



Peranan **'Circular Economy'**

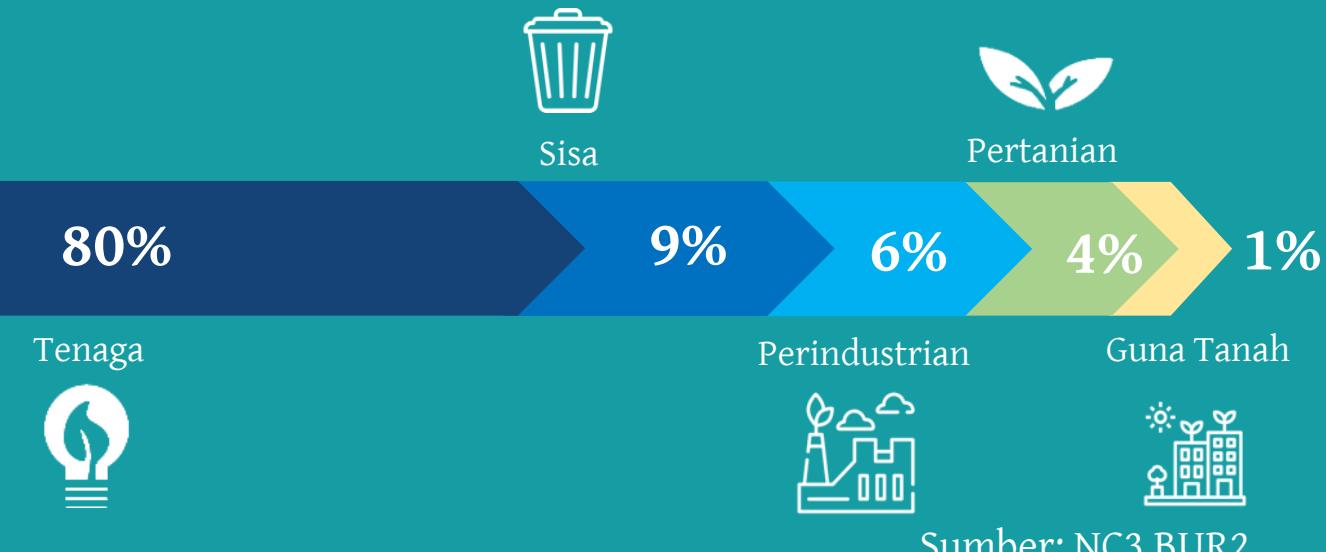
Dalam konteks Bandar
Rendah Karbon

Perspektif Perancangan Bandar

TPr. Rene Fu Swee Yun
Malaysian Institute of Planners
Webinar Normal Baharu Bandar Rendah Karbon
01st Sept 2020

REALITI SEMASA

Punca Penjanaan Gas Rumah Hijau



BANDAR menggunakan **75%**
Sumber alam semulajadi

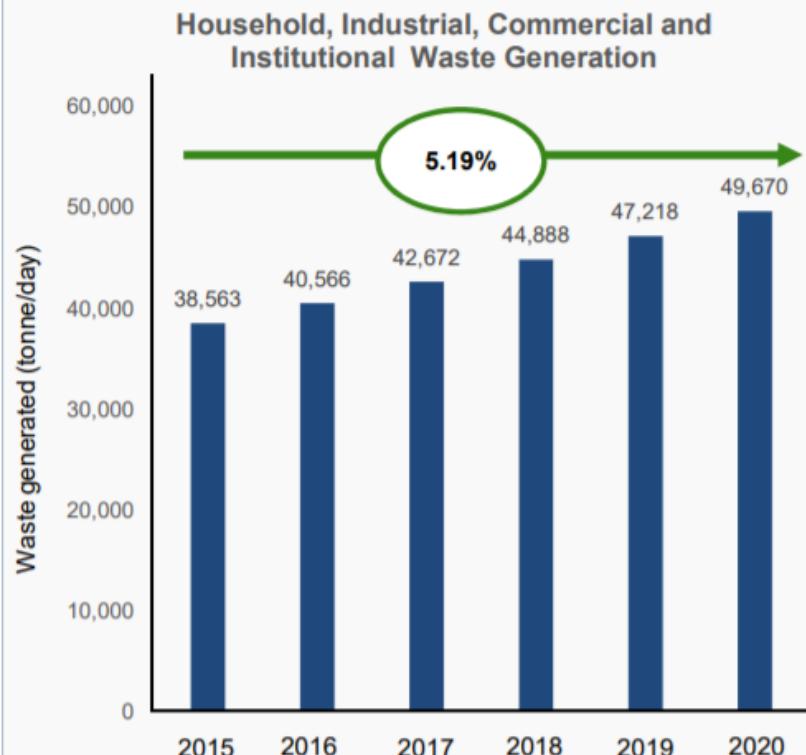
Bertanggungjawab atas
80% Gas
Rumah Hijau

