



**What if....**

Professor SueAnne Ware  
Head of School of Architecture and Built Environment  
University of Newcastle (Australia)

**“ His study of the anthropocene  
drove him back to the plasticine.”**

# The Little Book OF BIG WHAT-IFS



RENATA LIWSKA

SERIOUS SCIENTIFIC ANSWERS  
*to Absurd Hypothetical Questions*

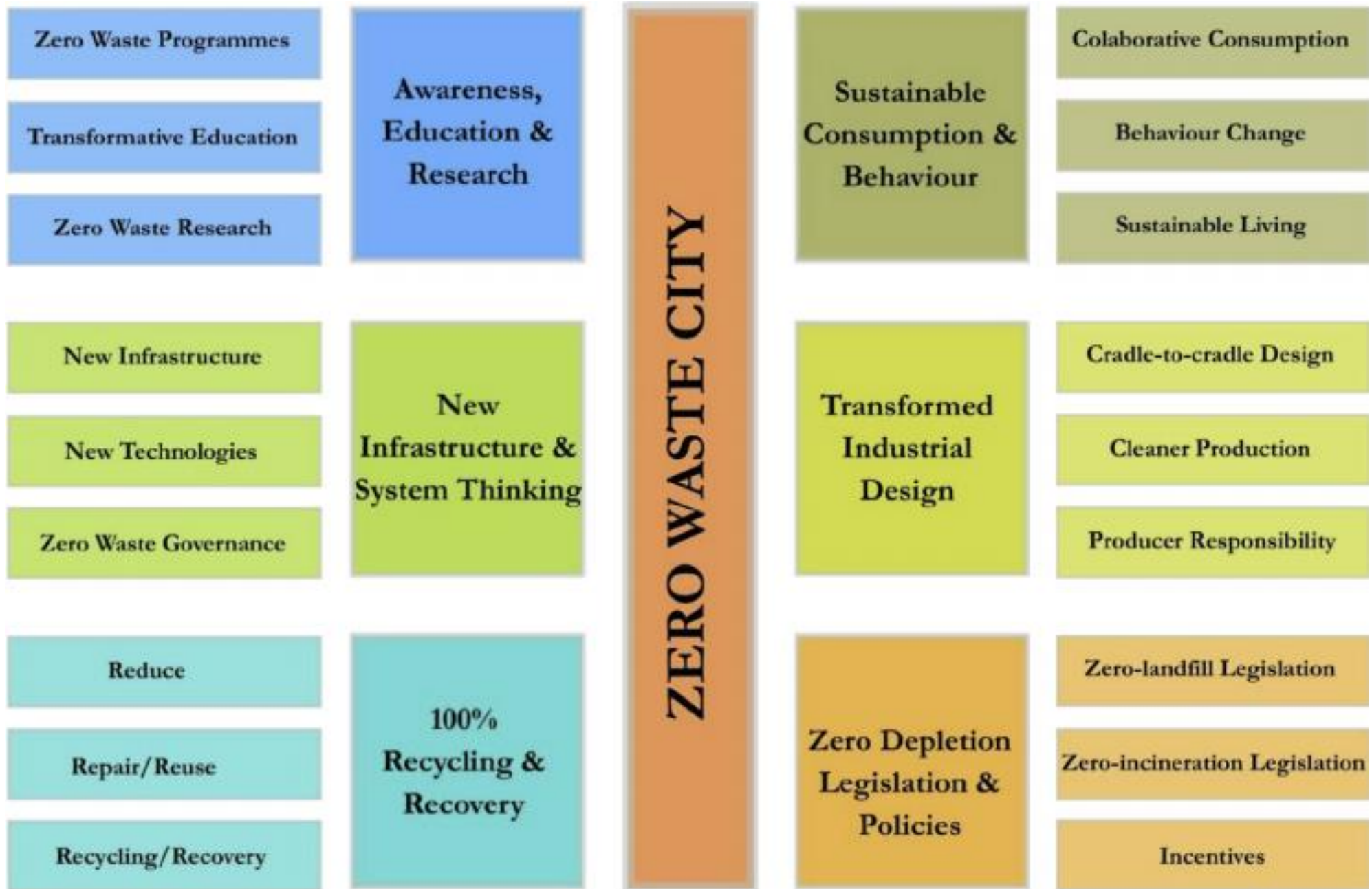


# what if?



RANDALL MUNROE

creator of **xkcd**



What if there was ZERO waste in Newcastle?





Kamikatsu, Japan



(Images: Zero Waste Academy)

**Zero Waste** is a philosophy that encourages the redesign of resource life cycles so that all products are reused. The goal is for no trash to be sent to landfills, incinerators, or the ocean. The process recommended is one similar to the way that resources are reused in nature.





Zero Waste Newcastle

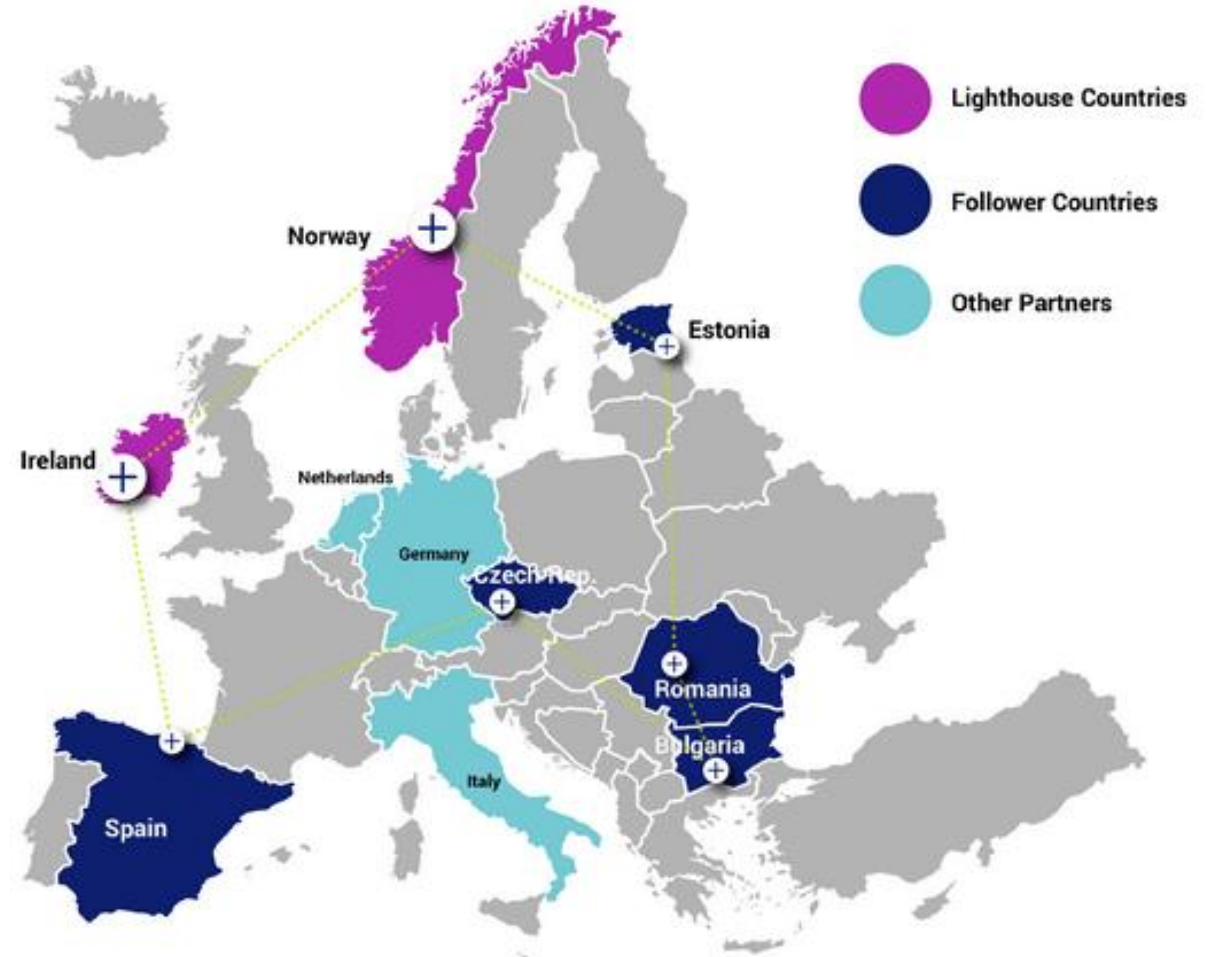


## Buildings account for:



The energy consumption in buildings can be reduced by **30% to 80%** using proven and commercially available technologies.

