a remote Australian Community

Climate Change: Understanding the science and applying it to the remote context

Contents

3 Bushlife Interview with Sally Gould, 2006 Senior Australian of the Year

4 News

7 Education and Training Project-based Training: building community assets and skills by Kathy Senior

8 Reflecting on our work Marcus Seidel, Leigh Collins and Tamela Vestergaard review CAT's work with the Karrayili Adult Education Centre in Fitzroy Crossing Western Australia

Centre pages

BUSH TECHS

#33 Disinfecting a water tank

#34 Renewable energy in remote communities

11 Outlook Tim Day discusses the background and rationale for CAT's Integrated Technical Services program

13 Livelihoods Insight into some of the tools and processes used and developed by CAT for working with remote community residents

16 International Alyson Wright looks at the science of climate change and its potential impact on remote communities

19 Review 'Indigenous Community Development and Self-Employment' with case studies in eco-tourism in North Australia by Metta Young

20 Our Place Radio

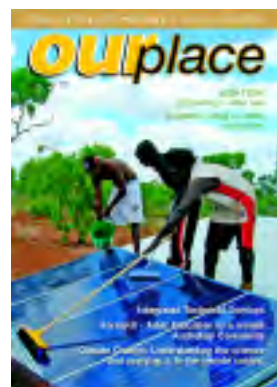
In this issue we focus on some of the key issues that are affecting or will affect Indigenous people across remote Australia. The articles on pages 7 and 8 explore approaches to Indigenous education in central and Western Australia that are seeing positive results for local people - results being driven by local need and livelihood aspirations. Education is often seen as the key intervention in overcoming disadvantage but despite many years of mainstream services in this area, Aboriginal people continue to have poor access and poor outcomes from both compulsory and post compulsory education. These articles highlight the importance of community driven responses to educational need.

On page 16 Alyson Wright outlines the potential impact of climate change on Australia's remote regions. "Many authors have argued that the most immediate impacts of climate change are likely to be felt first in small and marginalised communities". The ability of remote

communities in Australia to predict and adapt to rising temperatures, more variable rainfall and an increase in extreme weather events such as monsoons or cyclones will be increasingly important.

Elsewhere we have an article detailing the rationale behind CAT's Integrated Technical Service program. There is also a thought provoking article on tools for talking with people about livelihoods, tools that assist in developing common understanding about ways of working together. We highlight the extension of the Bushlight program and present a thoughtful interview with Sally Gould, 2006 Senior Australian of the year. Our BUSH TECH #33 looks at disinfecting water tanks and BUSH TECH #34 gives an update of renewable energy systems.

We hope you enjoy this 29th edition of Our Place and please use our free subscription service on the website www.icat.org.au to have the magazine sent to other interested people.



Front Cover

From left to right. Clinton Bostock, Darren Raymond and William Farrell. CDEP participants in the Level 2 Bushlight training at Jingaloo community, NT.

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Tel: (08) 8951 4311
Email: ourplace@icat.org.au

Opinions expressed in *Our Place* are those of the authors and not necessarily those of the CAT Board or staff.

WARNING This magazine contains images of Indigenous and non-Indigenous people. Caution should be exercised while reading this magazine, as some of these images may be of deceased persons.

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Sally Gould Senior Australian of the year 2006

Transcript of a story produced for Our Place radio

ADRIAN – Sally congratulations for the award Senior Australian of the year.

SALLY – Thankyou very much Adrian, it was really wonderful and I'm deeply honoured by this award, I was very surprised but really feel so good about it and it's great.

ADRIAN – Why did you feel surprised, cause you've done a lot of great work over the years in regards to health.

SALLY – Well, no, I do what I do because I enjoy it and because it needs to be done and there were very many other people who I thought were much more worthy than I.

ADRIAN – That's a great attitude to have.

SALLY – Laughter...thank you...should I tell you a bit about myself?

ADRIAN – Yes please.

SALLY – I'm a Wiradjuri woman from south western NSW, but I grew up in Sydney. We moved to Sydney when I was little, and I went to school in Sydney, with some degree of difficulties I need to say, because we were the only Aboriginal family in St Peters at that time. We were the only Aboriginal kids at St Peters public school, so there were problems of racism, particularly with other kids and often my two brothers and I were in fights on the way home from school, and one day when I was on my own, I was bashed by other kids. It was difficult, but after a little while, you learn to stand up for yourself, cause you have to.

ADRIAN – Isn't that the great thing about life, that we go through good experiences but also hard experiences, which makes us grow inside as human beings to become stronger people, to help other people.

SALLY – I couldn't agree with you more Adrian, because we really are the product

of our experiences, and I think that you cope with adversity and cope with the good times, and that makes you who you are.

ADRIAN – I understand that you've always wanted to be a nurse. What was the feeling inside you, that gave you that drive, that you wanted to become a nurse?

SALLY – Well, you know, I've been asked that question many times and I don't know, but I do know I've wanted to be a nurse since I was little.

I left school at 14, I got my intermediate certificate in NSW, and then I worked in factories. When I was 16, making up my applications to go do my training at Royal Prince Alfred hospital, people would then say, well you know you're not going to get in. I was really quite taken back, stunned actually, and I'd say, "of course I will and why do you say that" they said you won't get in because you're black, and this was from Aboriginal and Non-Aboriginal people, because no one in our family and my extended family had gone on to do further study. It was wonderful, and I felt so positive about it. We made the application, my mum and I were interviewed by the matron of the day at Royal Prince Alfred hospital, Miss Eveylyn Lorry, to whom I'll be ever grateful, because she accepted me in, to do my training, and I was the first Aboriginal registered nurse in NSW. Now I could be challenged on that, but that is, as I understand it, looking at the historical factors, as far as nursing is concerned.

ADRIAN – In today's world young people don't have a lot of hope and belief. Do you think it's about, how we actually think that we can hold onto a dream, that we want to be someone in our lives, what would you like to say to the youth?

SALLY – What I would like to say is, you have your dream and hang onto that

dream and keep your eye on the prize and the prize is wonderful. What I can say to you is stay at school, do the best you can and follow whatever path you want to follow, and don't, please don't, let anyone interfere with your dream, or take your dream away from you.

ADRIAN – You've been travelling around Australia visiting many communities since your award of Senior Australian of the year in January. What would be some of the best experiences you've had visiting communities, especially remote communities?

SALLY – Meeting the people. It's been really really good, and I feel just so honoured to have been able to meet so many people, there are so many good people out there, our people, out there.

ADRIAN – Onto Indigenous health Sally. We know that Indigenous health is very poor in Australia, our people have a lot of third world diseases, trachoma, also rheumatic fever. Is the infrastructure in remote communities one of the keys to improving Indigenous health? When and how do you think things can change?

SALLY – I don't believe that things will change until the social justice issues are addressed, and that's health, housing, education and employment. Those issues won't improve until those social justice issues are truly addressed. Now, COAG, the Council of Australian governments, they need to be really mindful that those are the issues, are the ones that need to be addressed, and you mentioned rheumatic fever. We have the highest incidents of rheumatic fever in the world. Now that is to me absolutely appalling, that in a first world country, we have these 3rd world and 4th world diseases that are still rife in this country. Tuberculosis is also extremely high amongst our people, and you know, that's being controlled worldwide, except in 3rd world countries.

ADRIAN – Our Indigenous health centres around the country, there on the forefront of our peoples health, what would you like to say to those people working in Indigenous health centres?

SALLY – Continue to do the good job, that you're doing cause you are doing a great job, for our people, and we need more funding in those areas. I would say thank-you, you're doing a great job.

ADRIAN – Nearly ten years ago, you helped establish CATSIN, the Congress of Aboriginal and Torres Strait Islander Nurses. How did CATSIN begin and why did you set it up?

SALLY – As I said, I was the first Aboriginal student nurse at the Royal Prince Alfred hospital and supposedly the first Aboriginal registered nurse in NSW. I didn't see any other Aboriginal people when I was working in the clinical areas, so when I did my masters degree, I looked at why there's so few Aboriginal registered nurses. The reasons behind that are fairly obvious, racism and discrimination and the lack of support within the tertiary sector, and also in the health care system. So I thought then, well there's no good writing about it and talking about it, we have to do something about this. So with the help of the Australian Nursing Federation, a forum was held in Sydney in 1997, and from that forum CATSIN was born. There were 32 Indigenous registered nurses who attended that forum, which was very good, and for people to know, that there are more of us out there, than we realised. The main objective of CATSIN is to increase the recruitment and retention of Aboriginal and Torres Strait people into nursing, the flow on from that are to have curriculum changed in schools of nursing, so all student nurses will learn about the Aboriginal and Torres Strait Islander history and culture, to have a better understanding, because if you consider, most student nurses come from white middle class backgrounds, and the only information that they get about Indigenous people, is from the media, and most of that as we know, portrays a negative stereotype.

