



REDEFINING WASTE MANAGEMENT

CRADLE TO CRADLE DESIGN 2.0 FOR A CLEANER ASEAN COMMUNITY



Industry, Innovation
& Infrastructure



Sustainable Cities
& Communities



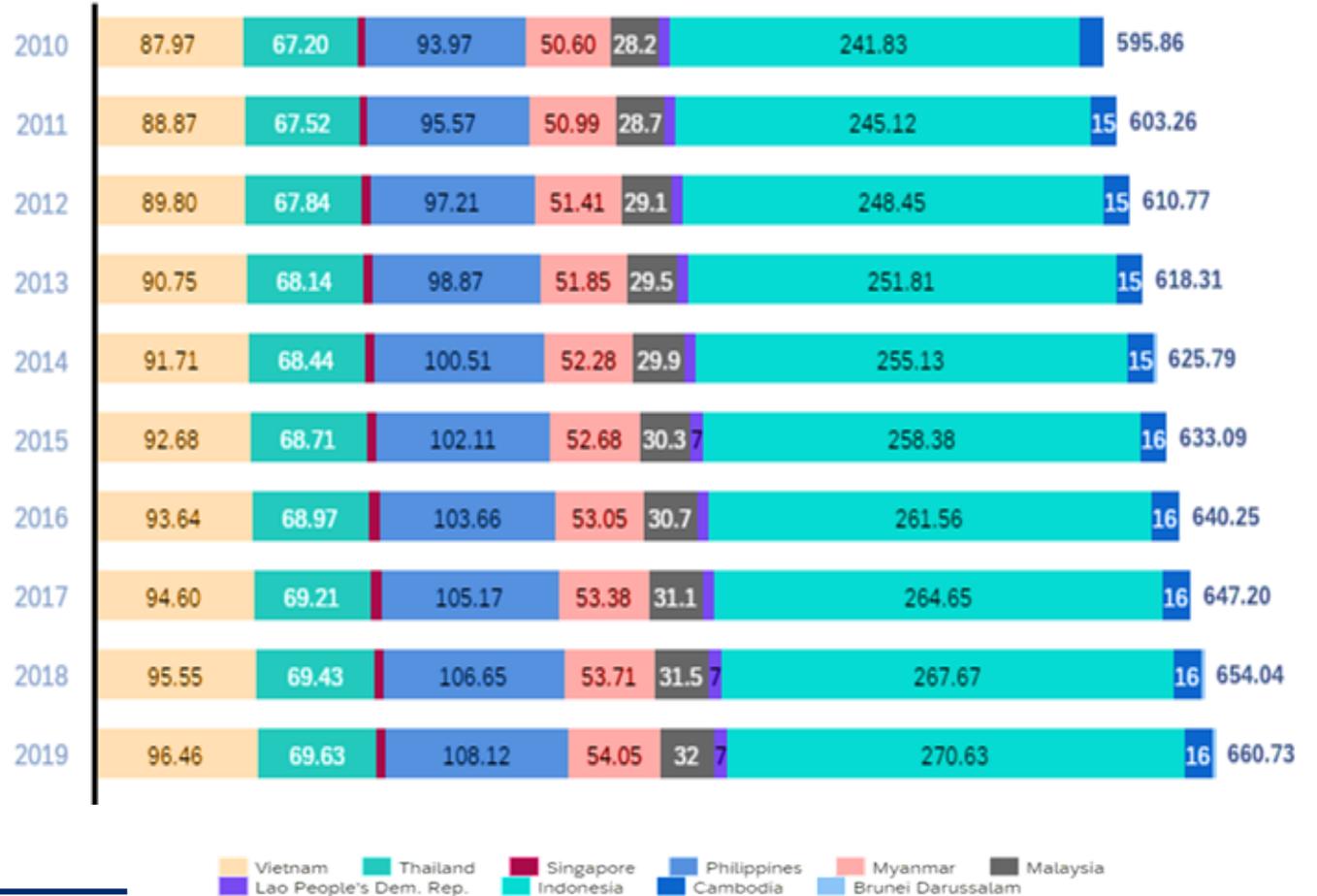
