Torrid Zone
*Symposium* 2010

# At Home in the Torrid Zone:
# *Design in the Tropical World*

A report from the 2010 symposium
Cairns, Queensland, Australia
21 – 22 August 2010


*www.torridzone.com.au*

# The Torrid Zone

**Believing that the area near the equator was too hot for habitation, Aristotle dubbed the region between the Tropic of Cancer (23.5°) in the north and the Tropic of Capricorn (23.5°) in the south the 'Torrid Zone'.**

**The tropical world is, however, home to nearly half the world's people. Fast population growth and economic and social inequality pose unique challenges and opportunities.**

**The Torrid Zone meeting was first held in 2009, and brings together a select group of leaders, policy makers and practitioners to debate the most pressing issues affecting the tropical world.**

**In 2010, the Torrid Zone symposium, *At Home in the Torrid Zone: Design in the Tropical World,* was held as part of the TropLinks International Symposium 2010.**

**The meeting focused on advancing knowledge on urbanisation in the tropics; identifying issues and opportunities related to tropical urbanisation and economic development; and building networks among leaders, investors, industry and researchers in the field of tropical urbanisation.**

# Contents

# Setting the scene

Living in the tropics gives rise to a different set of parameters to living in the non-tropical world. Rapid population growth and urbanisation occurring in the tropics creates a need to design, build and grow urban centres. In turn, this requires food and water security, and the supporting policy settings and social and physical infrastructure.

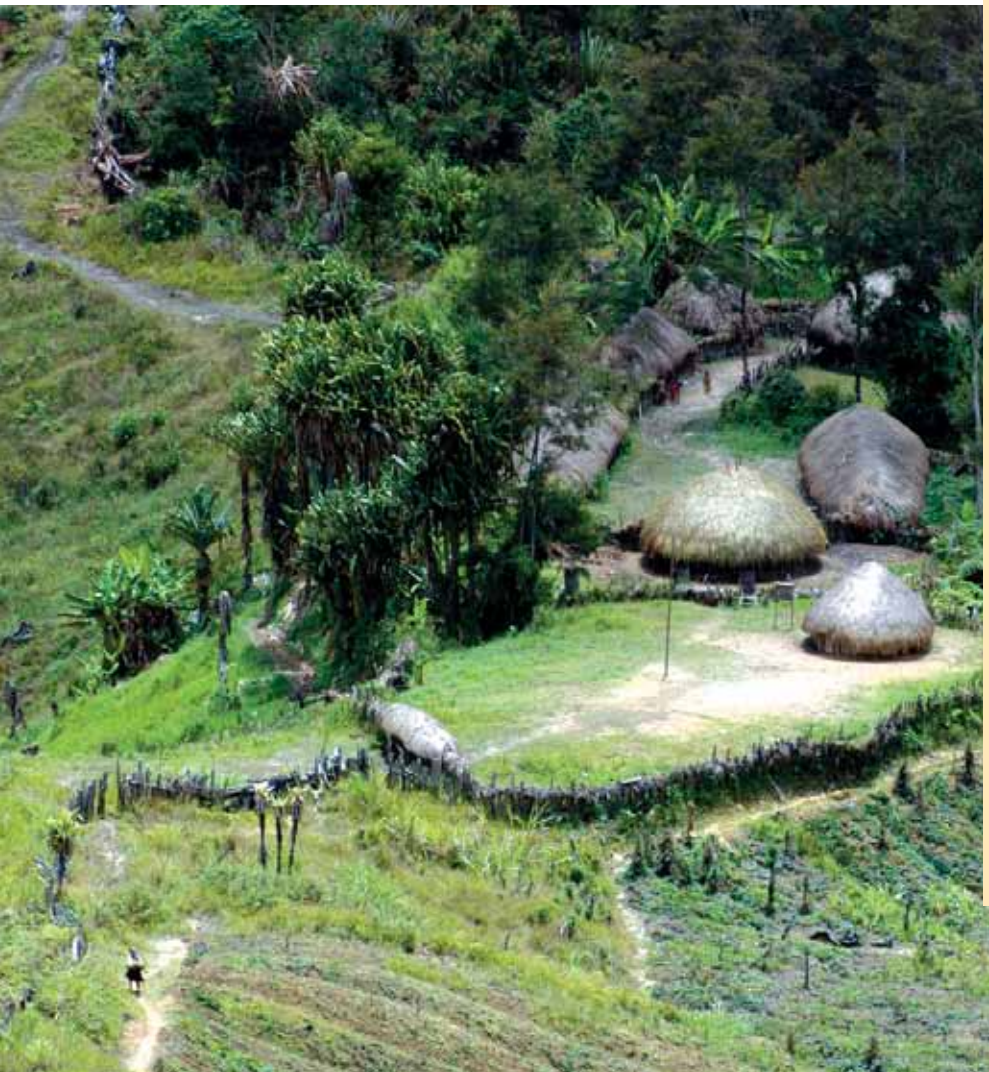
Much of the tropical world is subject to extreme weather events, but climate change is likely to exacerbate natural disasters (particularly flooding and inundation), as is the encroachment on waterways of ever growing cities. Tropical forest loss and degradation will, similarly, have a massive affect on climate, magnify natural disasters (such as flooding), and affect food production and local communities.

