

Shaping our world

Designing better cities and territories

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Part of a strong Group



We are a global reference in low-carbon energy and services. In response to the urgency of climate change, our ambition is to become the world leader in **the zero-carbon transition “as a service”** for our customers, in particular global companies and local authorities.



160,000

employees throughout
the world



€61

billion revenues



5

continents in which
we are present



€182

million invested in R&D
and €166M in start-ups

We help our customers to improve their use of energy and to reduce CO₂ emissions



• Low cO₂ power generation

- We develop, build and operate power plants delivering low CO₂ energy based on renewables and ever greener natural gas.
 - **#1 in independent power production**
 - **103GW ⁽¹⁾ installed**
 - **90% low CO₂**
 - **23% renewables ⁽²⁾**



• Global networks

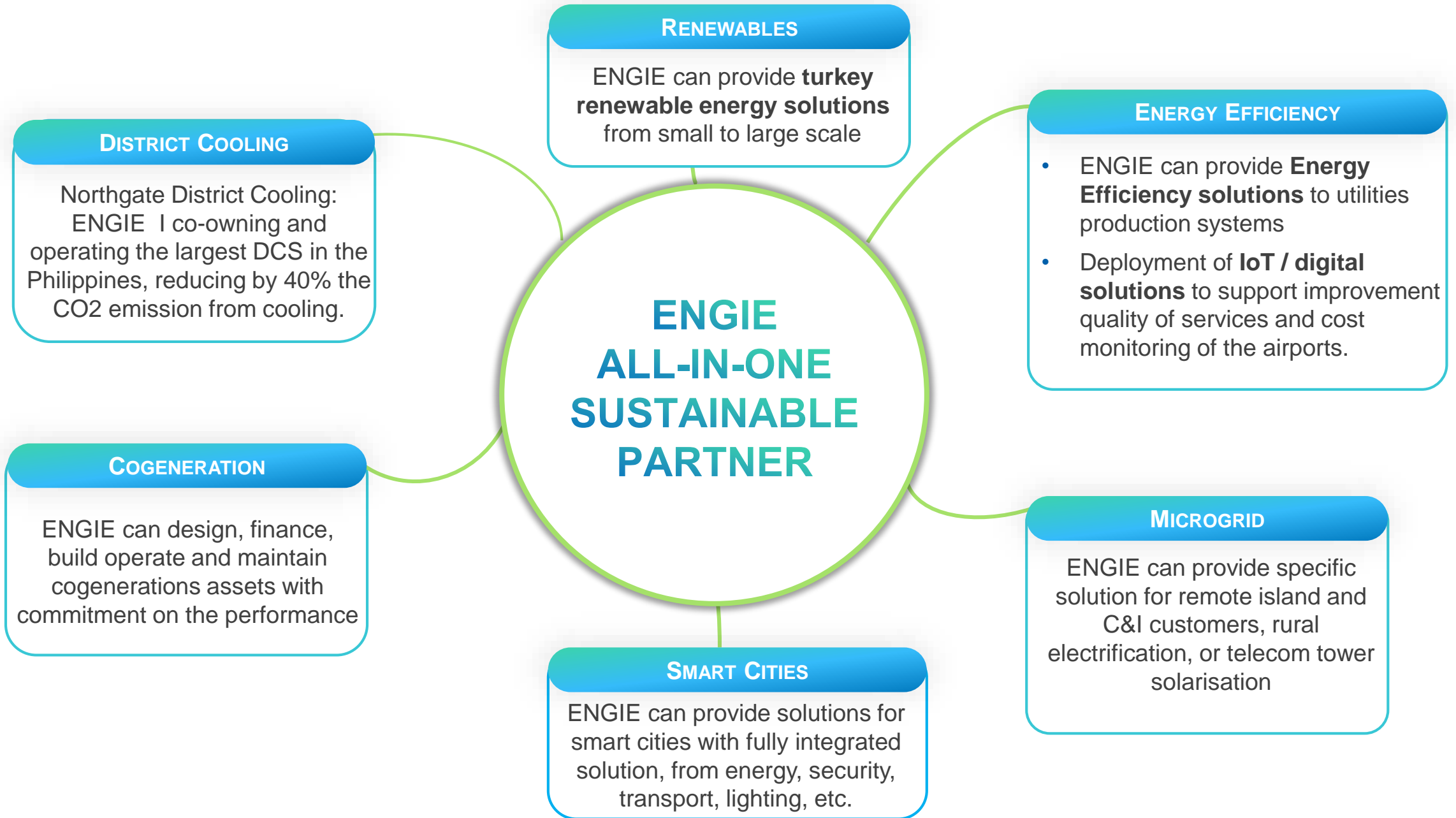
- We develop, build and operate large gas and electricity infrastructures, ensuring energy supply.
 - **#1 gas infrastructure operator in Europe**
 - **12 billion m³ gas storage capacity**
 - **Global presence in power transmission and distribution**



• Customer solutions

- We help our customers - individuals, businesses, cities and territories – with a wide range of energy, and beyond energy, solutions.
 - **24 million contracts worldwide**
 - **Global leader in energy solutions for cities**
 - **350+ District heating and cooling networks worldwide**

• (1) At 31/12/2017, at 100 %. (2) Excl.pumped storage for hydro (3 %).



