

Data Infrastructure and SDGs Dashboard:

An Infrastructure for Measuring, Monitoring and Comparing

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CSDILA
THE CENTRE FOR SPATIAL
DATA INFRASTRUCTURES
& LAND ADMINISTRATION



UN-GGIM
ACADEMIC NETWORK



The SDG Report 2019

1. END POVERTY IN ALL ITS FORMS EVERYWHERE

THE WORLD IS NOT ON TRACK TO END POVERTY BY 2030

55% OF THE WORLD'S POPULATION HAVE NO ACCESS TO SOCIAL PROTECTION

736 MILLION PEOPLE LIVED IN EXTREME POVERTY IN 2015. 413 MILLION IN SUB-SAHARAN AFRICA

MORE THAN 90% OF DEATHS DUE TO DISASTERS OCCUR IN LOW- AND MIDDLE-INCOME COUNTRIES

2. END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE

MILLIONS MORE ARE LIVING IN HUNGER

TWO THIRDS OF EXTREMELY NUTRIENT DEFICIENT WOMEN AND ADOLESCENT WORKERS

821 MILLION WERE UNDERNOURISHED IN 2017

784 MILLION IN 2015

2.2% OF THE WORLD'S POPULATION ARE MALNOURISHED

3. ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

UNDER-5 DEATHS DROPPED FROM 5.4 MILLION IN 2000 TO 3.4 MILLION IN 2017

THE INCIDENCE OF NEW HIV INFECTIONS AMONG 15-49 YEAR OLDS IN 2018 COMPARED TO 2010

VACCINATIONS FOR TOBACCO 80% DROP IN MEASLES DEATHS BETWEEN 2000 AND 2017

4. ENSURE INCLUSIVE AND QUALITY EDUCATION AND PROMOTE LIFELONG LEARNING OPPORTUNITIES FOR ALL

617 MILLION CHILDREN AND ADOLESCENTS LACK FUNDAMENTAL SKILLS IN READING OR MATHEMATICS

750 MILLION ADULTS STILL REMAIN ILLITERATE

MORE THAN HALF OF THE WORLD'S POPULATION LACK BASIC SKILLS

5. ACHIEVE GENDER EQUALITY AND EMPOWER ALL WOMEN AND GIRLS

18% OF EVER-PARTNERED WOMEN AND GIRLS AGED 15 TO 49 YEARS HAVE EXPERIENCED PHYSICAL AND/OR SEXUAL PARTNER VIOLENCE IN THE PREVIOUS 12 MONTHS

24% OF NATIONAL PARLIAMENTS HAVE BEEN SUBJECT TO FEMALE GENDER QUOTAS

6. ENSURE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL

785 MILLION PEOPLE REMAIN WITHOUT EVEN BASIC DRINKING WATER SERVICES (2017)

1 OUT OF 4 PEOPLE DO NOT HAVE ACCESS TO IMPROVED WATER SUPPLY SERVICES

7. ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL

9 OUT OF 10 PEOPLE WORLDWIDE HAVE ACCESS TO ELECTRICITY

ON AVERAGE, 2.3% LESS ENERGY CONSUMED PER \$1 OF GDP IN 2018

3 BILLION PEOPLE LACK CLEAN COOKING FUELS OR TECHNOLOGY

8. PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL

REAL GDP GREW BY 4.8% ANNUALLY IN LDCs (2009-2017), LESS THAN THE 7% SDG TARGET

ONE FIFTH OF YOUNG PEOPLE ARE NOT IN EDUCATION, EMPLOYMENT OR TRAINING

9. BUILD RESILIENT INFRASTRUCTURE, PROMOTE INCLUSIVE AND SUSTAINABLE INDUSTRIALIZATION AND FOSTER INNOVATION

INDUSTRIALIZATION IN LDCs IS TOO SLOW

GLOBAL INVESTMENT IN RESEARCH AND DEVELOPMENT IS \$2 TRILLION (\$739 BILLION)

10. REDUCE INEQUALITY WITHIN AND AMONG COUNTRIES

IN MORE THAN HALF OF THE BOTTOM 40% OF THE POPULATION INCOME GREW FASTER THAN THE NATIONAL AVERAGE

MOST COUNTRIES HAVE FAILED TO FACILITATE SAFE AND AFFORDABLE HOUSING

11. MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE

1 OUT OF 4 URBAN RESIDENTS LIVE IN SLUM-LIKE CONDITIONS

9 OUT OF 10 URBAN RESIDENTS BREATHE POLLUTED AIR

12. ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS

THE GLOBAL MATERIAL FOOTPRINT IS RAPIDLY GROWING, OUTPACING POPULATION AND ECONOMIC GROWTH

NEARLY 100 COUNTRIES ARE ACTIVELY USING POLICY AND REGULATORY MEASURES TO PROMOTE SUSTAINABLE CONSUMPTION

13. TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS

THE GLOBAL MEAN TEMPERATURE IN 2018 IS APPROXIMATELY 1°C ABOVE THE PRE-INDUSTRIAL BASELINE

ATMOSPHERIC CO₂ CONCENTRATION IS 146% OF PRE-INDUSTRIAL LEVELS (2017)