Population growth and urbanisation not only affects the rate and extent of climate change and deforestation, but also results in pressures on housing availability and affordability.

Peak oil, that is the point in time when the maximum rate of global petroleum extraction is reached, will also have a significant impact on the cost of living, the movement of goods and people and traditional logistic chains of getting food to market. It is anticipated that peak oil will also significantly disadvantage regional and remote locations and lower socio-economic groups. The synergies between these issues mean that solutions are complex and require cross-disciplinary responses.

Globalisation and urbanisation are also bound up with economic development and the generation of wealth and income. The tropics is home to some of the world's poorest people as well as a burgeoning middle class, and is experiencing rapid economic development. Planning and design needs to take into account wealth generation and distribution.

According to the Asia Development Bank, 'migration and urbanisation are now major factors in the growth of populations and their geographical distribution'. Most tropical nations have experienced an increase in urban population. This increase has been particularly dramatic in some areas. For example, in Indonesia the urban population as a proportion of the total population has increased by 12 percentage points between 1990 and 2009, by 16 percentage points in the Philippines and nearly 16 percentage points in Thailand accross the same period. More limited urbanisation is evident in the Pacific and South Asia. Indeed some in those communities are concerned about the inevidability of urbanisation even as they permit of its possibility.



## THEMES

Discussion at the 2010 Torrid Zone meeting ranged across many topics and issues, with three major themes emerging:

- **Doing things differently: Governance and community driven solutions.** The importance of governance and community engagement to achieve environmentally and socially appropriate planning, design and building in tropical cities and communities.
- **Doing things together: Applied tropical knowledge and expertise.** Being able to utilise and learn from good practice, while not repeating the mistakes of the past. Models for planning, design and building in the tropics are bound up with the social, economic and environmental models of good practice.
- **Doing things well: Learning from the past and looking to the future.** To adequately address issues pertaining to tropical living, a holistic model is needed. This will require an interdisciplinary approach, drawing on a range of experts and knowledge, from the community through to the specialist and professional.

# Doing things differently: Governance and community driven solutions

The Pakistani saying "being listened to is 50 percent of justice", is an apt summation of a key theme from the 2010 Torrid Zone meeting. Participants stressed the importance of listening to communities to achieve appropriate, sustainable and long-term planning, design and building outcomes in the tropics. The saying was also significant in the context of the Torrid Zone meeting itself as leaders, policy makers and practitioners had the opportunity to listen and learn from each other.

Governance and leadership, both top-down and bottom-up, emerged as major issues requiring reform to achieve appropriate models of design and development for the tropical world and people living in the tropics.

In Karachi there has been lobbying to formulate and evaluate projects against four principles. This requires a collaborative approach and is more than legislative change; it is also about demands values. These principles are as follows:

- projects should respect the ecology of the region in which they are located
- projects must help determine land use on the basis of social and environment related considerations and not on land value alone
- projects must cater to the needs of the majority population which in the case of the south are low and lower middle income
- projects must not damage the tangible and intangible cultural heritage of the communities that live in the cities.