Shaping our world

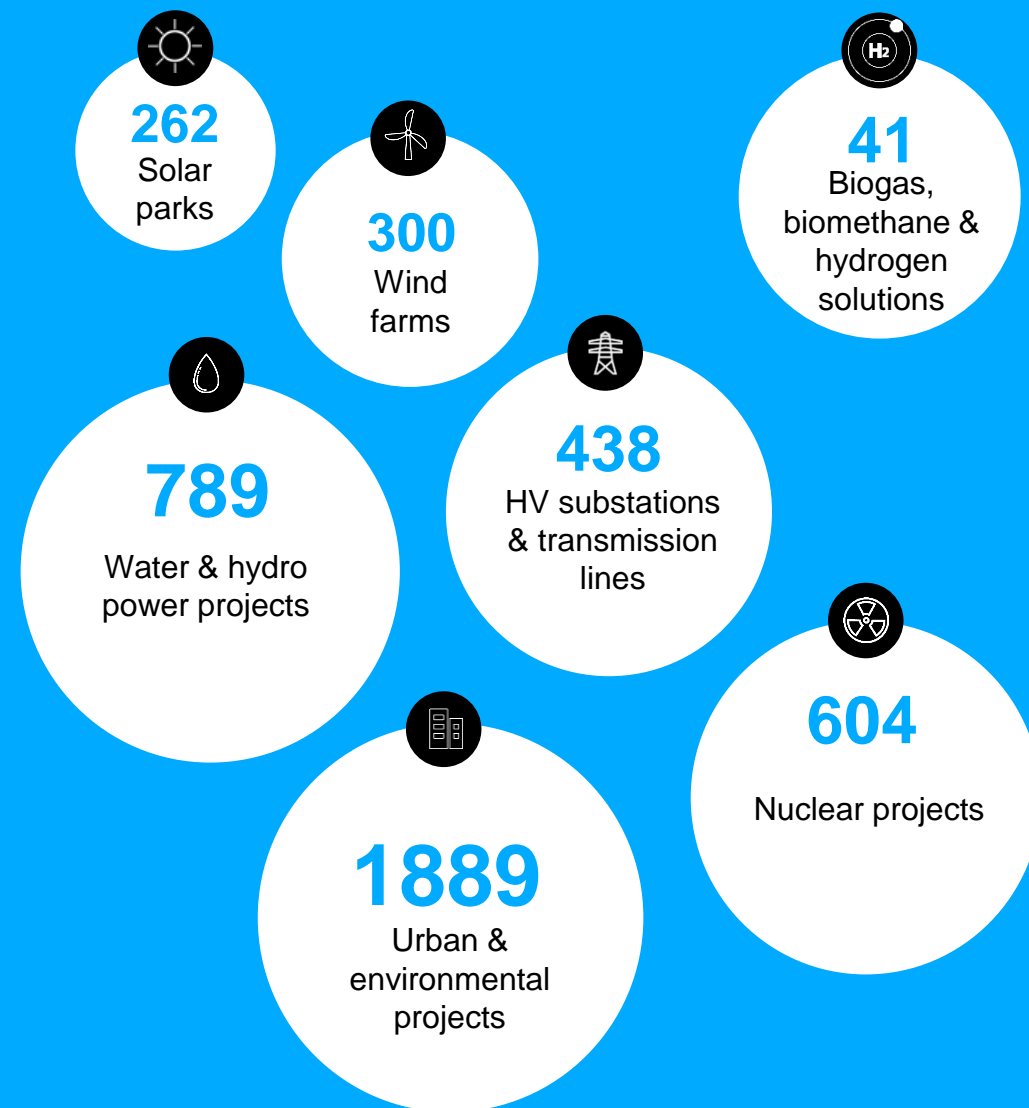
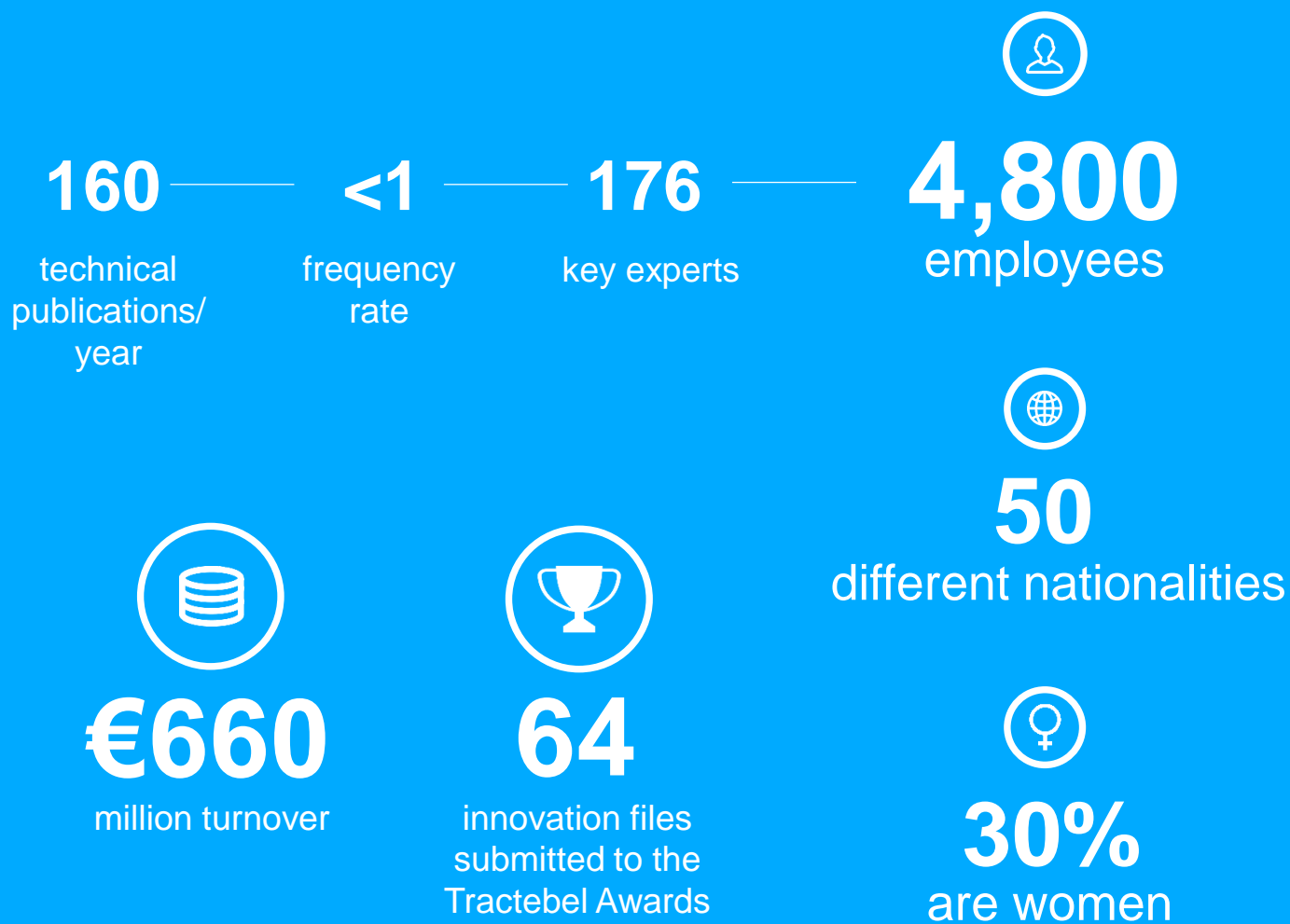
“

Together with our clients it's our mission to shape the world of tomorrow. Backed by 150 years of experience in energy, water and **urban**, we can provide you **engineering, consultancy and project management services** and be your partner in innovative solutions, the zero-carbon transition & digital transformation.