Source: United Nations Environment Programme Report

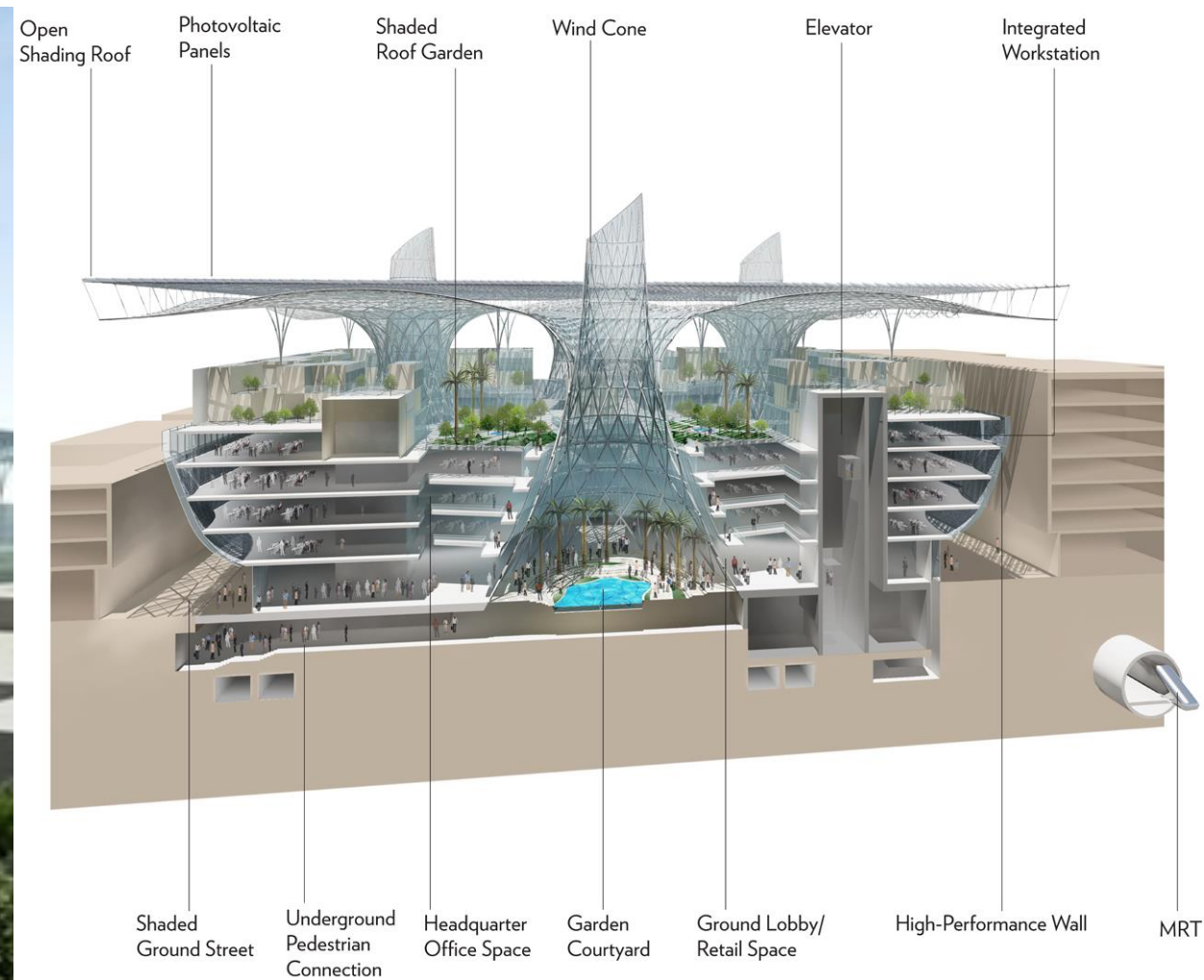


The +CityxChange (positive city exchange) is a smart city project submitted by a consortium of 32 partners including Limerick City and County Council from 11 countries.

## What if all buildings in Newcastle were positive energy buildings?

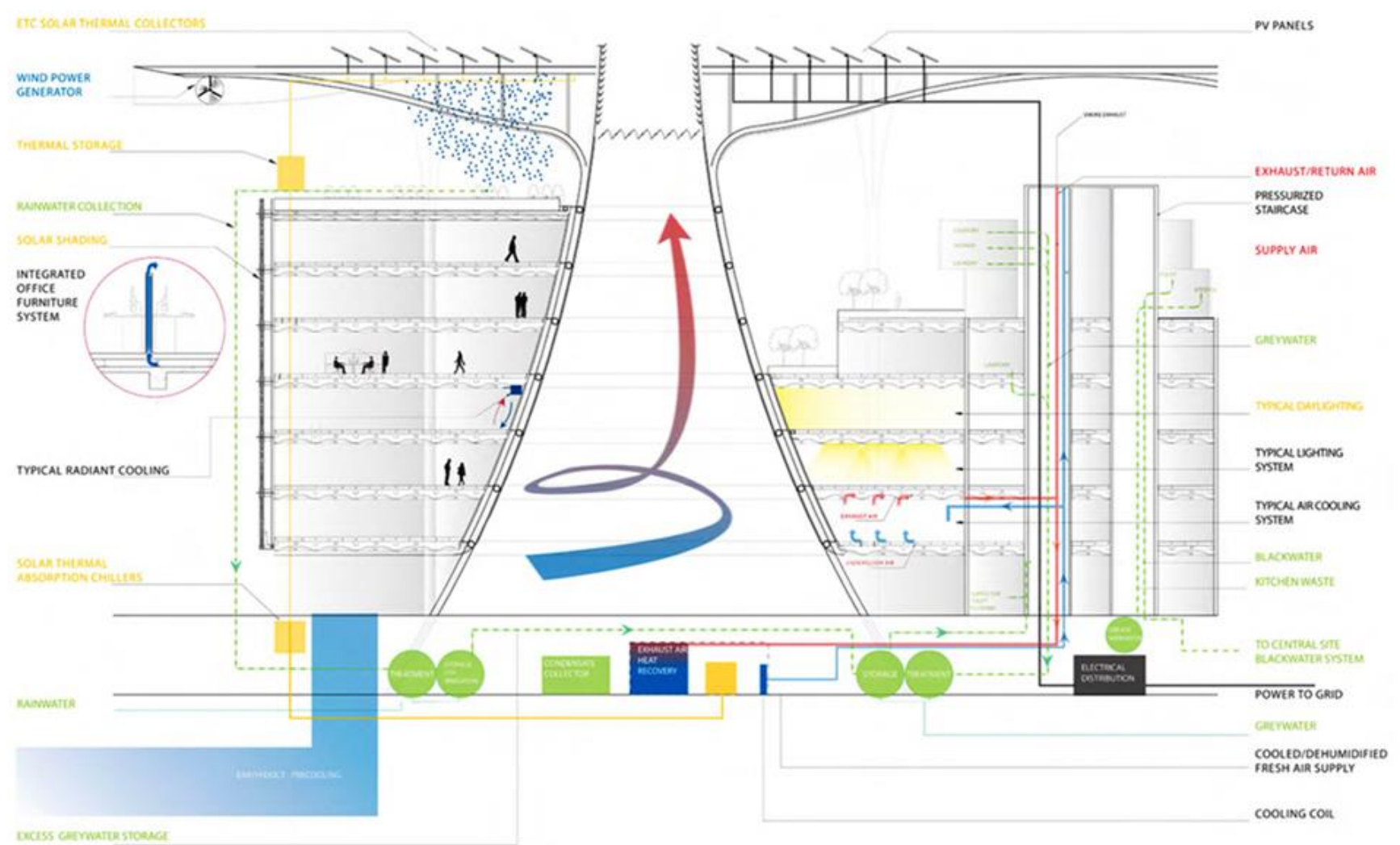
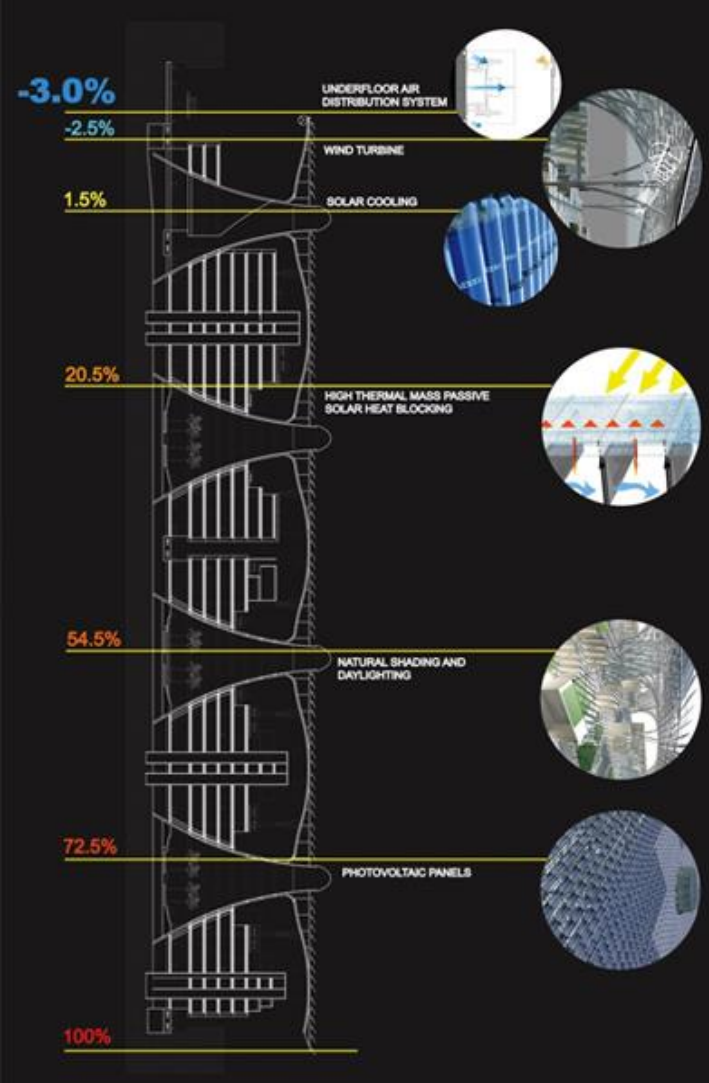
A positive energy building is a building (or a group of buildings) that produces more on-site energy from renewable sources than it consumes to achieve appropriate thermal comfort levels. The aim of the 1 billion m2 of positive energy buildings campaign is to support the development of 1 billion m2 of positive energy buildings globally in 10 years from now.