## Western models are not appropriate for the tropical world

"Patterns of urban development in tropical developing cities are merely copying western models focused upon city centres." observed **Michael Rayner**, Principal Director, Cox Rayner.

"And these models are less than ideal for tropical cities, which typically experience high levels of solar radiation, higher rainfall and are flood prone," he said.

*Western models of cities do not translate well to the tropical climate, ecology or population.*

More roofs and roads lead to a 'hardening' of cities, disconnecting them from their ecological context. This is important because European models are unsuitable to deal with the propensity for greater impact by, and of, natural disaster in the tropics.

The impact of climate change in this part of the world is forecast to bring more intense cyclones and rainfall events whilst rainfall patterns will become more variable across the year. This has a significant impact on how we will design infrastructure for the future as current approaches will not meet future needs, highlighted **Stewart Christie**, Senior Associate, Arup.

Similarly, **Arif Hasan**, Chair, Urban Resources Centre, Karachi, pointed to the tyranny of the idea of the 'world-class city' that has been circulated via globalisation, and spoke about the need for a governance and policy framework emphasising long-term planning rather than short-term projects.

## Traffic is an increasing issue for planning tropical cities

Large and growing populations mean traffic and congestion are an increasing problem for tropical cities.

Cars have become more accessible and more prolific due to the ease of obtaining finance over the past 15 years. For example, in the 2007-08 financial year, there were: 750 cars registered a day in Bangkok; 1250 in Delhi; 600 in

> *"Reduce the number of trips by going into high density mixed land use development ... but this is easier said than done. There are a number of constraints to this which are not yet clearly identified. If we can identify them then we can find solutions."*
> **Arif Hasan, Chair, Urban Resources Centre, Karachi**

Karachi. In Karachi $1.83 billion per annum is loaned for vehicle purchases.

Of course traffic congestion is not a Torrid Zone issure alone. It is a broader developing and developed issue. In an uncanny temperate world parallel, the issue is illustrated by the 100km traffic jam that took ten days to disperse (starting prior to the 2010 Torrid Zone meeting and lasting beyond its conclusion) on a road leading into Beijing.

## Governance reflecting the local environment and people

The short-term perspective and vested interests of political cycles were seen by participants as limiting good tropical design and development, particularly where long-term strategies and planning were required to address critical challenges facing our regions e.g. climate change, food security, peak oil, unsustainable consumption of non-renewable ecological resources, and indigenous health. Broad-based political support needs to be obtained through a community engagement and long-term vision and action plan process.

**Bill Grace**, Manager – Sustainability, GHD, highlighted the complex and inter-related nature of social and environmental contexts. To achieve healthy and resilient socio-ecological systems will require an effective governance structure which is genuinely responsive to place and community.

> *"We haven't yet worked out a way of dealing with a lack of ecosystems services, or the integration of ecosystems services thinking effectively into planning."*
> **Bill Grace, Manager – Sustainability, GHD**

An adaptive, multi-disciplinary framework will guide integrated decision-making, taking into account human needs, the local ecology, the built environment and the economy. Moreover, integrated management and adaptive management needs to occur on several different scales: global, regional and local.

Bill Grace suggested that it is vital for governance models to be rooted in common values and goals. A governance framework incorporating education, regulation and incentives will achieve better outcomes for tropical communities. Having taken a personal pledge not to be involved in projects that are environmentally destructive, dislocate people or create poverty, **Arif Hasan** also stressed the importance of values and ethics for design and planning professionals.

> *"We need creative thinking and practical solutions underpinned by best practice to demonstrate that there are alternative methods to developing sustainable outcomes that are appropriate to the tropics and will be accepted by the market."*
> **Stewart Christie, Senior Associate, Arup**

Leadership in developing good models and practices which remain economically viable was raised as a key problem by **Stewart Christie**, Senior Associate, Arup. Collaborative models between industry, research, government, community and finance are vital in order to share knowledge, provide leadership, and the necessary operating frameworks. Frameworks are necessary to develop sustainable tropical cities of the future that are underpinned by sustainability principles.