14. CONSERVE AND SUSTAINABLY USE THE OCEANS, SEA AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT

OCEAN ACIDITY HAS INCREASED BY 26% SINCE PRE-INDUSTRIAL TIMES

104 OF 220 COASTAL RESOURCES IMPROVED THEIR QUALITY WATER QUALITY SINCE 2010

15. PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS, SUSTAINABLY MANAGE FORESTS, CONSERVE BIODIVERSITY, AND PROMOTE RESILIENT LAND USE AND LAND-USE CHANGE AND BIODIVERSITY LOSS

RED LIST INDEX: BIODIVERSITY LOSS IS HAPPENING AT AN ACCELERATED RATE

MORE OF EACH KEY BIODIVERSITY AREA IS PROTECTED

16. PROMOTE PEACEFUL AND INCLUSIVE SOCIETIES FOR SUSTAINABLE DEVELOPMENT, PROVIDE ACCESS TO JUSTICE FOR ALL AND BUILD EFFECTIVE, ACCOUNTABLE AND INCLUSIVE INSTITUTIONS AT ALL LEVELS

387 ADDITIONAL KILLINGS OF JOURNALISTS AND REPORTERS AND 100000 MORE KILLINGS OF CIVILIANS SINCE 2015

70% OF ACTIVE VICTIMS OF HUMAN RIGHTS VIOLATIONS ARE WOMEN AND GIRLS

17. STRENGTHEN THE MEANS OF IMPLEMENTATION AND REVISIT THE GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT

NET ODA TRENDED DOWN BY 2.7% FROM 2015

IN 2018, BILATERAL ODA TO THE LDCs FELL BY 3%

18. MONITOR PROGRESS, BUILD CAPACITY AND PROMOTE SUSTAINABLE DEVELOPMENT

THE UNIVERSITY OF MELBOURNE

The SDG Report 2018 & 2019

The Sustainable Development Goals Report
2018



The Sustainable Development Goals Report
2019



Interlinked Nature of the SDGs



Data Requirements

(SDGs Report 2017)

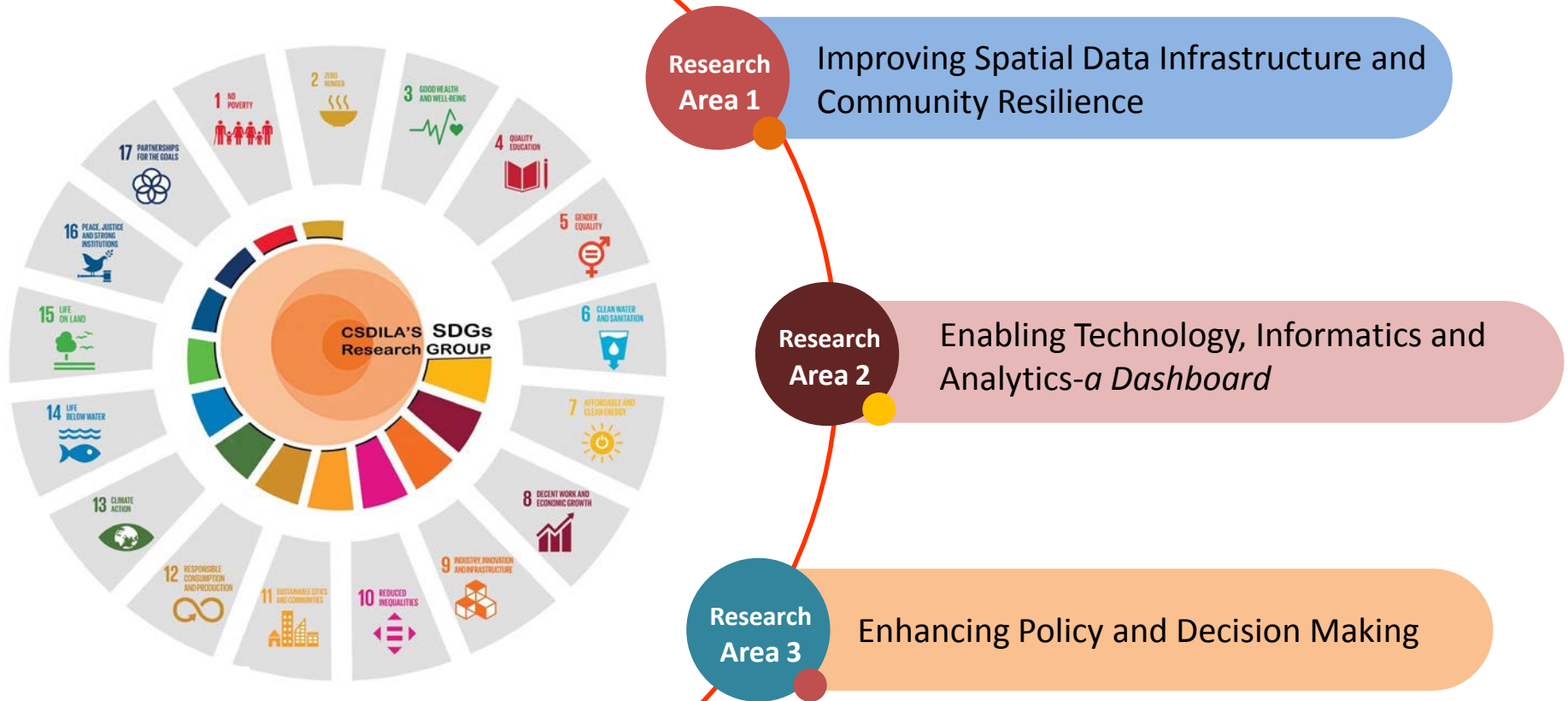
- Development of **data standards** and best practices in parallel with available technology and users' needs
- Development of new methodologies to ensure the **quality** and **reliability** of citizen-generated data
- New **open data** management frameworks and establishment of transparent mechanisms
- Modernization of **data governance** and quality frameworks
- New data sources and technologies for data **collection** and **integration** of different sources of data
- Facilitating **interoperability** among data providers, managers and users
- Private sector, academia and civil society **partners** to contribute to data, **expertise** and **technology** to achieving the SDGs
- The **integration** of **geospatial information** and statistical data