– PBB

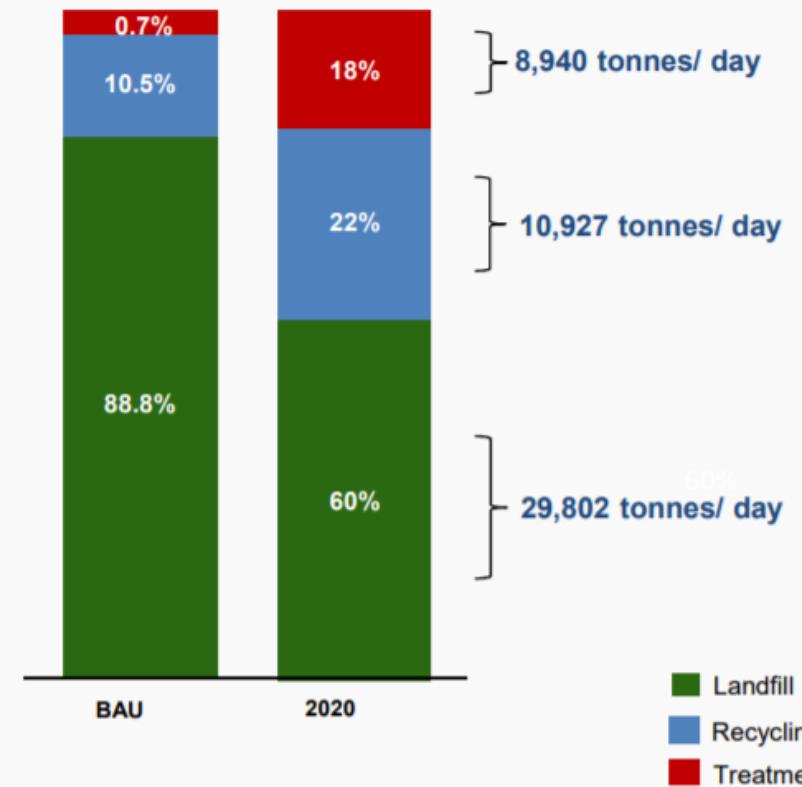
PENUJANAAN SISA

89% sisa pepejal
dihantar ke tapak
pelupusan sampah

49,670 tonne/day of waste is expected to be generated by Malaysians in the year 2020

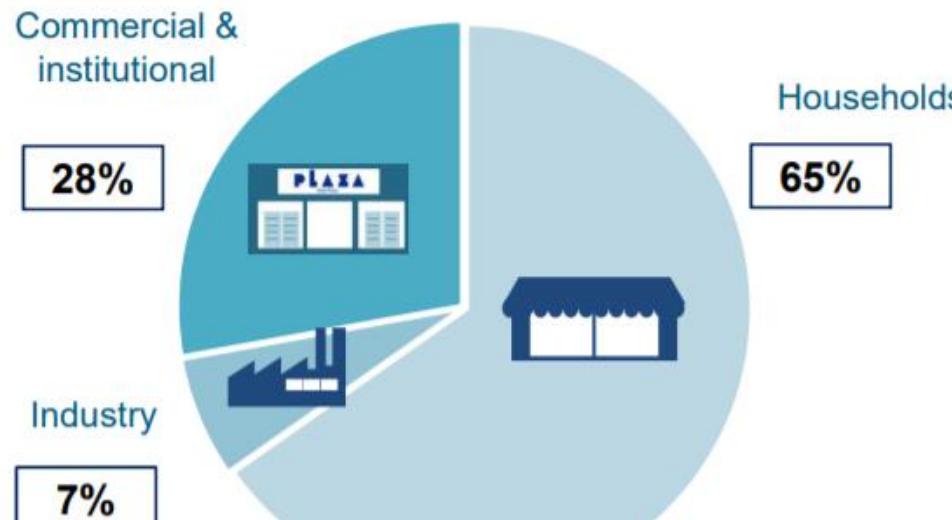


19,867 ton/day waste nationwide need to be treated and recycled in order to achieve the 40% waste diversion from landfill by year 2020



Source: JPSPN, 2012 (SWM 2012)

Solid waste generation in Malaysia (2012)



Total of 33 kT solid waste generated per day

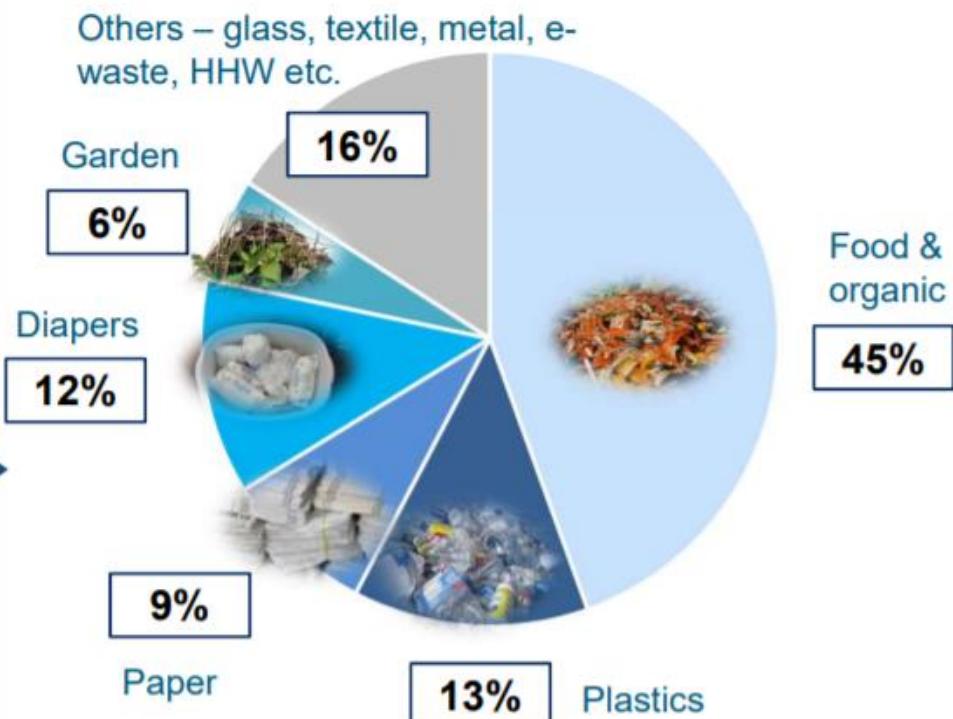
- 1.17 kg of solid waste generated per capita
- GKL/ KV generate 1.35 kg waste per capita
-