These frameworks need to address the environmental, social, economic and governance challenges facing the region. A key challenge in regional locations is sourcing investment for developing marketable technologies and services that allow sustainable cities to be delivered.

Decoupling economic growth from carbon dependency is important as a result of the challenges arising from climate change, peak oil and the unsustainable consumption of ecosystems and natural resources.

Meaningful community engagement in planning, design and building of tropical homes, communities and cities was recognised as critical to good governance. Actions and solutions should optimise the use of local knowledge, skills and materials. Participants observed that to really facilitate community input to urban planning and design will also require conflict resolution skills and inter-religious dialogue, as well as an awareness of power disparities based on race, ethnicity, class and gender.

## There are examples of good governance in tropical design and development

A successful example that is integrating grass roots engagement with national and international governance structures was presented by **David Kaunitz**, Director of Operations, Emergency Architects Australia. In the Solomon Islands Emergency Architects are working with local communities to design and rebuild 165 schools destroyed in the 2007 earthquake and tsunami. The process "starts with the simple principle of listening" as part of a "long process of understanding local building practices and cultural implications."

> *"Architects have the advantage of listening with a pencil, which makes it a very serious process."*
> **David Kaunitz, Director of Operations, Emergency Architects Australia**

Drawing on community knowledge as well as technologically advanced drafting tools, Emergency Architects have developed a series of 20 standard school buildings. Information and experience gathered during the building process is fed back into the design process to improve future buildings, and ensures that the standard buildings can be adapted for other purposes. Rebuilding schools in the Solomon Islands provides training, utilises local skills and is reintroducing traditional building materials and skills.

Emergency Architects work closely with government organisations, such as the Solomon Islands Ministry of Education and Human Resource Development and AusAID, as well as with non-government aid organisations. This demonstrates that community led design and reconstruction can occur in conjunction with top-down funding frameworks and governance structures.

# Doing things well: Learning from the past and looking to the future

While balancing top-down and bottom-up governance processes will provide the formal and informal structures for better planning, design and building outcomes for the tropics, harnessing knowledge and experience is also a vital ingredient.

Participants spoke of the need to capture the mistakes and successes of the past to inform current and future design of environmentally, culturally and sustainable housing, communities and cities. A number of examples, good and bad, were discussed over the course of the meeting, and may provide the basis for a preliminary series of case studies. Ongoing monitoring to assess the long term outcomes of practice is also important. This section outlines some of the models of good practice discussed by participants.

## Social and economic equity for planning, designing and building in the tropics

> *"Apply a gender lens to all planning, policy and programs. Start the change in your own organisation."*
> **Jane Sloane, Executive Director, Stakeholder Relations, Health Workforce Australia**

Planning and design are inextricably linked with social and economic conditions, and affect social and economic outcomes. **Jane Sloane**, Executive Director, Stakeholder Relations, Health Workforce Australia, highlighted the differential and gendered social and economic impacts of natural and humanitarian disaster, climate change, and urban growth on women in the tropics. The impacts of increasing urbanisation, for example, has a disproportionate affect on women – increased sex tourism and sex trafficking is one such case, as is the impact of natural disaster. "In the 2004 tsunami, for every man and boy who died, four women and girls died." said **Jane Sloane.** This was largely for social/cultural reasons, as women and girls were less likely to be able to swim, were impeded by their attire, or were unable to leave the home due to social mores.

Women in the tropics need to be fully engaged in the decision making and planning processes for managing climate change, urbanisation, and natural and humanitarian disasters.

> *"Asia's middle class has increased rapidly in size and purchasing power as strong economic growth in the past two decades has helped reduce poverty significantly and lift previously poor households into the middle class. By 2008, it had risen to 56% of the population—or nearly 1.9 billion people—up from 21% in 1990."*
> **Asian Development Bank, *Key Indicators for Asia and the Pacific 2010***

The tropical world is characterised by a diversity of wealth and resources. Policy and planning options are required to: support self-determination and economic security for the poor; to support an emerging middle class; and to encourage abstinence among the affluent.

