

Sustainability, resilience & safety: challenges & opportunities in rural environments.

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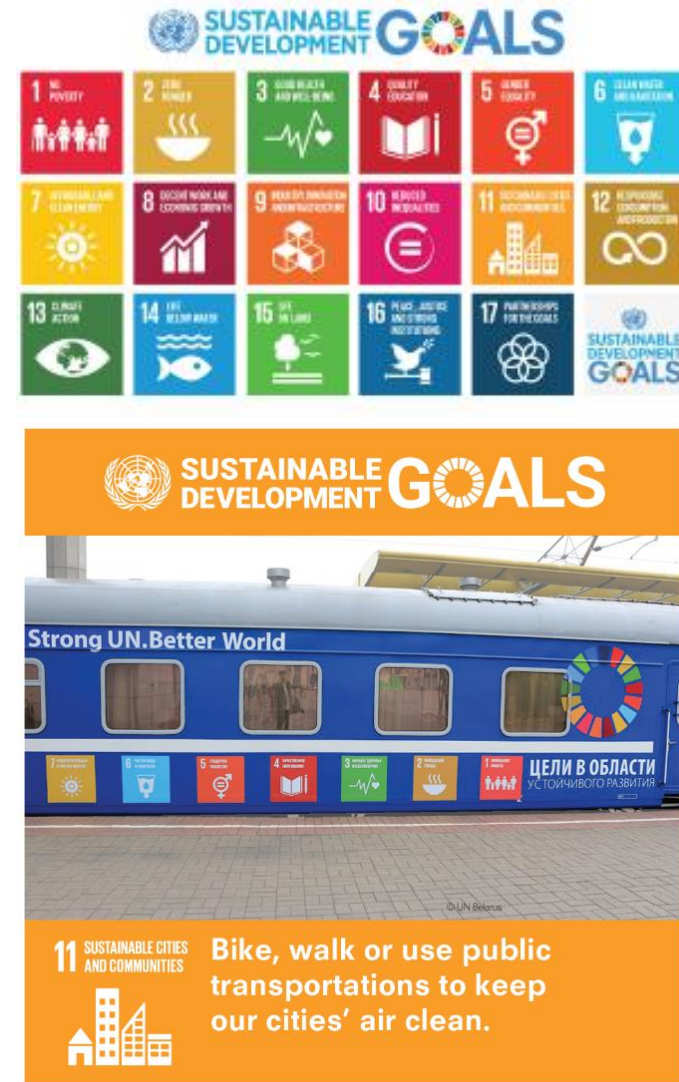
Colloquium Safety, resilience and community: Challenges & opportunities beyond the city

KTH, Stockholm, 29 September 2020 (Online)



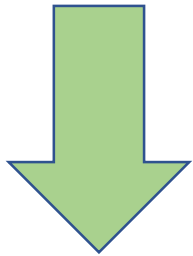
SDG 11: Focus on Human Settlements

- Goal: Make cities and human settlements inclusive, safe, resilient & sustainable
- Thus goal is sustainable human settlements
- Key qualities: inclusive, safe & resilient
- SDG on Public space (11.7):
 - By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.
 - Key qualities: accessible, safe, inclusive, green



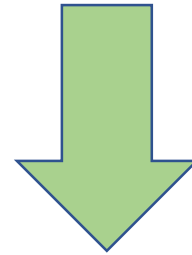
Sustainability aims to achieve two things

**Improve human
well-being**



Quality of life

**Ensure continuous
functioning of socio-
ecological systems**



Adaptive
capacity

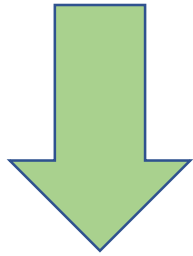
Goal

The goal of urban sustainability is not to “sustain cities or urbanization, but to meet human needs in settlements of all sizes without depleting environmental capital” (Satterthwaite 1999)

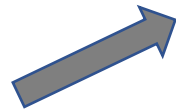
Sustainability: human well-being & adaptive capacity