Source:

Survey on Solid Waste Composition, Characteristics & Existing Practice of Solid Waste Recycling in Malaysia (2012), JPSPN, pre-lab discussions

Household waste composition, as generated (2012)



- Organic waste is the largest chunk at 45%
- Paper & plastics form 22% of total waste

SISA PLASTIK



KEPERLUAN

- Sisa pepejal bandar menjadi isu utama **pengurusan bandar**. Isirumah menghasilkan **65%** sisa pepejal ke tapak perlupusan sampah
- **World Habitat Day, 1st Oct 2018:** Municipal Solid Waste Management (**Waste Wise City**) Bandar Pintar Sisa
- Impak dari segi kewangan, alam sekitar, **tapak perlupusan**, kualiti air & udara, kualiti hidup



SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



RESPONSIBLE CONSUMPTION AND PRODUCTION

SUSTAINABLE CITIES AND COMMUNITIES

CLIMATE ACTION

PARTNERSHIP FOR THE GOALS

GOOD HEALTH AND WELL BEING

CLEAN WATER AND SANITATION

AFFORDABLE AND CLEAN ENERGY

DECENT WORK AND ECONOMIC GROWTH

INDUSTRY, INNOVATION AND INFRASTRUCTURE

LIFE ON LAND



12 RESPONSIBLE CONSUMPTION AND PRODUCTION

MALAYSIAN INSTITUTE OF PLANNERS

Encourage companies and transnational companies to adopt **sustainable practices**

By 2030, achieve the environmentally-sound management of chemicals and all wastes throughout their **life cycle**

By 2030, achieve the **sustainable management** and efficient use of **natural resources**

By 2030, halve global **food waste** and reduce food losses along **production and supply chains**

By 2030, substantially reduce waste generation through **prevention, reduction, recycling and reuse**

ACTION PLAN

Effective use of resources, and minimization of waste & pollution

Use of renewable resources

Fuller product life-cycle

- 5R (Refuse, Reduce, Reuse, Recycle, Rot)
- Extent Landfill life span
- Polluter pay
- Reuse, Recycling, Rot (composting)
- Resource recovery incentive (road)
- Green token/ Incentive/
- Carbon trade
- Sustainable design
- Support Circular economy activities (bulk store)
- Responsible for your waste

CIRI-CIRI BANDAR RENDAH KARBON



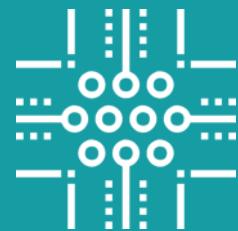
Source: NLCCM (draft) MESTECC, 2019; WORLD BANK, 2014; Word Wildlife Fund; ICLEI and C40 Cities; PLANMalaysia, 2010, LCCSC, 2020

KRITERIA PRESTASI LCCF



U E Urban Environment

UE 1 – Site selection
UE 2 – Urban form
UE 3 – Urban greenery & environmental quality



UI Urban Infrastructure

UI 1 – Infrastructure provision
UI 2 – Waste
UI 3 – Energy
UI 4 – Waste management



U T Urban Transportation

UT 1 – Reduction use of private transportation on urban road network
UT 2 – Increase in public transport
UT 3 – Mode shift from private to public transport and non-motorised transport
UT 4 – Use of low carbon transport
UT 5 – Improvement to level of service of road links and junctions
UT 6 – Utilization of transit oriented development approach



B Building

B 1 – Sustainable energy management system
B 2 – Low carbon building

WHAT IS CIRCULAR ECONOMY?