The key to sustainable wealth creation in the tropics is productivity in the use of human and natural resources, specifically:

- sustainable agriculture and food production
- efficient use of energy, water, materials
- integrated water cycle management.

**Stewart Christie** proposed a model to provide access to capital to implement transformational measures so that cities and communities are able to mitigate climate change and adapt to a low carbon economy. Regional sustainability investment models, via access to super funds, was suggested as one way of investing in regional solutions that would build sustainable regions, but would require changes in industry regulations.

*Wealth creation and distribution should be built into planning, development and design models.*

There is approximately $1.3 trillion currently invested in Australian superannuation funds and these are forecast to reach over $3 trillion by 2020 (with diminishing returns). Setting up regional investment funds focussing on sustainable infrastructure, businesses and technology (e.g. renewable energy, sustainable agriculture, green star rated buildings) would allow individuals to invest positively in their region, and could transform regional Australia.

At the individual level, tropical design and building must support sustainable growth and development for economic, social and cultural outcomes. Practical examples were given by David Kaunitz (of Emergency Architect's work in the Solomon Islands) and Paul Pholeros (of Heatlhabitat's work in Australian Indigenous communities), who deliver building and repair programs that train local people. **Taholo Kami** highlighted the issue of housing affordability in the tropics, and that solutions are needed to assist low income earners to take up sustainable housing options. Energy efficiency and appropriate housing design for the tropics are both key issues for tropical living.

## Planning and design are intricately linked with ... social outcomes for cities

The social impact of urban design is significant, demonstrated by the fact that considered and informed planning can engineer safer city centres. The renaissance of shop houses in Singapore, integrating residential space with the retail and commercial buildings, is an example of this.

key element of the public realm that facilitate the opportunity for traditional communal interactions, provide shade and shelter from the weather, provide refuge from natural disasters (such as flooding) and contribute to the sustainability and 'softening' of the city through the harvesting of stormwater and cultivation of nourishing landscapes.

## ... and health outcomes for communities

**Paul Pholeros**, Director, Healthabitat spoke about the social and health effects of housing design and maintenance. Improved health outcomes are achieved by ensuring that housing is functional e.g. that people are able to: wash and clean themselves and their clothes/bedding; to dispose of waste; and to store and prepare food safely.

Healthabitat works with Indigenous communities in Australia, and on low income housing in New York. Work has also been undertaken in Nepal to improve sanitation by constructing and installing toilets.

Good transport planning and infrastructure also shapes the liveability of the tropical city. Effective transport planning will increase mobility and decrease pollution, as well as improve health outcomes. Transport-oriented design principles recommend urban and residential development has a bus or train station at its centre, and supports walking and cycling options. Hong Kong, for example, boasts the longest covered moving walkway in the world to facilitate travel by foot. The walkway runs one way in the morning and the opposite direction in the afternoon.

The gender dimension to traffic and travel was also highlighted by Jane Sloane. Intra-urban travel has become a safety issue for women in urban areas due to increased violence against women in public. This is more likely in urban spaces due to the breakdown of cultural mores and lower likelihood that neighbours will intervene.

Travel options and routes therefore need to be designed with culture, climate and safety in mind. They should function as a

As part of the *Housing for Health and Fixing Houses for Better Health Projects* (1999-2010) Healthabitat have delivered over 180 projects in more than 7,000 houses in Australia. Of these houses: only 11% had safe electrical power systems; 37% had a working shower; and 6% had a working kitchen. The functionality of housing in the tropics was found to be lower than in other parts of Australia.

The impact of healthy housing is demonstrated by a New South Wales study which (although not in a tropical zone) found a 40% reduction in hospital separations for key environmental health related illnesses (acute respiratory, gut, skin and ear infection) over 10 years. The experience of fixing these houses has led to the publication of three editions of the *National Indigenous Housing Guide*, which preserves the information for future policy development and implementation.

The principle of functionality can be applied to any housing type, regardless of culture or location, to improve health and wellbeing.

## Technology and design empowers individuals

Design and technology can also improve the quality of life in tropical communities. Building on the population penetration afforded by mobile phone technology **Ashir Ahmed**, Guest Associate Professor, Kyushu University and Director, Grameen Communications, is part of a team developing a range of technologies aimed at reducing poverty in Bangladesh. Rather than being expensive modifications of existing technologies designed for the Western world, these technologies are designed with the needs of poor villagers in mind.