ADRIAN – Would you like to make a final comment Sally?

SALLY – Only what I said earlier Adrian. People should hang onto their dream and keep your eye on the prize, and don't let anyone, anyone, deter you from that.

Adrian Shaw

Centre for Appropriate Technology
Alice Springs

Engawala community trials bucket stove



Indoor conventional stoves are often not the most appropriate cooking facility for many remote communities. Conventional stoves often have an average life of 12-18 months in many places – the element can burn-out, the electrical wire can fail, cook tops can be damaged, gas burners can clog up, doors can be broken off and knobs can get lost. Moreover, people enjoy cooking outside on fire. There are a range of products for outdoor cooking. In this short article we highlight one designed by Roy Price from the Northern Territory Department of Health and Community Services.

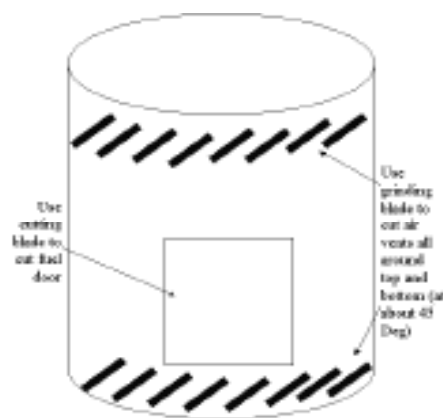
The bucket stove is made by placing a wok on a flour drum, but there are a couple of steps to preparing these items for use in cooking. The flour drum needs to be cut with an angle grinder, for air vents and a window to place fire wood (see diagram).

A new wok has engine oil on it to stop it from rusting. The engine oil must be burnt off before use for cooking on a fire. To burn off the engine oil:

1. Make a fire and put the wok in the fire and burn the engine oil off.
2. Clean the wok with a pot scrubber and detergent. Rinse with water.
3. Pour cooking oil over the inside of the wok and place on the fire again. The cooking oil blackens in the wok.
4. Clean the work with paper and water.

The bucket stove is now ready for cooking. You place the fire inside the window in the bucket drum and the wok on top.

At Engawala community, the most popular option for cooking is on the fire and many households do not have operational stoves. Last August, we undertook a test run of the bucket stove, as another option for cooking food on. Some members of the community helped to cook up a lamb and vegetable curry, as a



demonstration of use of the stove. Initial impressions of the stove from the community included:

- It is a good way of using old flour drums.
- It would be easy to make the bucket stove here at the community, as we have the tools.
- It is very fuel efficient.
- The wok is a good option for cooking a meal to feed between ten to twelve people.
- The food in the wok needs constant stirring because the bottom of the wok heats up more than the sides.
- It would be useful for the store to sell woks.

The bucket stove might provide another option for cooking food at your community. These questions may help you to decide whether it is an option for you. Can you buy flour in flour drums at the store? Is there an angle grinder in the community? Does some-one feel confident in using the angle grinder? Can you purchase a wok?

Many thanks to Roy Price for sharing his bucket stove concept with the staff from CAT.

Bushlight wins national engineering excellence award

Bushlight has been honoured with one of the engineering profession's highest accolades – an Engineers Australia National Engineering Excellence Award.

Forty-one engineering projects from around Australia were short-listed for the annual awards which recognise best practice in Australian engineering, contribution to the national economy, and impact on quality of life of relevant communities.

Bushlight is managed by the Centre for Appropriate Technology in Alice Springs. Jim Bray, Chair of the Centre for Appropriate Technology Board said, "This award is a valued recognition of the efforts of the Centre for Appropriate Technology – an Indigenous organisation which for over twenty years has supported Indigenous people with knowledge and access to science and technology. It is a recognition by mainstream engineering industry practitioners that cutting edge innovation can emerge from people-centred approaches."

Mr Bray thanked the Australian Government which has supported Bushlight over the last four years in working with more than 80 of Australia's remote Indigenous communities to implement sustainable renewable energy services.

Typically, remote communities rely on diesel or petrol generators to supply electricity for refrigeration, lighting, fans and other electrical appliances. Generators have proved to be increasingly expensive to operate and unreliable, making electricity supply in these communities intermittent and of poor quality. This reduces the life of appliances and makes the safe storage and refrigeration of food and medicines very difficult. The absence of reliable and affordable energy within a community also limits the educational, communications and livelihood opportunities of community members.



Grant Behrendorff, Bushlight with Jenny Kroker, Noel Hayes CAT Board Members, receiving the National Engineering Excellence award from Peter Cockbain, Engineers Australia (far left)

A significant feature of the Bushlight program is its focus on working with communities to develop Community Energy Plans which document community choices and decisions on how they use energy now and into the future. Bushlight designs, specifies and manages the manufacture and installation of robust renewable energy systems to meet identified community needs and ensures appropriate maintenance and support arrangements are in place.

Bushlight has managed the installation of more than 90 renewable energy system installations in remote communities spread across northern and central Australia. In doing so, Bushlight has set new national and international benchmarks for the cost effective, equitable and sustainable provision of energy services to remote communities.

The Australian Government through the Renewable Remote Power Generation Programme, within the Department of the Environment and Heritage, and the Department of Families, Community Services and Indigenous Affairs has committed to providing \$16m to fund the Bushlight project from July 2006 to June 2008.

Imparja Cup 2007

Men's Division 2 win to CAT Tigers

In a thrilling game the CAT Tigers won the Men's Division 2 final in the Imparja Cup 2007. Lachlan Thompson held his nerve as the last batsman for the CAT team and steered the team to victory against a valiant Central Land Council team. The Division 2 win came despite the CAT men going down to the Central Land Council team in the opening game.

CAT's all-rounder, Ronald Dodd, was named player of the series (Division 2) averaging three wickets per match with the ball and posting an average of thirty-eight runs with the bat. CAT's Luke Buzzacott scored the highest individual score of 78 runs. He kept his best till last as he scored his 78 runs in the grand final.

In other cricket action during the Imparja Cup 2007 the CAT Women's team, the Feral Katz, came third in the Women's Division.

CAT Tigers Men's Division 2

Back row, (left to right): Ronald Dodd, Luke Buzzacott, Peter Liddle, Gavin Clarke, Hayden Stuart. Front row, (left to right): Lachlan Thompson, Steve Bailey, Kevin Ronberg. Absent: Jamies Newman, Peter Watson, Reg Smith (Junior).



Green light for Bushlight

CAT's energy program to continue supporting Indigenous livelihoods for a further two years



Peter Paul at Kowanyma

The Australian Greenhouse Office and the Department of Families, Community Services and Indigenous Affairs (FaCSIA) have provided funding to extend Bushlight for a further two years to June 2008.

Bushlight can now continue its operations to improve renewable energy services for remote Indigenous communities.

In addition to providing renewable energy services, from July 2006 Bushlight will also coordinate the ongoing maintenance and repair of Bushlight renewable energy systems across its area of operations. This will ensure the sustainability of RE systems and community energy supplies into the future. It is envisaged that Bushlight will work with up to an additional 50 communities over the next two years.

The funding arrangements for the next two years will enable Bushlight to:

- Continue to deliver community energy planning, education and training.
- Coordinate maintenance and repairs of Bushlight RE systems.
- Undertake a capital works program comprising installation of Bushlight RE systems and assessment and upgrades where appropriate of existing non-Bushlight systems.

Independent review shows Bushlight is achieving excellent results

An independent review of the Bushlight Project was conducted in November 2005. This review found that the Bushlight project has been achieving excellent results. The review involved speaking to people from the communities and from the various community support agencies Bushlight has worked with.

The review found that:

- Recipient communities visited are very satisfied with both the performance of their systems and the relationship with the Bushlight organisation.
- An excellent community energy planning process has been designed, supported by a wealth of simply presented, understandable information resources.
- Communities have access to an integrated network comprising homelands support agencies, RE service providers and Bushlight Technical Support to provide service and maintenance of the RE systems.
- Users and other key stakeholders have received extensive training on systems operations and basic systems maintenance.
- Bushlight is supporting industry development, particularly in the context of upholding quality energy services provision, helping to expand the number of RE installation and service professionals, and contributing towards development of robust Remote Area Power System (RAPS) components and systems.

Bushlight Regional Energy Planning Process 2006-08

Now that Bushlight has been extended for another two years, over the coming months Bushlight regional teams will be conducting a second round of regional energy planning.

The Regional Energy Plans produced by this process will document the existing energy generation infrastructure at many of the outstations and homelands in central and northern Australia and prioritise those outstations and homelands that stand to benefit most from participation in the Bushlight project.

The initial round of planning was carried out over the first twelve months of the Bushlight project back in 2002. Back then, Bushlight regional teams visited over 400 outstations and homelands in central and northern Australia to assess their eligibility for inclusion in the Bushlight program. In partnership with the now disbanded ATSIC Regional Councils and ATSIC staff, Bushlight subsequently developed thirteen Regional Energy Plans which have guided Bushlight's community work over the last three years.

