IT IS NEVER TOO LATE TO FALL IN LO...

GIEL 2.1

Sustainable URBAN NEIGHBOURHOODS

3 key dimensions:

> sustainable development
- economic
- social
- environmental

How to achieve:

> Economic sustainability + high enough pop. density
↳ support local businesses
↳ keep transport and infrastructure $ low

> Social Sustainability
↳ keep population size small
↳ shared community spaces
→ facilitate regular social interactions ⇒ ...

> Environmental Sustainability
↳ ample protection for nature
↳ facilities to minimise waste and ↑ recycling
↳ Energy and water-efficient designs

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Sustainable urban neighbourhoods.

Development ← economic, social, political process → results in → improvement of standard of living (living conditions) for a population

Countries classified according to level of development (developed vs developing)

↳ Economic indicator : ① Gross Domestic Product (GDP) per capita (within country ONLY)

↳ total value of all final goods and services produced by a country in a year / total population

↳ developed country = higher GDP per capita

↳ usually have a larger number of productive industries and a well-developed service industry

↳ Social indicators : ① Life expectancy → influenced by — quality of healthcare

— access to clean water, sanitation, food supply and living conditions

→ developed country = higher life expectancy

② Adult literacy rate → higher literacy rate → generates more professionals who can contribute their skills and expertise ⇒ drive country's economy

E.g. NZ — highly developed country ↓ high adult literacy rate of 99%

→ developed country = higher adult lit. rate

Sustainable Development : development that

3 key dimensions (ensure higher standards of living are achieved.)

→ meets the needs of the present population by achieving high standard of living for all

→ ensures the ability of future generations to meet their own needs

Economic, Social, Environment ⇒ over focus on one dimension may lead to a neglect of the others → all are important

E.g. Singapore Green Plan 2030

↳ launched in 2020 — nationwide movement — advance SG's national agenda on sustainable development

↳ 5 key pillars — bring about high standards of living for current & future gen. of SGeans.

E.g. UN Sustainable Development Goals → to achieve the 2030 Agenda for Sustainable Development

↳ achieve high SOL and peace for current and future gens.

▶ How urban neighbourhoods achieve ECONOMIC SUSTAINABILITY.

> To ensure all human beings can enjoy prosperous, fulfilling lives and economic progress can occur in harmony with nature.

Attained through:

> ensure neighbourhood has a high enough population density

① Support local businesses

↳ sufficient demand for goods & services → local businesses able to sustain themselves

↳ residents take up employment → earn income + increase SOL

② Keep transport and infrastructure costs low

↳ neighbourhood densely populated → buildings, objects, amenities close to each other

↓

residents need not travel far → keep transport costs low.

↳ transportation infrastructure located close to one another

↳ connecting transport infrastructure need not be built or built over long distances.

↳ transportation costs for residents are lowered/minimised. (Co-development)

▶ How urban neighbourhoods achieve SOCIAL SUSTAINABILITY.

> To ensure that societies are inclusive and resilient, where residents have a voice

↳ residents feel included (voice heard) & have a sense of shared identity E.g. Vote what colour HDB walls to be painted

inclusive playgrounds

> Fostered by having ② Shared community spaces → promote regular social interactions

Attained through:

① keep population size small → facilitates regular interactions among residents

↳ Shared community spaces → residents from diff backgrounds and hobbies → come tgt and foster positive relationships

↳ Regular interactions btwn residents are important → help maintain a culture of open communication, mutual respect and understanding

↓

reduce misunderstandings and conflicts

↳ day-to-day, mundane issues can be resolved locally with an adequate neighbourhood structure

discuss decisions affecting the neighbourhood.

E.g. In SG, Residents' Network (RN) → promote neighbourliness and community cohesiveness amongst residents

→ each neighbourhood is divided into smaller designated zones and residents are encouraged to join the network

→ regular activities organised at the designated zonal levels to cater to small population size in the zone.

⇒ encourage residents to voice their opinions and participate in decision-making processes regarding issues affecting their neighbourhood,

↳ enhancing their social well-being.

▶ How urban neighbourhoods achieve ENVIRONMENTAL SUSTAINABILITY. (ample protection for nature; facilities that support waste minimisation & recycling; energy and water-efficient design approaches for buildings and landscapes)

> To sustainably manage natural resources and take urgent action on climate change to support the needs of the present and future generations.