*Apakah Maksud
Ekonomi Kitaran?*

The safe and potentially infinite
use of materials in cycles

Kitaran sumber yang selamat
dan berulang tanpa had



2



1

Concept of eco-efficiency

Konsep kecekapan eko



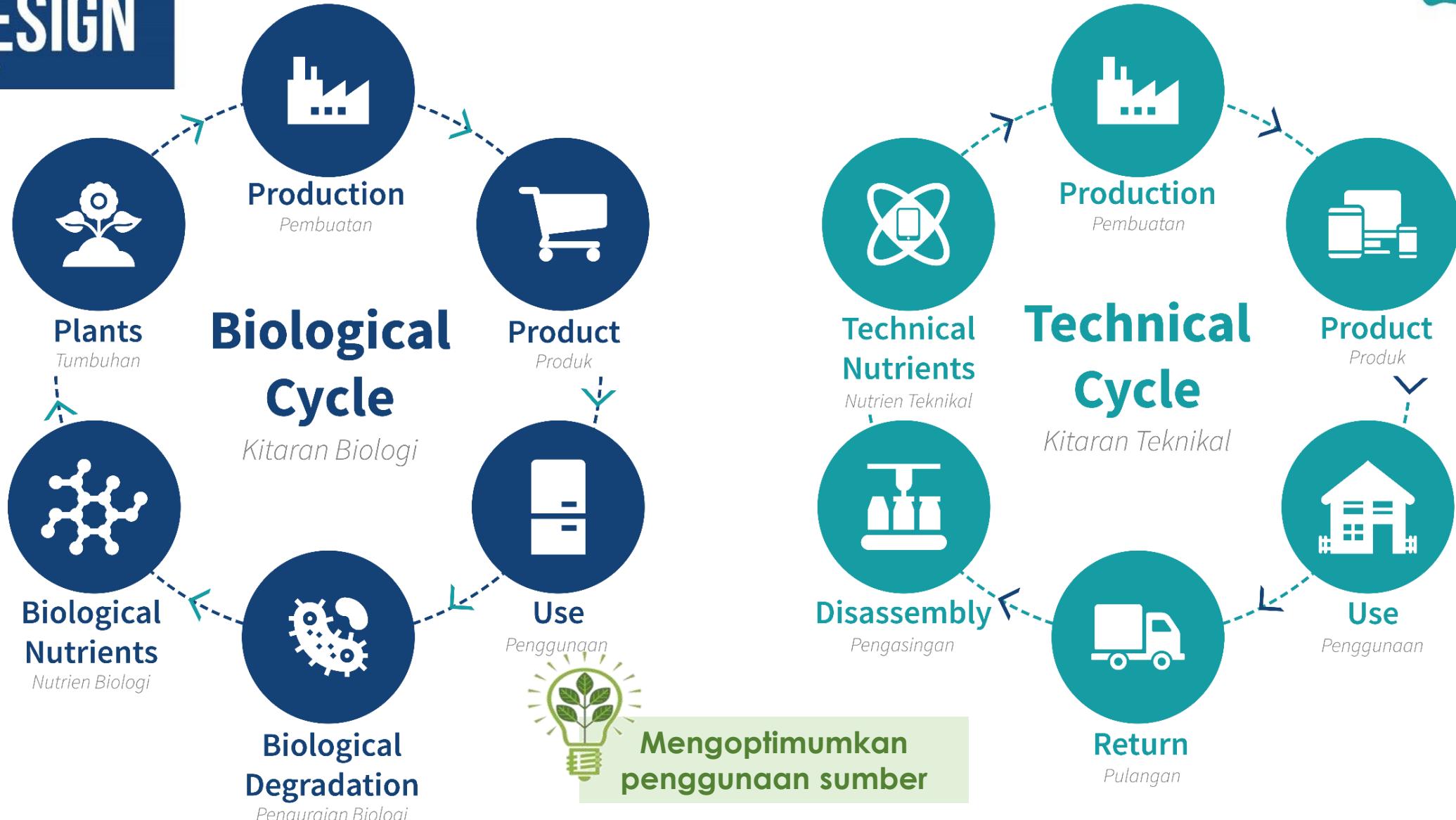
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Closing the loop of waste

Menutup kitaran sisa

REDESIGN

Reka Semula



CLOSING THE LOOP

Menutup Kitaran Sisa

Develop products with their end of life in mind, so they can be recycled or repurposed completely, with no residual waste

Pembangunan produk yang mempertimbangkan hayat hidup produk yang dapat dikitar semula, dibaik-pulih tanpa penjanaan sebarang sisa