This current round of energy planning

will again involve visiting a large number of homelands, including a number that Bushlight staff have not visited for up to three years, to assess each against Bushlight's and FaCSIA eligibility criteria. Bushlight regional teams will work closely with regional FaCSIA and Office of Indigenous Policy Coordination staff, state and territory government agencies, other related state and national program managers, community councils and resource agencies to develop the new Regional Energy Plans.

Bushlight renewable energy information resources available for download free from Bushlight's website
www.bushlight.org.au
 (click on the Resources page)



As described in the article in Bushlight's Review from July 2006, Bushlight has developed a comprehensive community energy planning process, supported by a wealth of simply presented, understandable information resources.

We have now adapted these resources to make them suitable for use by the broader Australian renewable energy industry and consumers.

You'll find heaps of easy to follow documents on:

- energy options for remote locations
- things to consider when planning energy services
- energy planning tools and resources
- RE system maintenance checklists and a whole lot more.

For more information contact Tig Armstrong at the Centre for Appropriate Technology, Alice Springs on 08 8951 4342, email hamilton.armstrong@bushlight.org.au



Project-based training: building community assets and skills

Throughout the winter months of 2006, Allan Jackson, a lecturer with the Technical Skills Group at CAT took 17 trainees through a Certificate I in Applied Design and Technology (ADT) at Arrernte Council in Alice Springs.

The ADT course, formerly known as the ATWORK (Aboriginal Technical Worker) program has proved very successful over the years within the education and training arm of CAT because it centres on meeting trainee needs through a problem solving framework, known as the technacy approach. Trainees are to identify a problem that needs to be solved within their environment and then they take the "problem" through a cyclical process of prepare; design; do and evaluate. The preparation stage is vital as this is where the group sketch out their ideas, list materials and designate time frames for the project. To come up with multiple solutions to an identified problem is part of the design process and this allows for greater scope and flexibility within the project's development. The do stage is the part that the trainees enjoy the most as it is where hands on learning happens and also where the results of their efforts can be seen. Once the project is finished, trainees are able to show how they went about their problem-solving technacy approach and can evaluate the project by identifying what did and didn't work. They can also state what could be improved in the process in a future context.

At Arrernte Council two projects were identified. One was the repair and maintenance of the Council's caravan which is used for contract work. The other project was to plan and prepare a storage cage

facility for tools and equipment.

The Council caravan is used for its kitchen and accommodation facilities and therefore work ranged from maintaining a safe and efficient cooking area to insulating the caravan properly for cold winter and hot summer desert nights. Windows were replaced; cupboard doors were planed and fixed to suit the openings and molding work was done, where needed, in order to cover gaps.

Allan took the trainees through a number of nationally recognised skills in order to achieve this repair and maintenance work, such as: CAT's technacy concept; occupational health and safety policies and procedures; workplace communication; planning and organising; the use of tools and equipment; the fastening and fixing of basic household hardware and the preparation for using metal welding cutting equipment and consumables.

The team of 17 trainees were of mixed ability and age and while one group focused on repairing and maintaining the caravan, the other group worked on the storage cage. Some of the group had previous welding experience that came in handy and the elder trainees strongly supported the younger ones within the group.

The development of the storage cage came about because there was no lock up area for tools and equipment prior to the course. Therefore the group set about drawing up a plan using the Applied Design and Technology model. They identified what needed to be done and who was best suited to do particular jobs. Some of the jobs included welding, cutting steel, measuring lengths and other

calculations as well as levelling.

Once the trainees became involved in the practicalities of the sequence of works, they were more able to see the big picture and their motivation, confidence and skills in the project came to the forefront.

The sequence of works for the storage cage included cutting steel for corner posts; plumbing and levelling corners; running string lines to set the height of the intermediate posts; getting the length of posts to cut; cutting steel to the right length; tack welding it; fixing the steel posts in place by welding; making up frames to go in between the posts; cutting the steel mesh; tack welding to suit and weld to finish. With the cage in its final stage, the trainee group are now setting out policies and procedures for tool maintenance and devising a tool recovery system.

The trainees did not only develop the manual trade skills of cutting and welding steel but the process of designing the project also allowed for the group to develop their own assets in tools and equipment and the training process went some way in improving policies and procedures in the workplace.

Allan felt a sense of satisfaction at seeing first hand the trainee skills being put into practice and also seeing the teams develop in motivation and confidence as the project progressed. One of the trainees - Noel Jackson, also went on to be an apprentice with a local kitchen company - Alice Kitchens and Cabinets.

Kathy Senior
 Centre for Appropriate Technology
 Alice Springs

Karrayili – Adult Education in a remote Australian Community

Karrayili is a *Walmajarri* word meaning learning place for middle aged people. Karrayili is an Aboriginal Corporation controlled by an Indigenous Council to provide education and training following a community education model. Training/education is carried out in the Fitzroy Crossing facility and Karrayili also often takes its programs out into the communities.

In the beginning

Karrayili Adult Education Centre is based in Fitzroy Crossing on the Great Northern Highway in the Southern Kimberley/ Fitzroy River Valley area of Western Australia. The traditional owners of the land there are the *Bunuba* people. The *Bunuba* people are one of four main language groups of the Fitzroy Valley, namely: *Bunuba*, *Walmajarri*, *Gooniyandi* and *Wangkatjungka*. While many of the older people are likely to speak one or more of the traditional languages, they also understand Kriol, a language developed in relation to having contact with non-Aboriginal people. Kriol is the “first language” of younger people in the region. English of course is added to make

up a total of six main languages spoken in the Fitzroy Valley.

Fitzroy Crossing was initially established in the late 1800’s as a depot town to service cattle and sheep stations in the region and contained a small resident population. Many Aboriginal people had cause to move from their homelands in the 1940’s, 50’s and 60’s to live and work on the surrounding cattle and sheep stations of the Kimberley. However with the advent of award wages and equal pay to pastoral workers in 1969, many people were forced to move from the stations to the larger centres, relying on seasonal work on the outlying stations. The *Walmajarri* people came to make up a large proportion of Fitzroy Crossing, with

Wangkatjungka and other peoples from the southern regions.

It was within this setting, with increasing need for local people to communicate with government agencies and other non-Aboriginal bodies that the idea of an adult education centre grew. While schooling was made available for children, it became evident that the non-Aboriginal people were not going to learn to communicate in the traditional languages. This led to great disappointment amongst many elders who expressed their desire to get their opinions heard and pushed for the chance to learn to read and write in English, to sign their own names and manage their finances. As the idea grew it was seen that learning English was a form

of empowerment and other needs were realised, like training to do what white people were doing in their community – fixing lawn mowers, house and vehicle maintenance and even pilot training.

In 1982 a group of ten men formally became the first group of students of the Karrayili Adult Education Centre. When asked what it was they wanted to learn, they explained the need to read and write and talk English so they could negotiate with white people for themselves. At the time, people were dealing with government representatives regarding housing and the curriculum was drawn up around this process. In 1984 a women’s literacy class began, learning to write in cursive script and manage their money. From these beginnings, Karrayili grew, with community classes establishing in the outer communities – Bayulu in 1984, Noonkanbah in 1985, Wangkatjungka in 1994 and most recently Yakanarra in 2001. Also from the beginning, talks centred on economic development, with Karrayili central to the setting up of an Economic Development Unit in 1988. Through this many outcomes followed, with initiatives such as the community purchase of the town supermarket and a fifty percent share in the local hotel. Other local development included the setting up of an Indigenous community radio station (*Wangkiyupurnanupurru*) in 1990 and the Mangkaja Arts Centre in 1991.

(Taken from Karrayili – Adult Education in a remote Australian community, Aboriginal Studies Press, Canberra, 2000 and Tell me More...about the People I Work with, Karrayili Adult Education Centre, undated)

From then to now

From the basic wishes and energy of local people wanting to learn to read, write and speak English and tell the time, to the influence the centre has had on economic development in the region, Karrayili has grown and changed. Other courses have included driver instruction, storekeeping, typing and computers and a “Work skills” program to prepare younger people to enter the mining work force in the region.

In 2006, courses offered by Karrayili include:

- **Certificates of General Education for Adults (CGEA)** – general numeracy and literacy skills across a range of subject and project themes with training designed to suit specific needs. Includes preparing resumes and job applications.

- **CGEA (Art) at the Yakanarra Annexe** – numeracy and literacy skills taught while learning to paint, stretch canvas, linocut, screen print and more.
- **Certificate II in Aboriginal Environmental Health Work** – a community-based course looking at everything in the environment that effects health – pest control; sewerage, rubbish and environmental management; community water supplies; dog health; germ theory. Students learn through workshops and field work in their own communities how to identify good environmental health and how to resolve concerns.
- **Certificates I, II and III in Business** – develops office skills including book keeping, computer use, reading accounts and working in an office environment. Flexible delivery modes are made available.