Responsible Consumption
& Production



TEAM INCOGNITO

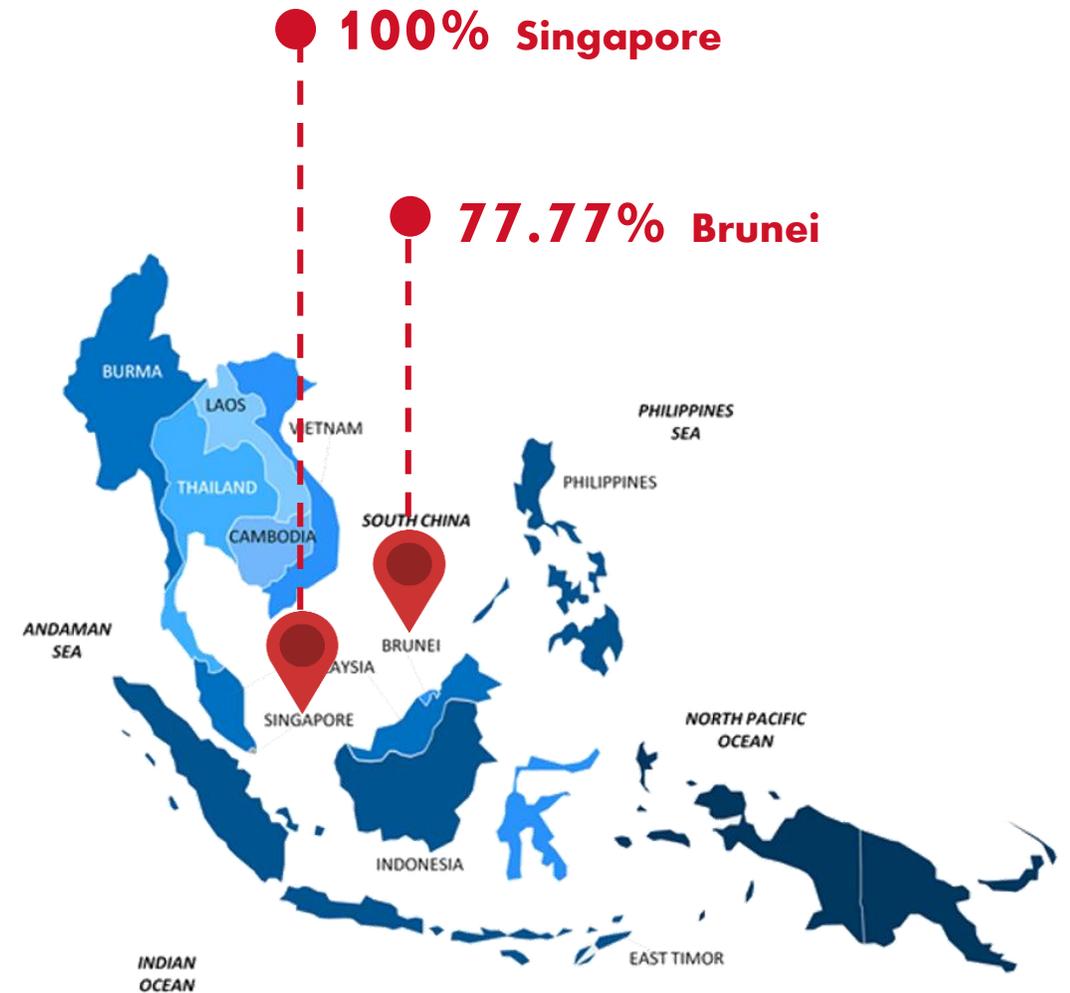
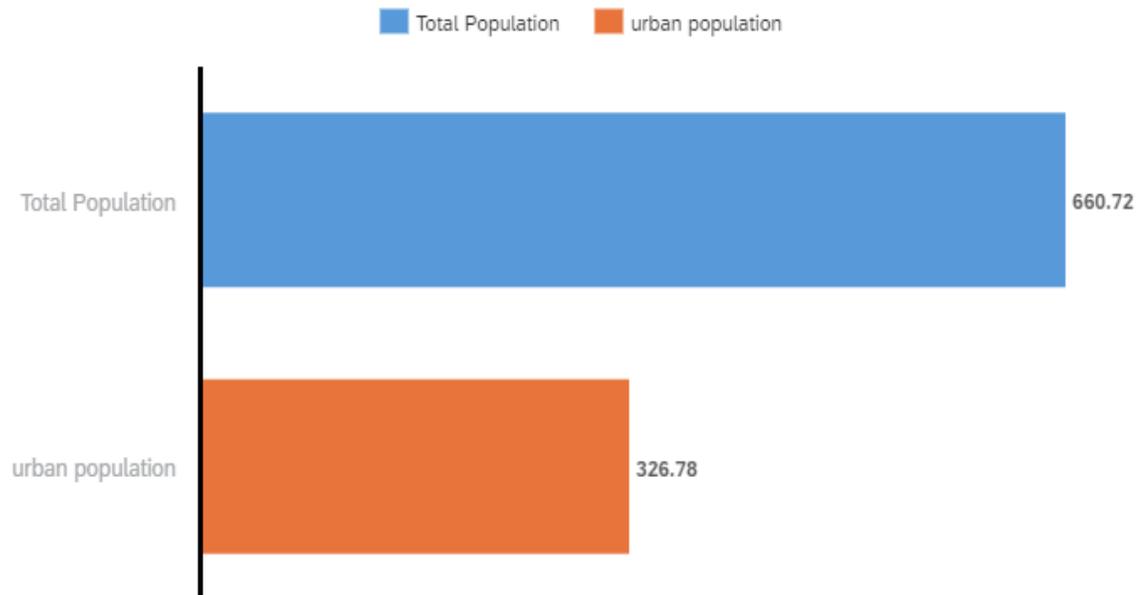
JAIRUS CARLO LIBUNAO & ALLEAH EUNICE TULIAO
NUEVA ECIJA UNIVERSITY OF SCIENCE AND TECHNOLOGY

