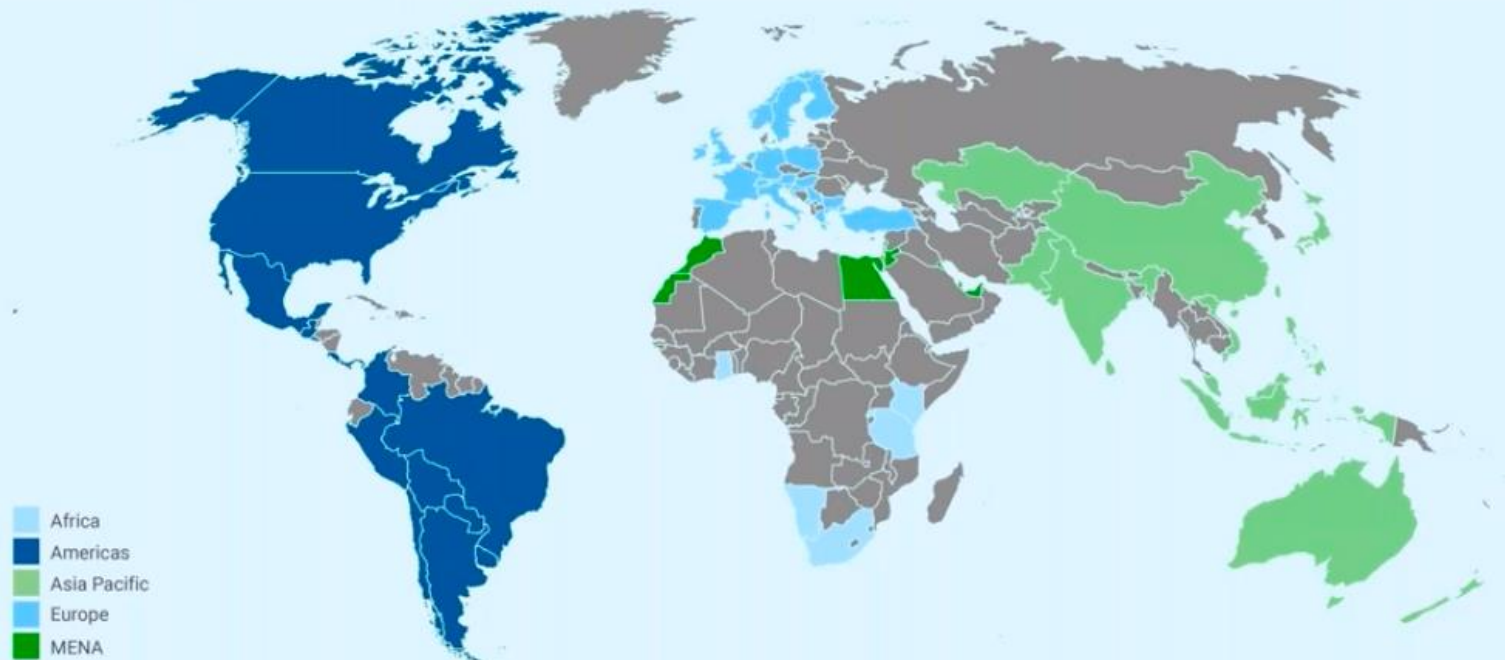


How Do We Achieve Low Carbon Cities

World Green Building Council

A global network of Green Building Councils, with the aim of creating green buildings for everyone, everywhere.



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A poster with a green background and a white diagonal stripe. It features the MalaysiaGBC logo in the top left. A dashed line with red location pins at both ends curves across the top. The text "WE HAVE MOVED" is prominently displayed in the center. Below it, a message states that the organization has moved to a sustainable co-working space and is fully operational as of 11th Sept 2020, available by appointment only. At the bottom left, the new address is listed: Common Ground Mid Valley (CGMV), BO 1-C, Level 19, Menara 2, No 3 Jalan Bangsar KL Eco City, 59200 Kuala Lumpur. At the bottom right, contact information is provided, including email addresses for various departments and a website for GreenPages Malaysia.

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WE HAVE MOVED

to a sustainable co-working space. We are fully operational as of 11th Sept 2020, available by appointment only.

Common Ground Mid Valley (CGMV)
BO 1-C, Level 19 , Menara 2,
No 3 Jalan Bangsar KL Eco City,
59200 Kuala Lumpur.

Should you need to contact us, please email us at:

- General Manager - gm@mgbc.org.my
- Seminar & Course - cpd@mgbc.org.my
- Media & Academic - media@mgbc.org.my
- Membership & Event Invitation - membership@mgbc.org
- Account & Finance - finance@mgbc.org.my
- GreenPages Malaysia - info@greenagesmalaysia.com