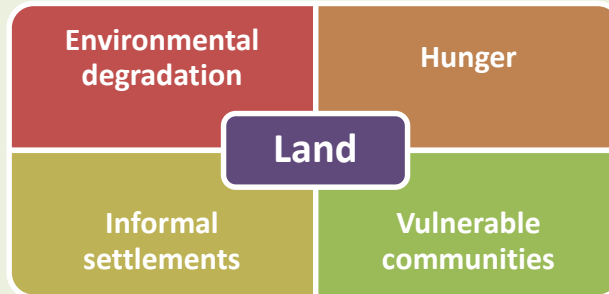
A Process to Achieve SDGs



CSDILA-Current Research Areas



Global Urbanisation Challenges



- ✓ Land is in the centre of global urbanization challenges and key for the future developments

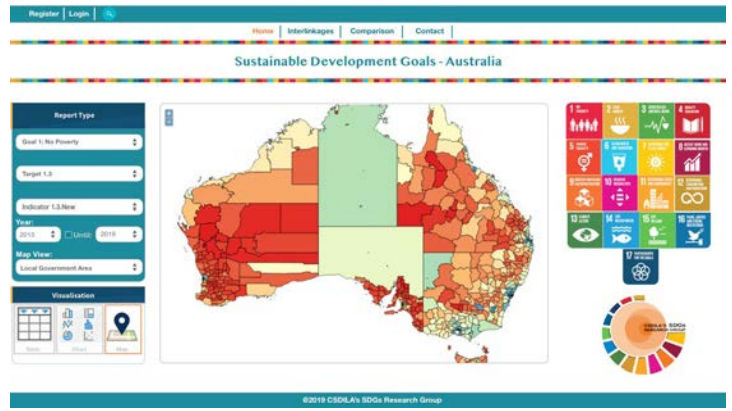
SDGs and Community Resilience



- ✓ Developing a method or improving existing methods to measure and monitor community resilience indicators related to land tenure in the context of SDGs

Research Area 2: Enabling Technology, Informatics and Analytics-*a Dashboard*

Visualise SDGs index in Sub-National Level



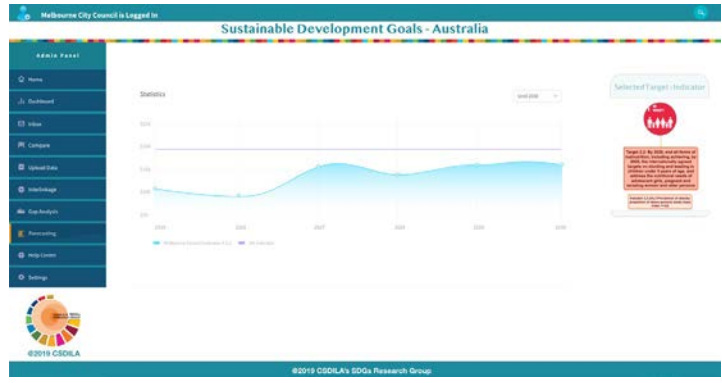
Comparison Between Sub-National Level



Visualising the synergies and trades-off



Live Forecasting of SDGs Index



An Infrastructure for *Measuring, Monitoring and Comparing*

A digital data **infrastructure** that enables the **integration**, **harmonisation**, **connectivity** and **scalability** of **multi-source datasets**.