Sectional perspective noting the building's zoning and the different sustainability strategies including the wind towers and the roof canopy. Copyright: Adrian Smith + Gordon Gill

Smith and Gill's **Masdar Future Energy Headquarters** building outside of Abu Dhabi is the first building in history to generate power for its own assembly, using a solar roof pier that will be built first to power the rest of the construction. (see <http://www.carboun.com/sustainable-design/masdar-headquarters-the-first-positive-energy-building-in-the-middle-east>, Accessed 28 Feb 2019)

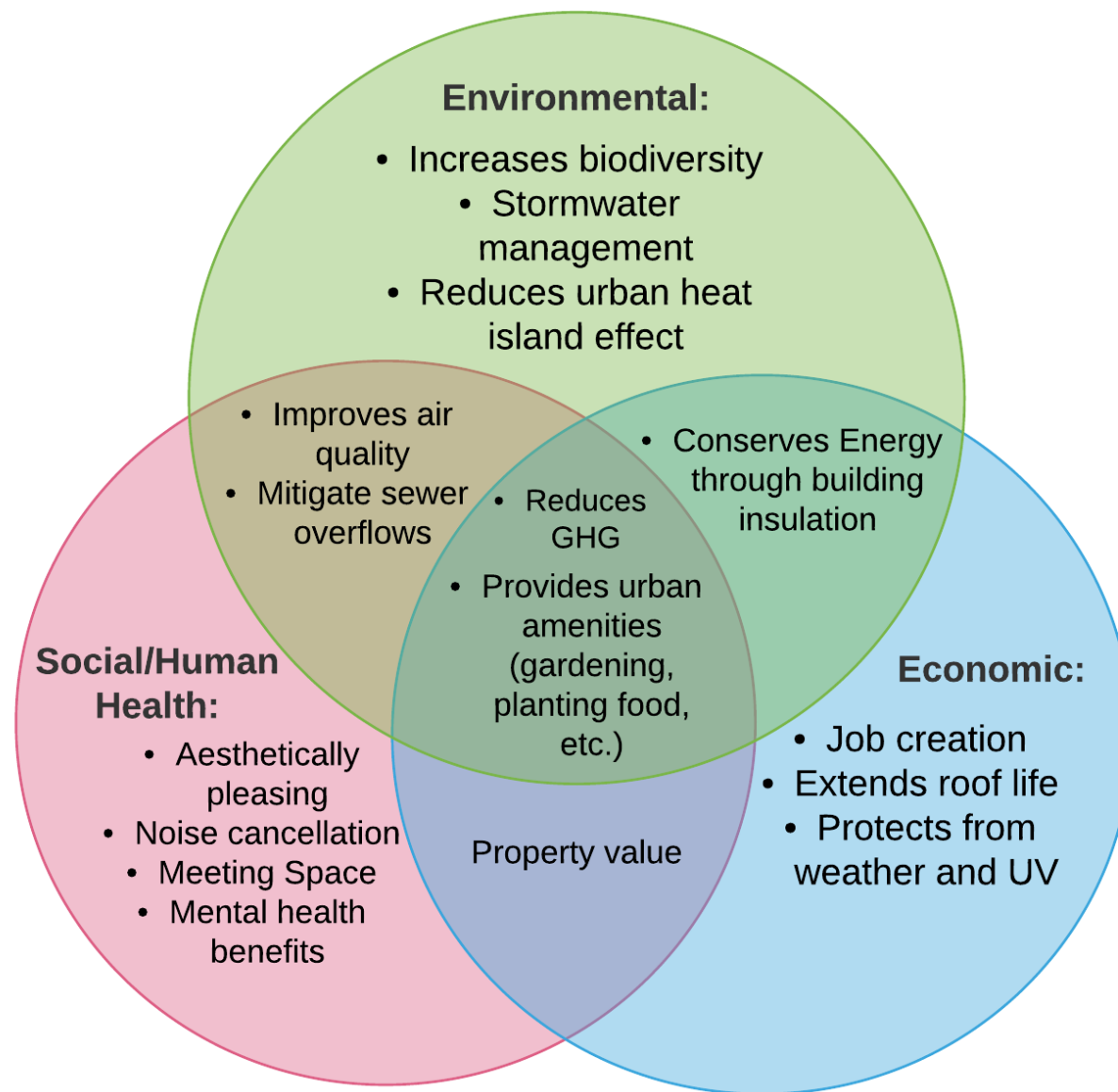


In addition to passive strategies integrated into the building design, the design also employed a number of efficient active systems to cool and ventilate the building, including ground source cooling, an efficient underfloor air distribution system integrated into office furniture, and the world's largest solar thermal driven cooling and dehumidification system on the roof canopy. The design also features the use of integrated renewable energy generation, such as integrated wind turbines and the world's largest integrated Photovoltaic systems, both mounted on the roof canopy. The installation of these renewables would help bring the building from a net energy user to a net energy producer that produces 3% more than it consumes, thus creating a building that is not only carbon neutral but carbon negative.





Positive Energy Newcastle



(<https://bethesdagreen.org/the-grass-is-always-greener-on-the-other-roof> , Accessed 28 Feb 2019)

## What if all buildings had green roofs in Newcastle?

Green roofs (roofs with a vegetated surface and substrate) provide ecosystem services in urban areas, including improved storm-water management, better regulation of building temperatures, reduced urban heat-island effects, and increased urban wildlife habitat.





Chicago is home to over 200 green roofs, covering 2.5 million square feet (232,000 square Meters), more than any other U.S. city. Chicago City Hall implemented one of the first projects in 2001.





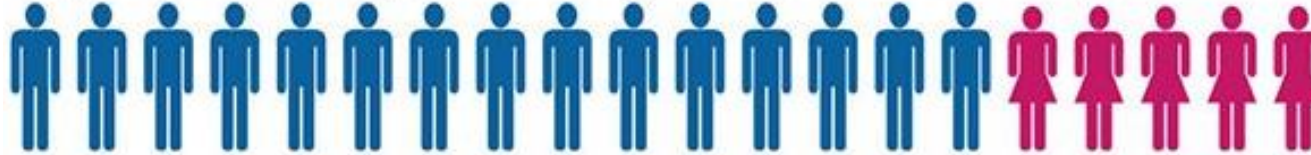
Green Roofed Newcastle



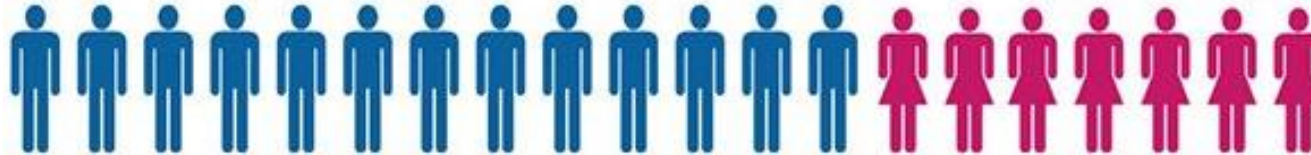
# Who are they?



Of people who stay in boarding houses: **74.8%** male, **25.2%** female



Of people who sleep rough: **67.6%** male, **32.4%** female



Of people staying in supported accommodation for the homeless:  
**49%** male, **51%** female



## What if Newcastle housed its homeless population?

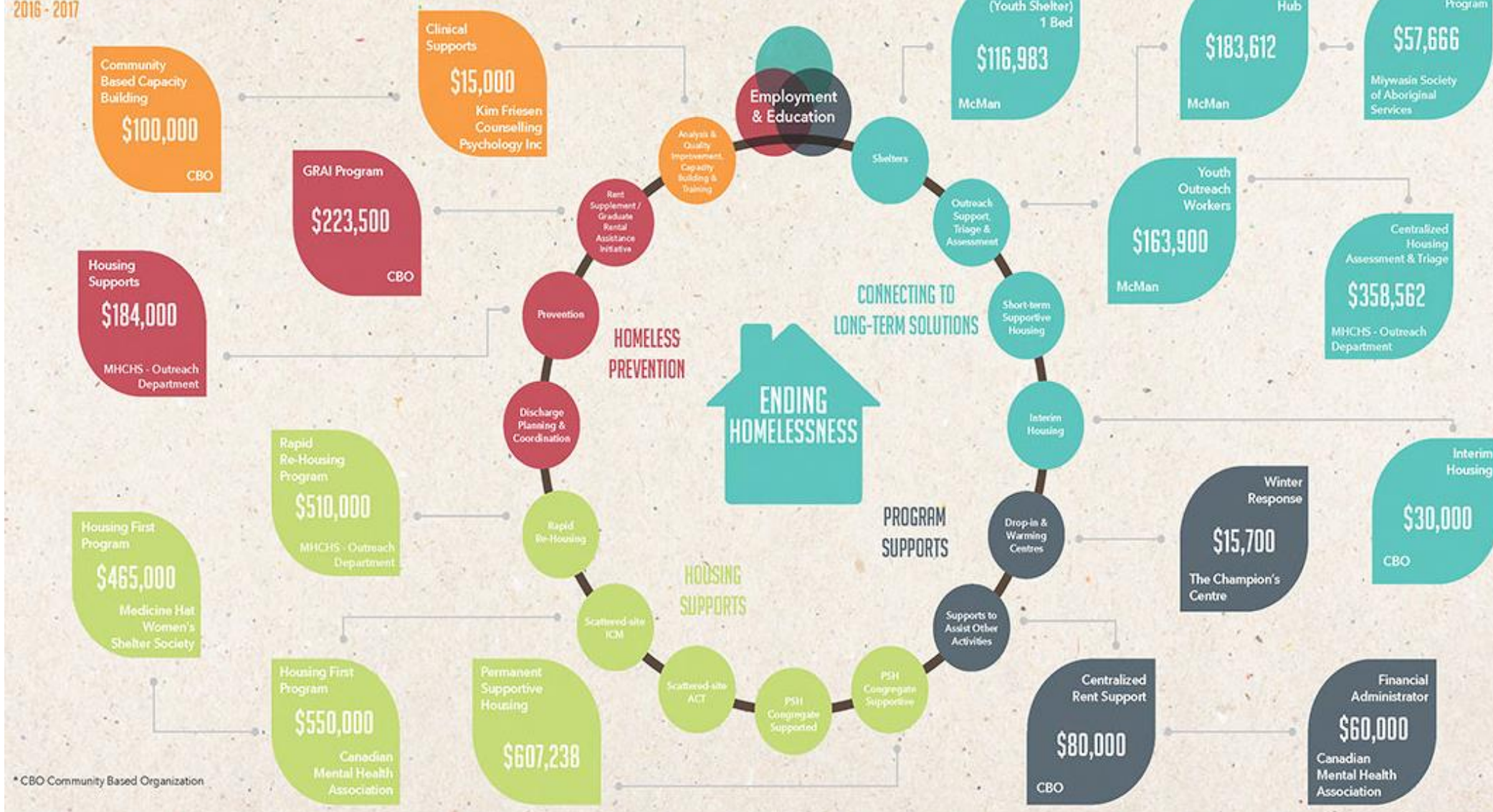
The number of homeless people in Australia jumped by more than 14,000 — or 14 per cent — in the five years to 2016, according to census data. The Australian Bureau of Statistics (ABS) said **116,000** people were homeless on census night in 2016, representing **50 homeless** people per 10,000. In Newcastle, there were about 800 homeless people in 2016 — an increase of around 22 per cent since 2011. (see <https://www.theherald.com.au/story/5287160/more-to-homelessness-than-lack-of-a-house/>, Accessed 28 Feb 2019)