Welding training to construct bin stands, Wangkatjungka.



Community beautification and tree planting, Wangkatjungka.



Ngalingkadji Business students wanting to develop skills that will prepare their community to run independently.

- **Certificate III in Childcare** – a ‘hands-on’ course designed to provide workers in all types of childcare facilities the skills and knowledge to run these centres in a safe and stimulating way. Specifically designed for Aboriginal communities with training that is culturally and locally appropriate.
- **Applied Vocational Study Skills** – a literacy team-teaching service that provides students in vocational education studies, literacy and numeracy support alongside industry-specific training. (Karrayili Adult Education Centre Information Brochure 2006)

Karrayili Adult Education Centre Story – working with CAT

CAT Derby staff first heard from the Karrayili Adult Education centre in 2002 when Tamela Vestergaard contacted Marcus Seidel in CAT Derby. Tamela is the Co-ordinating Lecturer in Aboriginal Environmental Health Work and has been with Karrayili since August 2001 as the longest standing member of staff. Tamela is a registered nurse, adult educator and also a veterinary nurse.

Tamela is a believer in a “both ways” learning approach and says “...I wouldn't be a good trainer if I didn't listen to and learn from my students”. Tamela also firmly believes that...“*environmental health is pre-primary health – the step before primary health*” (Emilia Biemmi, Broome Advertiser). In 2004, Tamela was short-listed for the Arrix Australia Trainer of the Year awards, and the Board and Director of Karrayili are very proud of her.

CAT was asked if they would be interested in being involved in any way with the delivery of the *Certificate II in Aboriginal Environmental Health Work* course provided by Karrayili. Tamela was aware of CAT's training and technology programs and was looking for an opportunity for CAT to assist and also talk about it's own programs.

This opportunity first came to fruition on the 13 to the 16 of May 2003 at the Wangkatjungka community, located about 130 km East of Fitzroy Crossing and 20 km South of the Great Northern Highway. Tamela co-ordinated the program, with industry representative assistants Marcus Seidel of CAT Derby, Tim Brokenshire, Environmental Health Officer of the Shire of Halls Creek and Gary Smith the Environmental Health Field Support Officer of the Shire of Derby/West Kimberley. A group of twelve enrolled students from surrounding communities and Fitzroy Crossing were on site to participate in the course. The particular component of the course was the Rubbish and Environmen-



Tamela and students at the Wangkatjungka tip.

tal Management Module.

The group all camped and ate great meals together in a community building and shared cooking and cleaning chores. Tim assembled a makeshift movie theatre where movies could be watched at night.

Marcus helped with course sessions and input on environmental beautification, landfill site design, site management, and different waste collection/ disposal methods. Tamela and the group came up with a design for the wheelie bin holders (to prevent dogs and pigs knocking bins over). Marcus and the other trusty assistants gave a short welding course to the students who then fabricated the wheelie bin supports.

The Wangkatjungka community enjoyed the tree planting, and seeing the neat rows of secure wheelie bins evolve. An old man has taken on the maintenance of the trees, and Lloyd Kwilla (Chairperson of Wangkatjungka at the time) has applied for and received some funding towards dealing with on-going environmental health issues.

Marcus, Tamela and the students made a visit to the local land fill site, and led the group in discussions about the problems with the tip. They also received feedback from the group about problems accessing the tip during the Wet Season – the Christmas Creek is a major creek in the area, and when it flows it cuts the road, isolating the tip.

In May 2006, Tamela Vestergaard and Darryl Minga, the new Karrayili Environmental Health Teacher, invited CAT back to Wangkatjungka a second time, with the great support of the Chairperson Olive Knight and the Wangkatjungka community, to again assist with the delivery of the waste management component of Environmental Health Worker course.

This time Marcus Seidel and Leigh Collins (new CAT Derby staff member) went along. The project this time was to produce more wheelie bin holders and plant some more trees, with a group of 26 students. Again a makeshift movie theatre was set up.

A part of the program required a revisit to the Wangkatjungka Waste Management land fill site. As a result of the site visit in 2003, and interaction with local community members and students, CAT sought and won some funds from the Department of Housing and Works to relocate the tip to the community side of Christmas Creek. Because of the very tight Excise Agreement that the community have with the Christmas Creek Pastoral Company (it's a very small block of land for such a large community), there are very few options for the tip location unless a lot of money is spent, so the newly relocated tip is still not a perfect solution. The group gave CAT feedback on how to make the new tip even more accessible during the wet season, and more usable, such as relocating the entrance gate. This work has since been done through the CAT/ DHW Civil Works maintenance program.

As Tamela says, this course is a valuable means of equipping communities with well trained people to manage environmental health in their own communities rather than relying on outside agencies, and CAT look forward to working with this program again in the future.

Story and photos by Marcus Seidel, Leigh Collins and Tamela Vestergaard

Integrated Technical Services

But we can't leave our country or it will die, and our children will die, and we will die. Then no one will be able to hear us.

Makinti Minutjukur, Pukatja September, 2006

Throughout the remote north of Australia there are over a thousand Indigenous communities and outstations. Of these, about 900 have less than 50 people as their usual population. All of these communities rely on water supplies, power, shelter, transport and communications to support their daily living needs. For people who live in cities and towns it is easy to take for granted that the power will come back on if there has been an outage or that a mechanic or tradesperson can be called on to carry out emergency repairs. When living on a remote outstation none of these services can be taken for granted.

What would you do if no hot water came out of the tap in the morning, or if no water came out at all? Would you have to check the bore or the header tanks? Has the pump failed? Has there been a break in the water main?

Living in an outstation requires a high level of resourcefulness. Someone needs to identify the cause of the problem before it can be fixed. Is it a simple problem that can be fixed with tools and materials at hand or does it require specialist skills and specific parts? It may cost \$1000 or more just to get a tradesperson on site and what if no one can come for a week or more. Who pays for the repairs? Are there enough funds? How will the community manage without water until then?

Those who choose to live on outstations realise that they have to adapt to and accept different levels and costs of services compared to those who live in townships. Other services such as health and education and opportunities to obtain

ongoing and meaningful employment can also be limited. These costs and limited opportunities are, of course, offset by a complex set of benefits associated with traditional and customary relationships to place, to people and to natural resources. The decision to live on country is often strongly held and requires dedication and resolve to see through. Despite the difficulties a small but significant proportion of Australia's Indigenous population pursue their livelihoods in remote and very remote outstations.

The viability of the outstation movement, where people moved away from the townships, missions and larger settlements back to country where they had traditional and historical affiliations, has been questioned in recent times - most notably by the former Federal Minister for Indigenous Affairs, Senator Amanda Vanstone. The long-term viability of outstations, she said, is compromised by extreme remoteness where there is no effective economic base and the cost of providing health and education services and infrastructure is excessive and is seen to affect the capacity of government to provide adequate services to the larger settlements.

The approach of normalisation and mainstreaming is intended to raise the level of services that are provided to the major settlements but Senator Vanstone acknowledged that small communities and outstations would have to accept lower levels of service than in larger settlements. The rhetoric of equal entitlement for all Aboriginal people is contingent upon a directed choice. The options are either one of re-location to larger settlements, towns and cities if services are to be accessed or to remain on outstations and accept the consequences of that choice. In the context of recent public discussion and media representation surrounding the difficult living conditions experienced in large settlements and town camps such a choice is not straightforward. And, in the context of housing and infrastructure resources already overtaxed in the major communities and town camps, it would be difficult to adequately accommodate and service a

small fraction of the outstation population if such recentralisation occurred.

Senator Vanstone's presentation did not necessarily establish a new policy direction. The Community Housing and Infrastructure Program has had a long-standing moratorium on funding new homelands and outstations - rather, she put forward a strong position within an ongoing debate about how Indigenous people need to engage with Australia's contemporary social and economic systems.

Where does this leave those who have already established livelihoods on their traditional or customary lands with established housing and infrastructure?

CAT has been grappling with issues around developing and supporting sustainable livelihoods in remote outstations for many years. Recognising that Indigenous people already have a myriad of techniques and strategies for coping with the difficulties and vulnerabilities of remote living, CAT seeks to work with communities to develop ways of securing and improving their livelihoods. In Our Place #21, Steve Fisher wrote about promoting the viability of remote outstations. He summarised the elements of a viable community. These are listed below.

- Effective governance - decision making about allocation of resources
- Expressed aspirations - planning for the future and directing decisions about the allocation of resources
- Reliable infrastructure - ensuring that power and water are available and that shelter is functional
- Livelihood activity - maintaining, developing and improving assets through work and enterprise to improve well-being
- Assets and resource flows - ensuring assets are not depleted and resource flows are maintained
- Access to services - being able to access health, education and communication services as well as essential services such as the water and power that supports domestic needs
- Low vulnerability - reducing risks associated with finances, safety and substance abuse

The provision of renewable energy supplies to remote outstations by Bushlight is an example of a successful approach to the integration of regional and community planning with the development of the user's skills in managing their energy demands. For many outstation residents, an energy supply that is reliable and affordable has greatly increased their ability to sustain their remote occupation.