Sustainability aims to achieve two things

Quality of life



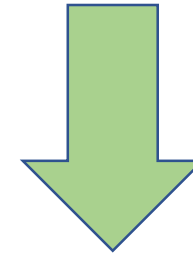
Health
Safety & security
Mobility (access to
services &
opportunities)



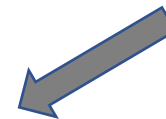
Safety


Resilience

Adaptive capacity



Ability to protect and
enhance socio-ecological
systems to ensure their
continuous functionality
to enable quality of life





Experiences and perceptions
Challenges and opportunities

Public places in rural towns & villages in South Africa

Perceptions & experiences of public places in rural environments

Khuma Park, North-west

Used to be nice park – now vandalised & no trees, 1 bench
Hub for gangsters – use drugs and mug people
People ask for security
Complained about lack of maintenance & management
CPF sometimes use it for meetings

Kanana Park, North-west

No furniture or facilities
Some trees & cattle grazing
Variety of social gatherings: fund-raising, music events ...
Stream – safety hazard
People generally feel safe
Traffic considered a hazard – asked for a fence next to road

Jouberton Park, North West

Furniture vandalised or destroyed
Signs of illegal dumping
Complaints about lack of management and maintenance
Still used but unsafe due to gangsters using the park, associated with muggings

Inchanga Villages, KZN

Minimally developed public spaces
Lack of maintenance and management
People feel unsafe at transport interchanges

Ladysmith Public Park, KZN

Park used by diversity of people
Well maintained & managed
Partly fenced, ablution facility
Large trees and lots of shade
People feel safe in the park
One unarmed security guard

Grey Square, Stutterheim, EC

Diversity of users
Informal traders make profit
People feel safe using the space
Many lunch-time users
Regular management & maintenance
Business owners confident

WHAT IS IT?

Crime Prevention through Planning and Design...

... aims to reduce the causes of and opportunities for criminal events and to address the fear of crime by applying sound planning, design and management principles to the built environment

Thus questions:

How to interpret signs / cues offered in the physical environment?

How to change the environment to reduce opportunities for crime?

Principles

Surveillance & visibility

Territoriality

Access & escape routes

Image & aesthetics

Target Hardening

Planning, Design & Management Interventions

Environmental design in South Africa needs to be implemented at various levels, involving the following:

Planning interventions

Physical urban planning approaches at strategic level, such as strategies to promote the reduction of vacant land, encourage mixed land use and support the integration of communities separated as a result of apartheid policies.

Design Interventions

Detailed design of different urban elements, such as the transport system, roads, public open spaces and buildings and the spaces between them.