# ENDING HOMELESSNESS IN MEDICINE HAT

WWW.MHCHS.CA

STRATEGIC AREAS OF INVESTMENT & CLASSIFICATION SCHEMA

2016 - 2017



Medicine Hat, Alberta Canada- Housing First and other suitable strategies

(<http://www.mhchs.ca/housing-development/service-providers/>, Accessed 01 March 2019)





Homie Newcastle

Access to Water



Evolution of Urbanization: Pre-Modern Era



Evolution of Urbanization: Modern Era



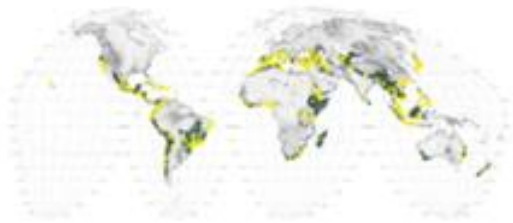
Megastructures



Population Pressure



Cities in Hotspots



Energy



Nuclear Energy



Climate Change



Sea Level Rise



Environmental Displacement



Conflict & Corruption



**What if Newcastle was the most biodiverse city in Australia?** ([http://atlas-for-the-end-of-the-world.com/index\\_0.html](http://atlas-for-the-end-of-the-world.com/index_0.html), Accessed 10 March 2019)





Two of the world's largest Megacities – San Paulo and Mexico City are candidates for the most biodiverse cities in the world. (<https://www.theguardian.com/cities/2017/jul/03/which-worlds-most-biodiverse-city-extreme-cities>, Accessed 10 March 2019)







# FORESTS OF EASTERN AUSTRALIA

330,154 km<sup>2</sup>



## BIODIVERSITY TARGET

2020 TARGET: 17% protected



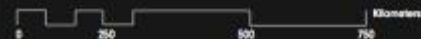
2015: 23.5% PROTECTED

20.2% I-IV

1% V-VI

2.3% NA

- Forests of Eastern Australia Hotspot
- Neighboring Hotspot
- Protected Area (IUCN Category I-IV)
- Protected Area (IUCN Category V-VI)
- Protected Area (IUCN Category NA)
- Urban Area
- Agriculture (0-100% landuse)
- Roads
- Railroads

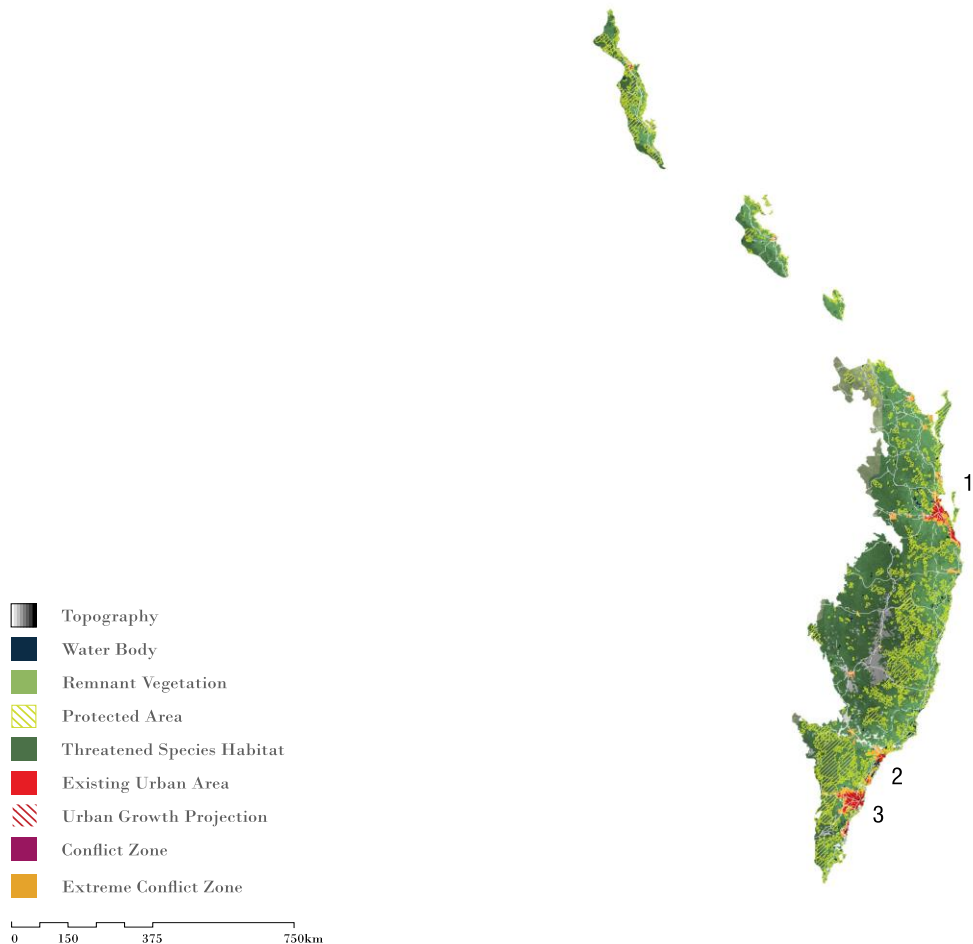


([http://atlas-for-the-end-of-the-world.com/index\\_0.html](http://atlas-for-the-end-of-the-world.com/index_0.html),  
Accessed 10 March 2019)



# FORESTS OF EASTERN AUSTRALIA | CONFLICTS

Conflicts between 2030 projected urban growth areas and threatened species habitats



7,080,000 Population

2015 URBAN POPULATION

8,485,000

2030 URBAN POPULATION

49

THREATENED SPECIES

MAJOR CROPS

wheat, sorghum, oats

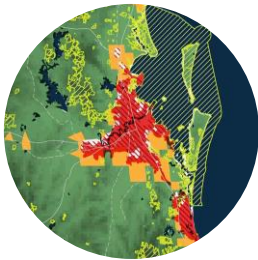
BIODIVERSITY THREATS

Agricultural Expansion

Deforestation

Mining

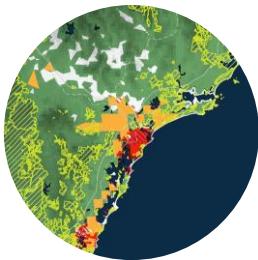
Poaching



## 1. BRISBANE, AUSTRALIA

POPULATION PROJECTIONS:

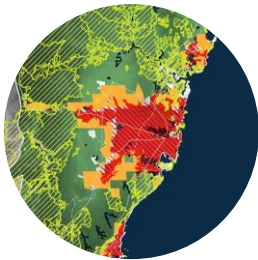
2015:	2030:
2,202,000	2,721,000



## 2. NEWCASTLE, AUSTRALIA

POPULATION PROJECTIONS:

2015:	2030:
373,000	463,000



## 3. SYDNEY, AUSTRALIA

POPULATION PROJECTIONS:

2015:	2030:
4,505,000	5,301,000



# VULNERABILITY BY LGA

## What if Newcastle had no challenges with Urban Heat Island Affect?

### 4.5 Rating

Hornsby Shire  
Ku-ring-gai Council  
Municipality of Mosman  
Municipality of Woollahra  
City of Bayside (VIC)  
City of Knox  
Shire of Nillumbik  
Shire of Yarra Ranges  
City of Adelaide  
City of Mitcham  
City of Tea Tree Gully  
Town of Claremont