Energy is only one of a range of services that are needed to maintain the viability of a community or outstation. In August 2005 CAT held a series of seminars. One of the participants made the following comment:

People have been talking for years about better technical services, but nobody has ever been able to make the change. (Our Place #27 p.6).

The seminar sought to explore how existing technical services could be improved and how access to technical services could be enhanced. The understanding that there can be improvements to technical services and that these improvements will improve the viability and sustainability of livelihoods also recognises that the livelihoods of outstation residents has often been compromised by the complexity of administrative frameworks, the variability of organisational capability, and the costs of service provision to remote locations. Often the decisions made by services and infrastructure suppliers have meant that local capacities for management and maintenance have been reduced.

In the report *Many Ways Forward*, for the House of Representatives Standing Committee on Aboriginal and Torres Strait Islander Affairs, the burden on Indigenous organisations was identified: *...we tend to use Indigenous community organisations as the principal vehicle for delivering government programs. That ranges from everything from primary health care to housing, legal aid, even forms of local government and day-to-day policing functions. In fact, many Indigenous community organisations have a wider range of responsibilities than metropolitan city councils. We ask Indigenous people in those situations to be landlords, nurses, teachers, police officers and maintenance personnel for their own neighbours and relatives. That puts an enormous amount of pressure on those communities and on the community organisations. Often they are communities that are suffering abnormal degrees of dysfunction, be it substance abuse, violence or whatever. So community capacity building becomes quite central in those circumstances because these communities and their organisations are the vehicles we are using for the delivery*

of government programs. (June 2004: 111,112)

CAT acted to formulate a program that would seriously address the issues discussed above. The program, Integrated Technical Services (ITS), has now received funding for two years through the Department of Families, Community Services and Indigenous Affairs. ITS is embarking on a program designed to trial



and evaluate the delivery of technical services in different regions. The focus will be on developing and evaluating service delivery associated with water, power, waste management and shelter with consideration also for transport and communications. Using a participatory process of community engagement and with an emphasis on developing demand responsive service models, ITS will generate an evidence base that can be compared with other benchmarking data.

An ITS team from the Alice Springs office will work in the Plenty Highway region. Led by Peter Renehan, three members of this group will make up a mobile service team to undertake maintenance work, to support local Indigenous employees and to provide work experience for Indigenous trainees. Project wide support is provided by the Regional Services team lead by Angus Thornton.

The integration of delivery of technical services offers efficiencies where a tradesperson or contractor can complete multiple jobs in one trip rather than re-establishing each time. For example if an electrician visits 3 or more outstations in one trip the travel costs can be divided between each outstation. Or, as CAT Regional Operations in Derby have shown, if plant for road building and maintenance are working on local roads the cost of taking on the additional work of grading fire-breaks or cleaning up hard waste at an outstation is only a fraction of the cost of independent mobilisation.

Integration of technical services can also be achieved by coordinating between programs and by establishing scheduled

maintenance that reduces emergency call-outs through programmed service and replacement.

To assist communities and outstations in understanding the complexity of funding arrangements as well as program and service responsibilities, a regional planning process will be undertaken to map organisational responsibilities and to identify where service gaps exist. Community planning will then be undertaken in the context of the regional plans. The planning process will support the capacity of communities to make informed and strategic decisions about the focus of maintenance services as well as the method of delivery. Taking a demand responsive approach to service delivery will contribute to matching local decisions about the level of service to the available funding, local capacity to pay and the functional performance of the assets and infrastructure.

ITS is establishing a monitoring and evaluation framework that will contribute to the responsiveness of the ITS program and enable future decisions about effective service delivery models to be informed by a robust evidence base. An independent evaluation of the ITS program will also be conducted.

Tim Day
Centre for Appropriate Technology,
Alice Springs

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Tools for talking about livelihoods with people

A challenge for people working with communities and those living in communities is to develop a common understanding and ground for working together. Too frequently, people from outside agencies rush in with quick solutions or ideas that are ineffective or create more harm than good.

The Sustainable Livelihoods Framework (DFID 2001) (see Figure 1) has been developed as one way of approaching livelihoods. The complexity of this framework identifies that people's well being is made up of a range of assets that include social relationships and environmental factors, as well as the more conventional ideas of income and property ownership.

The factors that contribute to people's livelihoods, no matter where they live, are complex and diverse. The Sustainable Livelihoods Framework is useful for practitioners as a way of understanding the family, household or community that they are working with. But is it a practical model for use in the field? How do people living in remote communities and those working with communities use this framework to help contribute to livelihoods?

CAT and the Desert Knowledge CRC have been working with people from a number of communities and homelands in central Australia to better understand how concepts of Sustainable Livelihoods might transfer to the remote Indigenous community

context. This work considered what had been done in the international development area, in addition to undertaking fieldwork in some central Australian communities. It was during these field investigations that we utilised a number of participatory tools to help us better explain the concepts and ideas of sustainable livelihoods. This article shares some of the participatory methods that have helped to engage people in discussions around livelihoods.

Taking the asset pentagon off the page

The asset pentagon is a central point in the DFID Sustainable Livelihoods Framework. The pentagon can be used to illustrate assets relative to other assets. This technique involves placing points on the pentagon and joining these points to form a new pentagon. The pentagon is frequently lop-sided or misshaped to reflect the situation at the community (see Figure 2).

Plotting out relativeness and relationships of assets is useful but the pentagon can also be used as an initial planning tool, to list out the assets of a community or household. This provides a

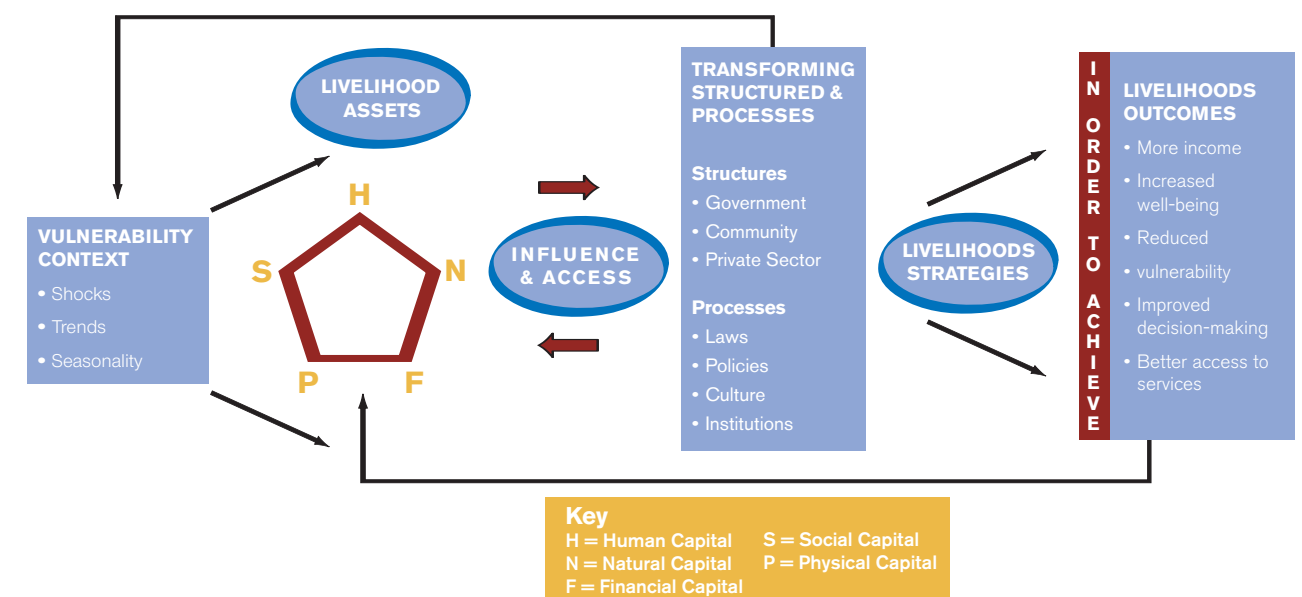


Figure 1 Sustainable Livelihoods Framework

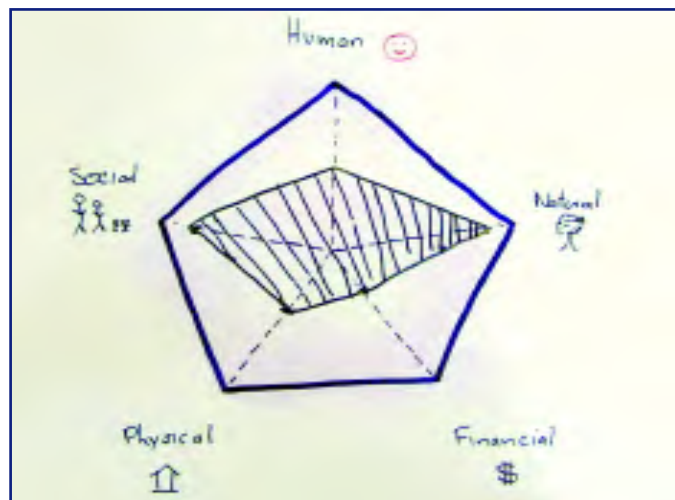


Figure 2 Community Asset Pentagon

more holistic picture of the situation. For example, we worked with a homeland in central Australia to list out all the assets according to 5 categories (social, human, natural, financial and physical). This meant sitting down at the homeland with the family and discussing and recording each category. This places the conversation around “what do you have to build on?” rather than “what do you need?”. It is particularly important that this conversation happens on country or in the community, where the people can visualise or relate stories about particular assets.