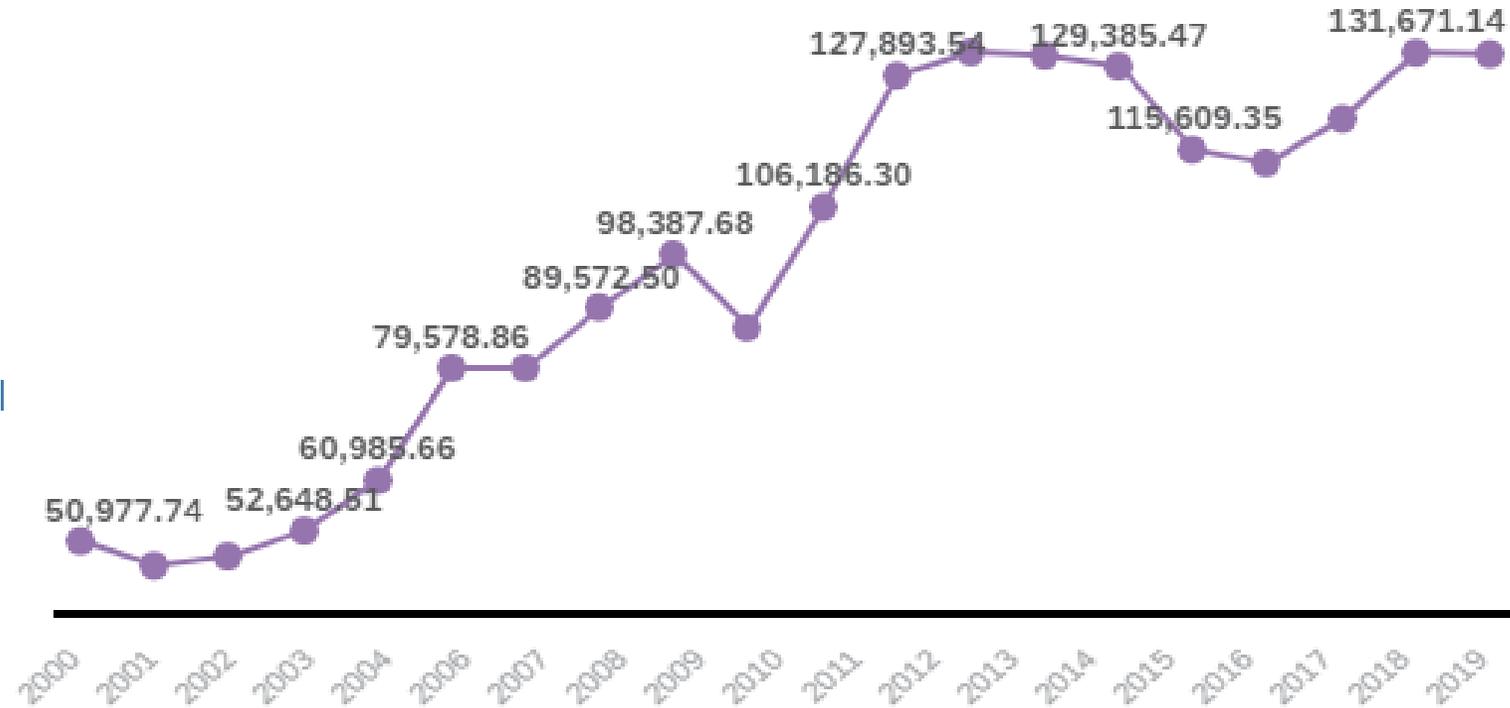
POPULATION IN SOUTH EAST ASIA



URBANIZED POPULATION VS. TOTAL POLULATION

The population of Southeast Asian countries increases yearly. A huge chunk of it belongs to **urban population** where there is increase in consumption pattern causing an **upsurge in waste generation**.





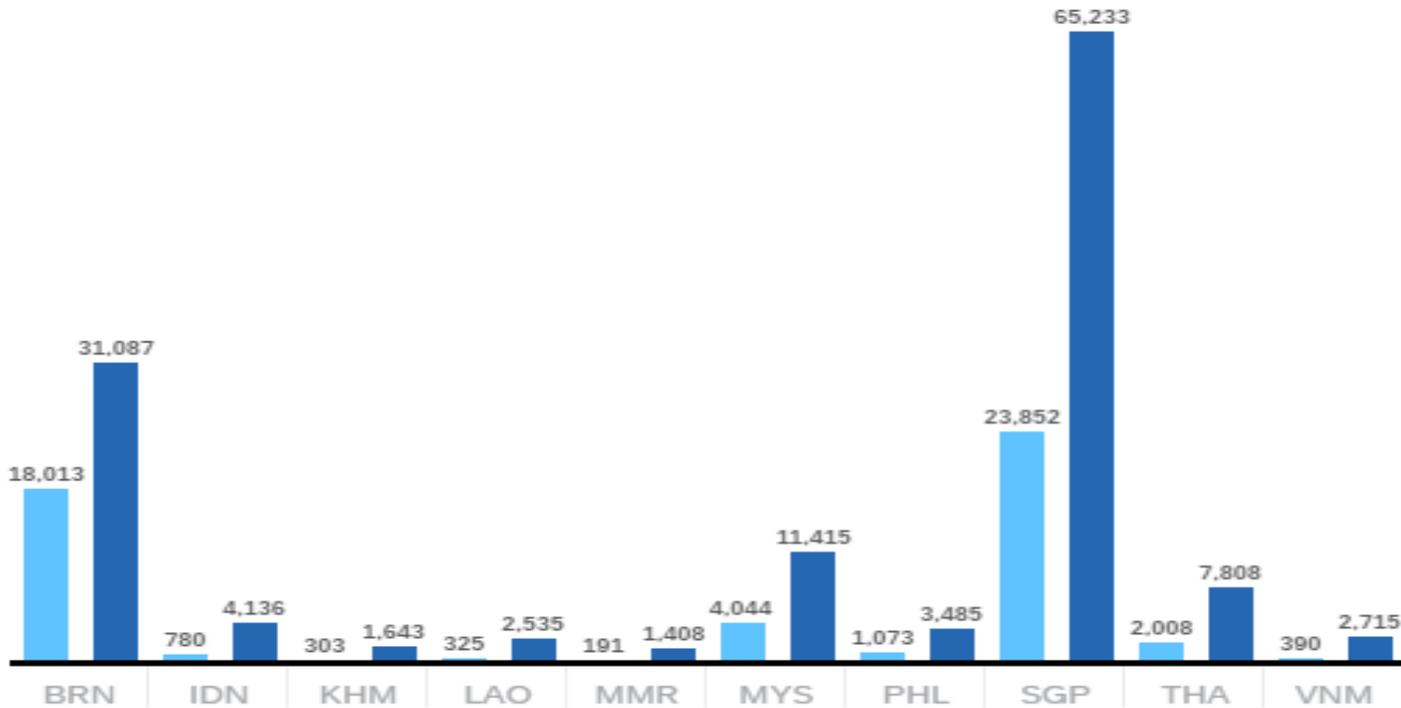
CURRENT US DOLLARS
ASEAN GDP PER CAPITA

The ASEAN has made a tremendous progress in the recent decades. It is considered as one of the largest economies in the world.