### 4.0 Rating

Municipality of Lane Cove  
Municipality of Leichhardt  
North Sydney Council  
Sutherland Shire  
City of Willoughby  
City of Manningham  
City of Whitehorse  
City of Yarra  
City of Brisbane  
City of Burnside  
City of Canning  
Town of Cottesloe  
Shire of Kalamunda  
Shire of Mundaring  
Shire of Peppermint Grove

### 3.5 Rating

Municipality of Hunter's Hill  
City of Kogarah  
Manly Council  
Pittwater Council  
City of Ryde  
The Hills Shire  
Warringah Council  
Waverley Council  
City of Boroondara  
Shire of Cardinia  
City of Melbourne  
City of Monash  
Shire of Mornington Peninsula  
Gold Coast City  
Redland City  
Townsville City Council  
City of Joondalup  
Town of Mosman Park  
City of Nedlands  
City of South Perth  
City of Subiaco  
City of Vincent  
City of Hobart  
ACT

### 3.0 Rating

Camden Council  
City of Sydney  
City of Banyule  
City of Casey  
City of Maroondah  
City of Port Phillip  
Moreton Bay Region  
Sunshine Coast  
City of Unley  
Town of Walkerville  
City of Bayswater  
Town of Cambridge  
Town of East Fremantle  
City of Melville  
City of Stirling  
Kingborough Council

### 2.5 Rating

City of Hurstville  
City of Penrith  
City of Randwick  
City of Glen Eira  
City of Kingston  
City of Stonnington  
Cairns Regional Council  
City of Norwood  
Payneham & St Peters  
City of Prospect  
City of Armadale  
City of Fremantle  
City of Gosnells  
City of Perth  
City of Rockingham  
City of Palmerston

### 2.0 Rating

Municipality of Ashfield  
Burwood Council  
City of Canada Bay  
Marrickville Council  
City of Newcastle  
City of Parramatta  
Municipality of Strathfield  
City of Moonee Valley  
City of Whittlesea  
City of Wyndham  
City of Ipswich  
Logan City  
Toowoomba Regional Council  
City of Campbelltown (SA)  
City of Holdfast Bay  
Town of Bassendean  
Town of Swan  
City of Wanneroo  
City of Darwin

### 1.5 Rating

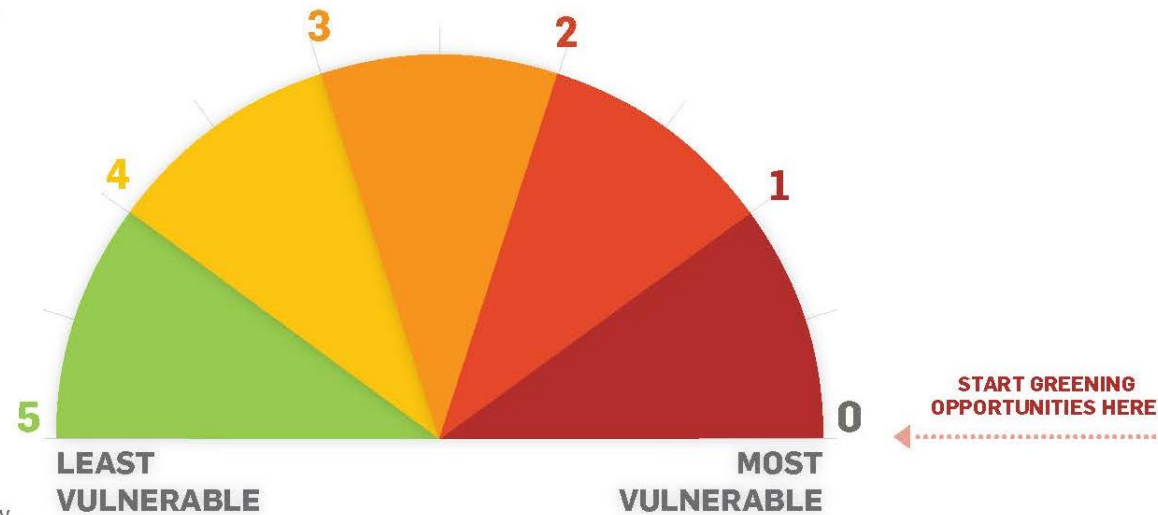
Auburn City  
Bankstown City  
City of Campbelltown (NSW)  
Fairfield City  
City of Liverpool  
City of Frankston  
City of Greater Bendigo  
City of Greater Dandenong  
City of Greater Geelong  
City of Hobsons Bay  
City of Melton  
Adelaide Hills Council  
City of Onkaparinga  
City of Cockburn  
Town of Victoria Park  
City of Clarence  
City of Glenorchy

### 1.0 Rating

City of Blacktown  
City of Botany Bay  
City of Canterbury  
City of Holroyd  
Rockdale City  
City of Brimbank  
City of Maribyrnong  
City of Moreland  
City of Marion  
City of Salisbury  
City of Kwinana  
City of Launceston

### 0.5 Rating

City of Ballarat  
City of Darebin  
City of Hume  
City of Charles Sturt  
Town of Gawler  
City of Playford  
City of Port Adelaide Enfield  
City of West Torrens  
City of Belmont



Amati, M. Boruff, B. Caccetta, P. Devereux, D. Kaspar, J. Phelan K. and Saunders, A. (2017).  
*Where should all the trees go? Investigating the impact of tree canopy cover on socio-economic status and wellbeing in LGA's* prepared for Hort Innovation by the Centre for Urban Research, RMIT University.





Biophilic Cities Project: Singapore and Portland, Oregon, USA  
(<http://biophiliccities.org/about/>, Accessed 01 March 2019)





Shady Newcastle



### UNEMPLOYMENT RATES, July 2016, Annual averages %

Qld outback	13.7	Ballarat	6.4	Mornington Peninsula	5.1
Mandurah	10.5	South Australia outback	6.4	Sydney - Outer South West	5.0
Townsville	9.7	Sydney - Parramatta	6.3	Shepparton	5.0
Wide Bay Qld	9.1	Perth North East	6.3	Sydney - City and Inner South	4.9
Adelaide North	8.9	Adelaide - Central and Hills	6.3	Melbourne North East	4.9
Cairns	8.6	Logan - Beaudesert	6.3	Melbourne Inner	4.8
Latrobe - Gippsland	8.3	Perth North West	6.3	Sunshine coast	4.8
New England and North West	8.1	Perth South West	6.2	Brisbane - North	4.8
Ipwsich	8.0	Newcastle and Lake Macquarie	6.2	Hume	4.8
Melbourne West	7.8	Fitzroy Qld	6.2	Baulkham Hills and Hawkesbury	4.7
Launceston and North East	7.6	Greater Hobart	6.1	Moreton Bay - South	4.7
Barossa - Yorke - Mid North	7.5	Sth Australia Sth East	6.0	Melbourne Outer East	4.5
Melbourne South East	7.5	Tasmania - West and North West	6.0	ACT	4.4
Murray	7.2	WA Wheat Belt	6.0	Toowoomba	4.4
Mid North Coast NSW	7.2	Western Australia	6.0	Bunbury	4.4
Moreton Bay - North	7.0	Greater Perth	6.0	Melbourne Inner South	4.3
Richmond Tweed	7.0	Tasmania South East	5.8	Sydney - Sutherland	4.3
Melbourne North West	6.8	Far West NSW & Orana	5.8	Sydney - Inner West	4.0
Mackay	6.8	NSW Central West	5.7	NSW Capital Region	3.9
Bendigo	6.8	Perth South East	5.6	Sydney - Outer West and Blue Mountains	3.8
Adelaide South	6.8	Brisbane - South	5.6	Sydney - North Sydney and Hornsby	3.8
Sydney - South West	6.6	Victoria North West	5.5	Warrnambool and South West	3.8
Central Coast NSW	6.6	Gold Coast	5.5	Perth Inner	3.8
Southern Highlands and Shoalhaven	6.6	Sydney - Inner South West	5.5	Brisbane Inner city	3.7
Sydney - Ryde	6.5	Melbourne Inner East	5.4	Darling Downs - Maranoa	3.6
Adelaide West	6.5	Geelong	5.4	Darwin	3.4
Sydney - Blacktown	6.5	NT Outback	5.4	Riverina NSW	3.3
Hunter Valley ex Newcastle	6.5	Brisbane - East	5.2	Sydney - Northern Beaches	2.8
Illawarra	6.4	Brisbane - West	5.1	Sydney - Eastern Suburbs	2.7
WA Outback	6.4	Coffs Harbour - Grafton	5.1		