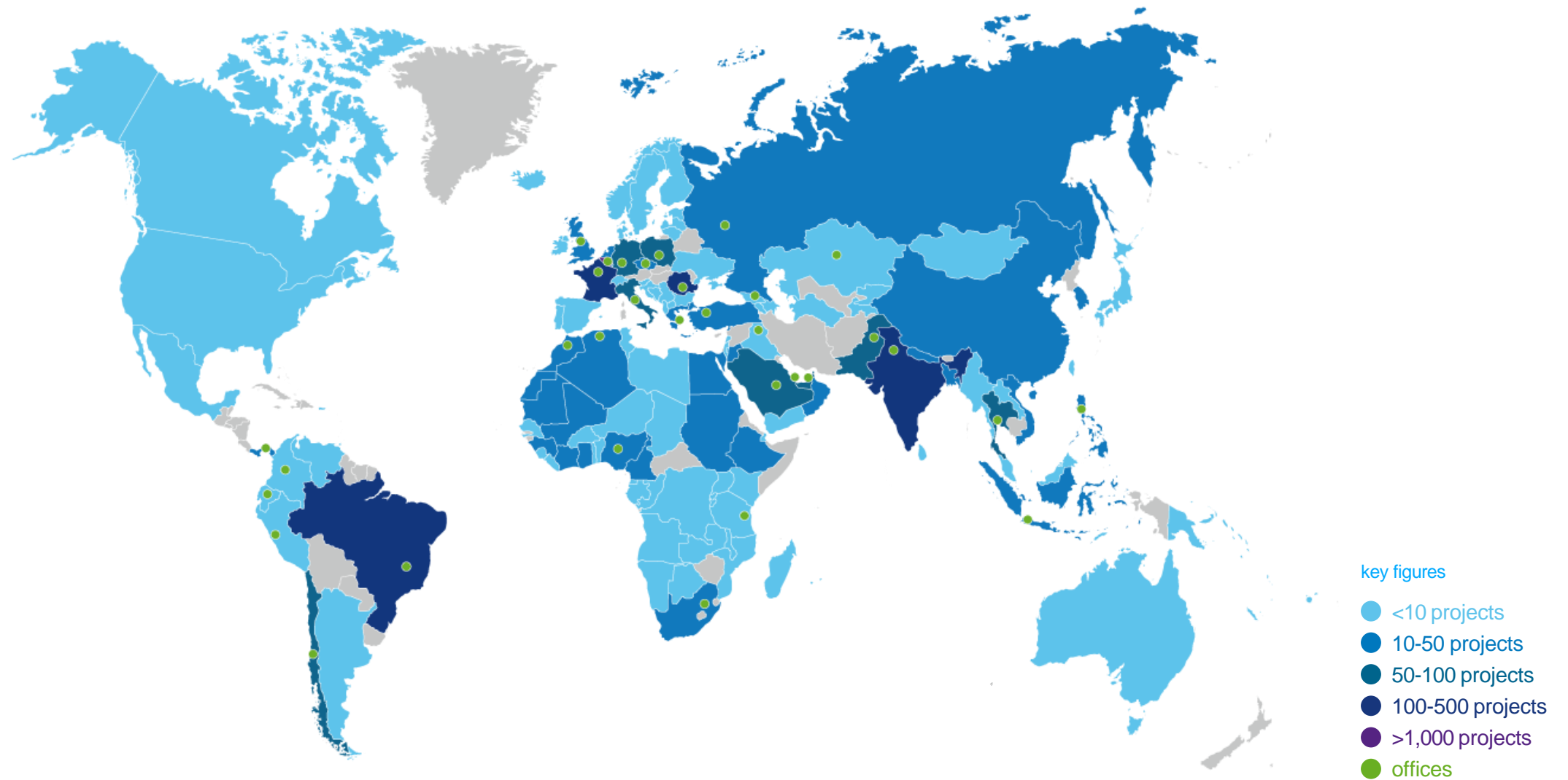
Olivier Biancarelli, CEO



Tractebel Some facts & figures



Wherever you are located



Offering an A to Z Value Proposition

STRATEGY

- Digital Tools
- Master Plans
- Road Maps & Policy Studies
- Strategic & Technical Consultancy

DECOMMISSIONING

- Dismantling
- Waste Management
- Soil Remediation
- Site Redevelopment

OPERATION

- Strategic O&M Engineering
- Simulators & Training
- Operation Support Solutions
- Modification, Renovation, Lifetime Extension

PRE-INVESTMENT

- Master Plans & Policy Studies
- Due Diligence
- Pre-Feasibility & Feasibility Studies
- Conceptual Design
- Environmental Impact Assessment & Licensing