As a secondary step, the list can be expanded to detail information and data around the individual assets. Members of the community are vital in the provision of information on assets. For example they can help to explain age of housing, the seasonal nature of bush tucker, how local decisions are made and level of income. It is also important to consider what information other stakeholders may have (e.g. clinic, government bodies) and how community members can help to collect this data.

A map is more than just a tool for directions

At the hub of what you are discussing in livelihoods is the place, the community or homeland. People have a strong connection with their land and culture, and easily relate to maps and aerial photographs. An enlarged community map or diagram is useful in facilitating focus group discussions. The map provides an opportunity to focus attention within and around the community area. At Engawala community, we used the map as a tool to facilitate discussion around local employment and improved CDEP opportunities. We moved across community spaces (such as the school, women's centre, creek bed, roads, and community yards) and identified what types of work do or could occur in these places (see Figure 3).

The role of the facilitator in this method is to identify existing work and to encourage participants to think outside the square, e.g. using scrap metal from the landfill to create art/sculptures. The results from our work at Engawala have been used in the development of a skills audit which documented the expressed work aspirations of individuals in the community. Such a document can become a vital tool for mapping out and resourcing future CDEP and employment activities, identifying succession plans for current employment or in ascertaining appropriate training requirements for individuals.

A picture paints a thousand words

Far too often, people working with communities arrive with preconceived notions of what is important to community members and what needs to change to improve the situation. The Sustainable Livelihoods model attempts to take a more local focus. Through sitting down, observing and talking with residents outsiders can often become more aware and gain an appreciation that the realities are far from their own experiences. Such discussions occur when a relationship of trust and honesty develops between people. A approach that might improve this discussion is utilising local photographs and images.

In Atitjere community, we ran a workshop that utilised a participatory method known as ‘photovoice’, to aid discussions. A number of local people were given digital cameras for a period of time and asked to take photos of community aspects that were important to them. The photos that came back were all unique and different, although, not surprisingly, human and social interactions accounted for many of the photos. These photos encouraged a discussion around social relationships, structure and processes of decision making in the context of this community. Other photos of housing and infrastructure supported a discussion with community members around ownership, lifecycles and maintenance regimes.

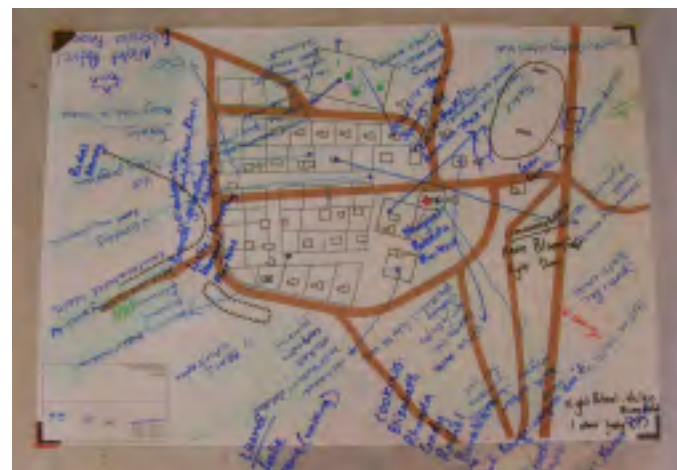


Figure 3 community mapping

A bicycle can be a metaphor for how the parts fit together

All of the above tools and approaches attempt to help in the collection of information and data that are important in understanding aspects of a community's or individual's livelihood. However, perhaps more challenging is conceptualising how the collected information fits within the entire framework. CAT has developed a conceptual interpretation of the livelihood framework that is expressed through images of a bicycle - “the bicycle model”.

The metaphor of the bicycle in this context demonstrates how parts need to work together to achieve an outcome. Each part of the bicycle and the surrounding environment is an aspect of the framework (see Figure 4) and the use of the bicycle helps to convey the meaning and relationships of each element in the framework.

The bicycle model is delivered to community members as a story. By utilising story telling, the model responds to and reinforces cultural practises of story telling that people living in remote Australia identify with. The model can be used as an initial point for planning and as a checklist for evaluations during a community planning and implementation process.

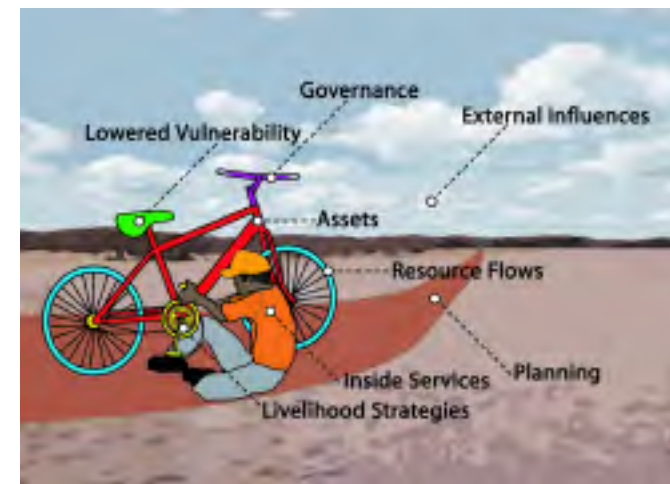


Figure 4 The bicycle model

Using participatory tools

To make participatory tools and resources useful in a community, elements of the tools may need to be adapted, changed or restructured. We have found every community we work with is unique, no matter where the community is situated or how large or small it is. The greater understanding facilitators have of the social interactions and relationships at the local community, the better resources and dialogue can be created and targeted that bring about meaningful exchanges of information and understandings. Community members are not passive in this process, they are vital in the creation, development and dialogue that occurs in developing tools.

The term tool should not be taken literally either. It is not possible to use these tools to build communities, construct involvement or create empowerment in the same way you can use tools to fix a car. More importantly, the use of the tools relies on relationships of trust, mutual respect, integrity and honesty.

BUSH TECHS AND POSTERS

BUSH TECH POSTERS

- #1 How to look after your bore
- #2 When it's time to change the oil
- #3 Buyer's guide to stoves in remote communities
- #4 Rainwater tanks in remote Australia

BUSH TECHS

BUSH TECHS tell you what we've learnt about working with technology in remote communities.

Many are fact sheets. Some summarise emerging issues.

BUSH TECHS are published in each issue of *Our Place*.

- #1 Hot water
- #2 Renewable energy
- #3 Stormwater harvesting
- #4 Rainwater harvesting
- #5 Gas fittings
- #6 Carbon farming
- #7 Feasibility of gas and dual fuel
- #8 How to get a telephone
- #9 Disinfecting a rainwater tank
- #10 Creek crossings
- #11 Maintaining your air conditioner
- #12 Choosing the right door
- #13 Choosing a landfill method
- #14 Dust control

These are prerequisites for all work with communities. The tools will be ineffective without substantial effort placed on developing meaningful and long term relationships with the community.

The value of participatory methods should be to create meaningful discussion and to aid the development of long term interventions that bring about desired improvements. However, our work with Desert Knowledge CRC identified that often practitioners are much better at developing participatory tools and frameworks for understanding disadvantage than they are in achieving outcomes that actually impact on disadvantage (Moran et al. 2007). The challenge in project work for us and others working in the field is therefore not only use the models but to make them and the outcomes real to the people we are working with.

CAT acknowledges the community participating in this work and the support from the Desert Knowledge CRC to undertake the work with Engawala community.

Alyson Wright
Centre for Appropriate Technology,
Alice Springs

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- #15 Choosing the right toilet
 - #16 House warming
 - #17 Landfill design
 - #18 Pit toilets
 - #19 Maintaining your tip
 - #20 Local radio networks
 - #21 Water bores
 - #22 Used oil
 - #23 Waterless composting toilets
 - #24 Managing liquid fuel risk
 - #25 How to get a wheelchair
 - #26 Maintaining roads
 - #27 Septic tanks and absorption trenches
 - #28 Looking after your computer in the bush
 - #29 Pump selection and storage for water supplies
 - #30 Basic community airstrip inspections
 - #31 How to develop a project for your community
 - #32 The use of gas for cooking
- For a free copy of a BUSH TECH, TECH POSTER, telephone CAT on (08) 8951 4311.