Source ABS, CommSec

**What if everyone in Newcastle was gainfully employed?**

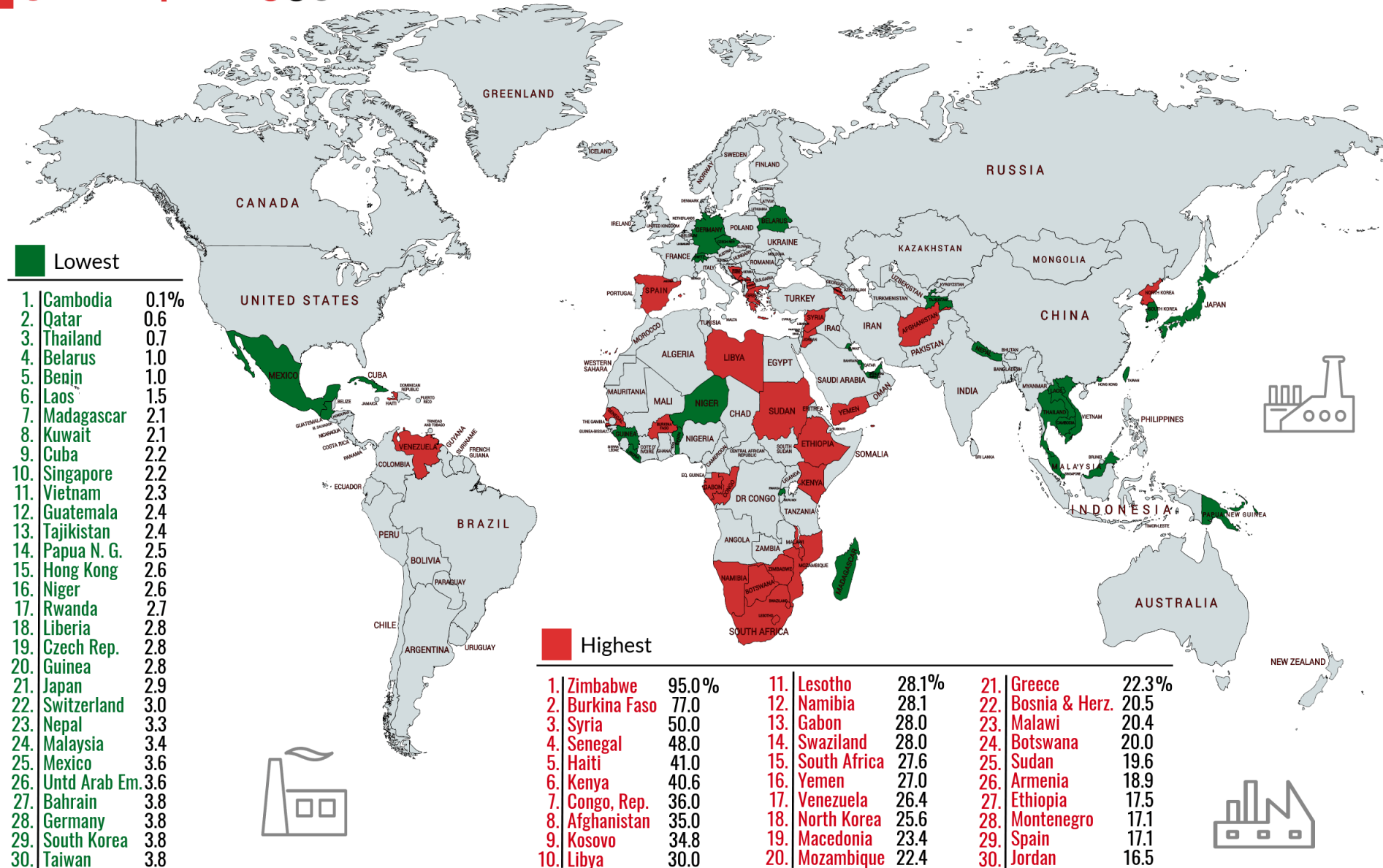


# TOP 30 countries with the highest and lowest unemployment rates

Source:  
The World  
Factbook,  
Central  
Intelligence  
Agency,  
2015-2017

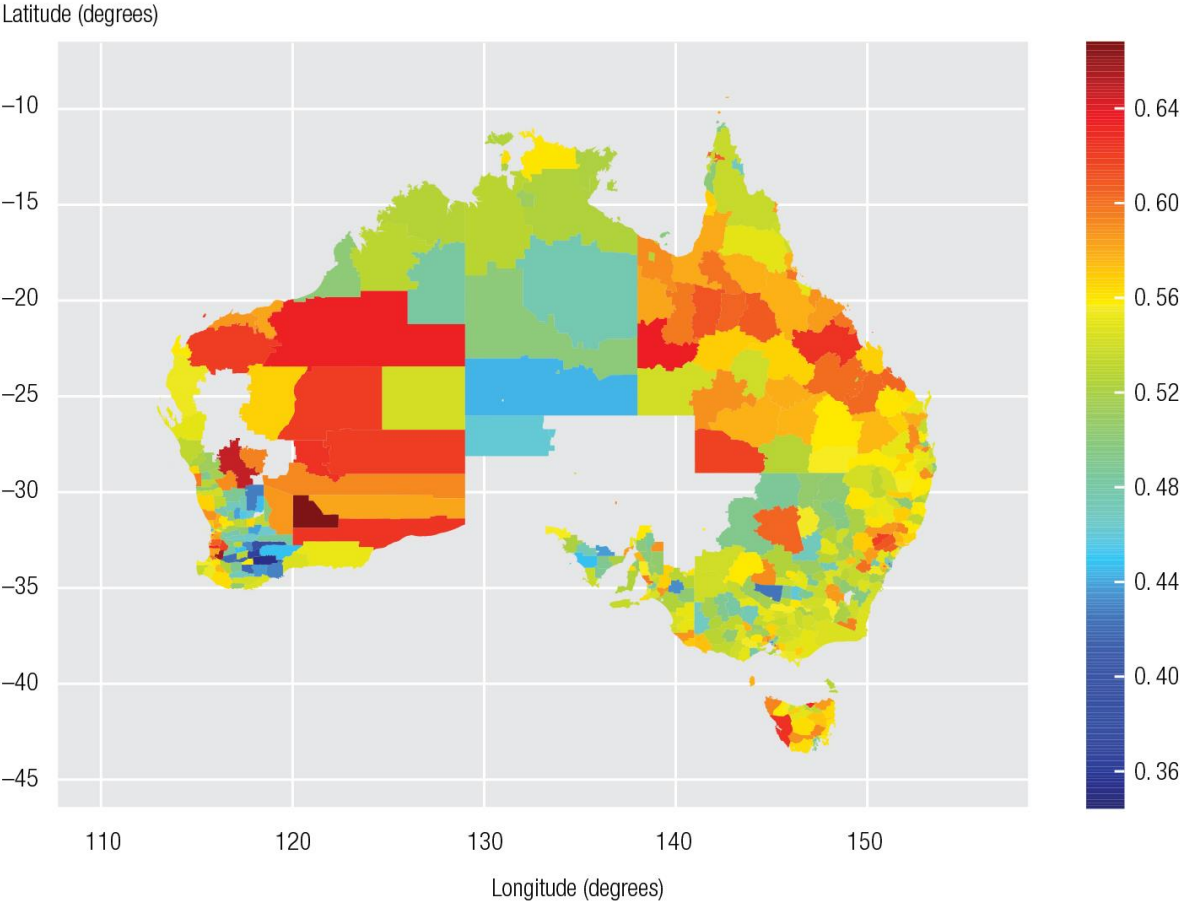
factsmaps.com

\*Countries with less than 1 million inhabitants are not included





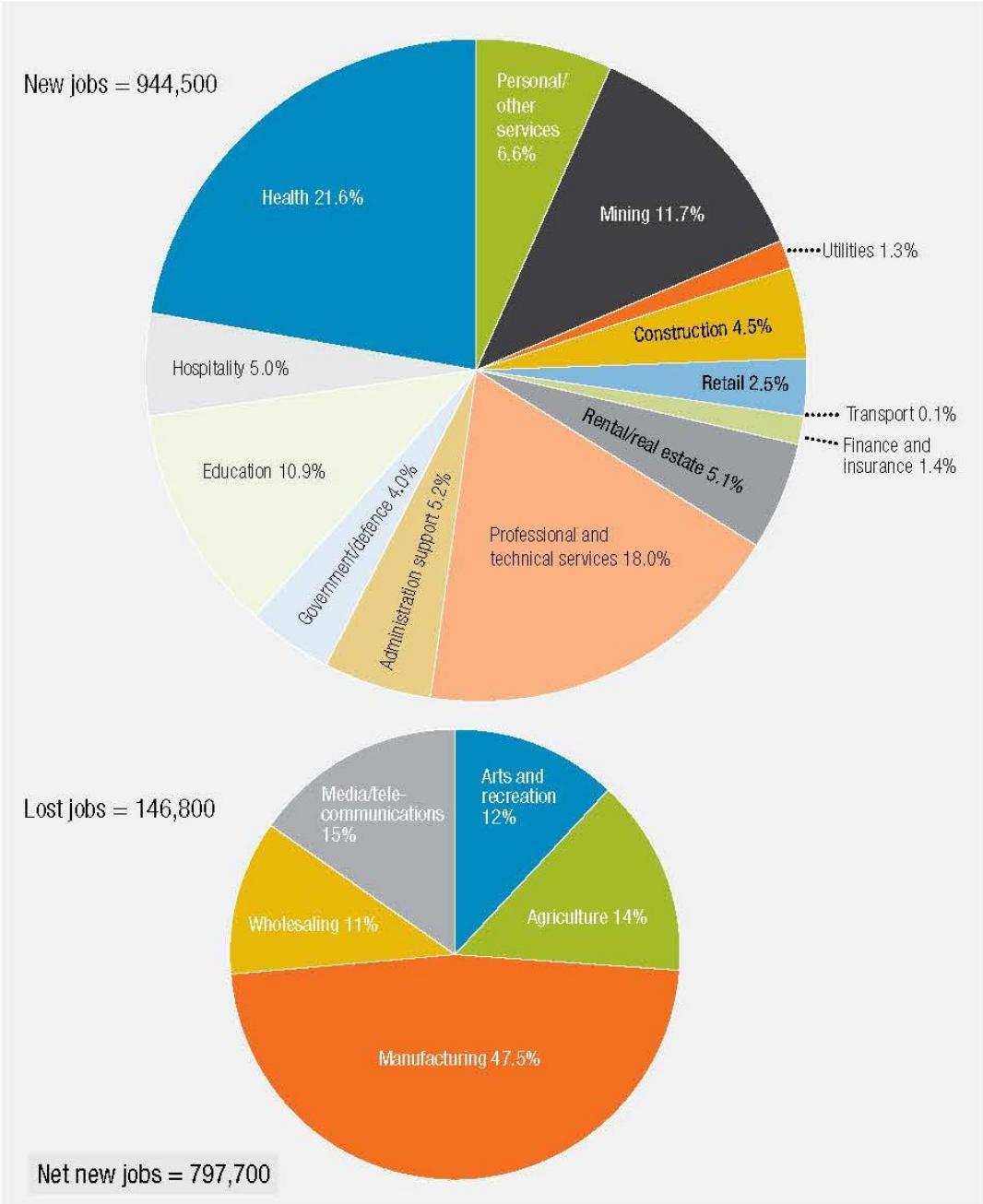
**FIGURE 3**  
PROBABILITY OF JOB LOSS THROUGH COMPUTERISATION AND AUTOMATION IN LOCAL GOVERNMENT AREAS OF AUSTRALIA



Note: Map shows local government areas with more than 100 workers, so some areas of the country are blank.