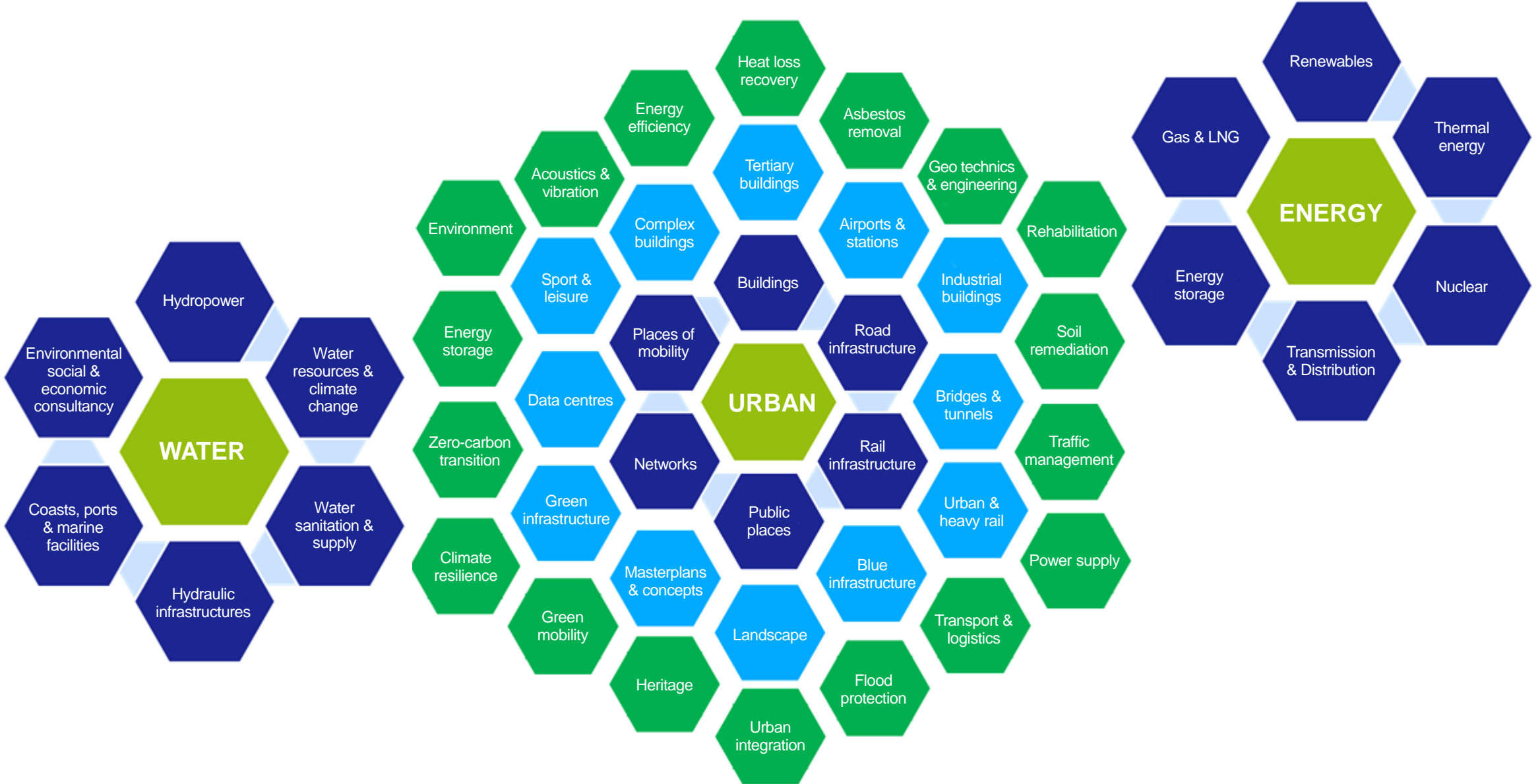
IMPLEMENTATION

- Basic & Detailed Design
- Front-End Engineering Design
- Basic & Detailed Design
- Owner's or Lender's Engineering
- Expedity & Quality Assurance
- Project & Contract Management
- EPC Management
- Site Supervision & Commissioning





Offering you integrated approaches



OUR MOTTO

Designing better cities and territories
around the globe



Urban Design
& Development



Transport
& Mobility

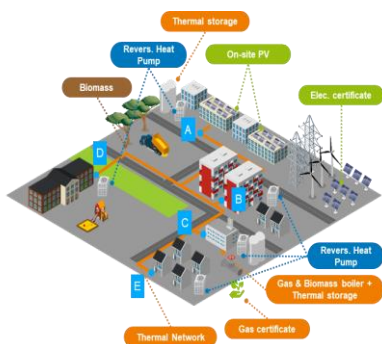


Buildings & Complex
Structures

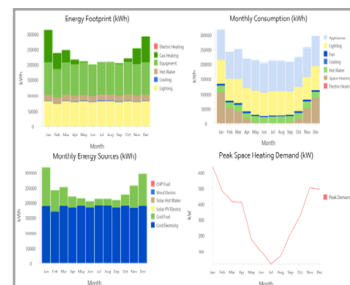


Environment &
Climate Change

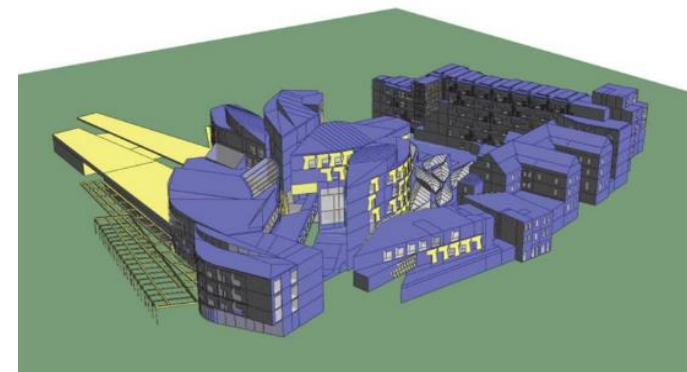
Computerized simulation tools for optimum urban development



POWERFUL MODELLING FOR
CITIES & DISTRICTS TO GO ZERO
CARBON



PREDICTIVE ENERGY
PERFORMANCE & SYSTEM
SIZING FOR BUILDINGS



DYNAMIC SIMULATION MODELING FOR
DETAILED ENERGY ANALYSIS WITH CO₂
EMISSIONS



COMPUTERIZED FLUID
DYNAMICS FOR DATA CENTERS



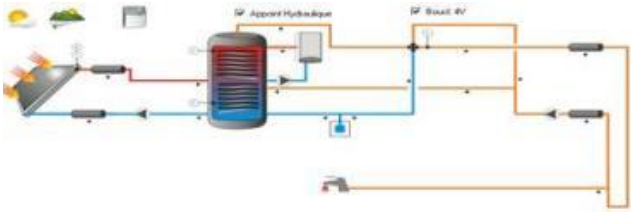
INDUSTRIAL
CYBERSECURITY



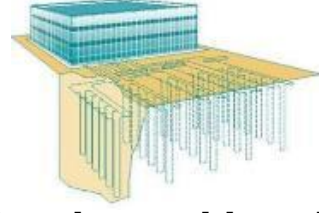
DYNAMIC LIGHTING
ASSESSMENT

DIGITIZATION IS KEY

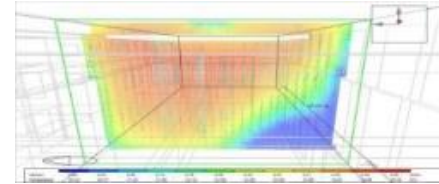
Engineering & Consulting based on modelling and simulation