CAT PAPERS

CAT has published reports on a range of technologies and themes. Many are available on the CAT website at www.icat.org.au. For a copy of any CAT Paper, telephone CAT on (08) 8951 4311.



Climate Change: Understanding the science and applying it to the remote context

In previous Our Place articles, we have explored climate change through the carbon credits scheme. In this article, we take a step back and explore some of the global understandings of climate change and provide examples of some potential impacts that a changing climate may have on remote communities in Australia.

What is climate change?

Changes in the earth's climate over time is a natural phenomena, examples include events such as previous ice ages. However many scientists now agree that human activities, particularly in the last century, have greatly accelerated the natural changes in climate. These human activities – primarily burning of fossil fuels, agriculture and changes in land use – are increasing the greenhouse gas content of

the earth's atmosphere which affects the processes and feedback of the climate system. The response of the climate to these human-induced factors is complicated; generally speaking an increase in greenhouse gas concentrations leads to an average increase of temperature in the atmosphere (Commonwealth of Australia 2005). This is because greenhouse gases (particularly carbon dioxide) trap heat near the planet's surface.

Global implications

The following provides a brief overview of some of the visible signs of changes in our climate.

Increasing temperatures:

The most immediate sign of climate change is that the earth is becoming warmer. The Intergovernmental Panel on Climate Change (IPCC) reports that the

average surface temperature of the earth has increased during the twentieth century by about 0.6° (IPCC 2001). Although, this may seem like small shift, the fact is that global temperatures are generally quite stable and small shifts can result in large fluctuations in regional and short-term temperatures. The increase in global mean temperature correlates to increased occurrences of heatwaves. Such events can have ramifications on the natural environment (fauna and flora) and human health. For example, in the 2003 heatwave in central Europe, it was estimated that 21,000 excess deaths occurred during this period (WMO 2003). This estimate is based on the expected mortality for that period in average weather conditions.

Changes in precipitation (rain):

In line with temperature changes, observational results show that precipitation

has increased over land at high latitudes and decreased over the subtropics and the tropics. The on-going impacts of drought in the many agricultural regions in Africa could be linked with climate change.

Rising sea water levels:

Another important indication of a warming earth is observable in oceans. The water temperature of the major ocean basins have all increased markedly over the last 25 years (Barnett et al. 2005). The results of this are sea level rises due specifically to the melting of ice caps and glaciers and thermal expansion of the ocean. Church and White (2006) estimate the sea level rise has increased about 3 mm per year since 1993 and moreover, that global average rise is about 195 mm from 1870 to 2004. The rise in sea levels is of specific concern to a number of communities on small islands, including Kiribati, Tuvalu and Maldives.

Uncertainty in debate

Climate models help scientists to identify and forecast future changes. A climate model is a simplified mathematical representation of the Earth's climate system and therefore its limitations need to be recognised. The international review and validation of climate models suggest that they reproduce present climate features reasonably well. Although much uncertainty still surrounds the timing and rate and magnitude of climate change effects, climate models suggest that the current signs will be amplified with continual increases in greenhouses gases.

Regional models and climate data can provide more specific indication of the changes in climate. The Department of Meteorology (2002) suggests that Australian temperatures have, on average, risen by about 1 degree with an increase in the frequency of heatwaves and a decrease in the numbers of frosts and cold days. Furthermore, they add that rainfall patterns have also changed - the north-west has seen an increase in rainfall over the last 50 years while much of eastern Australia and the far southwest have experienced a decline.

Impacts of climate change for remote communities

There is a growing body of knowledge (McMichael 2005, Green 2006) estimating the potential impacts of climate change in communities. Some recent climatic events in some communities are

Example: King Tides on Saibai Islands

King tide is a common term to refer to tide levels that are the highest for the year. A king tide that occurs at summer is of particular concern in Northern Australia because they occur at a time when there are other extreme events influence water levels such as cyclones and monsoonal rains. In 2006, the king tides on Saibai Island were so high that they flooded community areas. The Saibai Island community is currently investigating potential solutions that may reduce the impact of floods from tides because it effects many of the delivery essential services (power, waste management) and protect other cultural and social values within the community (such as grave yard).

also linked to the changes (see box 1). The predictive research on impact use climatic models also use local experience to predict the consequences of climate change. In this section, we look at current perceptions around the vulnerability of small communities and provide some details on the regional predictions for Central Australia, Kimberly, Top End and Torres Strait. Much of the work below utilises the experience and knowledge of CSIRO (2006).

Remote communities and vulnerability

Vulnerability is the term used to explain the relationship that people and their environment have to social forces and institutions and the cultural values that sustain and contest them. Vulnerability is the extent to which a change in the system could harm the system, the environment or people within the system. A key concept in vulnerability is that the events are not controllable but the capacity to adapt or to deal with change and shock is controllable. Many authors (Green 2006; Ford 2005) have argued that the most immediate impacts of climate change are likely to be felt first in small and marginalised communities who are isolated because of their location or their limited resource base. In terms of Australian communities, many remote Indigenous communities may be the most vulnerable to impacts of climate change because of their geographic locations and/or their limited resources to draw upon during times of change.

Regional predictions

Central Australia

Australia's central arid lands region is likely to be affected by global warming, in the following ways:

- Temperatures will increase (approximately 1.9 to 2.2 °C by 2050 and 3.8 to 4.4 °C by the year 2100).
- Changes in rainfall patterns: some areas may increase in rainfall whereas others

may decrease.

- Variability of climate, including the potential for an increased number or severity of extreme weather events (e.g. number of days in Alice Springs over 35 °C and 40 °C will roughly double over the next century).

Kimberley region

The climate in the Kimberley region is expected to change in the following ways:

- Temperatures will increase (approximately 1.5 to 2 °C by 2050 and 3.0 to 4.0 °C by the year 2100)
- Modest changes in rainfall (increase or decrease of up to 2% in next 50 years)
- Temperatures will rise, oceans will warm and the sea level will rise somewhere between 9-88 cm (particular risk areas include King Sound and Gulf of Cambridge)
- Variability of climate, including the potential for increased number or severity of extreme weather events (particularly cyclone events or monsoonal rains).

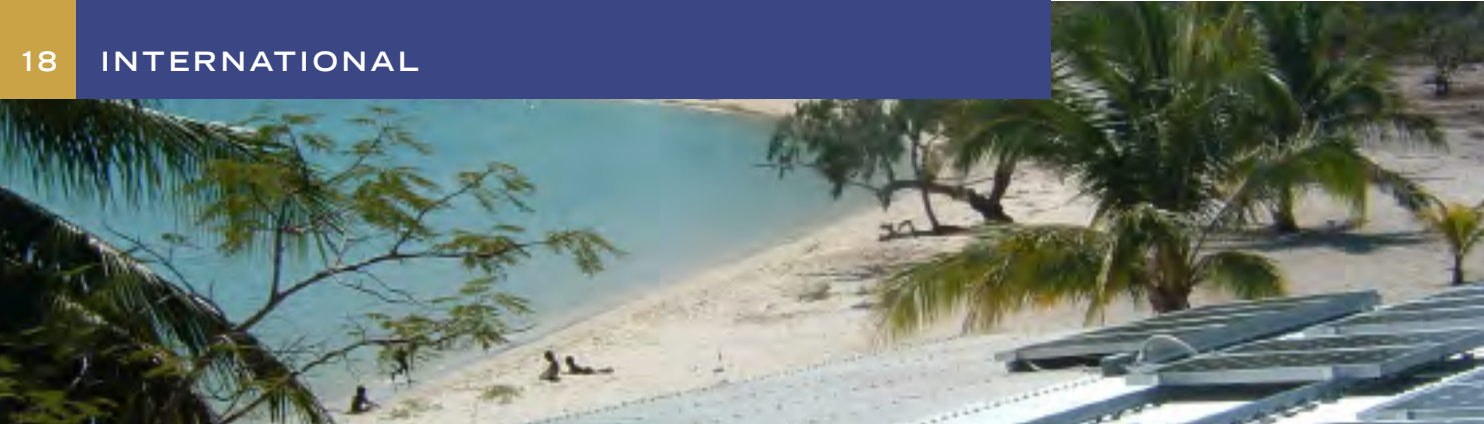
Arnhem Land – Northern Territory

In Arnhem Land, the changes in the climate are likely to be:

- Temperatures will increase (approximately 1.3 to 1.7 °C by 2050 and 2.6 to 3.4 °C by the year 2100)
- Changes in rainfall (approximate increase or decrease of 4%)
- Temperatures will rise, oceans will warm and the sea level will rise somewhere between 9-88 cm
- Variability of climate, including the potential for increased number or severity of extreme weather events (particularly cyclone events for areas where there is already a high risk).