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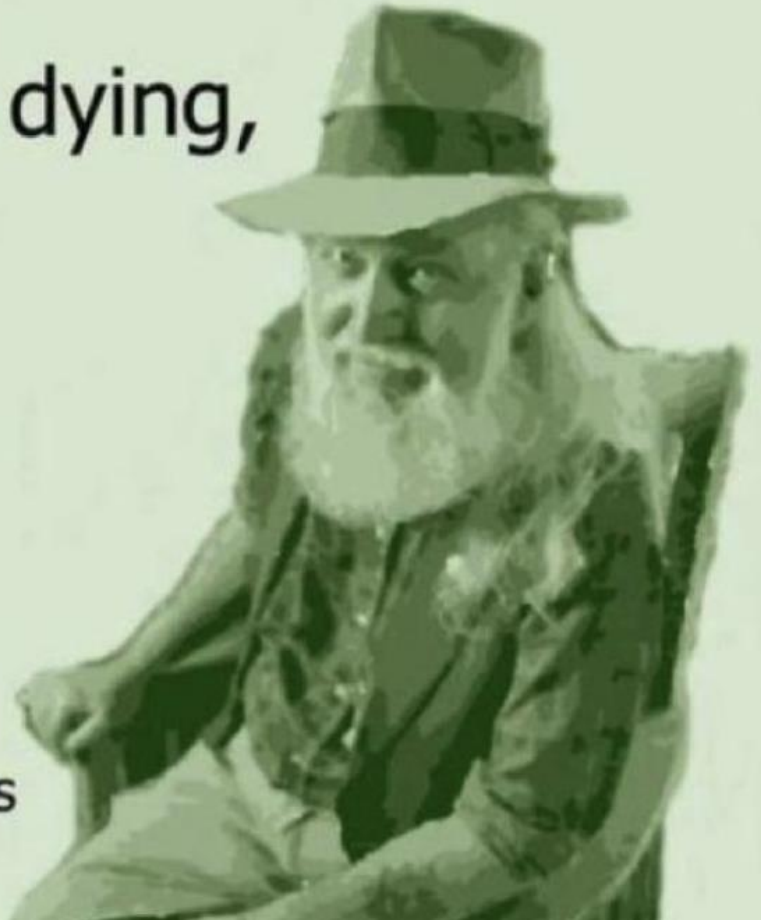
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**CO₂ is being released
into the atmosphere
faster than at any time in
at least the last
66 million years.**

"The Earth is not dying,
it is being killed.
And the people
who are killing it
have names
and addresses."

- Utah Phillips





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Sectorial Approach

1. **E**nergy
2. **W**aste
3. **W**ater
4. **T**ransport
5. **B**uildings – passive design and net zero carbon
6. **F**ood Production

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Strategy of approach

1. **D**ecentralise services
2. **F**actor in at design stage a. New buildings or
b. asset reinvestment - existing buildings
3. **O**ptimise design for performance – biomimicry
4. **A**vail green finance as funding
5. **I**mplement and monitor performance
6. **C**onstantly compare to baseline and announce
difference

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Overarching Requirement

1. EDUCATION

Overarching Principles

1. **E**ducation
2. **C**ircular economy
3. **S**DGs
4. **S**mart Cities



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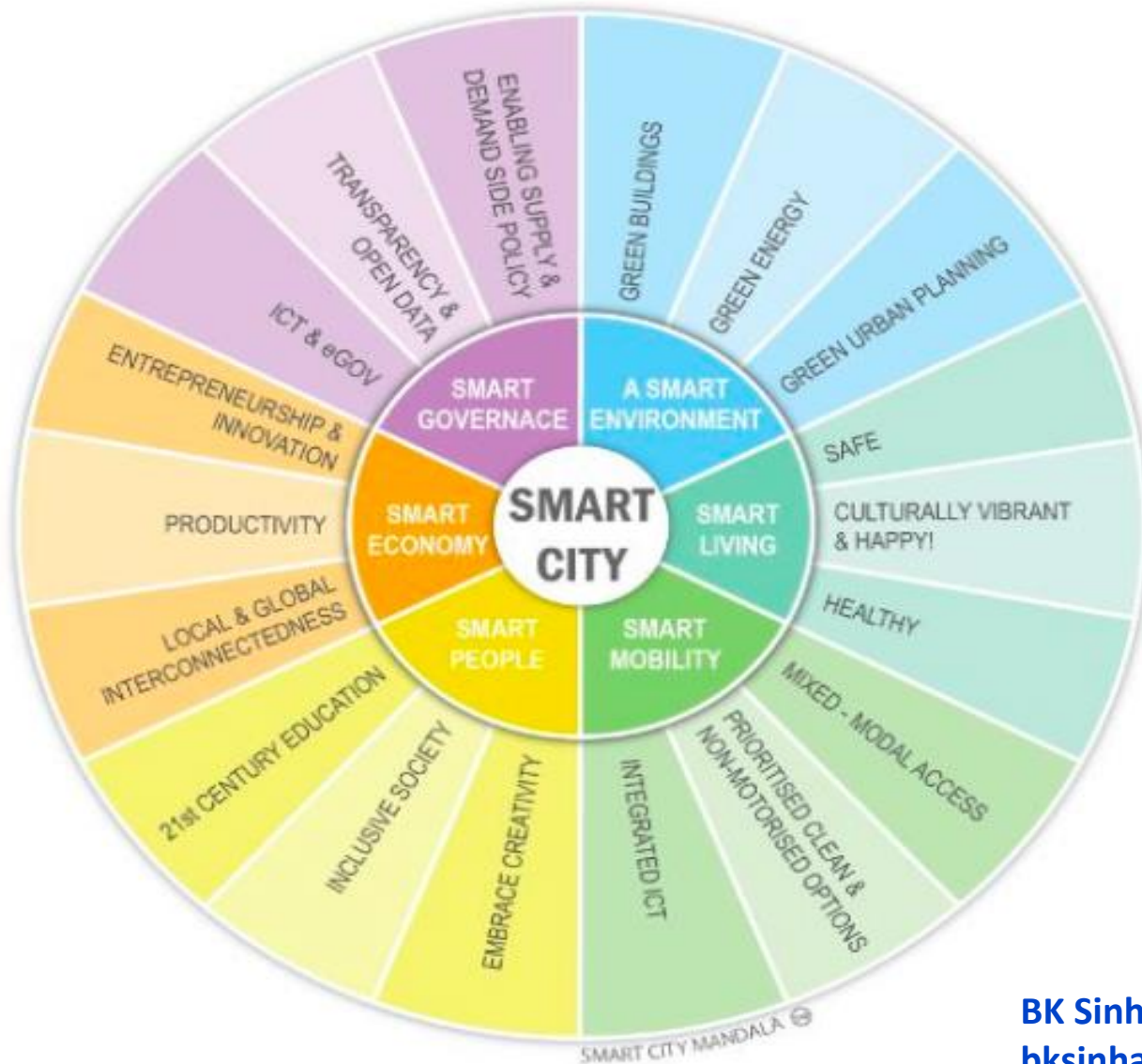
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SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD