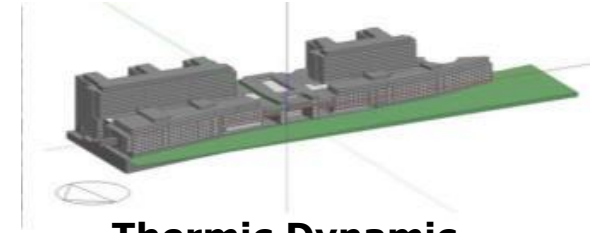
Solar thermic Power



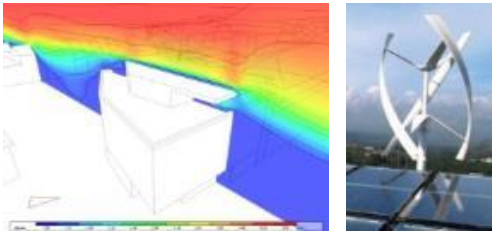
Geothermal borehole Simulation



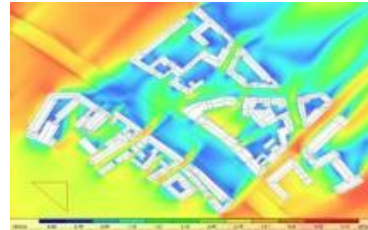
Natural Ventilation Simulation



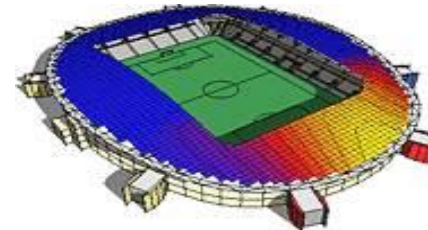
Thermic Dynamic Simulation



Micro Wind Turbine Simulation



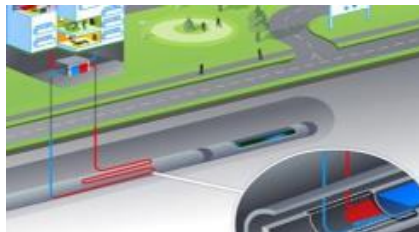
Wind Simulation



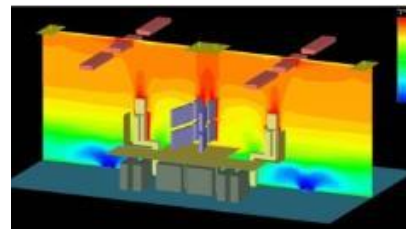
Photovoltaic cells optimization



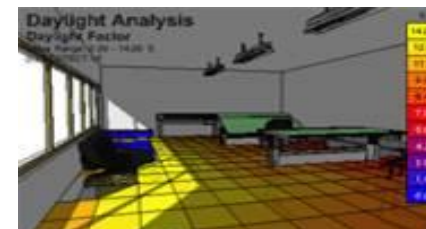
Shadow Simulation



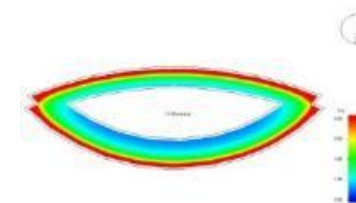
Power recuperation on used water



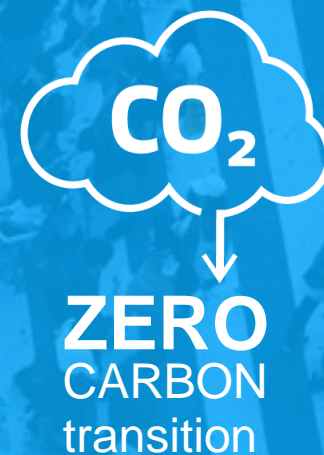
Thermal Confort Analysis



Natural lighting Simulation



AN INTEGRATED APPROACH FOR URBAN ACTIVITIES



The challenge

What do people really need (the most)?



The challenge

What do people really need (the most)?



The challenge

What do people really need (the most)?



The challenge What do people really need (the most)?



The challenge

What do people really need (the most)?



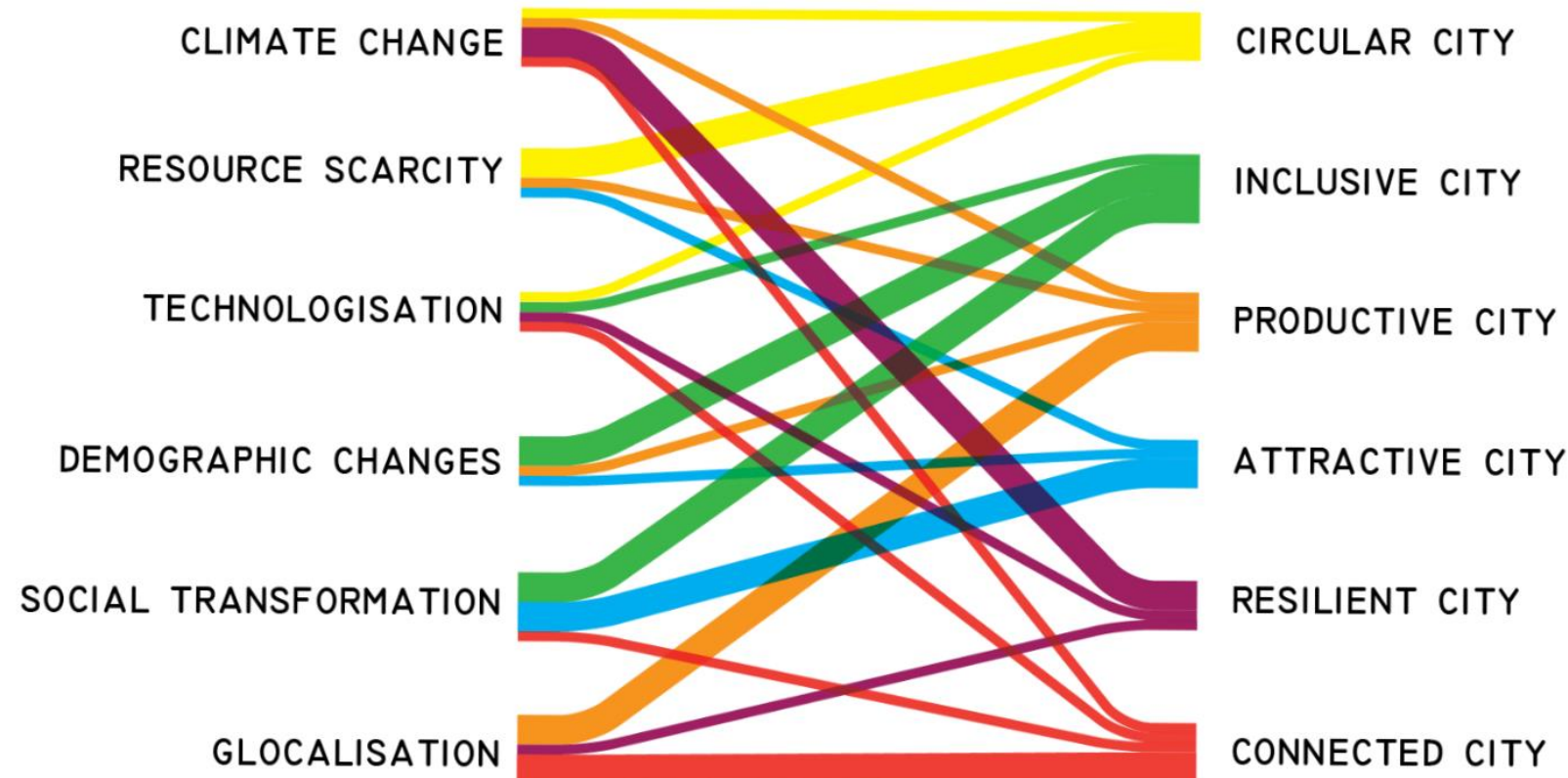
Urgency to prepare Cities for the future



From global challenges to city perspectives. City perspectives are an answer to the global challenges with which a city is confronted