Potential impacts of climate change for Australian communities and their environments

Changing climates are likely to impact on the country, people and health. The connections between country, people and health are extremely important to many Indigenous Australians. The impacts will



vary depending on location but the ability to adapt and plan for these impacts may also function to strengthen the community. Communities may develop capacities for recognising, understanding and adapting to climate change and this may also enable improved approaches to dealing with other external vulnerabilities affecting the community.

Human Health

- Increased risk of illness and death related to extreme heat events.
- Potential increase in injury or death from extreme weather events (floods, heat events, bushfires).
- Increased risk of water and food-borne illness.
- Increases in the incidence of infection from mosquitoes carrying viruses. (Malaria, Ross River, Dengue, etc). (Curie 2006).

Biodiversity/Environment

- Increased stress (heat and moisture) for native fauna.
- Loss of suitable habitat for plants and animals.
- Increased risk invasion from non-native species.
- Increased risk of disturbances, such as fire and pests.
- Potential impacts to industries that rely on the environment, e.g. pastoral industry, bush tucker enterprises.

Water Resources

- Changes in annual and seasonal rainfall in most parts of the region.
- Potential for increased aridity interrupted by short-term flooding events.
- Potential increase in drought and flooding events.
- Further depletion of regional groundwater resources that may affect future water availability to communities.
- Potential reduction in inland and coastal water quality.
- Salt-water intrusion into surface and groundwater.

Buildings and Infrastructure

- Increased maintenance costs for infrastructure such as roads and bridges.
- Increased energy costs for cooling of buildings.
- Increased risk of periodic breakdown of water and sewage infrastructure.

Coastal Communities

- Inundation of coastal communities from sea-level rise.
- Increased erosion of coastlines, particularly during storms and severe weather.

Adapting to change

The ability of communities to adapt to climate change is often determined by their level of development, their access to resources (including financial and social, etc.) and their technical capacity. There are a number of activities that help to improve the capacity of communities to cope with changes in climate such as better education, predictions used in community planning, training and awareness of climate change and more technical measures. In many cases the current focus is increasing communities' adaptive capacity in relation to key sectors, such as public health threats. The CSIRO (2006) has initiated one process titled "knowledge sharing" that brings together local and scientific knowledges on climate change in remote areas and provides an avenue for increased awareness on locally relevant impacts and changes. To lessen the impact of climate change on a country's development, people and governments also need to start working to integrate adaptation into mainstream development policies and to work out appropriate cultural strategies for adaptation.

Alyson Wright
Centre for Appropriate Technology,
Alice Springs

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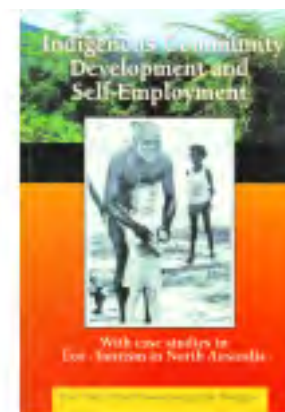
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Indigenous Community Development and Self-Employment

With case studies in eco-tourism in North Australia



This book provides a comprehensive and detailed analysis of employment, enterprise and education issues in remote Indigenous communities, particularly those in Northern Australia. It has a specific focus on the history, reality and contested role of the Community Development Employment Program (CDEP). It is very thick with statistics, academic analyses and arguments and in that sense not really accessible to people on the ground trying to think about or implement enterprise opportunities or economic development strategies for remote communities. Apart from the case studies on ecotourism ventures and the interesting SWOT (Strengths, Weaknesses, Opportunities, Threats) and financial analyses of these, there is not a lot of 'what works' information presented. The book does however devote considerable effort to evaluating the issues and constraints experienced by CDEP programs over time and in relation to parallel issues such as education and small enterprise development in areas with thin and volatile markets.

The section devoted to Indigenous micro-enterprise formation that discusses two ecotourism ventures in detail – the boat transport and ecotourism enterprise at Ngukurr and the proposed ecotourism venture by the Warai – applies contemporary business development and feasibility assessment processes. The application of rigorous opportunity, risk and viability

appraisal provides a useful baseline template for micro enterprise formation across remote communities. In particular, the scoring of strengths, weaknesses, opportunities and risks and the development of businesses strategies for each of the enterprises based on these, offers practical strategies for assessing business development opportunities on remote communities. It also provides a window into the unique variables at play in diverse cultural, environmental and economic landscapes. For example, negotiating and working alongside structures of kin, clan and their relationships to land is identified as strength, but surfaces as a weakness in relation to existing Land Council structures and processes for enabling commercial ventures on Aboriginal land. So whilst the difficulties facing Indigenous enterprise are similar to those facing all enterprises in Northern Australia, there are unique opportunities and risks particular to the Indigenous domain which are clearly articulated. This section should be a useful tool for anyone working with or in the area of enterprise development on Indigenous land.

The book identifies the clear links between CDEP programs and small enterprise development on remote communities especially given the almost total reliance on CDEP as the only activity on many communities that can offer skills development and enterprise support. It argues that small to medium enterprises form the backbone of the Australian economy and employment, especially in rural areas, and similar benefits could accrue to Indigenous peoples in remote communities if small to medium enterprise development could be supported. This would necessitate the alignment of CDEP activities to supporting enterprise development.

CDEP is a Federal government program and is currently being reinvented as a work transition scheme targeting the integration of Indigenous peoples into mainstream employment. The books lengthy evaluation of CDEP policy and implementation to date, and recommen-

dations for the programs future place in supporting community and enterprise development, thus slides into the realm of being a little too late to effect policy development, despite a last minute overview of impending changes incorporated at the end. It does however provide a valuable contribution to the corpus of knowledge about remote communities and the challenges therein.

The books overarching recommendations for the future in relation to community and economic development in remote areas slip away from useful and practical ideas and issues and into broad and populist suggestions about everything from housing, to the role of the academy, philanthropists, land rights and governance. Ideas in this section foreground ideas currently being flagged by conservative think tanks such as the Centre for Independent Studies who is the publisher of John Cleary's work extensively quoted in the final chapter. Whilst the way forward in Indigenous affairs is very much a debate in process, the strong evidence based analysis and ideas presented in earlier chapters are let down by the journey into ideology articulated at the end. The strength of the book lies in the wealth of expertise of the authors in their extensive work with and alongside Indigenous peoples in Northern Australia, in enterprise and tourism development. The voice and aspirations of Indigenous peoples themselves are apparent in these sections and increasingly opaque as the authors move into policy and practice solution making across various fields. Thus read this book for its insights into remote communities, and small enterprise development challenges, issues and successes and read the policy solutions floated for what they are – ideas, inevitably political.

**Don Fuller, Myles Howard and
Jeremy Buultjens**

*Indigenous Community Development
and Self-Employment*
Central Queensland University Press,
RRP \$36.95, 259pp
Reviewed by Metta Young

Our Place Radio

Our Place Radio show is now in its fifth year. Adrian Shaw produces a twenty minute report each fortnight, which presents the voices and perspectives of Indigenous people along with commentary on a technology theme. The major themes are energy planning, communication, health, housing, water, training and transport.

Our Place Radio is broadcast on community radio stations across mainland Australia and in the Torres Strait Islands.

- CAAMA 8KIN FM (100.5 FM), Alice Springs
- Radio Larrakia (93.7 FM), Darwin
- Walpiri Media, Yuendumu
- 6AR, Perth
- Nggaayatjarra Media, Wingellina
- Mulba Radio, Port Hedland
- 6GME (99.7 FM), Broome
- 6FX (936 AM), Fitzroy Crossing
- 6PRK (98.1 FM), Halls Creek
- 6WR (693 AM), Kununurra
- 3CR (855 AM), Melbourne
- 3KND, Melbourne
- Gadigal Information Service (93.7 FM), Sydney
- 4AAA (98.9 FM), Brisbane

- 4CLM (98.7 FM), Cairns
- 4K1G (107.1 FM), Townsville
- 4MOB (100.9 FM), Mt Isa
- 5UV Radio Adelaide (101.5), Adelaide
- 5UMA (89.1 FM), Port Augusta
- 5NPY Media Umuwa (101.3 FM), Pitjatjantjara Lands

BRACS stations in the Top End via TEABBA (Top End Aboriginal Bush Broadcasting Association); in the Pilbara and Kimberley via PAKAM (Pilbara and Kimberley Aboriginal Media Association); in the Torres Strait Islands on Moa Island, Yam Island and via TSIMA (TSI Media Association).

Other stations pick up the show via the National Indigenous Radio Service and TAPE, the Aboriginal Program Exchange.



32 Priest Street, Alice Springs NT 0870
telephone **08 8951 4311** fax **08 8951 4333**
email info@icat.org.au visit www.icat.org.au

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