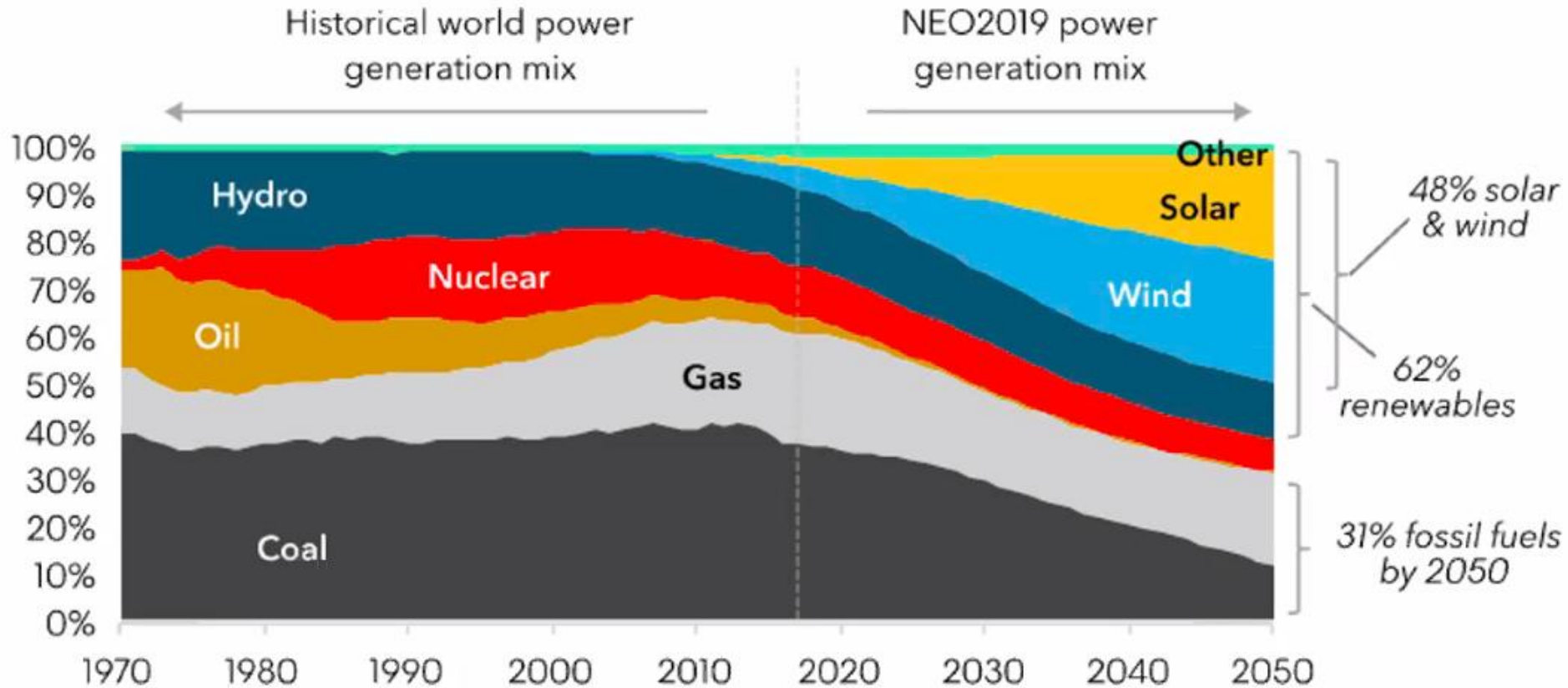




A. Energy

1. **E**ducation
2. **P**assive design
3. **O**ptimised design
4. **R**enewable Energy

THE FUTURE TREND OF ENERGY?



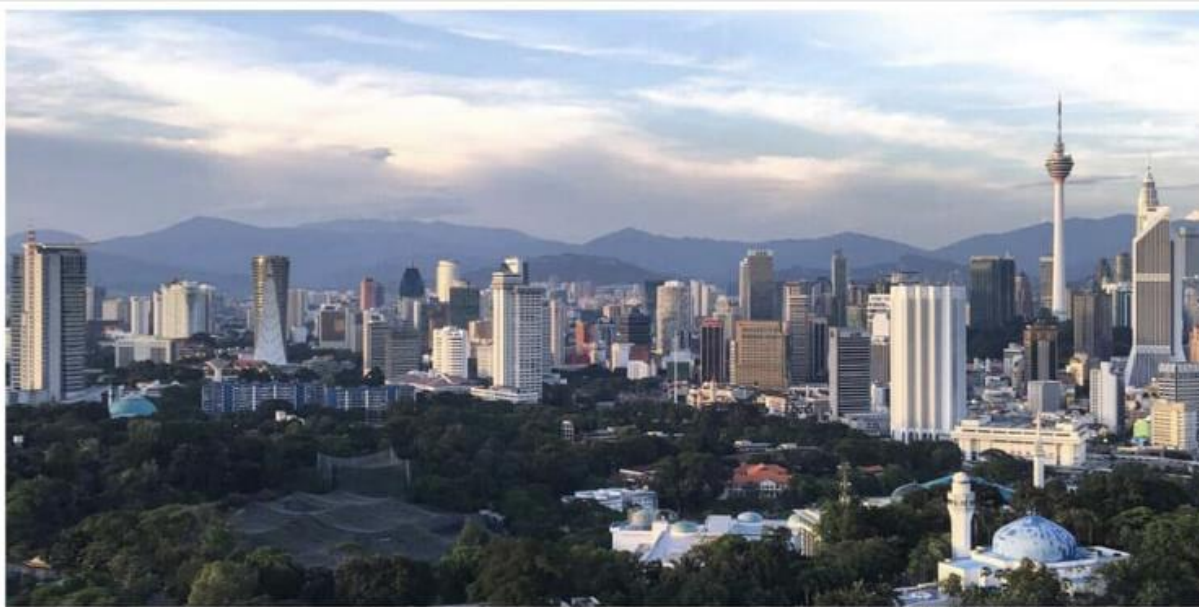
Source: BloombergNEF

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B. Waste

1. **E**ducation
2. **S**eparation at Source
3. **W**aste to Energy
4. **1**00% Recycle Rate

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only 1 plastic bottle said 8 billion people!!