2000 VS 2019

GDP PER CAPITA COMPARISON AMONG ASEAN COUNTRIES



Singapore
41.381 USD

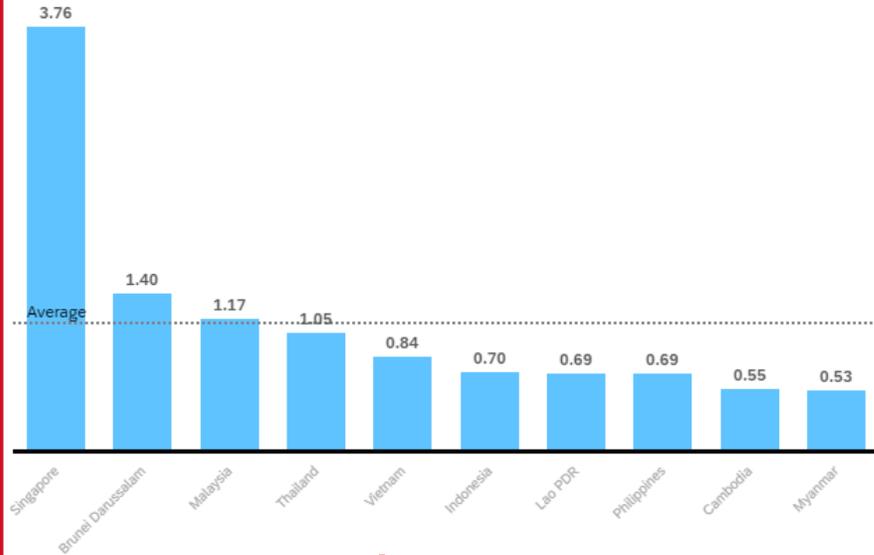


Myanmar
1.217 USD

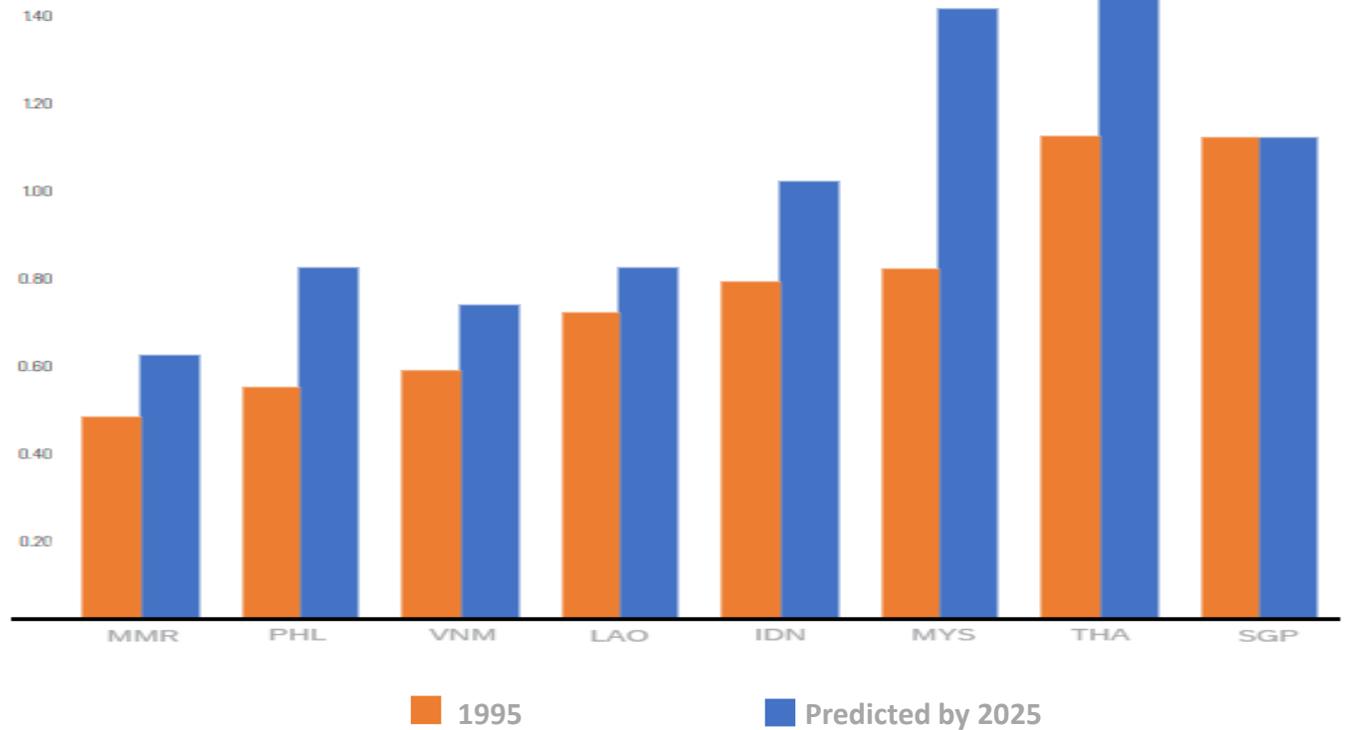


Philippines
2.412 USD

MUNICIPAL SOLID WASTE GENERATION (KG/CAPITA/DAY)