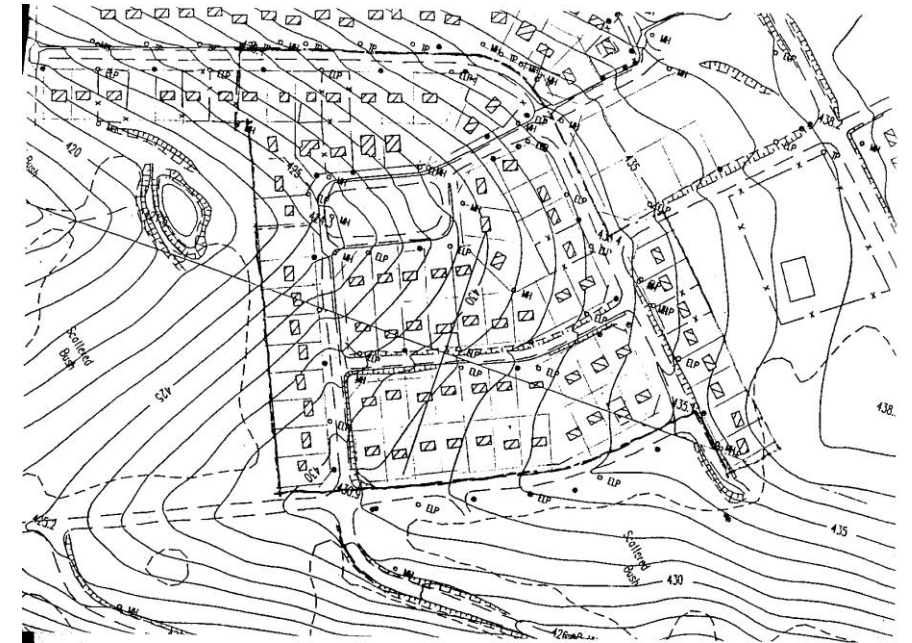
Management interventions

Managing the entire urban system and the precincts within it (e.g. infrastructure, maintenance and bylaw enforcement), as well as managing and facilitating the implementation of environmental design initiatives.

Challenges at various levels for crime prevention

Challenges at the planning level

- Minimally developed or vacant land in Zwelitsha, Ginsburg, Sweetwaters (in King Williams Town) & Inchanga, eThekweni
- No supporting land uses (dormitory townships)
- Separation of communities as a result of apartheid policies through buffer strips, e.g. Zwelitsha in King Williams Town
- Fragmented rural villages scattered across the landscape in deep rural areas, often under traditional leadership
 - Complicates governance & coordination



Sweetwaters East (above) & West (below), King Williams Town



Challenges at various levels for crime prevention

Challenges at a design level

- Ginsburg separated from older part of King Williams Town by rail-way line and buffer strip along Buffalo River
- Lack of demarcated pedestrian routes and overgrown vegetation – crimes such as mugging and rape
- Lack of opportunities for surveillance
 - No windows to the street in Ginsburg - burglaries
- Kuma Park in Kuma township limited relationship between buildings (houses and schools) next to the park.
 - High fence between park and surrounding buildings.
- Dilapidated buildings in Jouberton Park
- Inadequate taxi ranks with no lighting and proper paths in Inchanga Village – crimes such as mugging



Ginsburg, King Williams Town



Kuma Park, dilapidated old building



Challenges at various levels for crime prevention

Challenges at a management level

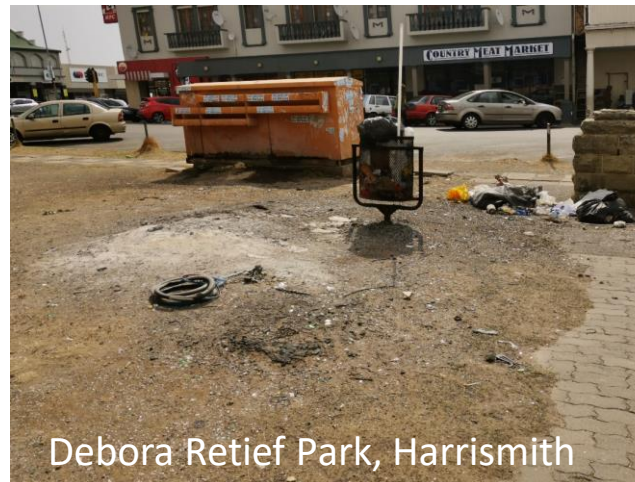
- Lack of management and maintenance related to infrastructure and buildings in parks, e.g. Kuma, Kanana, Jouberton, Deborah Retief parks, as well as in Sweetwaters.
- Limited or no by-law enforcement in rural areas
- No attempt at managing and facilitating the implementation of CPTED initiatives.



Small public open space in Sweetwaters
unmaintained



Gathering space, Inchanga



Deborah Retief Park, Harrismith



Broken furniture and lack of maintenance in
Jouberton Park

WHAT IS IT?

In complex adaptive systems (cities), resilience defined **“as the system’s ability to absorb stresses and shocks without losing functionality or changing structure”**

Appropriate for cities as socio-ecological living systems that respond to change & perturbation by adapting to and absorbing stress in order to continue functioning

Du Plessis, 2013

WHAT TO DO?