WHICH?

Aluminium cans



- ✓ Infinitely recyclable
- Recycling:**
 - ✓ Less energy/ Easily recycled
 - ✓ Most common recycled Product
- Producing as new**
 - ✗ More energy to produce (need to mine bauxite)
- Transportation**
 - ✓ Smaller carbon footprint (cans are lighter)

Glass bottles



- ✓ Infinitely recyclable
- Recycling:**
 - ✗ More energy needed to recycle
- Producing as new**
 - ✓ Less energy to produce (sand and gravel)
- Transportation**
 - ✗ Bigger carbon footprint (glass is heavier)

RESULT

Cans better if recycled/ glass better if virgin

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A Local, Decentralized Approach to Various Organic Waste Streams Management and Clean Energy Production



40 years on, Penang villagers say river pollution remains unresolved



The river, which has turned black and smelly, was the result of indiscriminate dumping of pig faeces by operators of nearby pig farms.
Bernama



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Principal Project Components

2. Pre-Treatment and Digestion of Raw Waste



- **Pre-Treatment** of pig waste slurry occurs in 2 buffer tanks at 35°C, running in parallel.
- Waste from farms collected in individual collection (for conveyance through gravity pipes) and pump pits (for conveyance through forced-main pipes);
- Waste from buffer tanks pumped into 2 parallel ADs. Design criteria of each AD:
 - Diameter: 20 m
 - Height: 22.6 m
 - Top Water Level: 20 m
 - Hydraulic Retention Time (HRT): 17 days
 - Operational Temperature: 30 - 35°C
 - Construction material: Welded steel with agitator
- Properties of waste pumped into each AD:
 - Total Solids: 6.5%
 - BOD: 157,000 ppm

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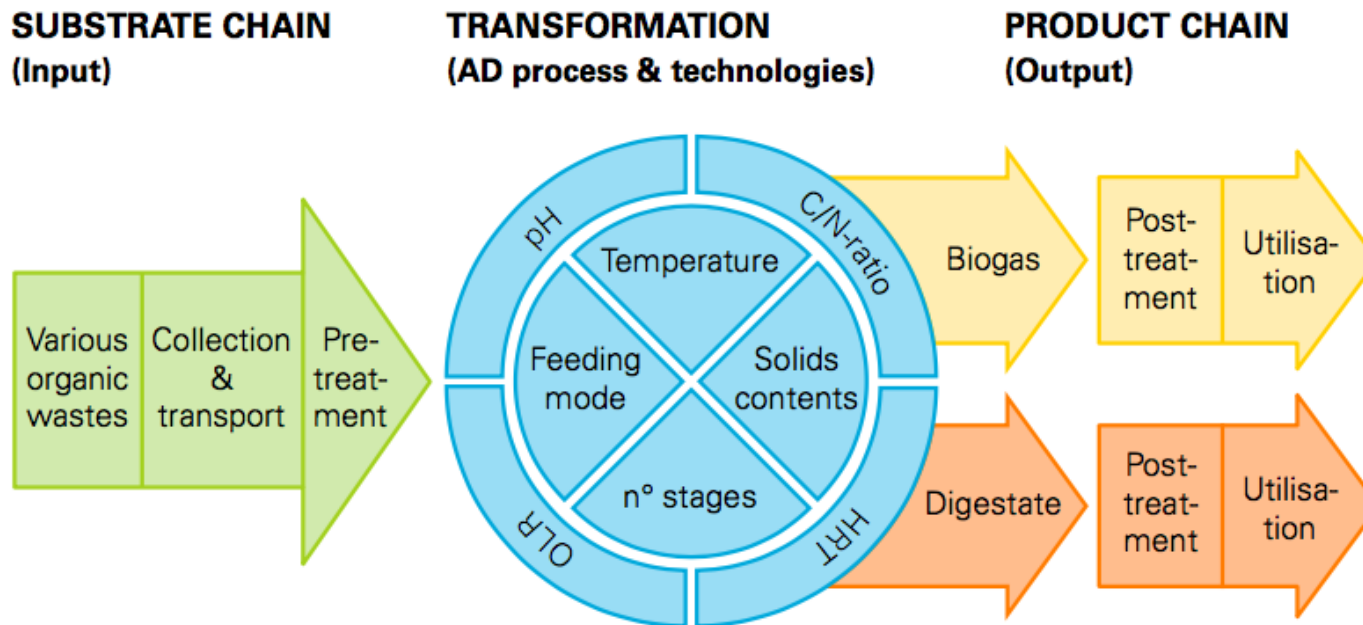
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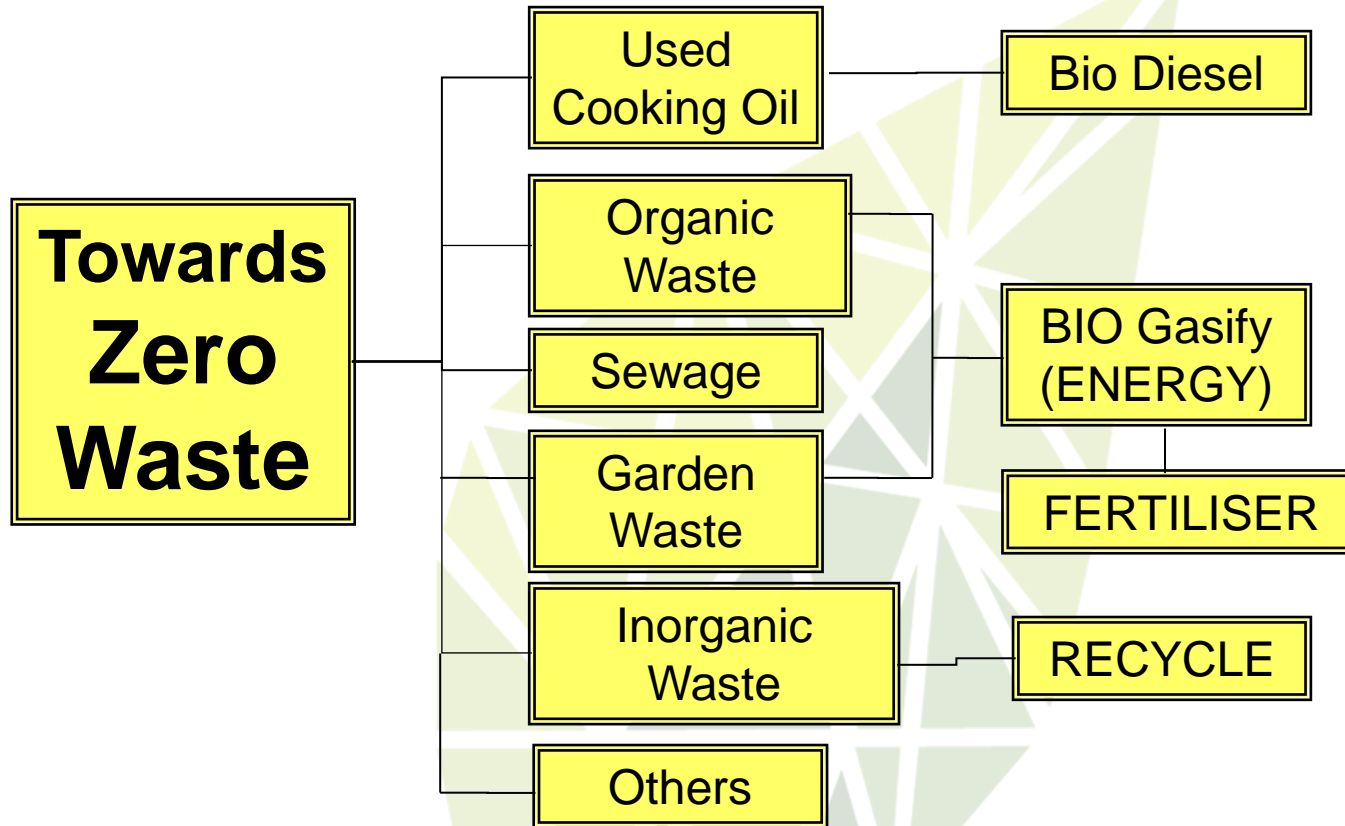
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Calorific Value Comparison