An infrastructure with a **new ontological framework** and a **dictionary** to underpin the **next generation** of **data driven modeling** and **decision-support tools** to enable **smart**, **sustainable**, **productive**, and **resilient** future.

Objectives

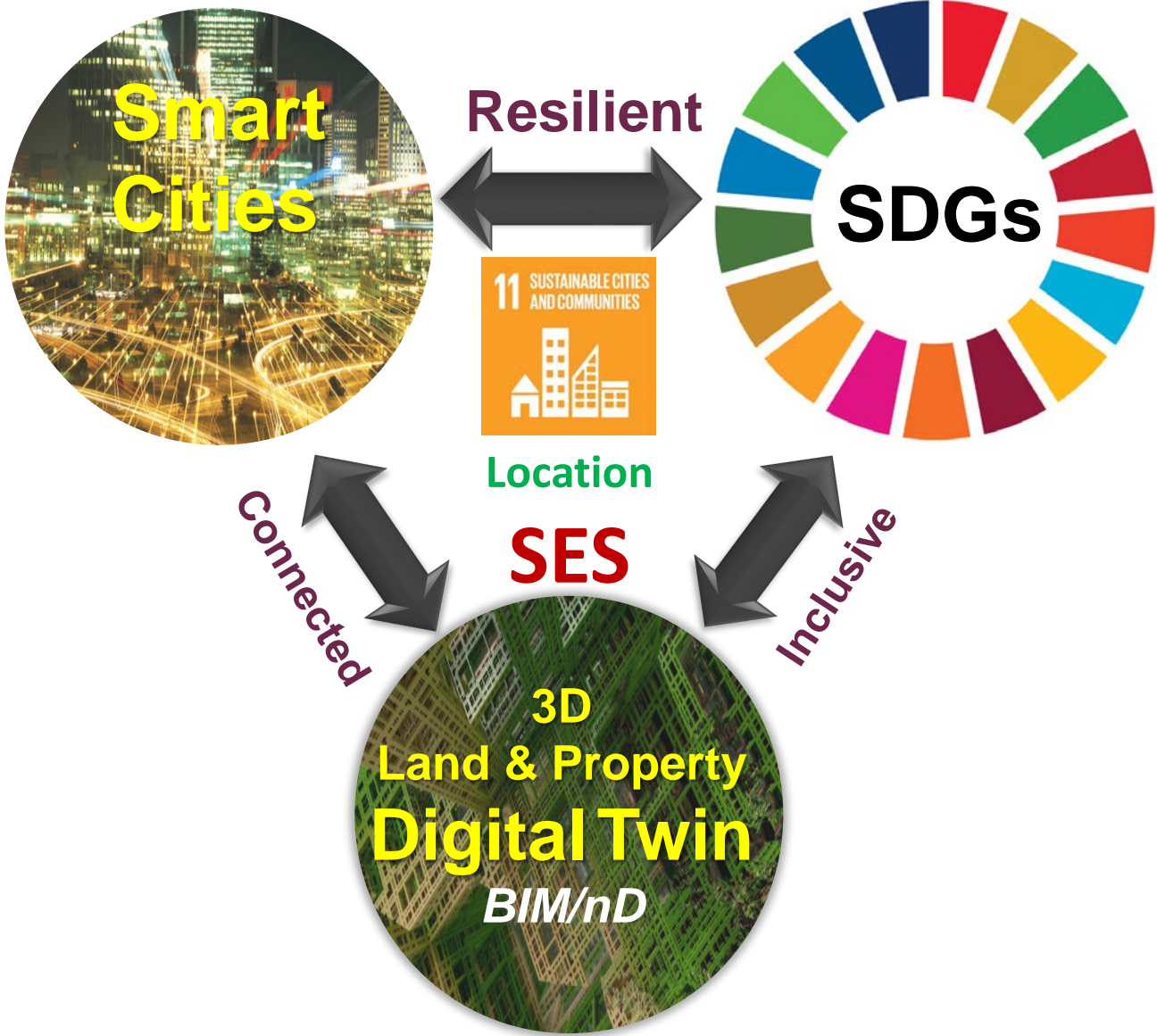
- 1** To provide an underlying **framework** for **harmonisation** and **integration** of (urban) data by adopting the ISO 37120 and **ISO 19115 standards**.
- 2** To develop **data tools**, including data access, **registry**, **integration** and metadata API through adoption of **OGC standards**.
- 3** To develop an **integrated platform** and web-portal to visualise and evaluate the cross-jurisdictional and cross-domain performances.