To strengthen positive parts of city system that need to be more resilient **and** decrease resilience in those that are negatively affecting the city system

Peres, 2015

HOW?

MITIGATION

Ability to recover from decline or disaster

ADAPTATION

Positive ability of system (or sub-place) to adapt

TRANSFORMATION

Ability of sub-systems to transform / collapse

Adapt / Transform

Diversity	Build complexity through multitude of interactions. Diversity of a) similar objects, b) in space - spatial distribution at different scales
Redundancy	Redundancy can be regarded as a diverse number of elements that can fulfil the same or similar functions.
Proximity	Reduce average distance between things - thus link between diversity and distance to lessen travel time
Intensity	Increase quantity of something within area or concentration of object at given scale, e.g. people or du
Connectivity	Increase ways to move. Measure of how connected an area is in terms of road network or public transport
Modularity	Degree to which a system's components may be separated and recombined to localize shocks / stop spreading of risks.

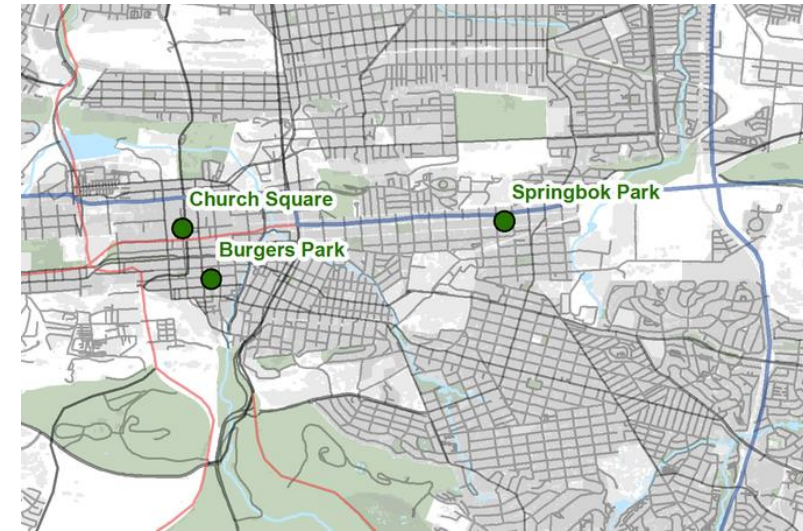
To understand impact of changes on two levels



Diversity: activities (uses) and users in public space

Connectivity: movement in public space

Public space (site)



Diversity: land use around public space

Redundancy: linked to diversity of activities

Intensity: population and density around public space

Proximity: number & type of facilities within various distances

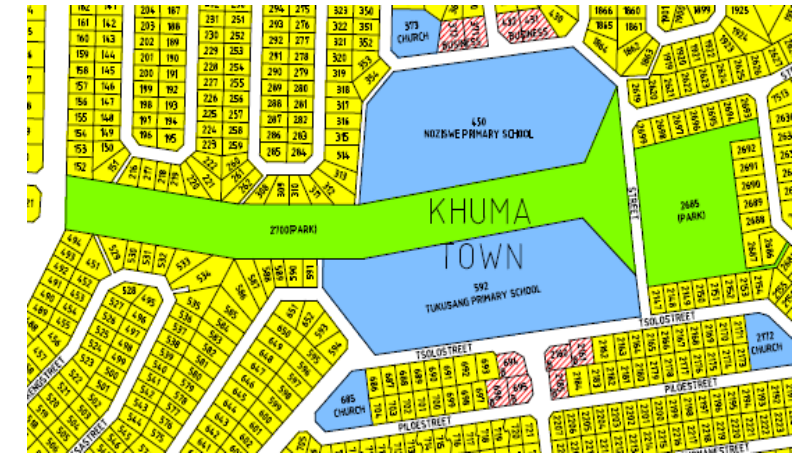
Connectivity: accessibility to public space