GLOBAL CHALLENGES

CITY PERSPECTIVES



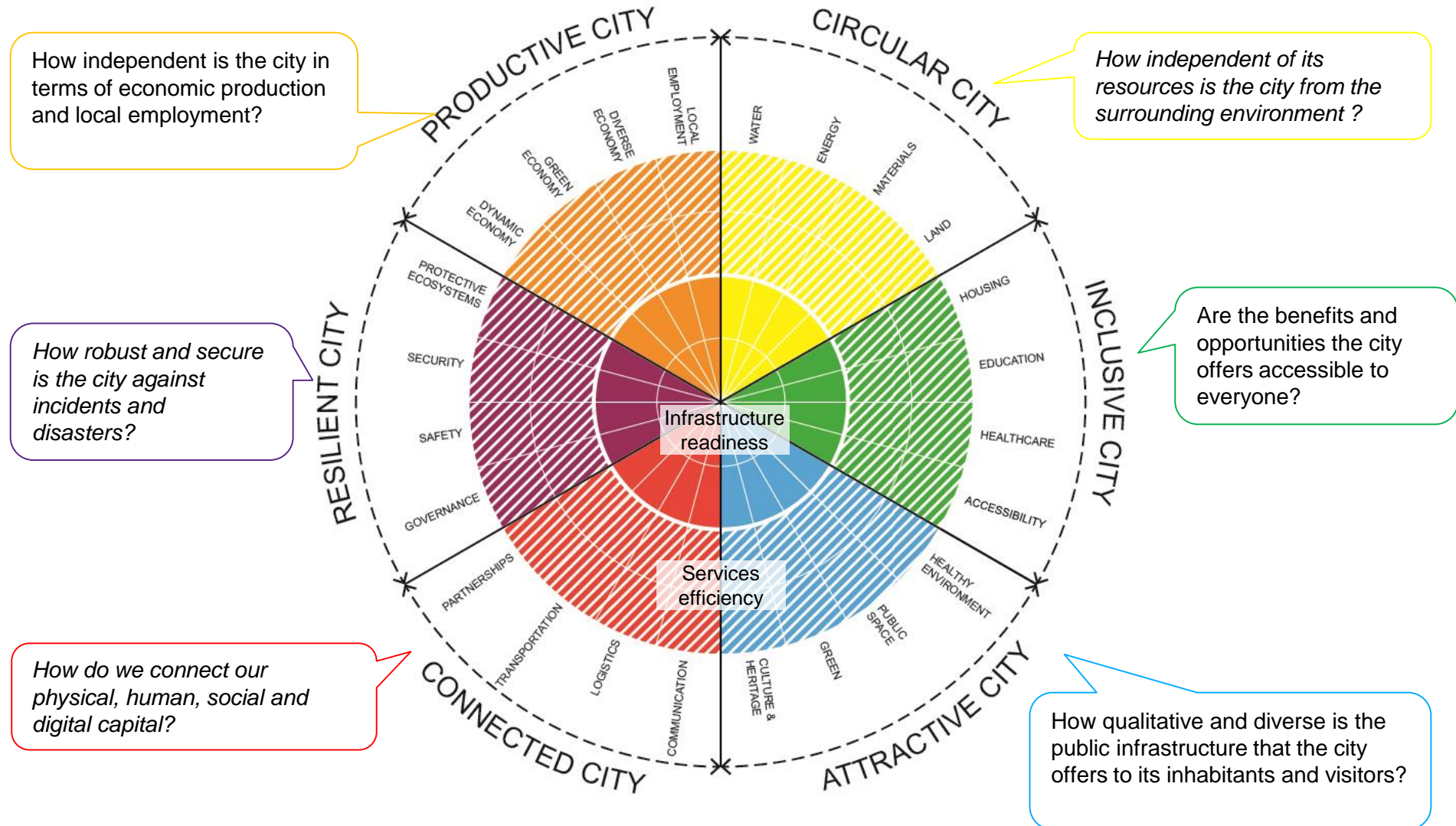
A well-performing city should be balanced across all these different perspectives

A balanced city contains all the perspectives, the different perspectives complement each other.

When one perspective isn't developed evenly in the city, it will affect future development.



We use the 360 City Scan to measure the level of maturity for the different themes and perspectives within the city, and detect of potential areas of improvement