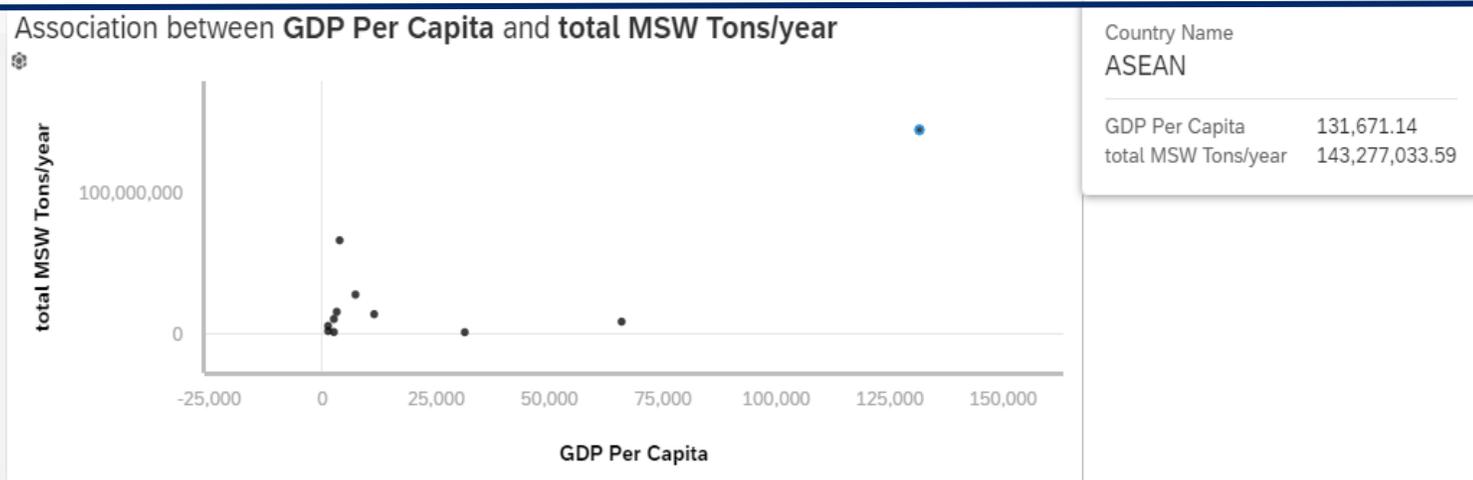
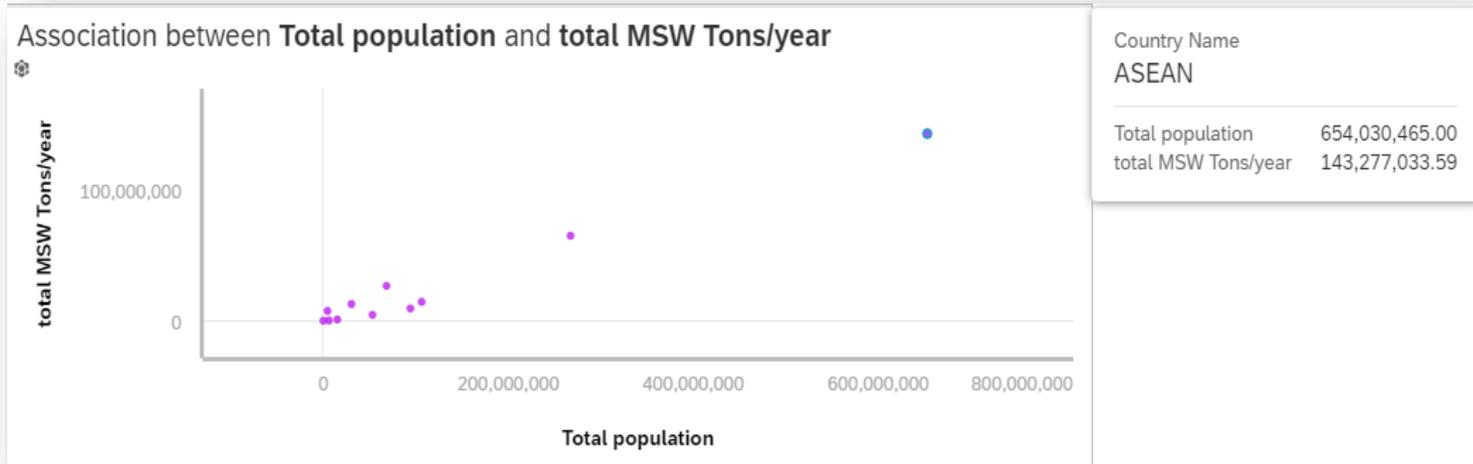


PROJECTED URBAN WASTE IN SOME ASEAN COUNTRIES





THE REALATIONSHIP OF THIS FACTORS





HOW?

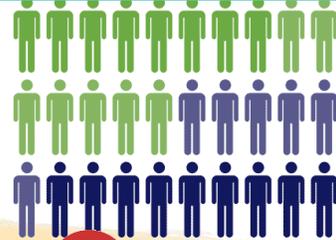


DEMAND = PRODUCTION

Urbanization

Population

**SECTORS
OF THE
ECONOMY**



**Economic
Growth**



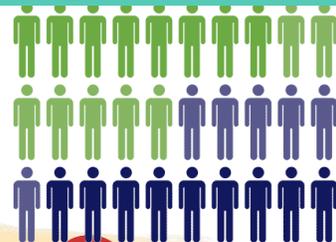
HOW?