Attained thru:

① Ample protection for nature

- So wildlife can thrive in our urban spaces
- human-wildlife coexistence can be fostered

} nature shld be protected

E.g. NP Board → developed multiple strats aimed at safeguarding SG's habitats and ecosystems for long-term sustainability

Biodiversity in urban neighbourhoods can also be maximised thru concerted efforts : aimed to

Ⓐ ↳ protect existing native species, habitats, ecosystems

↳ implementation of species conservation and recovery programmes ↳ re-establish species

Ⓑ > Have a wide variety of habitats (e.g. street trees, pocket parks, roof gardens) instead of uniform areas of grass.

> Diff varieties and species of trees and plants → provides adequate shelter and food for a wider variety of wildlife to thrive → maximising biodiversity

E.g. 44 Nature Ways in SG → connects areas of high biodiversity across SG.

② Having facilities that support waste minimisation and recycling

Ⓐ > conveniently located recycling facilities and infrastructures

↳ Blue recycling bins around estate

↳ new BTO flats have recycling chutes in their homes

} encourage residents to recycle.

Ⓒ > Neighbourhood-scale recycling activities organised by either residents or town council → encourage waste recycling

E.g. Town Council → put up posters and banners → educate and encourage residents to recycle properly

③ Energy and water-efficient design approaches for buildings and landscapes.

> to minimise the use of resources

> Done by safeguarding nearby nature areas and embracing smart technology & eco-friendly features

E.g. Treelodge@Punggol → plenty of greenery

↳ reduces surrounding air temp → ↓ need for usage of air-con / fans

↳ enhances aesthetics → creates a conducive living environment for residents

E.g. Heat-reflective paint (cool paint) under HDB's Green Towns Programme

↳ lowers temp up to 2°C → reduce energy consumption

E.g. Rainwater used for block washing of void decks & corridors → reduce overall water consumption / instead of using a new source of H_2O

GIEL 2.3 COMMON HAZARDS in Urban Neighborhoods

> Hazards 101
- man-made
- natural

> Fire Hazards
- man-made
- natural

> Health impacts
- burn injuries
- CO poisoning
- resp. system damage

> Property damage

> Air pollution Hazards
- Burning vegetation
- Exhaust emissions

> Health impacts
- asthma in kids
- lung function decline in adults

> Traffic Hazards
- Speed-related
- red-light running
- drunk driving

> Health Impacts
injuries & fatalities
- esp in elderly pedestrians and motorcyclists

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Common hazards in urban neighbourhoods.

Hazards → process, phenomenon, human activity that has potential to cause harm
- ↳ loss of life / other health impacts
- ↳ property damage
- ↳ economic consequences

natural
- > earthquakes
- > volcanic eruptions

man-made
- > traffic hazards
- > fire
- > pollution

▲ FIRE HAZARDS and their impacts [ans: cause → impact/outcome]

• Fires occur in neighbourhoods > Naturally → wild land fires – due to dry weather → dry veg. → fuel for fires when lightning strikes
  - ↓ impact: spread to residential areas if too big to put out

  due to: > Man-made → technological or industrial conditions
  - → dangerous procedures
  - → infrastructure failures
  - → specific human activities

• Fires occur in: > Residential Areas → unattended cooking fires – oil gets hot enough → self-ignites
  - → burning incense
  - → faulty electrical appliances and wiring (Personal Mobility Devices PMDs)
  - → ignite nearby flammable materials → ↓ fire

  > Non-residential Areas → commercial
  - → industrial
  - → social
  - → communal places

• Impacts of fire hazards: health impacts; property damage

- HEALTH IMPACTS

① Burn injuries → when unable to evacuate in time
- ↳ severe burn injuries ⇒ may lead to disabilities or death

② Carbon monoxide poisoning → when high levels of carbon monoxide and carbon dioxide released during a fire
- ↳ cause headache, dizziness, weakness, confusion
- ↳ even loss of consciousness and death
  - ↓ make it more difficult for ppl to escape a fire