1



Smart
Design

Reka Bentuk Pintar

2



Conscious
Use

Penggunaan Cermat

3

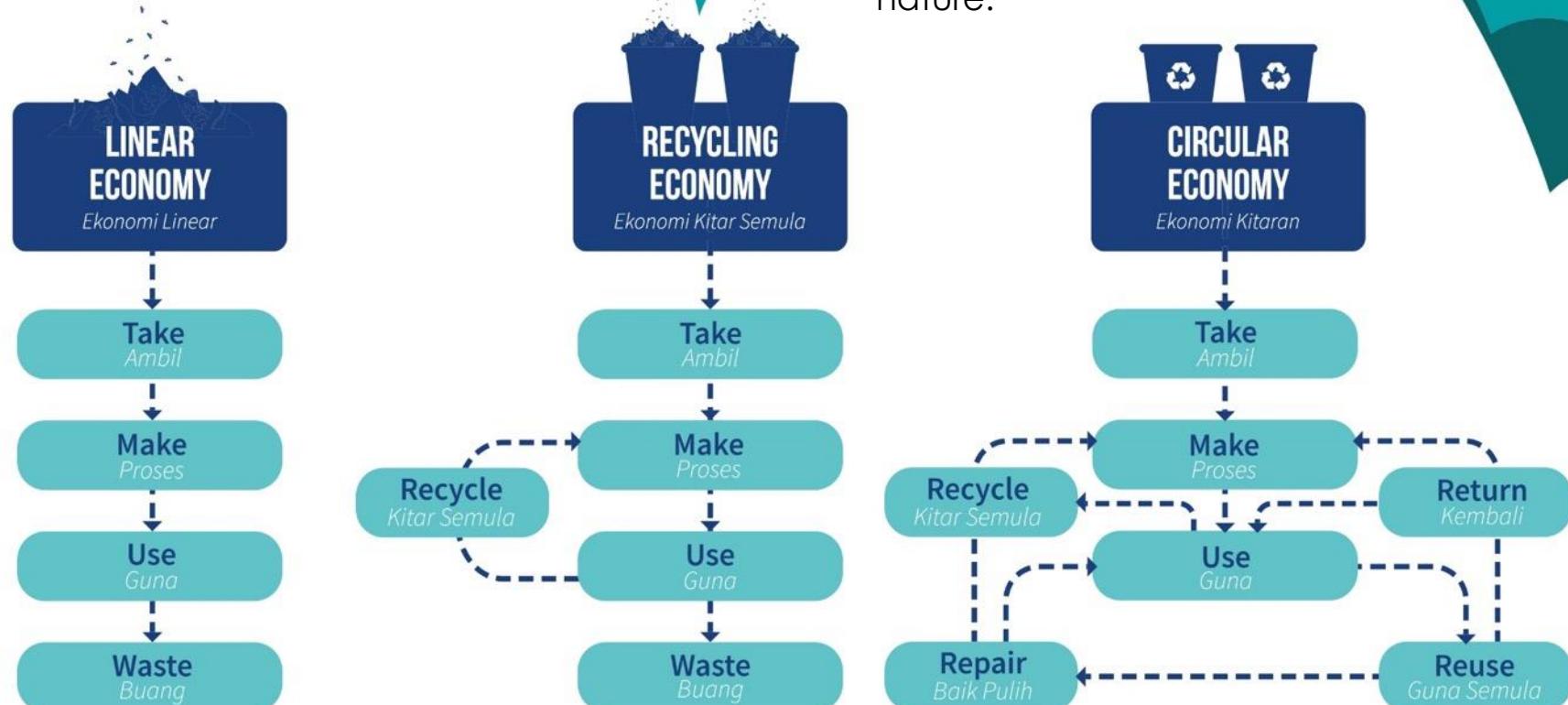


More &
Better Reuse

Tingkatkan
Penggunaan Semula

THREE TYPES OF ECONOMY

Tiga Jenis Ekonomi



Cradle to Cradle

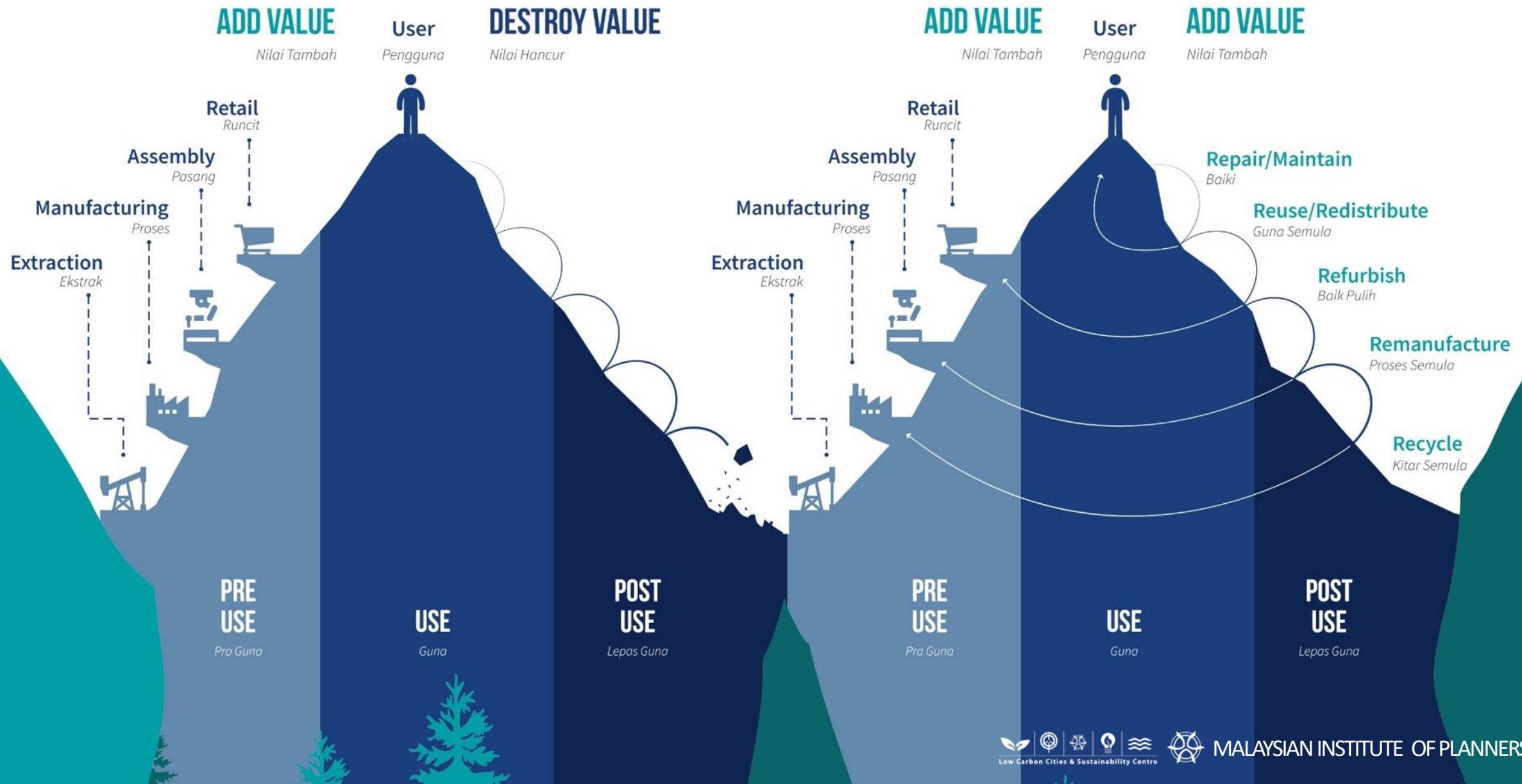
the safe and potentially infinite use of materials in cycles.

re-inventing products so that materials and processes have a positive influence on man and nature.