Urbanization



Population



Economic Growth

CRADLE TO GRAVE



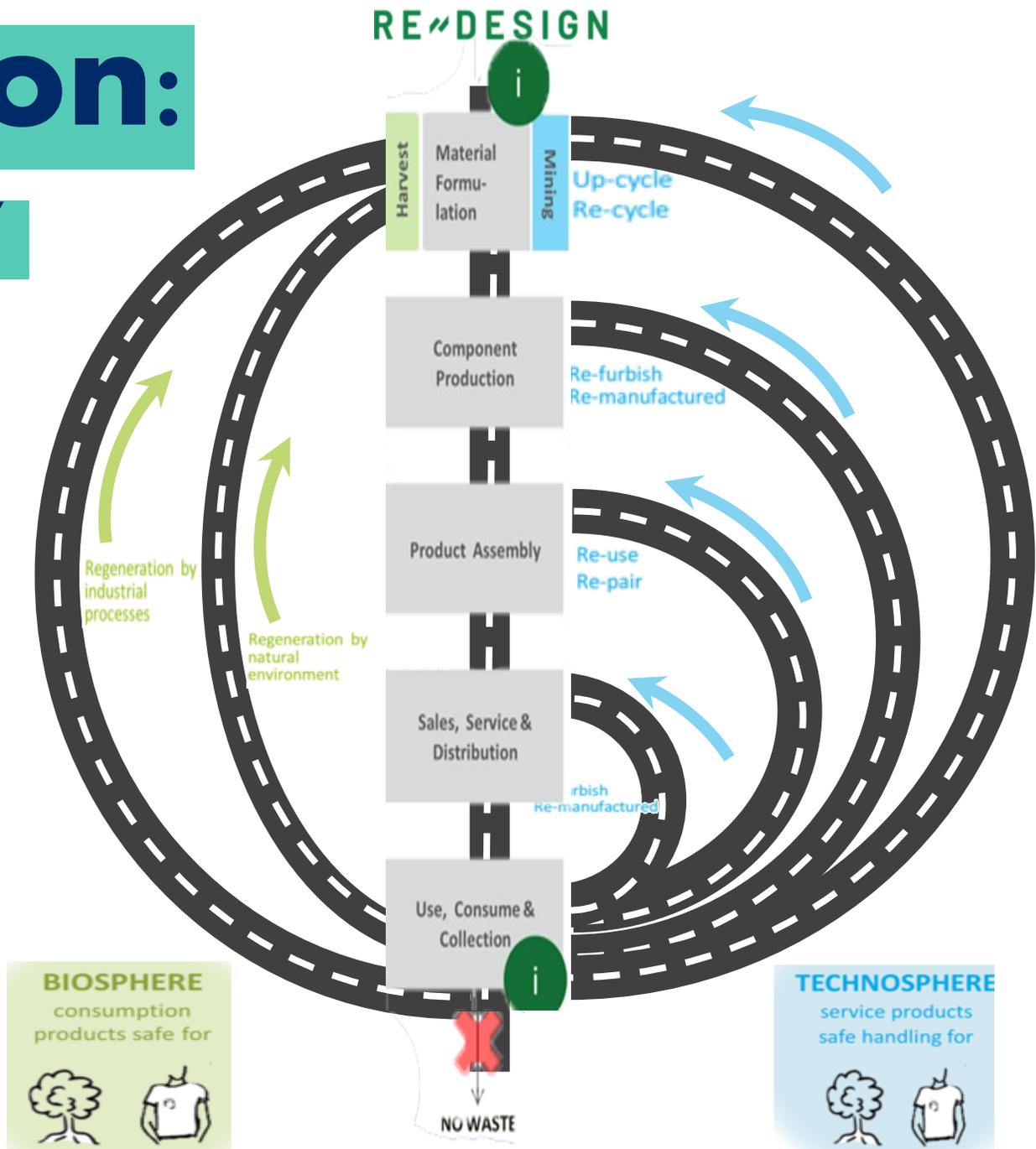
11 SUSTAINABLE CITIES AND COMMUNITIES

11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

Recommendation:

FROM "CRADLE TO GRAVE" TO "CRADLE TO CRADLE"

Reducing the demand of raw by
closing production cycles



Cradle to Cradle will be more feasible through:

Material Recovery Facility



30% RECOVERED ON A DIRTY MRF

Intelligent Product Design

Cradle to Cradle Certified



Making products with a positive impact on people and planet.

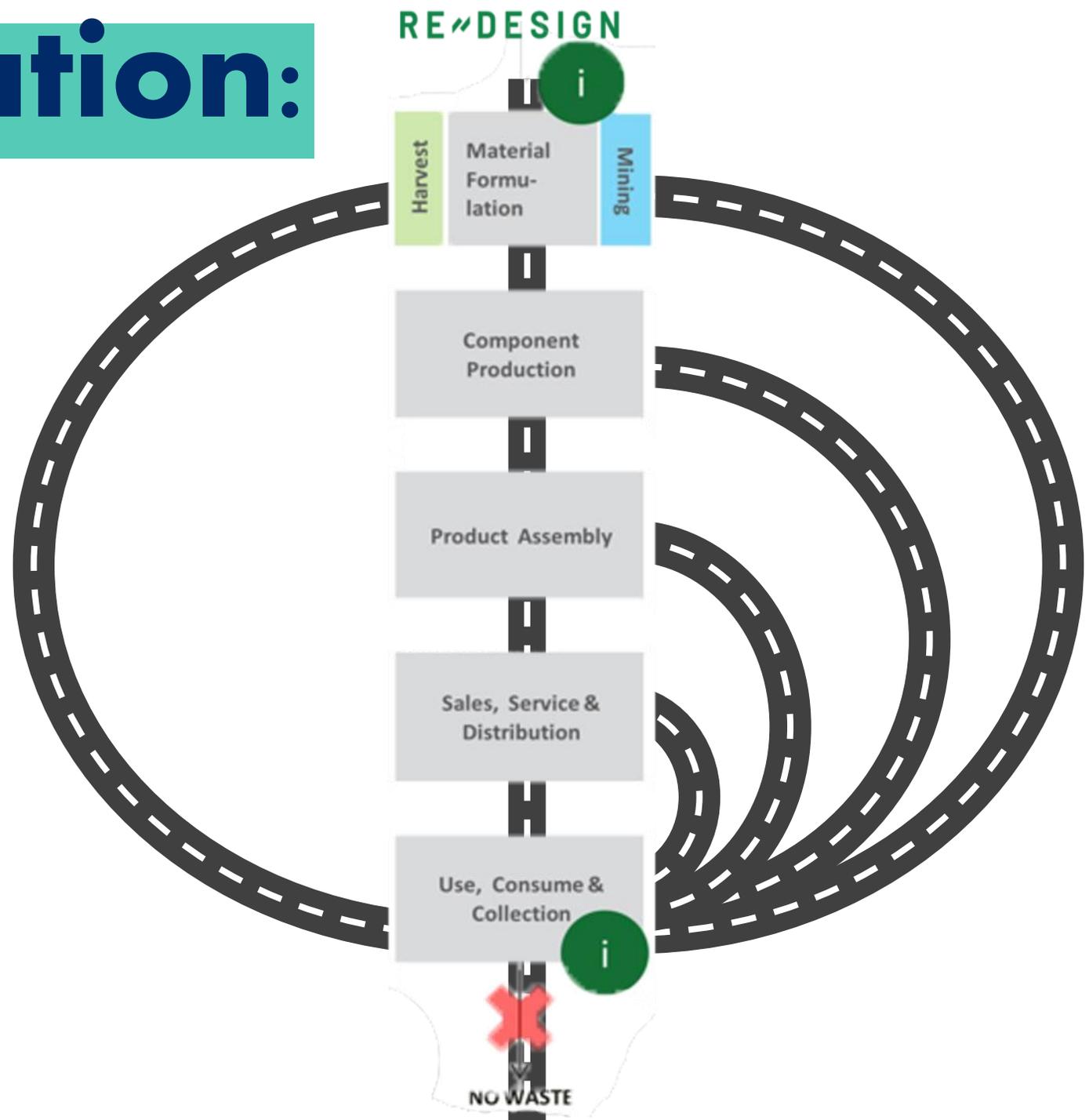
Reverse Logistics



All operations related to the reuse of products and materials

Recommendation:

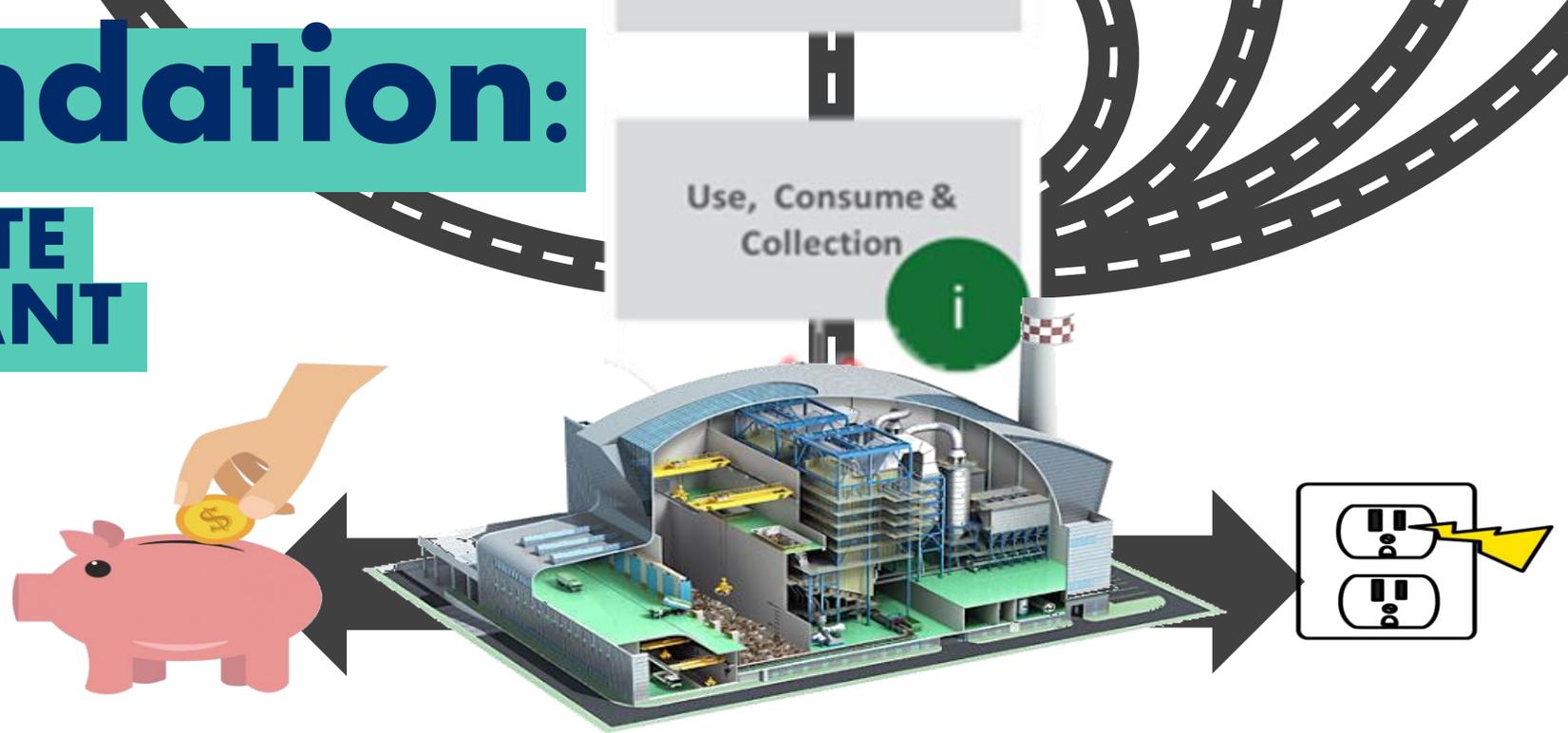
INTEGRATING A WTE INCINERATION PLANT TO THE CRADLE TO CRADLE



Recommendation:

INTEGRATING A WTE INCINERATION PLANT TO THE CRADLE TO CRADLE

Incineration plants are also known as waste-to-energy (WTE) plants. The heat from the combustion generates superheated steam in boilers, and the steam drives turbogenerators to produce electricity.



Decided on mass burn incineration

- waste volume reduction
- electricity generation
- bottom ash and fly-ash recycling
- scrap metal recovery