Fuel Source	Approximate Calorific Value	Equivalent to 1 m ³ Biogas (approx. 6 kWh/m ³)
Biogas	6–6.5 kWh/m ³	
Diesel, Kerosene	12 kWh/kg	0.50 kg
Wood	4.5 kWh/kg	1.30 kg
Cow dung	5 kWh/kg dry matter	1.20 kg
Plant residues	4.5 kWh/kg dry matter	1.30 kg
Hard coal	8.5 kWh/kg	0.70 kg
Propane	25 kWh/m ³	0.24 m ³
Natural gas	10.6 kWh/m ³	0.60 m ³
Liquefied petroleum gas	26.1 kWh/m ³	0.20 m ³

Biogas Production Process





The Value in Biosolids

Organic Matter

- Food for soil microbes
- Builds soil tilth
- Erosion resistance
- Water-holding capacity
- Ability to retain nutrients

Nutrients

Macro-Nutrients

- Nitrogen (~1.5%)
- Phosphorus (~2%)
- Calcium

Micro-Nutrients

- Zinc
- Copper
- Molybdenum

Drought resistance

- More root & shoot growth
- Improved yields

Energy

For Energy Recovery

- Energy in the chemical bonds of organic matter
- 9,300,000 Btu/metric ton of biosolids available through anaerobic digestion