ID	Status	Result	Organisation Name	Database Name	Type
18	✓	OKCD	SEP	SEP	WFS
19	✓	Call	CLER	WFS	WFS
21	✓	DMS	DMS	WFS	WFS
22	✓	Health	Health	WFS	WFS
23	✓	VicRoads	VicRoads	WFS	WFS
24	✓	EPA	EPA	WFS	WFS
25	✓	UACI	UACI-Port	WFS	WFS
26	✓	VEAC	VEAC	WFS	WFS
27	✓	IGM	UACI_Dataset	WFS	WFS
28	✓	VicPolice	VicPolice	WFS	WFS
29	✓	VICLR	VICLR	WFS	WFS
30	✓	VECD	DECD	WFS	WFS

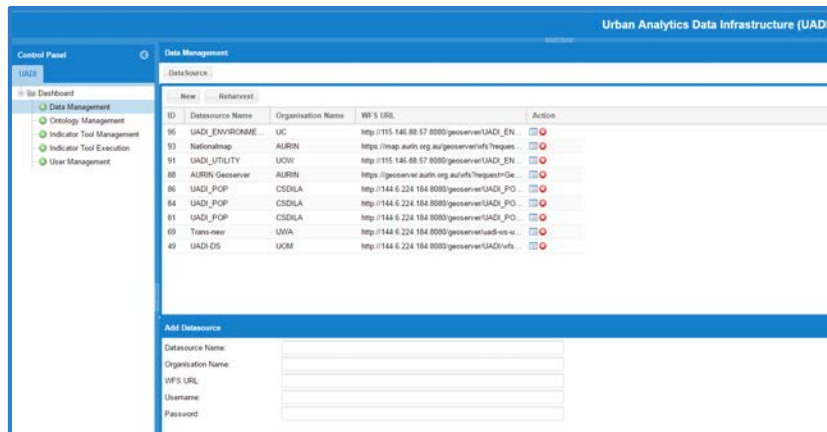


Interconnected FUTURE For ALL

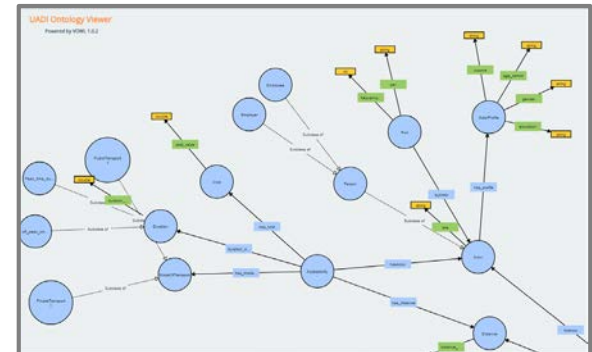


Development Environment

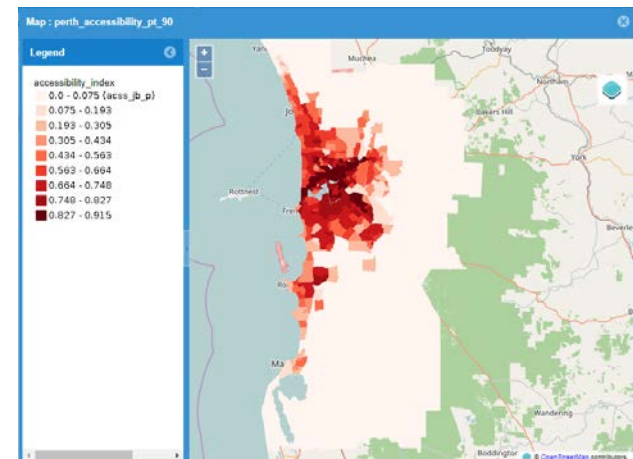
Data Registration



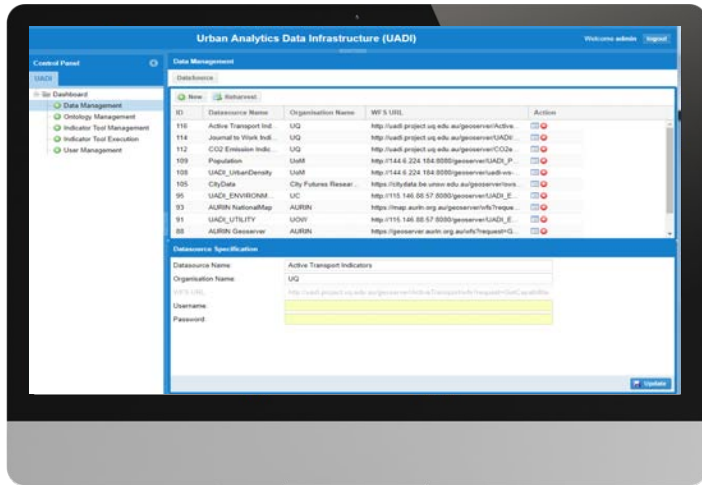
Ontology Registration



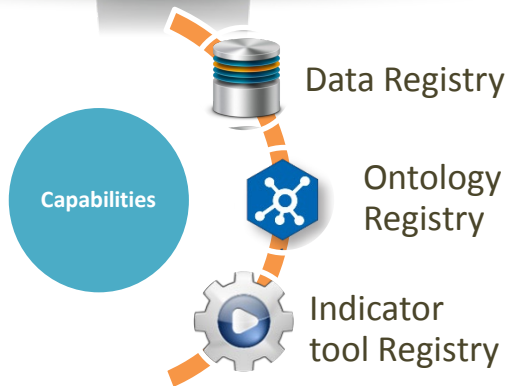
Comparative Tool: Registration and Indicator Publishing