Flue gas cleaning waste incineration

**Less
extraction of
raw
materials**



**Ensures the
smallest
possible
environmental
footprint.**



**Stable
Innovation
and economic
growth
without
Harming the
environment**



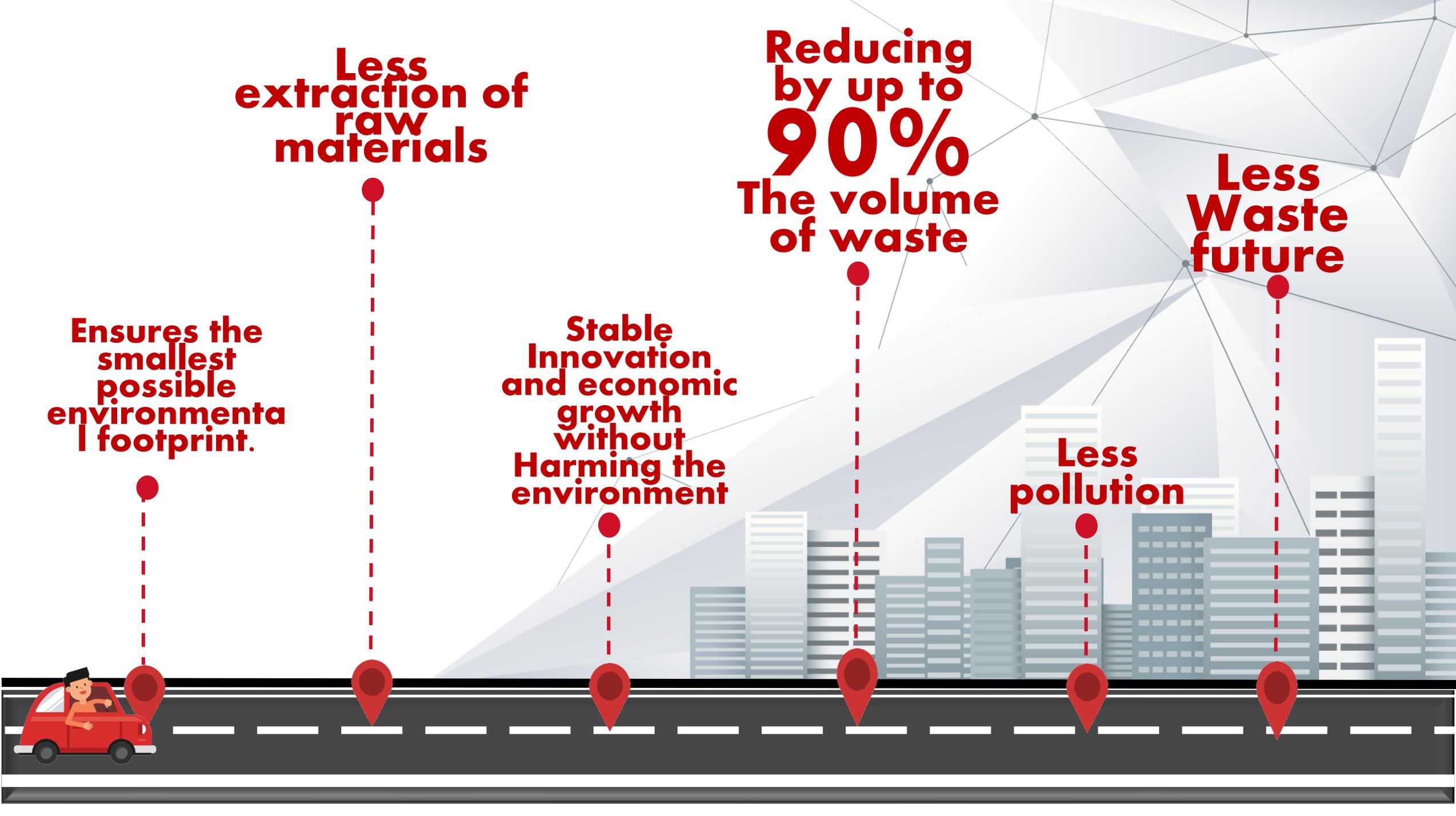
**Reducing
by up to
90%
The volume
of waste**



**Less
pollution**



**Less
Waste
future**



THANK YOU!



References and graphic attributions

- European Environment Agency. (2014, Oct. 31). Global Total Material Use by Resource Type. Retrieved May 2020, from <https://www.eea.europa.eu/data-and-maps/figures/global-total-material-use-by>
- The World Bank. (n.d.). Urban population - East Asia & Pacific, Malaysia. Retrieved May 2020, from <https://data.worldbank.org/indicator/SP.URB.TOTL?locations=BN-KH>
- The World Bank. (n.d.). GDP per capita (current US\$) - Brunei Darussalam, Cambodia, Indonesia, Lao PDR. Retrieved May 2020, from <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=BN-KH-ID-LA>
- Cradle to Cradle (n.d.). EPEA. Retrieved May 2020, from <https://epea.com/en/about-us/cradle-to-cradle>
- The ASEAN Secretariat. (2017, July). Celebrating ASEAN: 50 years of evolution and progress. https://asean.org/?static_post=celebrating-asean-50-years-evolution-progress-1967-2017
- Amit, Borongan et al. (2017). United Nations Environment Programme, 2017. <https://environment.asean.org/wp-content/uploads/2020/03/Summary-Report-Waste-Management-in-ASEAN-Countries-UNEP.pdf>
- OECD (2019), Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences, OECD Publishing, Paris. <https://doi.org/10.1787/9789264307452-en>
- <https://www.pngitem.com/pimgs/m/130-1307169-transparent-food-clipart-pile-of-trash-clipart-hd.png>
- https://www.google.com/search?q=car+gif&tbm=isch&ved=2ahUKEwi-PDL-anrAhUlc5QKHZfGAWYQ2-cCegQIABAA&oq=car+gif&gs_lcp=CgNpbWcQAzIECCMQJzICCAAYAggAMgIIADICCAAYAggAMgIIADICCAAYAggAMgIIADoHCAAQsQMQQzoECAAAQ1DVLliuOWC3PGgAcAB4AIAB0AGIAcwEkgEFMC4zLjGYAQcGAQGqAQtd3Mtd2l6LWltZ8ABAQ&sclient=img&ei=8II-X4nAJoim0QsXjYewBg&bih=831&biw=1707#imgcr=F3ubs2y31uw3kM
- <https://encrypted-tbn0.gstatic.com/images?q=tbn%3AANd9GcRK9vO5M06nXzcSAG8meoeegg98i67ZtQoznQ&usqp=CAU>
- https://cdn.dribbble.com/users/207059/screenshots/4442479/mens_walking.gif
- <https://cdn.lowgif.com/small/1b061c33a5dfeaf2-walk-cycle-character-design-loop-gif-and-cycling.gif>