Beneficial microbes

- Improved nutrient uptake
- Disease resistance

Slide adapted from Northern Tilth

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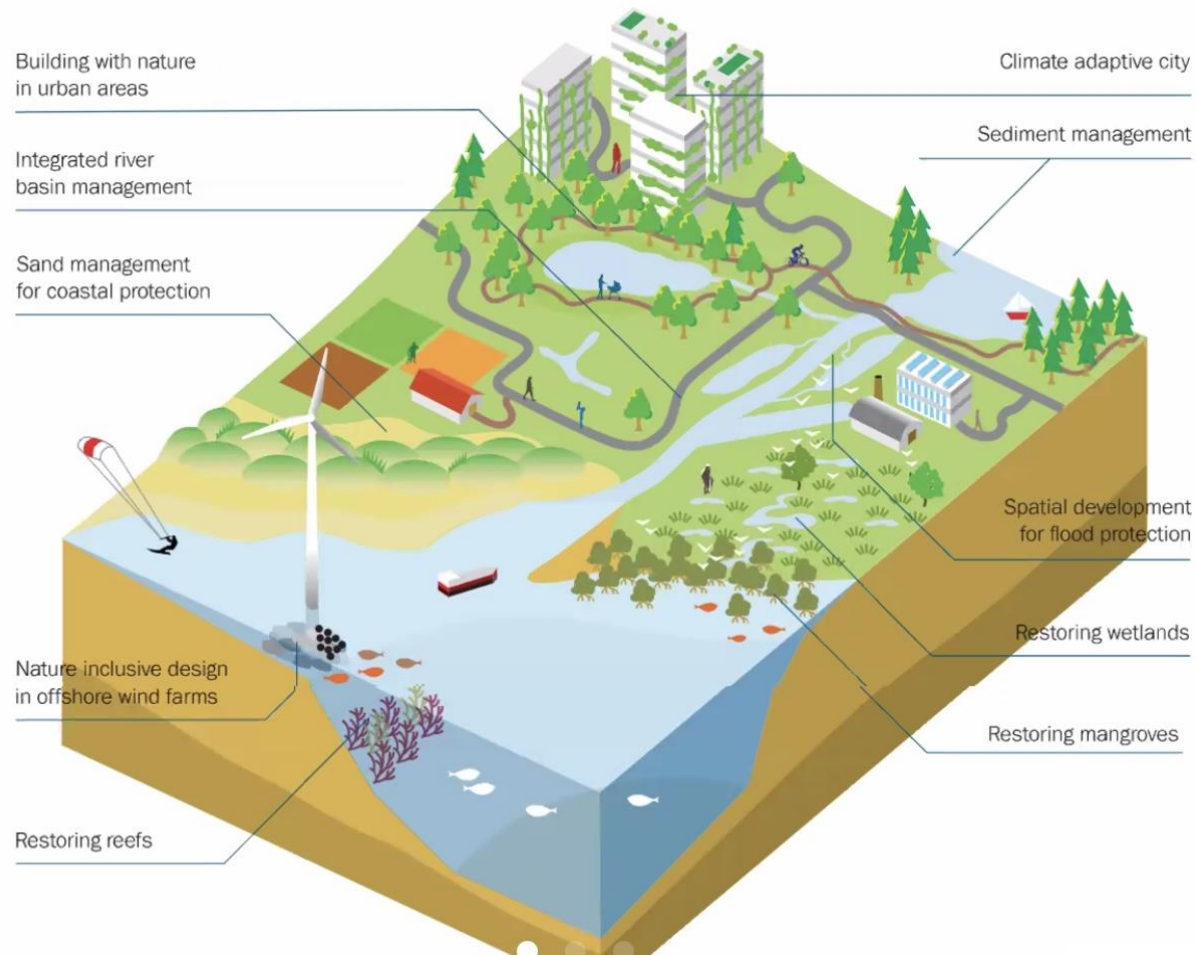
C. Water

1. **E**ducation
2. **C**onserve
3. **D**ifferentiated Use
4. **R**euse
5. **R**echarge

POSSIBLE WATER RESOURCES ?

- **SURFACE WATER – RIVER/LAKE/SEA**
- **GROUND WATER**
- **RAINWATER HARVESTING**
- **WASTE/GREY/SEWERAGE WATER**
- **ATMOSPHERIC WATER /DEW WATER**