DASHBOARD



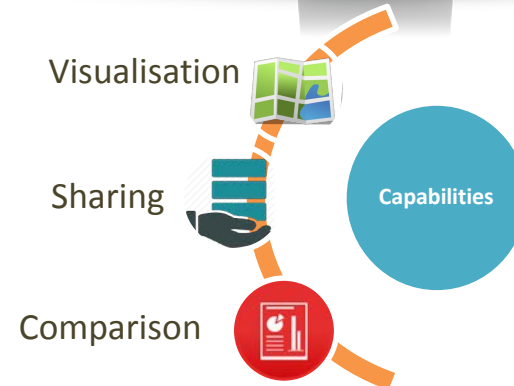
<http://apps.csdila.ie.unimelb.edu.au/uadi/index.html>



UADI PORTAL



<http://apps.csdila.ie.unimelb.edu.au/uadi-portal/index.html>



Urban Indicators

- Discovery
- Visualisations
- Comparisons
- Sharing

Urban Analytics Data Infrastructure Portal

A Digital Infrastructure for exploring urban quality of life indicators

Sustainable Indicators
Custom Specific Indicators for Sustainability

HOME ABOUT UADI BROWSE INDICATORS RESEARCH TEAM PARTNERS LINKS URBAN DICTIONARY

Explore Urban Quality of Life Indicators
Free and open access to urban quality of life indicators for Australian cities

Search indicators e.g. Green areas per 100,000 population OR Perth accessibility to jobs

Browse indicators by Name, Year, Theme or Geographic Boundary

Perth Job Accessibility Index (60 mins by public transport) SA2 2011
23 October 2017 | by [University of Melbourne](#)
Perth job accessibility index at SA2 level, public transport mode.

TAG CLOUD
urban density (7) plus factor (3) melbourne (3)
victoria (2) housing (4)



Interactive Maps
The following maps were produced for the indicator:



Interactive Maps
The following maps were produced for the indicator:



Overcrowded households (%)
 0.0 - 0.998 (indicator)
 0.998 - 1.197
 1.197 - 1.795

Overcrowded households (%)
 0.0 - 0.171 (indicator)
 0.171 - 0.343
 0.343 - 0.515

Urban Analytics Infrastructure Dashboard

A Digital Infrastructure for exploring urban quality of life indicators

melbourne_bua_commercial_sa1

id	objectid	sa1_main11	sa1_dig11	sa2_1
melbourne_bua_commercial_sa1_3620912	20604111811	2111811	20604111811	2111811

melbourne_far_sa1

id	objectid	sa1_main11	sa1_dig11	sa2_main11	sa2_1
melbourne_far_sa1_4320912	20604111811	2111811	20604111811	2111811	2111811

melbourne_pga_sa1

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melbourne_pga_sa1_4920912	20604111811	2111811	20604111811	2111811	2111811

Bua_commercial_sa1

City	Value
City of Melbourne	~180
City of Moreland	~5
City of Whitehorse	~10

moreland_bua_commercial_sa1

id	objectid	sa1_main11	sa1_dig11	sa2_1
moreland_bua_commercial_sa1_41324934	21005124216	2124216	21005124216	2124216

moreland_far_sa1

id	objectid	sa1_main11	sa1_dig11	sa2_main11	sa2_1
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moreland_pga_sa1

id	objectid	sa1_main11	sa1_dig11	sa2_main11	sa2_1
moreland_pga_sa1_41324934	21005124216	2124216	21005124216	2124216	2124216

FAR_sa1

City	Value
City of Melbourne	~0.15
City of Moreland	~0.25
City of Whitehorse	~0.25