The e-passbook, for example, provides access to health information and treatment without requiring villagers to travel long distances to the cities for diagnosis. It also allows for the development of an electronic Family Health Record which can be accessed by those with the correct credentials, bypassing the establishment of a new record each time the patient visits a clinic or hospital.

The information and communication technology (ICT) is also being used to improve income generation among the poor, particularly farmers. For example, mobile phones are used to share information about crop selection and care, and to negotiate sales prices prior to travelling to market.

Apart from health and agriculture, ICTs can be used to deliver a range of education services, and are being included in disaster early warning systems. Increasingly, they are also being used to implement smart grids to facilitate sustainable energy solutions and distributed generation (including solar PV at the home scale).

**Fiona Wood**, University of New England (presenting on behalf of Ashir Ahmed) highlighted the importance of promoting awareness about the many ways ICTs in combination with social business are being used to create economic and social development in countries such as Bangladesh.

In an example of practical experience gained on the ground feeding into technological research and development, work done by Paul Pholeros and Healthabitat informs industrial design. Stoves purchased by governments and installed in public housing were found to need replacement or repair within six months to two years of installation. Research was fed into a program to design a stove that lasted longer and met the needs of households. In turn, a functional stove results in better nutrition, health and development.

## Urbanisation is not always inevitable or desirable

**Peter Andrews**, Queensland Chief Scientist and President of TropLinks, referred to '*Arrival City: How the Largest Migration in History is Reshaping Our World*' which argues that urbanisation not only as inevitable, but as a solution to poverty, population growth and agricultural productivity.

While the 2010 Torrid Zone meeting focussed on sustainable and appropriate tropical urbanisation, the view of urbanisation as an inevitable consequence of progress was queried by participants. Recognising that urbanisation is not always the goal, or inevitable consequence of globalisation, planners, designers, policy makers and leaders can aspire to rural economic development and sustainable agriculture. The Solomon Islands was given as an example of a place where urbanisation is not regarded as desirable or unavoidable.

The notion of small-scale cities that are designed for the tropics, with services equivalent to large urban centres, was proposed. These cities could be built with local and sustainable materials, be sensitive to local climate and ecology, facilitate safe and environmentally friendly transport options, and support social and economic equity.

# Doing things together: Applied tropical knowledge and expertise

The wide ranging discussion at the meeting covered urban planning, design and architecture alongside natural resources, agriculture, climate change, health and economics. The breadth of the issues that affect tropical cities, communities, and homes calls for an interdisciplinary response in order to share knowledge, build capacity and implement new ways of designing and building in the tropics. Bringing an interdisciplinary approach to bear involves, for example, not just a design approach, but also a consideration of the supply chain – ensuring sustainable materials can be supplied, and that construction workers have the confidence to work with these materials.

## Interdisciplinary expertise is required to build with and for the tropics

**Michael Rayner** noted that although independent studies of specific issues are occurring (e.g. agriculture, health, transport engineering), there is little work on the environmental impacts *on* and *by* urbanising cities (e.g. marine environments, vegetation, air and water quality, hydrology, microclimates and psychology). There is a significant disconnect between the knowledge disciplines that should be brought to bear on tropical living: science, research, knowledge, planning, urban design and the psychology of living in sustainable tropical cities.

Michael Rayner identified a "unique opportunity for Queensland, as one of few developed tropical regions in world, to establish an institute directly linking scientific research with urban design to assist developing tropical cities" to inform design and develop holistic and robust solutions. Existing models and networks can be tapped into.

**Stewart Christie** suggested for a model to be developed linking tropical cities together and sharing best practice for dealing with the combined challenges of climate change, reducing carbon emissions and reliance on oil, reducing our ecological footprint, and raising overall wellbeing and education of our communities, whilst continuing to develop and grow within our resource constraints.