Finally, it is essential to adopt a holistic approach to climate impacts



Nature-based solutions are very effective in increasing urban resilience



Industrial areas



Backlanes



Pocket parks



Green facades



Connected canopies



New tree-lined streets



Infiltration wells



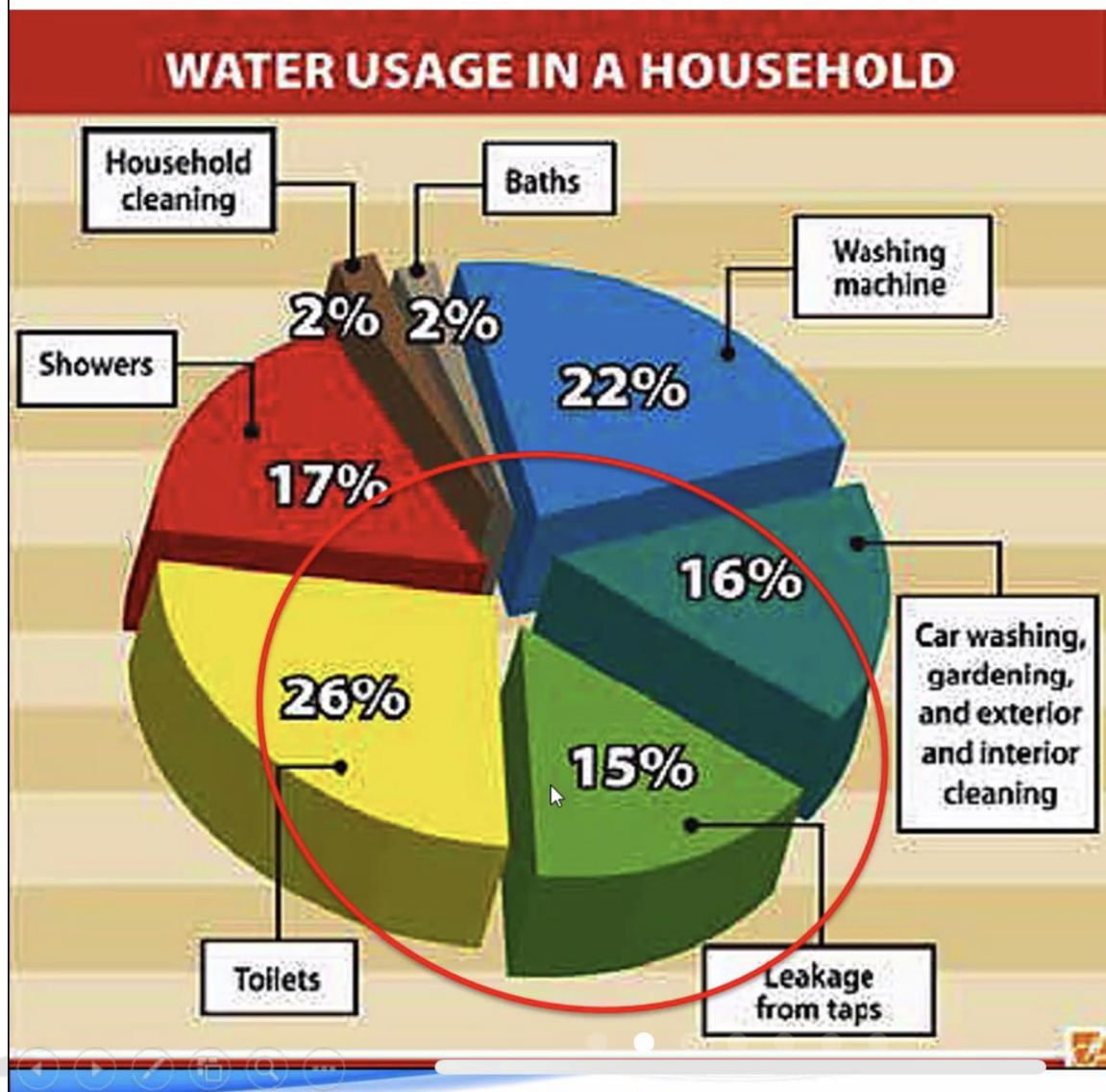
Blue corridors



Swales



Retention areas upstream



**DO WE
NEED TO
USE
TREATED
WATER
FOR THIS
ACTIVITIES
DAILY????**

Source: M.W.A.

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Once you carry
your own water,
you will learn
the value of every
drop.

Program In The PHILIPPINES

RENEWABLE ENERGY LENDING PROGRAM

Powering the development of country's energy
sector

GBC

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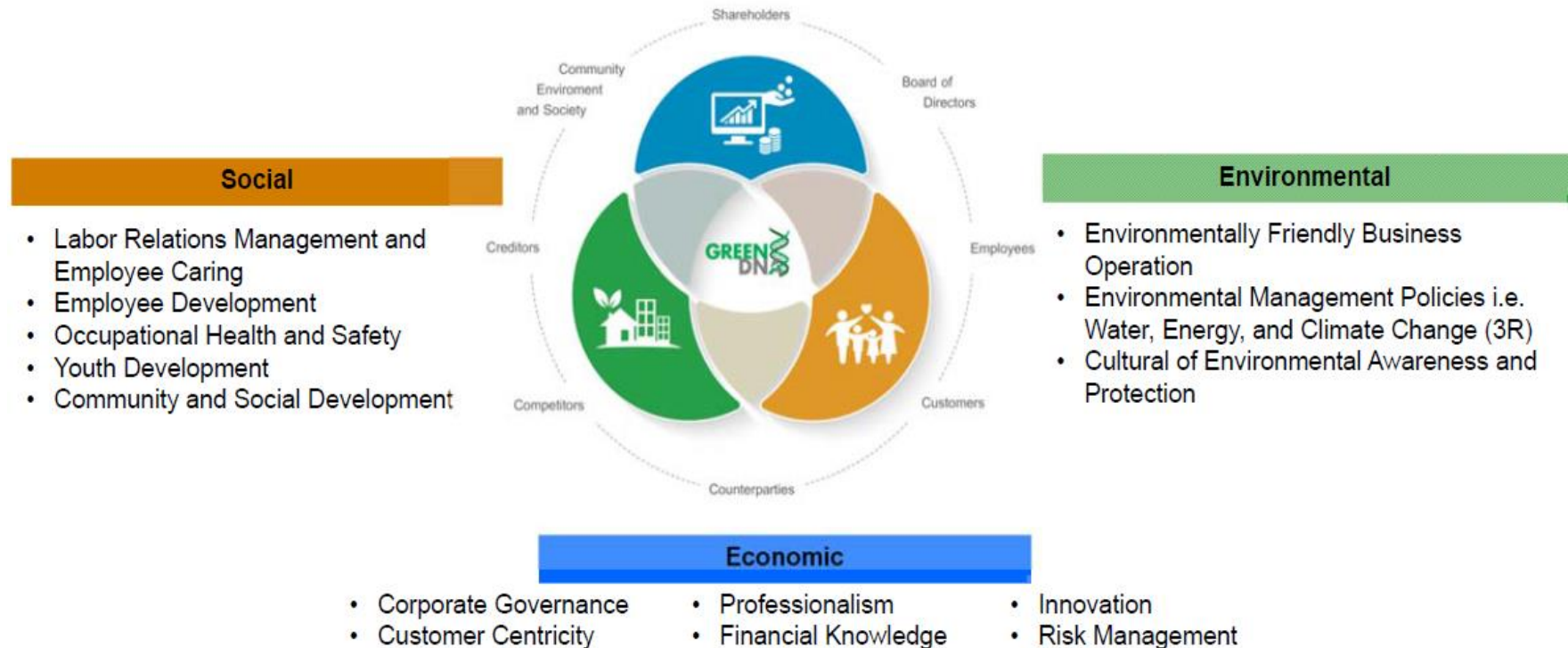
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Sustainable Development

KASIKORNBANK embraces sustainable development in the economy, society and environment as the foundation of our operations. This guiding concept enhances our business innovation and ensures the maximum benefit to all stakeholders, thus paving the way towards being a “Bank of Sustainability” for our society and nation.