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

11 SUSTAINABLE CITIES AND COMMUNITIES

17 PARTNERSHIPS FOR THE GOALS

Indicator Visualization and Comparison

9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE



11 SUSTAINABLE CITIES
AND COMMUNITIES



13 CLIMATE
ACTION

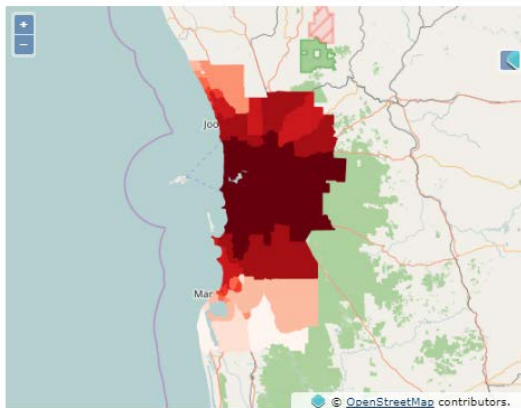


15 LIFE
ON LAND



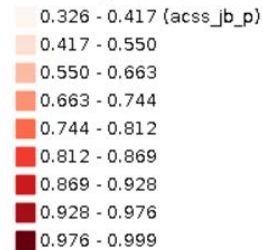
Map View Charts

Interactive Map



Legend for layers

accessibility_index



Download Indicator Outputs:

- accessibility_index ([geoJSON](#), [ShapeFile](#), [GML 3](#))

Indicator Provenance Information

Inputs Metadata Tool Metadata

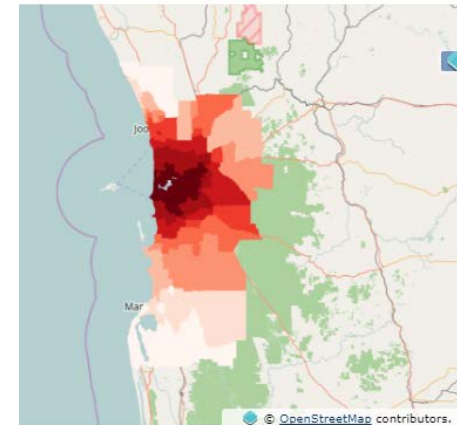
The followings are the inputs of the tool that was used to derive the indicator. You can download the metadata or - if the permission is provided - the data itself for further exploitation:

Input 1

Input name: jobuuid (string)

Charts

Map



Legend for layers

accessibility_index



Indicator Outputs:

- y_index ([geoJSON](#), [ShapeFile](#), [GML 3](#))

Indicator Provenance Information

Inputs Metadata Tool Metadata

The metadata of the tool used for deriving this indicator are as follows:

custom:execIndicatorAccessibility

calculates the accessible jobs and labour force for each zone and according to the mode of

A Blueprint for Disaster Management RD&D

Supporting the SDGs

CSDILA

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DATA INFRASTRUCTURES
& LAND ADMINISTRATION



International Symposium and Workshops

**A SMART SUSTAINABLE
FUTURE FOR ALL**

Enhancing Resilience in a Changing Landscape

MELBOURNE, AUSTRALIA | 24 - 26 SEPTEMBER 2018

Launched of the Blueprint for DM RD&D to Support SDGs on September 25, 2018, Melbourne, Australia

Mapping the links between **disaster management** and resilience research themes with the **UN-SDGs** and supporting trans-disciplinary research to overcome real-world challenges.



CENTRE FOR
DISASTER MANAGEMENT
AND PUBLIC SAFETY



WORLD BANK



UN-GGIM
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THE UNIVERSITY OF
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United Nations World Geospatial Information Congress

联合国世界地理信息大会

The Geospatial Way to a Better World

同绘空间蓝图 共建美好世界

19-21 November 2018

Deqing, Zhejiang, China

2018年11月

中国·浙江·德清

Organized by: The United Nations

Hosted by: The Ministry of Natural Resources, P. R. China
The People's Government of Zhejiang Province, P. R. China