<https://www.ceda.com.au/News-and-analysis/Media-releases/More-than-five-million-Aussie-jobs-gone-in-10-to-15-years>, Accessed 02 March 2019)

**FIGURE 1**  
AUSTRALIA'S NEW AND LOST JOBS BY INDUSTRY (FIVE YEARS TO JUNE 2014)







# FUND MY NEIGHBOURHOOD

YOUR STREET, YOUR DECISION

Vote now in the one of the world's biggest participatory budgeting programs.

**VOTE BY MAP**

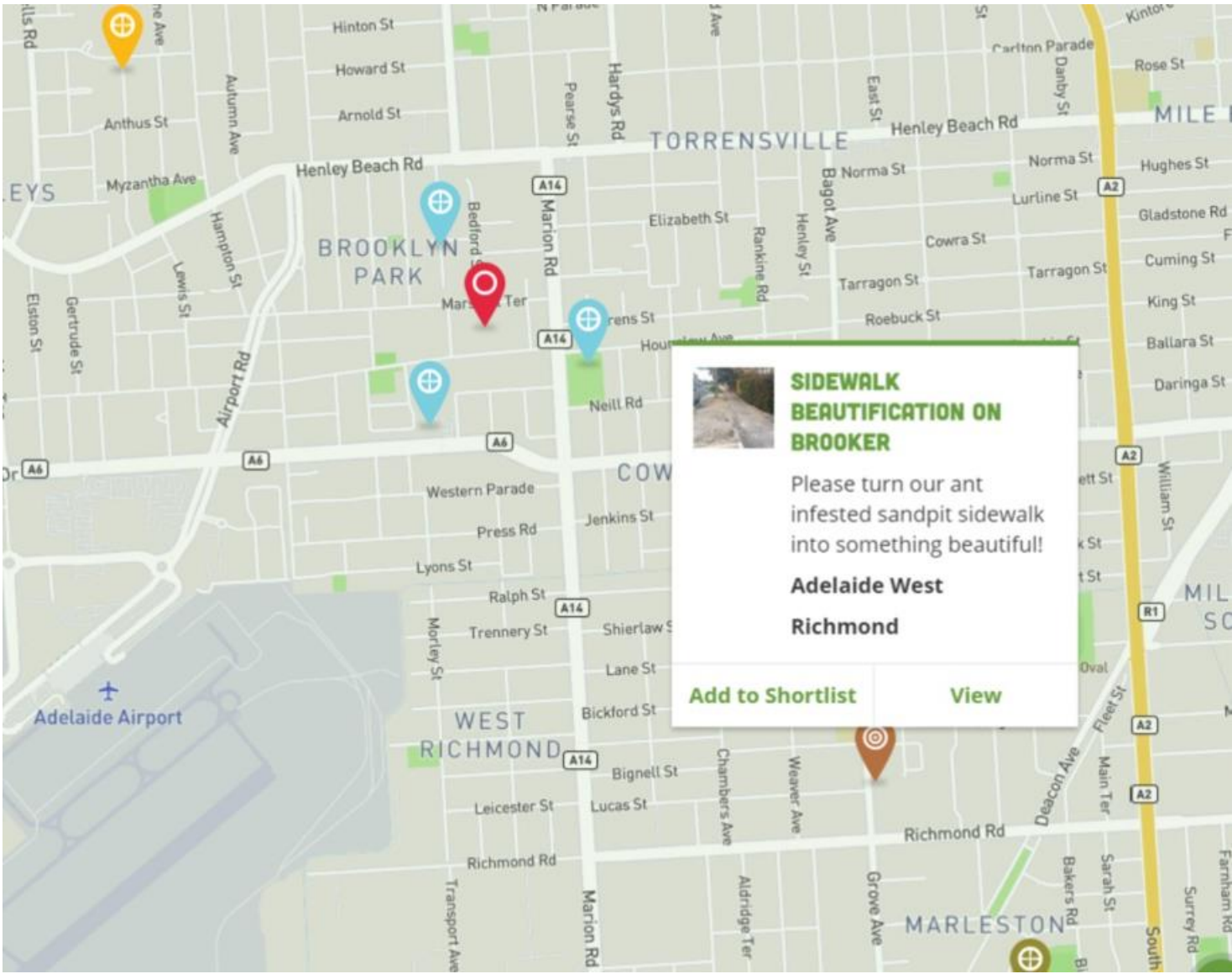
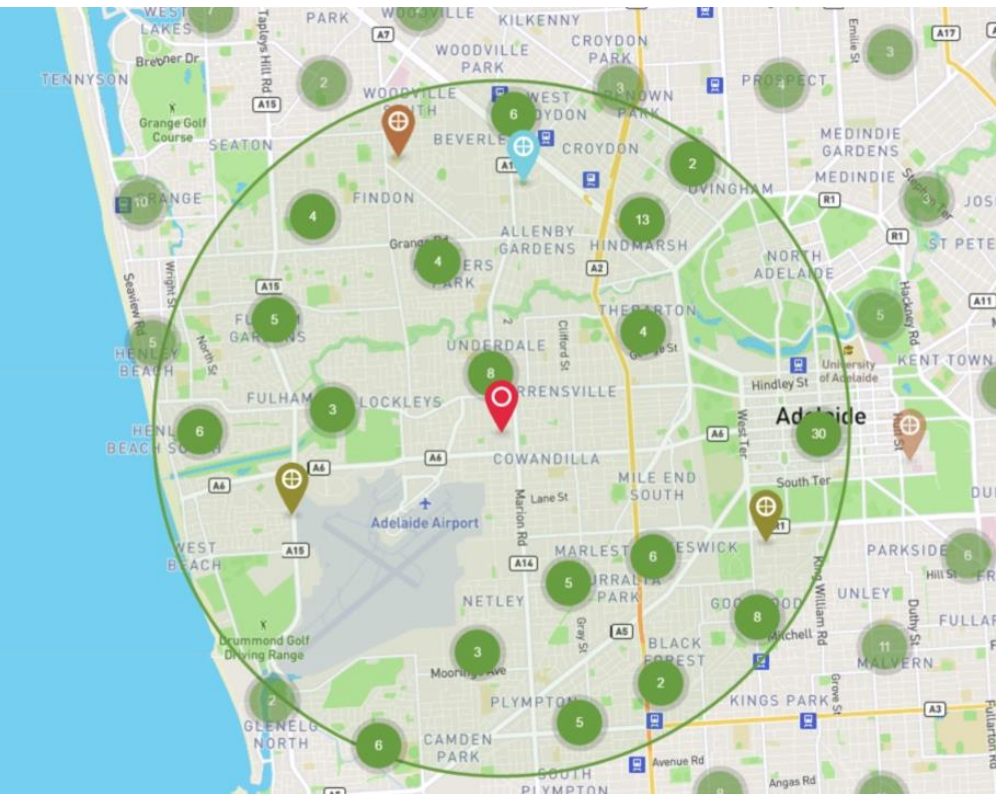
or try

**QUICK VOTE**

**22 DAYS UNTIL VOTING ENDS**

What if Newcastle was a Citizen Centric city?





South Australia’s Fund my Neighborhood

Fund My Neighbourhood is one of the biggest participatory budgeting projects ever run, empowering South Australians to decide how \$40 million is spent. Locals nominate improvement projects that they would like to receive government funding in their local area. The community then votes on which projects the government should fund.



# INSTRUCTIONS

The ideas listed below are those in your neighbourhood that you can vote on. Please add between 3 and 5 ideas to your shortlist. Once done click the submit button to vote.



## moving our local communityforward

upgrade facilities for our local community to also use

📍 Brooklyn Park (270m away)

Add to shortlist



## Western Youth Centre Tennis Club Clubhouse Upgrade

Promoting participation in tennis with a safe and usable clubhouse

📍 Cowandilla (320m away)

Add to shortlist



## Upgrade our basketball area

Fix the surface and ramps for young people

📍 Brooklyn Park (330m away)

Add to shortlist

## YOUR SHORTLIST

3 Ideas in shortlist

Your shortlist is complete. Please submit it when ready.

Submit my vote now

Your location is currently set to **Brooklyn Park**. Not correct?

Change My Location





Citizen Centric Newcastle





Panoramic view (140°) of the [Landschaftspark Duisburg-Nord](https://commons.wikimedia.org/wiki/File:LaPaDu_Panorama_2010-10-03.jpg), in Duisbourg, Germany.