*"Circular economy is a system change; another way of **designing, producing, using** products and dealing with waste"*

THE VALUE HILL

Penjana Nilai



PERANCANGAN BANDAR KITARAN

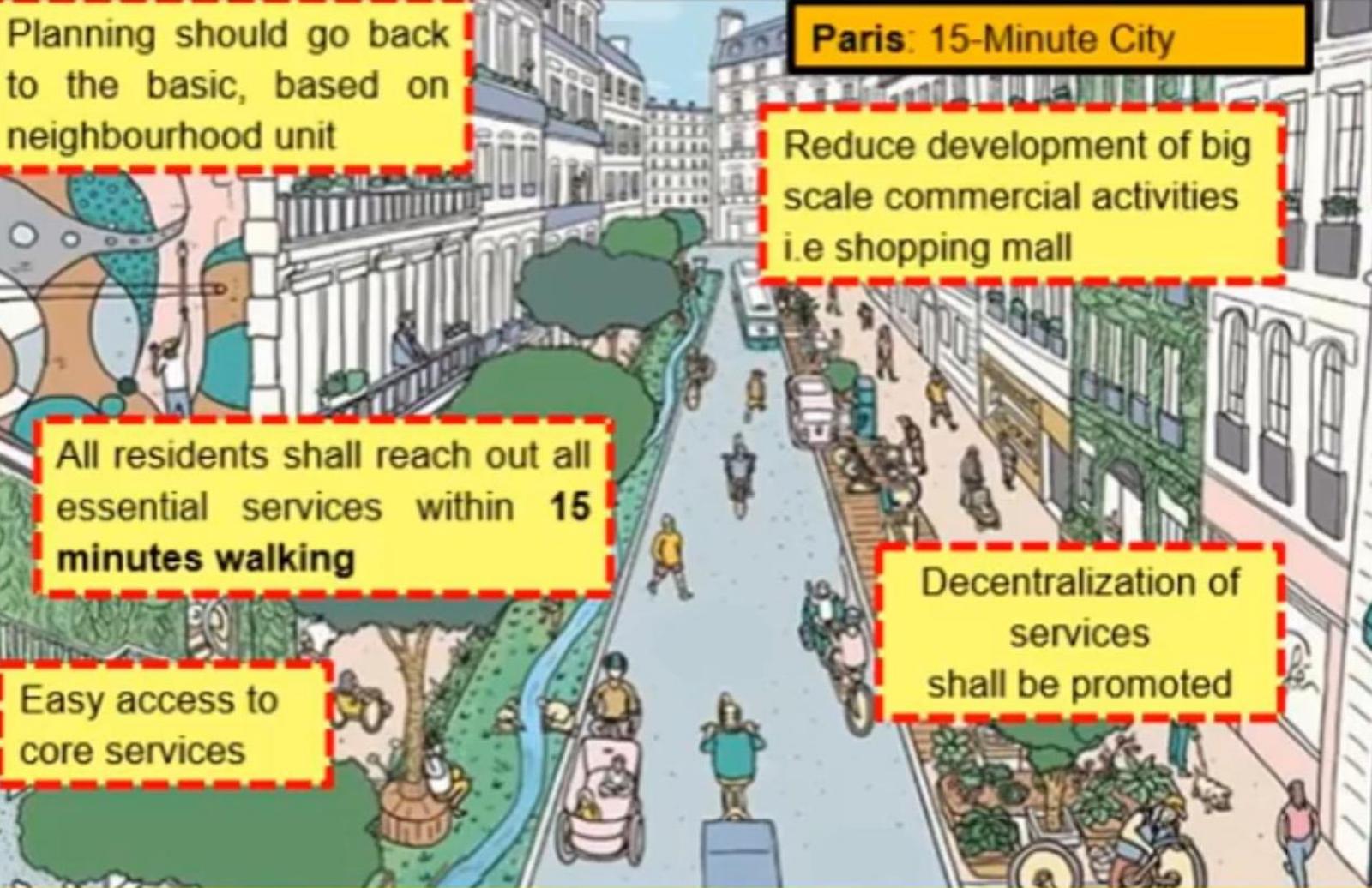


Taman Industri Hijau

- **Rekabentuk Mampan (Intergrasi sisa sifar)** product mesra alam, tenaga boleh dibaharui
- Kluster industry aliran atas dan bawah (upstream & downstream)
- **Tenaga Bersih (rawatan sisa berpusat)**
- **Simbiosis: Mengoptimumkan sumber, penukaran sumber & sisa, sisa ke tenaga (WtE)**

Perancangan Kejiranian

- Perancangan vibrant, bercampur
- Intergrasi Hub Komuniti (Surau, Dewan serbaguna, perpustakaan, klinik, tadika, pusat permulihan sumber
- Kedai sisa sifar dalam jarak perjalan kaki
- Pasar tempatan



It's the lack of access to essential services that has exacerbated the challenge of responding effectively to COVID-19 in many cities





Pusat Permulihan Sumber

- Resource recovery centre
- Bukan saja untuk kitar semula, pengomposan
- R&D, trading, bengkel, pusat Pendidikan, pameran
- Penukaran, sewaan, baik-pulih barang