③ Damage to respiratory systems
- ↳ irritants from a fire (e.g. acid gases, smoke) → permanent damage to resp. system
- ↳ Smoke inhalation → cause breathing difficulties and suffocation → may lead to death

- PROPERTY DAMAGE

> Fires can destroy / burn down commercial or residential properties → goods, furniture, impt documents destroyed

> Money required to repair and rebuild the properties damaged in the fire → further costs incurred → ↓ economic losses

▸ AIR POLLUTION HAZARDS and their impacts

the presence of contaminant or pollutant substances in the air

- Air pollution occurs due to:

> Burning vegetation → CO_2 and other pollutants are released into the atmosphere when vegetation burns (when)

Eg. first half of 2019, SG had ~555 vegetation fires → 56% ↑ in vegetation fires from 2018 → due to drier and hotter weather

resulted in slight deterioration in air quality

> Industrial and motor emissions → due to ↑ in car ownership and usage → ↑ in air pollution hazards

↳ vehicles produce significant amts of exhaust emissions → e.g. nitrogen oxides, carbon monoxide, other pollutants

deterioration of air quality in urban areas

- HEALTH IMPACTS : respiratory infections, heart diseases, lung cancer

- Nitrogen dioxide — emitted in areas of high vehicle traffic

↳ High levels of exposure to nitrogen dioxide → higher risks of asthma in children ①

- PM 2.5 (soot, smoke, dust, liquid droplets) — produced in urban neighbourhoods

↳ PM 2.5 can enter bloodstreams and lodge deep in human organs

↳ cause lung function decline in older adults ②

pollutants may lead to
- lung function decline
- lung cancer

▸ TRAFFIC HAZARDS and their impacts

arise from accidents due to irresponsible motorists who put others at risk

- Traffic hazards occur due to:

> Speeding / Speed-related accidents → lack of adherence to speed limits

> Red-light running

> Drink driving — driving w excess alcohol in blood

E.g. in 2021, there were a total of 969 speeding-related traffic accidents

153 accidents caused by drink driving

- HEALTH IMPACTS : injuries and fatalities

> People involved in a traffic accidents → suffer serious injuries → lead to disabilities or loss of life

E.g. 2021 → total of 100 traffic accidents in SG that resulted in fatalities, 8 caused by drink-driving

* elderly pedestrians and motorcyclists → account for a high % of traffic accidents resulting in injuries or death

IT IS NEVER TOO LATE TO FALL IN LOVE

also see 2.1

GIEL 2.4

What are we doing to BUILD SUSTAINABLE Urban neighbourhoods

> Environmental Stewardship
↳ promote volunteerism
↳ partnership of sectors

> Disaster Risk Management
↳ reduce neighbourhood's exposure to hazards
↳ reduce vulnerability of ppl & properties to hazards
(↳ warning systems ↳ Insurance Schemes
Emergency preparedness $$$ aid

Building
> Community Resilience
↳ Strengthen relationship among residents + raise awareness of potential hazards
↳ develop ability to organise & equip themselves w resources

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Building sustainable urban neighbourhoods

- environmental Stewardship
- disaster risk management
- developing community resilience

ENVIRONMENTAL STEWARDSHIP

the actions taken by individuals or groups → to protect, care for, responsibly use the environment
to pursue environmental and/or social outcomes
→ to reduce the negative impacts of human activities on the natural environment

Actions should seek to:

- conserve natural resources
- preserve the existing natural environment
- repair the damages and reverse the negative impacts caused by humans

to ensure its sustainability

Environmental sustainability can be achieved: promoting volunteerism, partnership of sectors

① Promoting Volunteerism

Eco-friendly lifestyles
↳ events
↳ spread awareness to public

↳ to share knowledge with others about the importance of healthy ecosystems
- ↳ Helps residents become more aware of what they can and should do to responsibly use and protect the natural environment

E.g. Encouraging residents to lead eco-friendly lifestyles (e.g. reducing waste) and take ownership of their living environment

> Volunteers of 'Keeping SG Clean' events organising by Clean and Green Singapore
- ↳ clean-up events that encourage public cleanliness
- ↳ raise public awareness on resource conservation (e.g. 3Rs) in neighbourhoods

> Ground-led initiatives w NParks (such as) → Friends of the Parks
↳ 2019 → communities took part in the design, development and management of SG's parks and green spaces — co-creating more than 50 parks across SG over next 5 years
↳ through collaboration and cooperation btwn residents → green spaces are enhanced → providing opportunities for biodiversity to thrive

② Partnership of Public and Private Stakeholders in Environmental Stewardship Efforts

Residents can partner with public and private stakeholders → diff. stakeholders have diff expertise to enhance environmental stewardship efforts
↳ all need to be actively involved.