Broader environment

Example: spatial resilience challenges

Khuma Park, Matlosana Municipality

- **Diversity:** mostly residential land use, with two schools and library
- **Intensity:** low-density housing, thus low population and dwelling unit density
 - Less people – lower economies of scale and generation of opportunities
- **Proximity:** close to schools & library
- **Connectivity:** park serves as major thoroughfare between main road and library
 - Closed road network – limits accessibility to park
- **Modularity:** can be trapped by gangsters – 2 exits



Predominantly residential land use



Example: spatial resilience challenges & opportunities

Kanana Park, Matlosana Municipality

- **Diversity:** a number of municipal facilities opposite the park
- **Intensity:** predominantly low density residential with a few municipal facilities
- **Proximity:** close to library, community hall and municipal office. No ablution facilities on site – only sewage plant
- **Connectivity:** next to major road that connects the township with the old town, Klerksdorp.
 - Road also barrier for pedestrian access



Example: spatial resilience opportunities

Grey Square, Stutterheim

- **Diversity:** in the center of the CBD of town with many retail and commercial uses, both formal & informal
- **Intensity:** lower population densities, but usual in small rural town. Residential two blocks away.
- **Proximity:** close to many commercial and retail opportunities, as well as municipal facilities and places of worship
- **Connectivity:** on the corner of the two main roads going through the town (Hill & Mclean streets).



Opportunities: planning for safer environments

CPTED	EXAMPLE: Factor	Issue to consider
City & neighbourhood	Vacant land	Reduce un- or underdeveloped land and encourage development and alternative land uses. Parks and playgrounds should not be located next to undeveloped land as this may increase potential criminal activity.
	Mixed land and 24-hour use	Encourage mix use or a range of activities and longer hours of use in the vicinity.
	Transit safety	Ensure well-developed and accessible public transport facilities and modes of transport to ensure safe transit for all users.