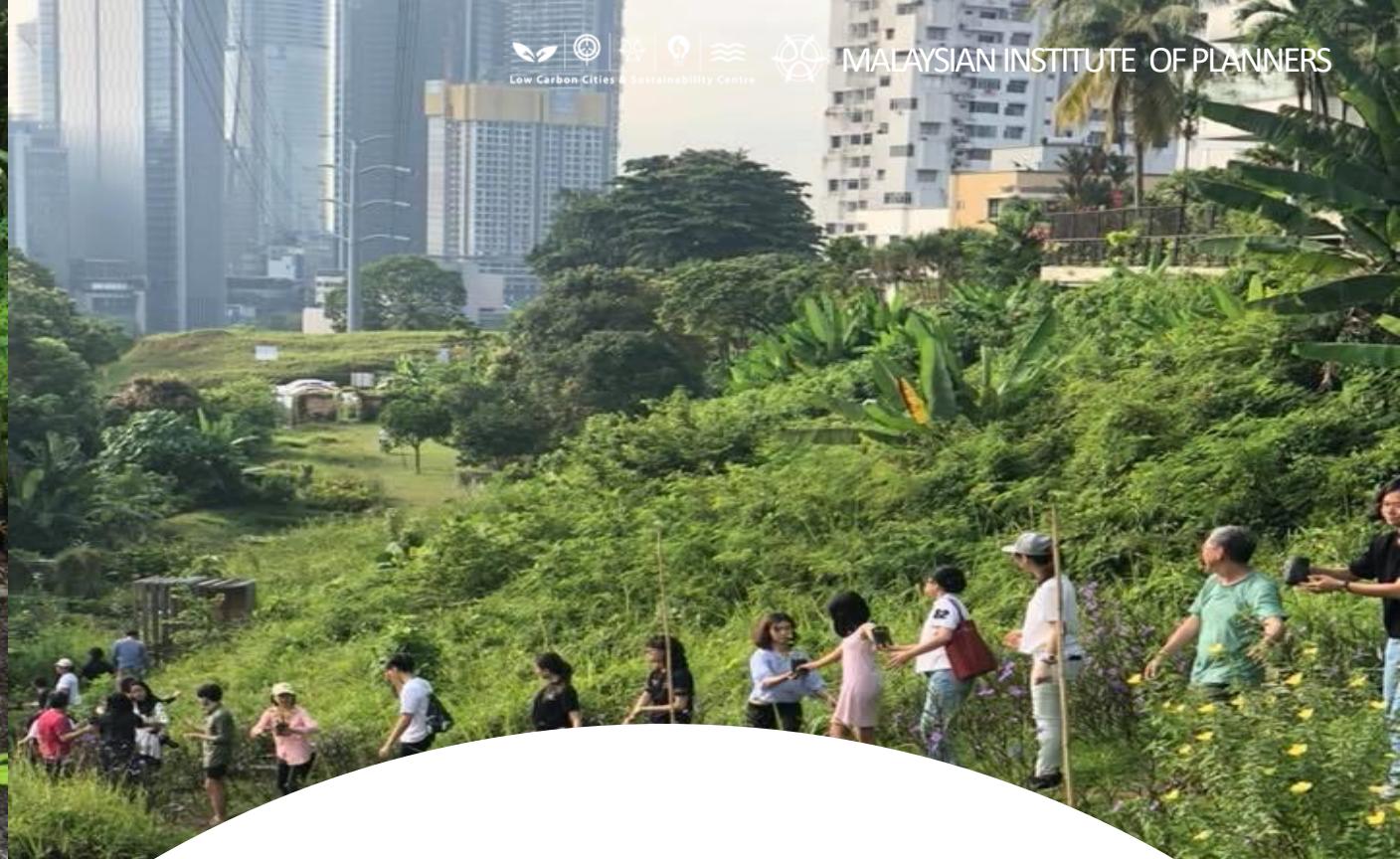
Sisa Organik Kembali ke sumber

- Strategi kurangkan pembaziran makanan
- MBPJ Food bank (64 Charity homes)
- Sisa kepada tenaga

Kemudahan Pengkomposan

- Kembalikan 50% sumber ke alam
- Penyediaan Pusat Pengkomposan (MBPJ, MBSA, dll)
- Inisiatif komuniti
- Cabaran bangunan bertingkat?





Kebun Bandar

- Taman Komuniti
- Pusat pengkomposan
- Pasar petani
- Mengenalpasti tanah bersesuaian
- Penglibatan penduduk setempat
- Bantuan dan pemantauan



Perundangan & Perlaksanaan

- **Potongan cukai & pemberian insentif** (3 peringkat) untuk perniagaan & pembangunan hijau
- **Pengasingan Sisa**
- Kawalan Perancangan(syarat pengurusan sisa)
- **Sekatan penggunaan plastic pakai buang & pembungkusan tidak mampar**
- Rekod dan laporan penjanaan sisa (sukarela / bersyarat)



Sistem Sokongan Rantai

- Semua sektor aliran atas hingga ke aliran bawah
- Platform menghubungkan semua punca kuasa (connecting the dot)

Sumber: MBPJ



- ~ Waste minimization
- ~ Waste reporting
- ~ Waste tracking
- ~ Waste disposal

- ~ Waste segregation
- ~ Waste treatment & recycling
- ~ Waste collection & transfer
- ~ GHG emission from waste

Innovative Solutions for Waste Management

- ~ Internet of Things (IoT)
- ~ Big Data

IoT-powered waste management solutions focus on improving the total efficiency of waste management such as waste collection and recycling through optimization.