E.g. To ensure that recycling is optimised

- Public → NEA → educates residents on the importance of waste recycling & how & what they shld recycle
- Residents → play a vital role in the proper recycling of their waste
- Private → provide recycling facilities

DISASTER RISK

> Disaster risk → the likelihood of damage to properties, injuries and loss of lives from a disaster in a given period of time

> Disaster risk = nature of hazard + vulnerability + exposure

- nature of hazard → characteristics (intensity/magnitude/spatial scale/duration)
- vulnerability → conditions determined by factors = ↑ susceptibility to impact of hazards
  - Physical
    E.g. building design, land-use planning
  - Social
    E.g. social status, age, economic status
  - Economic
    E.g. livelihood, industries
  - Environmental
    E.g. environmental management, ecosystem services, climate change
- exposure → situation in hazard-prone areas
  - ↓ no exposure = no risk
  - People and economic assets become concentrated in areas exposed to hazards through processes such as population growth, mitigation, urbanisation, economic development

> Types of Hazards: natural / man-made

- Biological (m-m) → direct threat to health (disease outbreak)
- Environment (m-m) → threat to nature (pollution)
- Geological (n) → earthquakes, volcanoes, landslides
- Hydrometerological (n) → typhons, flooding
  (water) (atmosp./climate)
- Technological (m-m) → nuclear, cyber-warfare

DISASTER RISK MANAGEMENT

the plans and actions that are implemented to prevent new risks from happening, reduce existing risks and manage disaster risks

> Disaster risk management strategies aim to reduce:

- a neighbourhood's exposure to hazards → warning systems — land-use planning, timely evacuation
- the vulnerability of ppl and properties to hazards → preparedness measures, knowledge and awareness raising, regulatory codes

> SG's disaster risk management strategies primarily focus on:

- improving residents' emergency preparedness to respond to natural and technological hazards (reduce vulnerability)
  E.g. SCDF → conducts a Community Emergency Preparedness Programme (CEPP)
  ↳ focuses on key lifesaving skills and impt emergency procedures
- implementation of monitoring and warning systems (reduce exposure & vul.)
  E.g. SCDF → Public Warning System (PWS) → warn public of imminent threats that may endanger lives and property (natural | man-made disasters)

→ Insurance schemes ↳ provide financial aid following house fires

COMMUNITY RESILIENCE

the ability of a community to resist, adapt to and recover from impacts of disasters in a timely and efficient manner.

It can be developed by:

① Strengthening relationships among residents and raising their awareness of potential hazards

> need widespread support and long-term participation from residents

↳ neighbourhood management plans can be effective and sustainable

> residents encouraged to get to know their neighbours → can depend on one another during an emergency.

* Neighbour relations are highly diverse, varying from one group to another,

↳ may occasionally be problematic

E.g. People's Association (PA)

↳ organises a wide range of community activities → foster positive relationships amongst residents living in the neighbourhood

↓

active aging, emergency preparedness, community sports

as a result ↓

community resilience developed thru

② Developing residents' ability to organise themselves themselves and equip themselves with resources to resist, adapt and recover from a disaster.

↳ respond faster and more efficiently to hazard

Organise themselves:

> residents can participate in a participatory, inclusive planning process that involves community leaders, civil society organisations and the government.

Equip themselves:

> residents actively participate in urban infrastructure projects → minimise potential hazards in the neighbourhood

> can better understand the risks and adaptation options to communicate to the planners and government.

E.g. Community First Responders (CFRs)

E.g. Total defence framework.

Strengthening relationships among residents & raising awareness of pot. hazards

↓ as a result

develop residents' ability to organise ppl and resources to adapt to hazards & recover from disasters

∴ community resilience helps to build sustainable urban neighbourhoods