[https://commons.wikimedia.org/wiki/File:LaPaDu\\_Panorama\\_2010-10-03.jpg](https://commons.wikimedia.org/wiki/File:LaPaDu_Panorama_2010-10-03.jpg), Accessed 02 March 2019)

**What if Newcastle was seen as the worlds best practice for Post Industrial transformation and Adaptive Reuse?**





Germany's Ruhr Valley (<https://www.theguardian.com/cities/2017/oct/06/essen-germany-european-green-capital-revive-economy>, Accessed 02 march 2019)

The largest of Essen's disused coal mines, the Zeche Zollverein, is now a Unesco world heritage site and open for public viewing. The skeletal remains of the once flourishing mines and its coking plant watch over fresh construction: a housing project taking over part of the former plant. The coal washing complex is now the site of the Ruhr museum.





The roads that once transported coal consignments are now open for cyclists, in a programme called Route der Industriekultur (route of industry culture). The route stretches 400km past highlights of the 150-year-old industrial heritage: most of the factories abandoned, a few preserved like the Zollverein.





ReClaimed Newcastle



# WHAT COULD A WATER SENSITIVE CITY LOOK LIKE?

## URBAN FORM:

Large urban area centred on river corridor  
City centre dominated by paved areas  
Significant growth targets

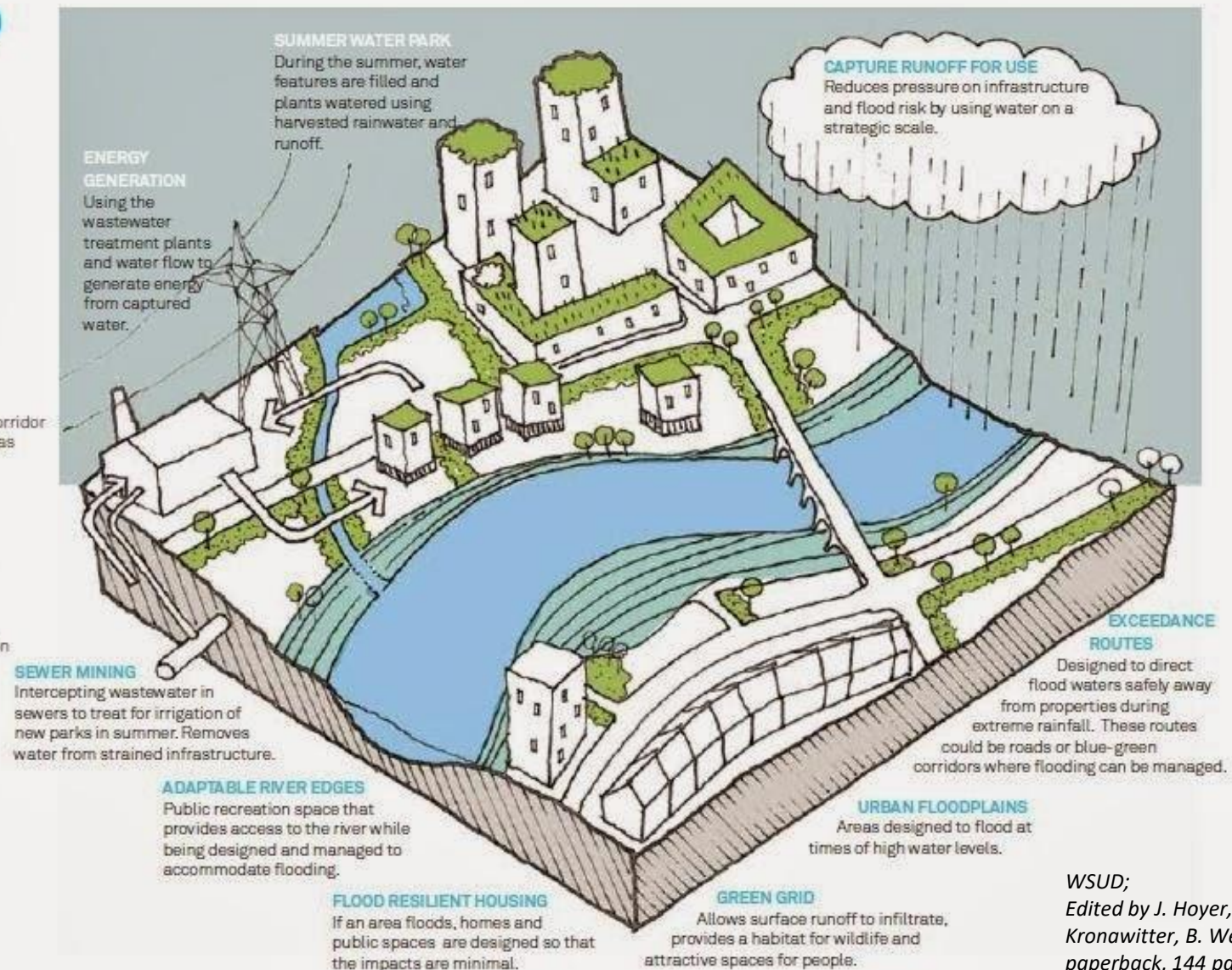
## WATER CONTEXT:

Lack of capacity in sewer system  
Serious flood risk  
High rainfall and low water stress

## COMMUNITY CONTEXT:

Pockets of deprivation  
Neighbourhood parks and recreation  
space needed

water  
sensitive  
urban  
design



WSUD;

Edited by J. Hoyer, W. Dickhaut, L. Kronawitter, B. Weber (Jovis: 2011)  
paperback, 144 pages

## What if Newcastle was the world leader for Water Sensitive Urban Design (WSUD) ?

WSUD is a broad term that describes types of land planning or engineering design that support the sustainable management of the whole urban water cycle; including water supply, water reuse, wastewater management, and groundwater or surface water management.





Wellington, NZ





Water Wise Newcastle





Copenhagen, Denmark

**What if Newcastle was the most connected city in Australia?**  
Public Transport, Bicycles, Internet of Things and Smart Cities.....





Seoul and Shanghai





Connected Newcastle





# Creative Cities Network

[Home](#)[Creative Cities](#)[What's On](#)[About us](#)[Join the Network](#)[All](#)[Crafts & Folk Art](#)[Design](#)[Film](#)[Gastronomy](#)[Literature](#)[Media Arts](#)[Music](#)

What if Newcastle was a world leading Creative City?

<https://en.unesco.org/creative-cities>

## Kanazawa



🔨 Crafts and Folk Art

## Phuket



🍴 Gastronomy

## Hatay



🍴 Gastro

## Hamamatsu



🎵 Music

## Tsuruoka



🍴 Gastronomy

## Singapore



★ D

## Busan



🎬 Film

## Seoul



★ Design

## Melbourne



📖 Lite

## Suzhou



🔨 Crafts and Folk Art

## Kobe



★ Design

## Jaipur



🔨 Crafts and Fo





Creative Victoria Designated Bendigo as a Regional Art Centre which included \$65 million AUD in funding

(<http://www.regionalaustralia.org.au/home/2017/05/rise-regional-bohemians-painting-new-picture-arts-culture-regional-australia/>, Accessed 03 March 2019)





Uber Creative Newcastle





What if... all buildings (public and private) in the city of Newcastle were part of the *living building challenge*?



# SUMMARY MATRIX

The 20 Imperatives of the Living Building Challenge: Follow down the column associated with each Typology to see which Imperatives apply.

 Imperative omitted from Typology

 Solutions beyond project footprint are permissible

	LIVING BUILDING CHALLENGE 3.1			
	BUILDINGS	RENOVATIONS	LANDSCAPE + INFRASTRUCTURE	
PLACE				01. LIMITS TO GROWTH
	SCALE JUMPING		SCALE JUMPING	02. URBAN AGRICULTURE
			SCALE JUMPING	03. HABITAT EXCHANGE
				04. HUMAN-POWERED LIVING
WATER			SCALE JUMPING	05. NET POSITIVE WATER
ENERGY			SCALE JUMPING	06. NET POSITIVE ENERGY
HEALTH + HAPPINESS				07. CIVILIZED ENVIRONMENT
				08. HEALTHY INTERIOR ENVIRONMENT
				09. BIOPHILIC ENVIRONMENT
MATERIALS				10. RED LIST
			SCALE JUMPING	11. EMBODIED CARBON FOOTPRINT
				12. RESPONSIBLE INDUSTRY
				13. LIVING ECONOMY SOURCING
				14. NET POSITIVE WASTE
EQUITY				15. HUMAN SCALE + HUMANE PLACES
				16. UNIVERSAL ACCESS TO NATURE + PLACE
			SCALE JUMPING	17. EQUITABLE INVESTMENT
				18. JUST ORGANIZATIONS
BEAUTY				19. BEAUTY + SPIRIT
				20. INSPIRATION + EDUCATION

“What if every single act of design and construction made the world a better place? The Living Building Challenge is the world’s most rigorous proven performance standard for buildings. People from around the world use our regenerative design framework to create spaces that, like a flower, give more than they take.”

( <https://living-future.org/lbc/>, accessed 27 February 2019)





Dixon Water Foundation, the Betty and Clint Josey Pavilion Cook County, Texas, USA

The site encompasses more than 1,900 acres of tallgrass prairie in Cooke County. The bottomlands of the Leo Unit were previously farmed and provide an excellent demonstration site for the restoration of farmland to prairie. The project used a greenfield exception since its primary purpose is to serve as an interpretation of the site and environment.

<https://inhabitat.com/solar-powered-josey-pavilion-beats-wicked-hot-summer-in-texas-without-air-conditioning/betty-and-clint-josey-pavilion-by-lakeflato-architects-1/>, Accessed 03 March 2019)





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Thank you