A holistic methodology for a balanced city



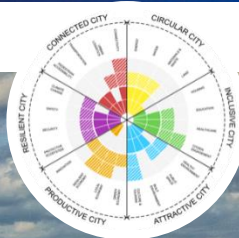
MELBOURNE



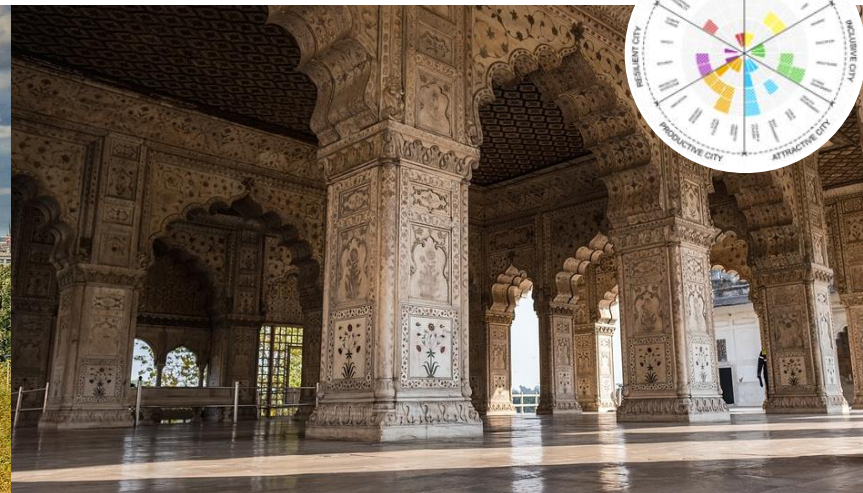
MONACO



SAN PEDRO



BRUSSELS

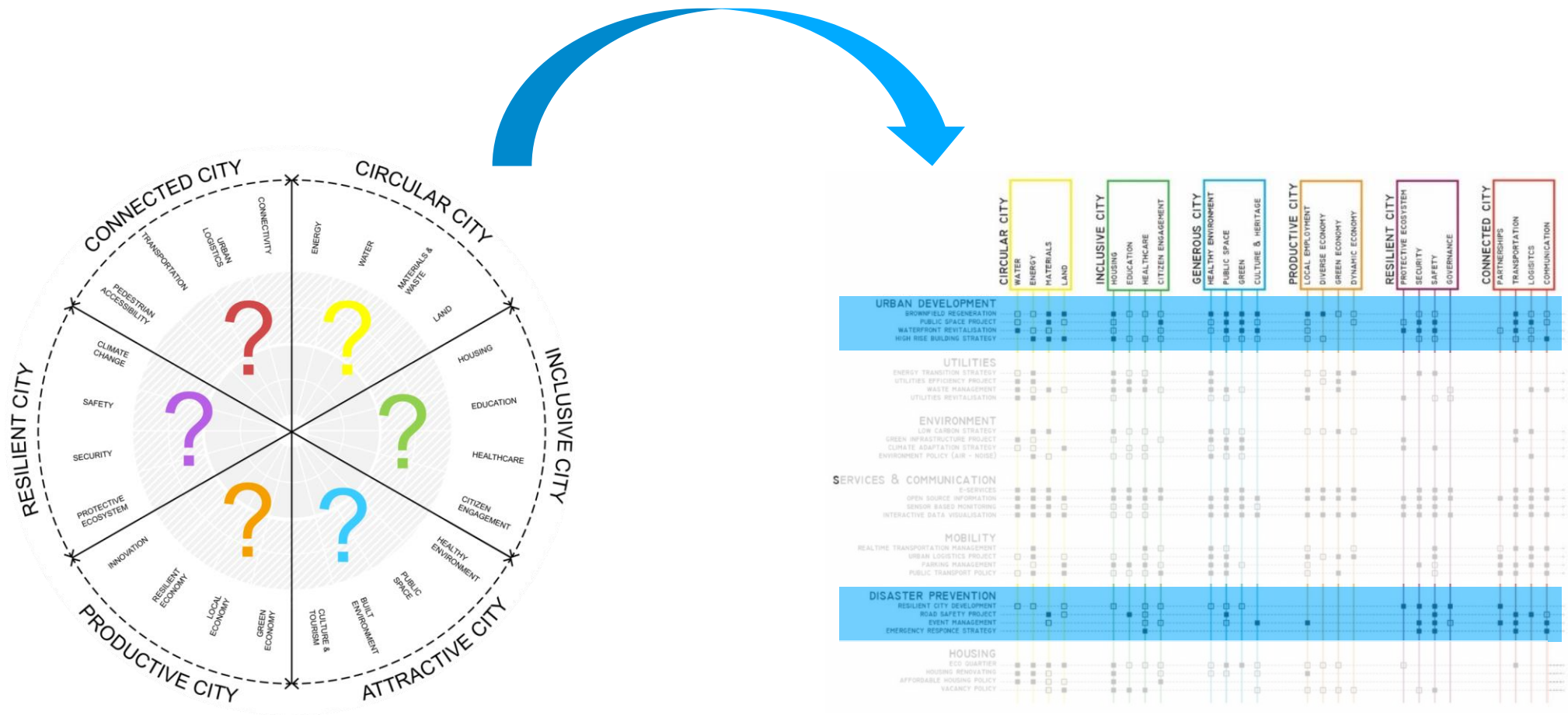


NEW DELHI



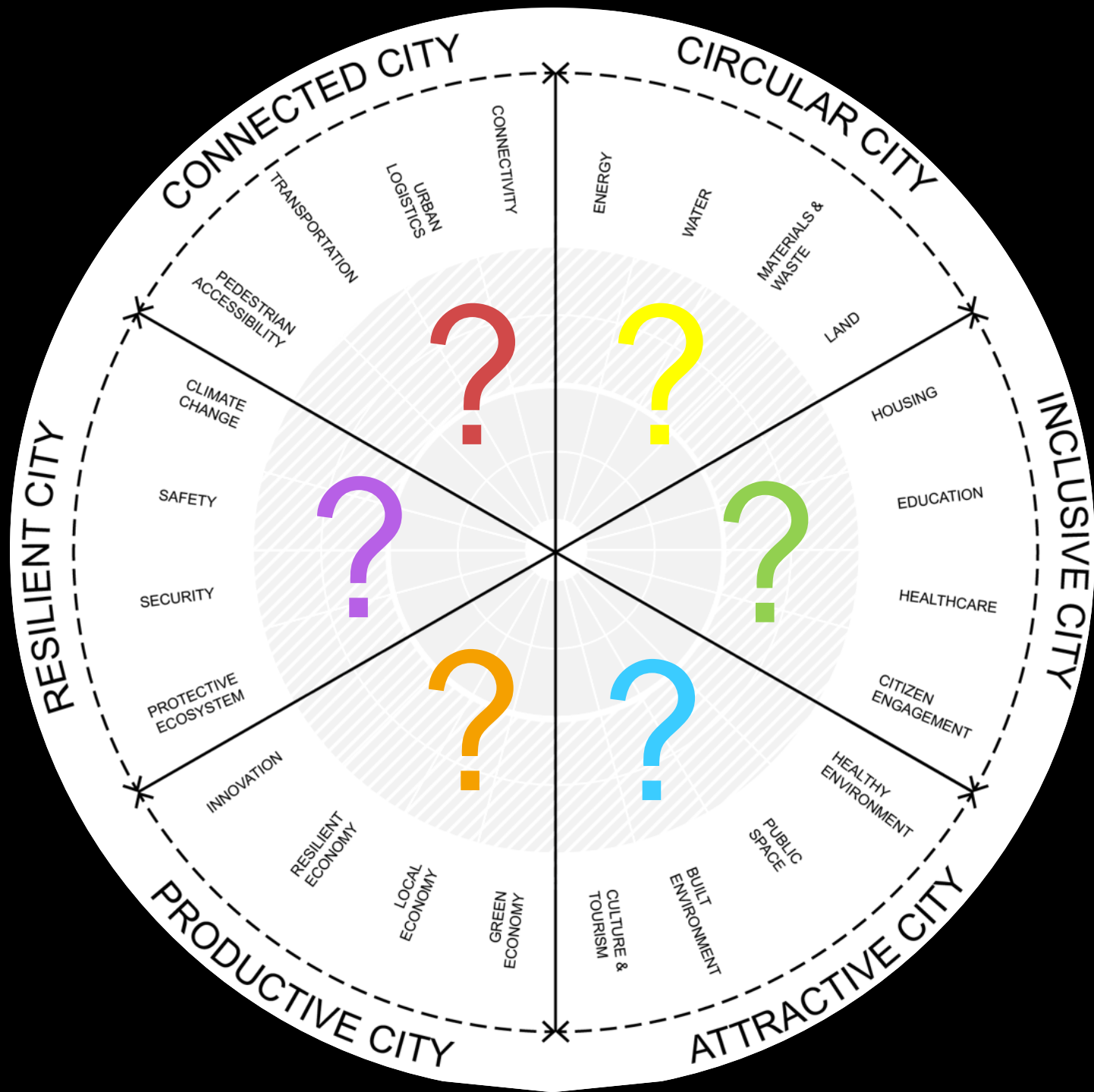
LONDON

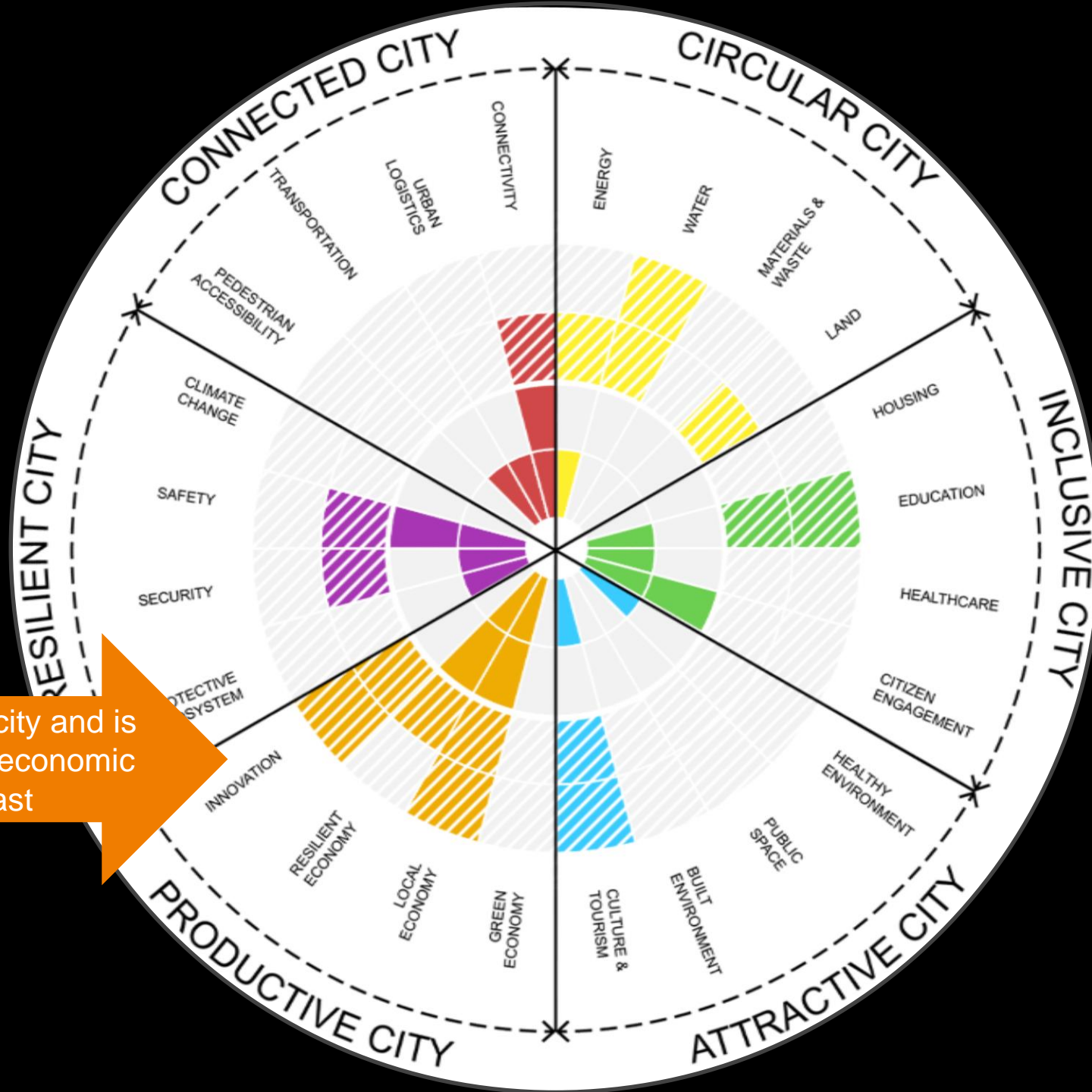