Determinants of Resilience

Diversity

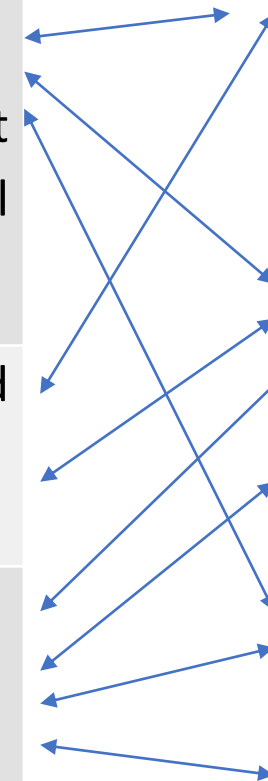
Redundancy

Intensity

Proximity

Connectivity

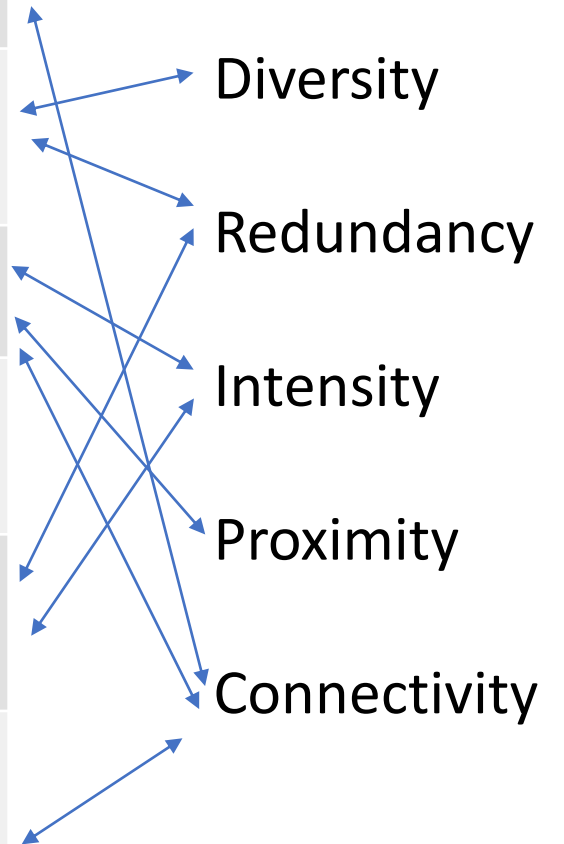
Modularity



Opportunities: designing for safer environments

	EG: Factor	Issue to consider
Public Places	Size of public space	Promote networks of smaller open spaces where appropriate - easier for residents to take responsibility and for authorities to manage these.
	Variety of activities	Encourage a variety of activities in larger parks to cater for a range of age groups and optimise passive surveillance, e.g. tea gardens, informal markets, playgrounds and picnic areas.
	Pedestrian-friendly	Guide people along safe routes in and around open spaces and parks through signage, lighting and the use of surface material to indicate pedestrian paths.
	Parking areas	Ensure easy access from the parking areas to the park/square with opportunities for surveillance and visibility - can be enhanced by a building facing the parking area.
	Informal trading	Informal trading should be accommodated in a structured way to reduce congestion and opportunities for pickpockets. The design of trading stores should increase surveillance and not create hiding places.
	Fences	To avoid walls/fencing to allow integration and reduce barriers to free movement. If not possible, to encourage permeable fencing and numerous points of entry. It may be necessary to demarcate play areas for smaller children with low and permeable fences.

Determinants of Resilience



Opportunities: management for safer environments

	EG: Factor	Issues to consider
Places for people & community	Institutional support	Park and open space management should be part of larger municipal management and maintenance plans and also linked to a holistic crime prevention strategy.
	By-laws	By-law enforcement can support certain aspects of CPTED such as littering, illegal land use, alcohol abuse in public places, etc.
	Physical structures	There should be continuous maintenance, reparation and upgrading of built environment elements and structures in public spaces to avoid perceptions of insecurity linked to deteriorated spaces that could invite opportunities for crime linked to issues of 'crime and grime'.
	Facilities	Facilities should be cleaned regularly and used for legitimate purposes.

Determinants of Resilience

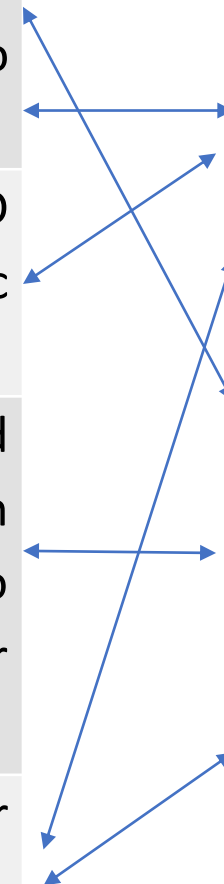
Diversity

Redundancy -

Intensity

Proximity -

Connectivity -



Grey Square, Stutterheim

Increased diversity, proximity, intensity and connectivity have established a safer space where people can gather and transact in the centre of the town.

Taking context in consideration: proximity of formal and informal trade.

Malmesbury, Swartland Municipality, Western Cape

Creating places for gathering in small rural towns

To increase mix use and diversity to enable more opportunities for more people
Through variety of activities and events for different groups

Public Space, Saldanah Bay, Western Cape

Proximity of public spaces important

Connecting spaces to sustainable transport options

Creating viable land uses around

Mix of soft and hard open spaces

Conceptual Design –Grey Square, Hill Street / N6 Interchange & Hill Street East





Looking forward to plan, design & manage public places in rural towns & villages in South Africa to be safe & resilient

Conclusion

- Many challenges related to safety & security in rural areas
- Yet, some spaces and their immediate environments exhibit elements of spatial resilience that allow them to adapt
- The determinants of spatial resilience allows opportunities for the implementation of actions towards the planning, design & management for safer environments
- Thus, resilience thinking and a focus on spatial resilience not only offers opportunities towards greater sustainability, but also have the ability to increase safety in human settlements
- Towards the achievement of SDG 11: safe, resilient & inclusive human settlements & spaces

Putting it all together: safe, resilient & inclusive settlements and spaces