主办：联合国
承办：中华人民共和国自然资源部
浙江省人民政府

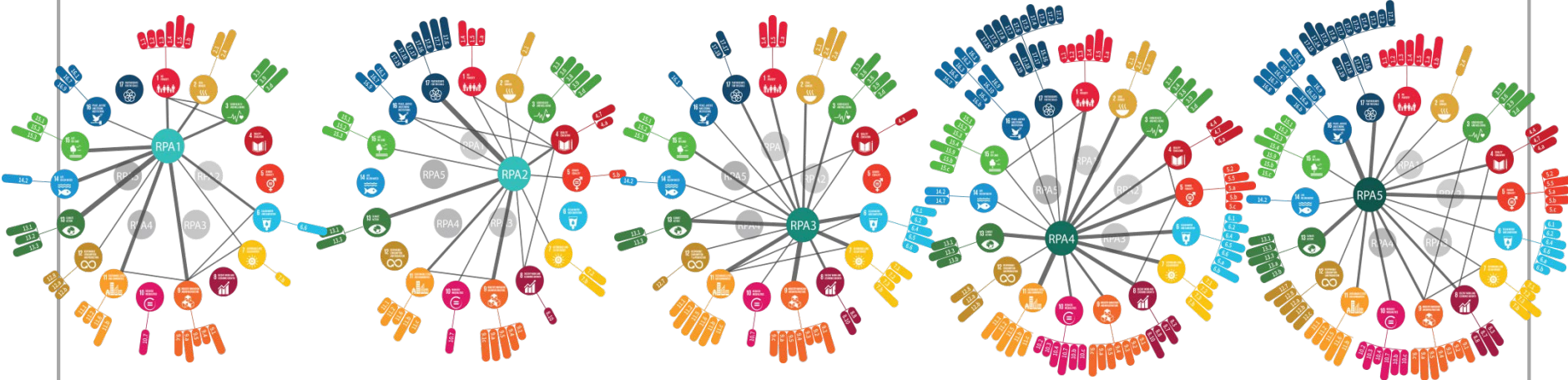


A Sustainable and Resilient Future for All

Sustainable
Development



*"Leave no one
behind"*



Resilience
Thinking



*"Building back
stronger"*



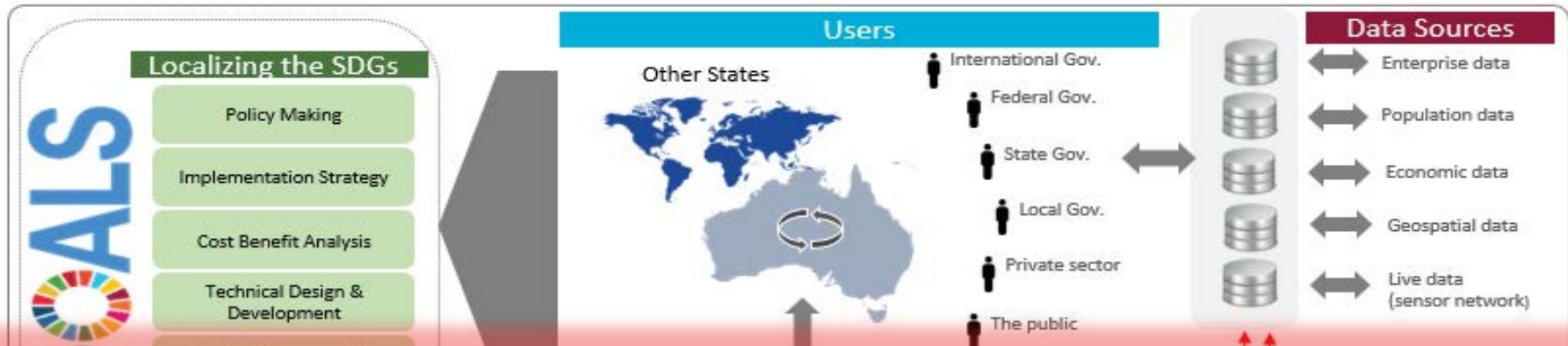
Blueprint Digital Copy



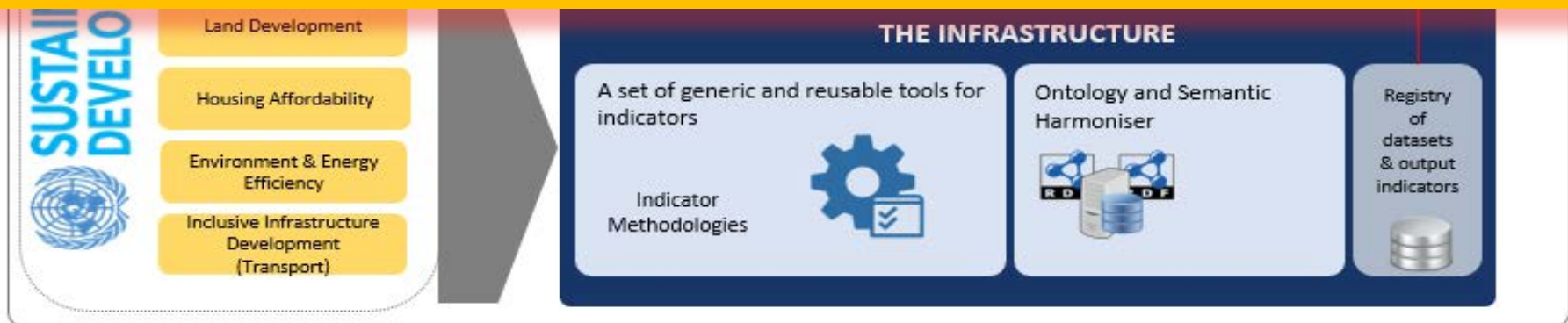
Link:

<https://www.unimelb.edu.au/cdmeps/home#sdg-blueprint>

Potential Contribution To **SDGs**



UN-GGIM Academic Network Research Collaboration



The development of (National) **Indicators** for the **SDGs** requires an **Infrastructure** that can facilitate the **Registration** and **Sharing** of indicators Globally.

The **UN-GGIM Academic Network** can facilitate the development of an **Infrastructure** for Member States **to register new indicators**, to measure and compare and monitor the **inclusive** progress of the **SDGs**.

THANK YOU

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