Examples include the work undertaken as part of the C40 Climate Change initiative (consisting of 40 large cities across the world) and the European Union Covenant of Mayors (a commitment by signatory towns and cities to go beyond the objectives of European Union energy policy in terms of reduction in $CO_2$ emissions).

Both these initiatives foster a sense of shared purpose, offer cities an effective forum in which to work together, share information, demonstrate leadership and are supported and funded by industry, government and research organisations.

## Future opinion makers and leaders are vital

**Sanga-Ngoie Kazadi**, Dean of International Cooperation and Research, Ritsumeikan Asia Pacific University, emphasised the role of education and increased awareness of the environmental issues facing the tropics, particularly rising sea levels and endangered biodiversity associated with climate change. Sanga-Ngoie Kazadi is delivering the cross-disciplinary Environmental Opinion Leaders for the Asia Pacific (ENVOL) program which addresses skills shortages to produce environmentally aware specialists, entrepreneurs, planners and opinion leaders of the future. Students participating in this course are largely from developing and tropical countries.

The course, funded for three years by the Japanese Government, takes an international perspective. It is delivered in Japan and has international links with tropical organisations and universities from countries including the Philippines, Australia, Sri Lanka, Africa and Brazil. ENVOL focuses on building advanced knowledge and skills in basic and applied ecology, while also ensuring the development of skills in information, social and management science.

> *"Some of the bigger challenges lie with how we move the greater part of the population over time to housing that makes sense in the tropics."*
> **Taholo Kami, Regional Director Oceania, IUCN Oceania**

## Sharing expertise and experience to meet the needs of communities

Drawing on an example of work just commencing in a remote Indigenous community in Australia, **James Davidson**, Director, James Davidson Architects, emphasised a collaborative process that entails knowledge sharing, and a responsive approach that focuses on affordable construction (utilising local skills) to facilitate home ownership. The approach taken was summarised as: listen (to the needs of the local community), think (about solutions and appropriate housing design), and act (to achieve outcomes that meets the criteria). Challenges include the legacy of displacement and intervention by the state and church in the lives of Indigenous people.

James Davidson highlighted that utilising both Indigenous and Western knowledge, informal and formal knowledge, is an important strategy to achieve affordable and appropriate housing. Traditional knowledge informs design and purpose, while technology is an enabler to achieve solutions and outcomes.

**Taholo Kami**, observed that sustainable housing in the Pacific should be affordable, and not only available to the wealthy, especially as the majority of housing in the Pacific is required for low income families. The building of western-style homes has had a negative impact on energy efficiency and sustainable housing. To address this, the Palau Development Bank is providing loans for energy efficient housing, both to upgrade existing homes and inform new home design. One challenge is that, due to environmental degradation, the Pacific region is running out of traditional building materials. Another, related to the functionality of homes, is that the people who are least likely to move or upgrade housing are the people who have less to spend on housing.

Illustrating the impact of the export of western design and urban planning, Taholo Kami spoke about the connection between the home design and the strengthening of communities and culture. Maintaining families, values and communities via the design and building of homes is a powerful way to build and grow resilient communities. These communities are better able to live in their ecological context, make the right choices, educate their children and adapt together.

Maintaining community and culture in the Pacific is one way to achieve differentiation in a crowded global market, and is potentially a future platform for income generation via tourism.

# Outcomes

**The *2010 Torrid Zone* meeting brought together an interdisciplinary network of researchers, practitioners, tropical leaders, scientists, and policy makers to connect research, planning and applied design and development. Participants had an opportunity to renew and build their tropical networks, to hear about and share models of practices, and to draw on inter-disciplinary knowledge.**

**The Torrid Zone meeting promotes a collaborative approach to applied tropical knowledge and expertise, and provides contacts and information to support attendees to develop and deliver their work into the future. Participants, for example, spoke about the power of small scale programs, and building momentum to achieve tangible outcomes for communities, develop a repository of good practice examples, and engage with all relevant parties (from political structures through to community members).**

**Participants identified a need to maintain a network of tropical expertise that will share, disseminate and preserve tropical planning and design knowledge, good practice and process for the tropical world. The actions on page 9 address these requirements.**