- ✓ Solution of the new era
- ✓ Borderless / defined boundary
- ✓ Wide range and flexibility of application for all sectors
- ✓ Connecting all players at one single platform
- ✓ Generating big data for effective future planning

KE ARAH HADAPAN



- Perkongsian sumber (win-win)
- Key industrial player
- Pihak Berkuasa
- Memupuk kapasiti



MENETAPKAN SASARAN & 'BASELINE'

- Rangka Kerja
- Penetapan keutamaan
- Penentuan Kayu Ukur
- Sasaran (jangka pendek, sederhana, panjang)



PROJEK PERINTIS

- Action Plans
- Sektor Impak utama (makanan, pembinaan, elektronik dll)



TEKNOLOGI & PERKONGSIAN DATA

- Pangkalan digital sebagai penjana
- Connecting the dot

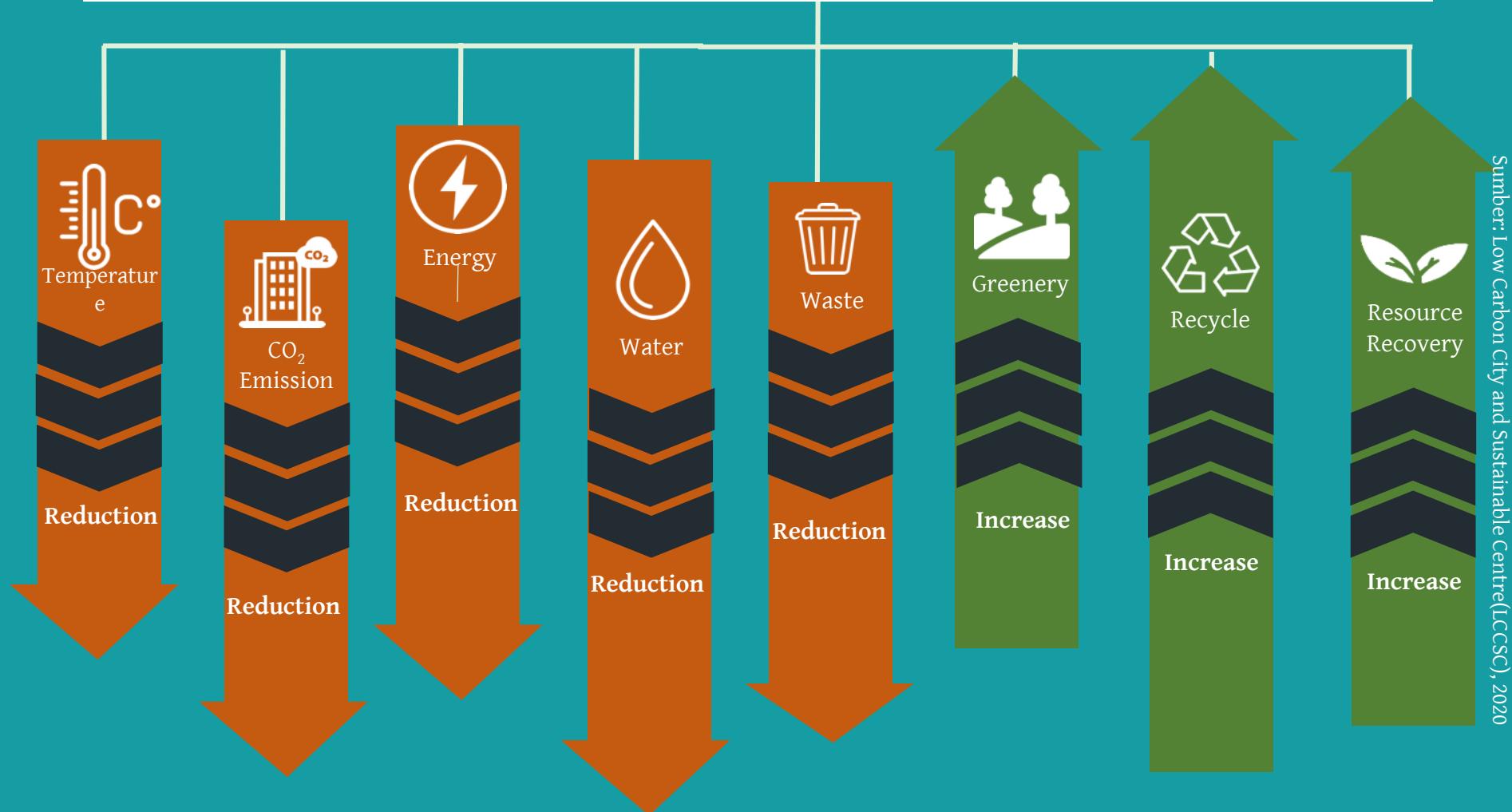


PEMANTAUAN & PENINJAUAN

- Mewujudkan ekosistem yang holistik
- Peninjauan pencapaian

Sumber: Low Carbon City and Sustainable Centre(LCCSC), 2020

PENETAPAN HALA TUJU & SASARAN



Sumber: Low Carbon City and Sustainable Centre(LCCSC), 2020

Mengukur Impak dari semasa ke semasa



Sekian
Terima Kasih