Bank of Sustainability



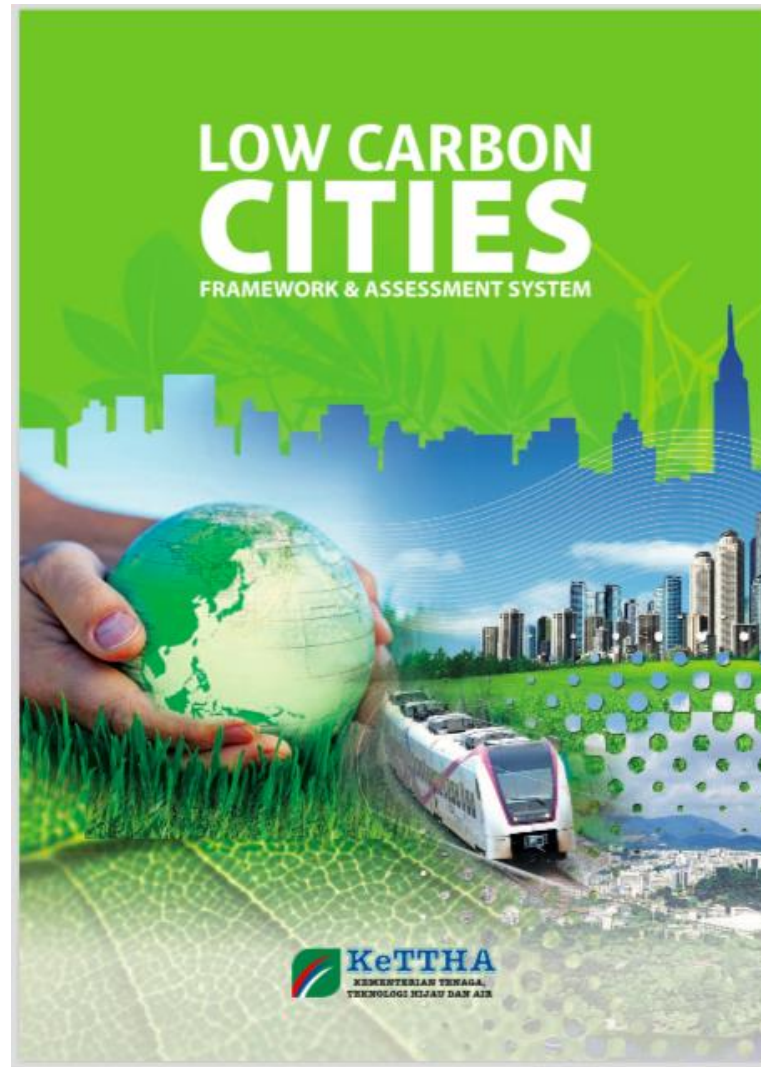
Note: More information on our Sustainable Development can be found on our website and KBank's Sustainability Development Report 2015

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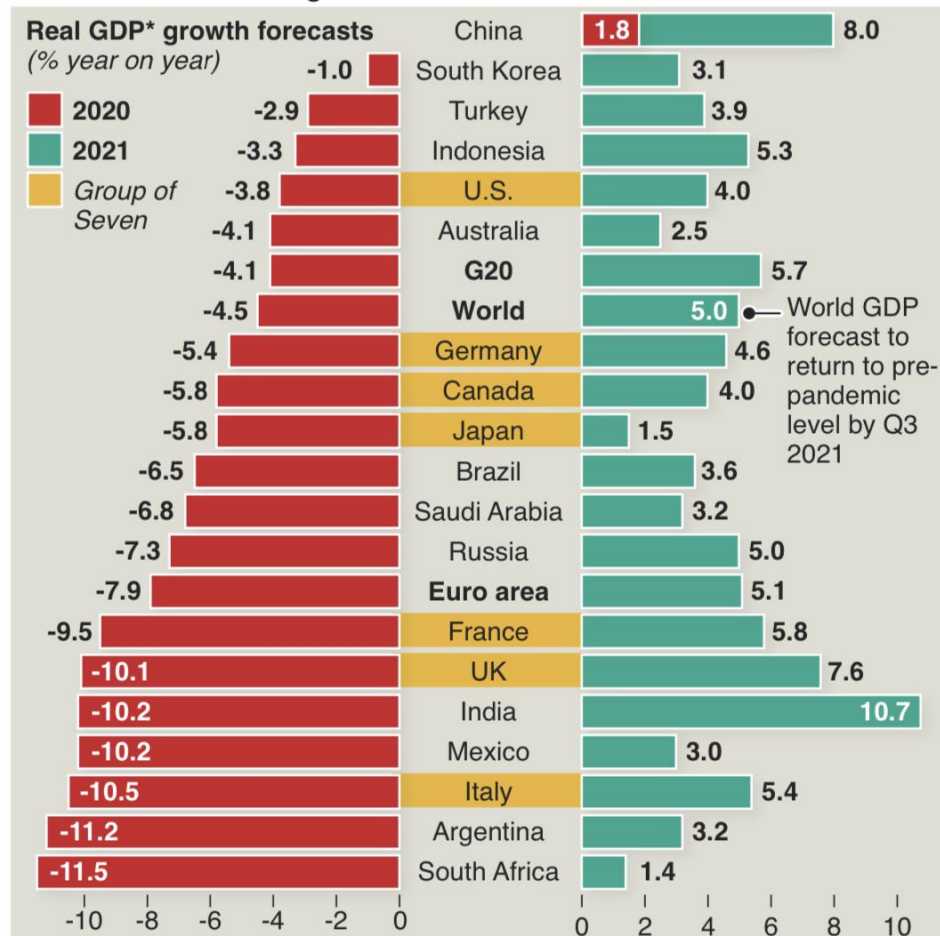
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Economies forecast to recover in 2021

All G20 countries except China are facing recession this year – reflecting the global health crisis – but economic activity should pick up in 2021, according to the latest OECD Interim Outlook



Source: OECD Interim Report September 2020

© GRAPHIC NEWS

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THANK YOU

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