**In closing the Torrid Zone meeting, Sandra Harding, Vice Chancellor, James Cook University quoted the poet William Wordsworth, "Every great and original writer, in proportion as he is great and original, must himself create the taste by which he is to be relished." Although Wordsworth himself was far from the tropical world, Sandra Harding drew an analogy between the creation of 'taste' and the Torrid Zone meeting. The meeting aims to shine a spotlight on issues in a different way and in a tropical place, drawing on a range of disciplines. Engagement with the issues of the Torrid Zone is a taste that must be created, a knowledge base to be consolidated and a network to be developed.**

# A way forward

## 1 Consolidate knowledge and research to inform tropical design and planning

Examine options for the establishment of a Centre for Tropical Urban Design to: link cross-disciplinary expertise; provide professional training in sustainable tropical urban planning, design and building.

## 2 Establish a Torrid Zone alumni

Continue the conversation about the Torrid Zone by attendees sharing contacts and models of good practice.

# List of Attendies

**Max Aitken**
Partnerships and Advisory Services Operations Department IFC

**Peter Andrews**
*Chief Scientist*
Queensland Government

**Sallyanne Atkinson**
*Chair, Queensland Committee*
Crawford Fund

**Hurriyet Babacan**
*Foundation Director*
The Cairns Institute

**Lyn Beazley**
*Western Australia Chief Scientist*

**Michael Birt**
*Executive Director Pacific Health Summit*
The Biodesign Insitute, Sustainable Health

**Debra Burden**
*General Manager*
1300Smiles

**Stewart Christie**
*Office Leader*
Arup Cairns

**David Conn**
*CEO*
Port Moresby Chamber of Commerce

**Leslie Curtis**
*Senior Urban Design Advisor*
Office of the Queensland Government Architect

**Margaret Darveniza**
*Regional Development Officer*
Advance Cairns

**James Davidson**
Emergency Architects

**Glenn Denning**
*Professor of Professional Practice*
School of International and Public Affairs & the Earth Institute

**Tania Dennis**
Insideout Architects

**Bill Grace**
*Manager - Sustainability*
GHD

**Judy Halliday**
*Commercialisation Manger*
Uniquest Pty Ltd

**Sandra Harding**
*Vice-Chancellor*
James Cook University

**Arif Hasan**
*Chair*
Urban Resources Centre, Karachi

**Taholo Kami**
*Regional Director Oceania*
IUCN Oceania

**David Kaunitz**
Emergency Architects

**Sanga-Ngoie Kazadi**
*Dean of International Cooperation & Research*
Asia Pacific University

**Rosemary Kennedy**
*Director*
*Centre for Subtropical Design*
Queensland University of Technology

**Lisa Law**
*Senior Lecturer, Cultural Geography*
James Cook University

**Charles Lepani**
*High Commissioner*
Papua New Guinea

**Kevin Low**
*Architect*
Small Projects

**Lisa McDonald**
*Economic Development Manager*
Townsville Enterprise LTD

**Keith Noble**
Insideout Architects

**Mario Penisi**
Queensland Clinical Trials Network

**Paul Pholeros**
*Director*
Healthabitat

**Ian Poiner**
*Chief Executive*
Australian Marine Science

**Graham Poon**
*CEO*
Troplinks Inc

**Michael Rayner**
*Principal Director*
Cox Rayner

**Richard Sale**
*Sustainability Committee Chair*
Australian Institute of Architects

**Val Schier**
Mayor
Cairns City Council

**Peter Skinner**
*President*
Australian Institute of Architects

**Jane Sloane**
*Executive Director, Stakeholder Relations*
Health Workforce Australia

**Ross Spark**
*Deputy Director*
Menzies Institute

**Peter Spearrit**
*Executive Director*
Brisbane Insitute

**David Stefanovic**
Architects North

**Nicky Swan**
*Sustainable Regions Project Officer*
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**Ron Tong**
Tong Sing Pty Ltd

**Steve Turton**
*TLJV Director*
Australian Tropical Sciences Innovation Project, James Cook University

**Fiona Wood**
University of New England

**Wendy Yeung**
Emergency Architects

**Paul Zorner**
*Chief Executive*
Hawaii Bio Energy

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