From Analysis of the city towards the identification of solutions which can actually deliver measurable impact on the maturity of the city while reinforcing its DNA



Abidjan





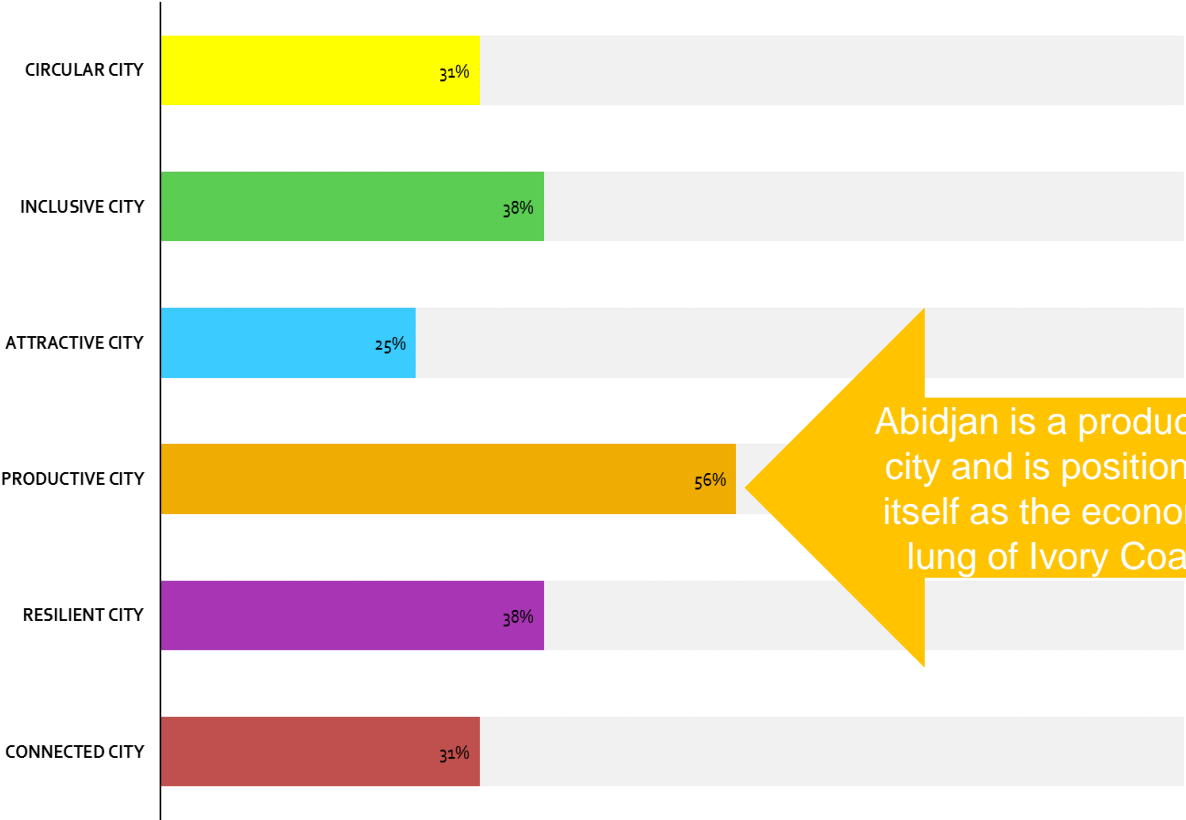


Abidjan is a productive city and is positioning itself as the economic lung of Ivory Coast

Towards a (more) balanced city...

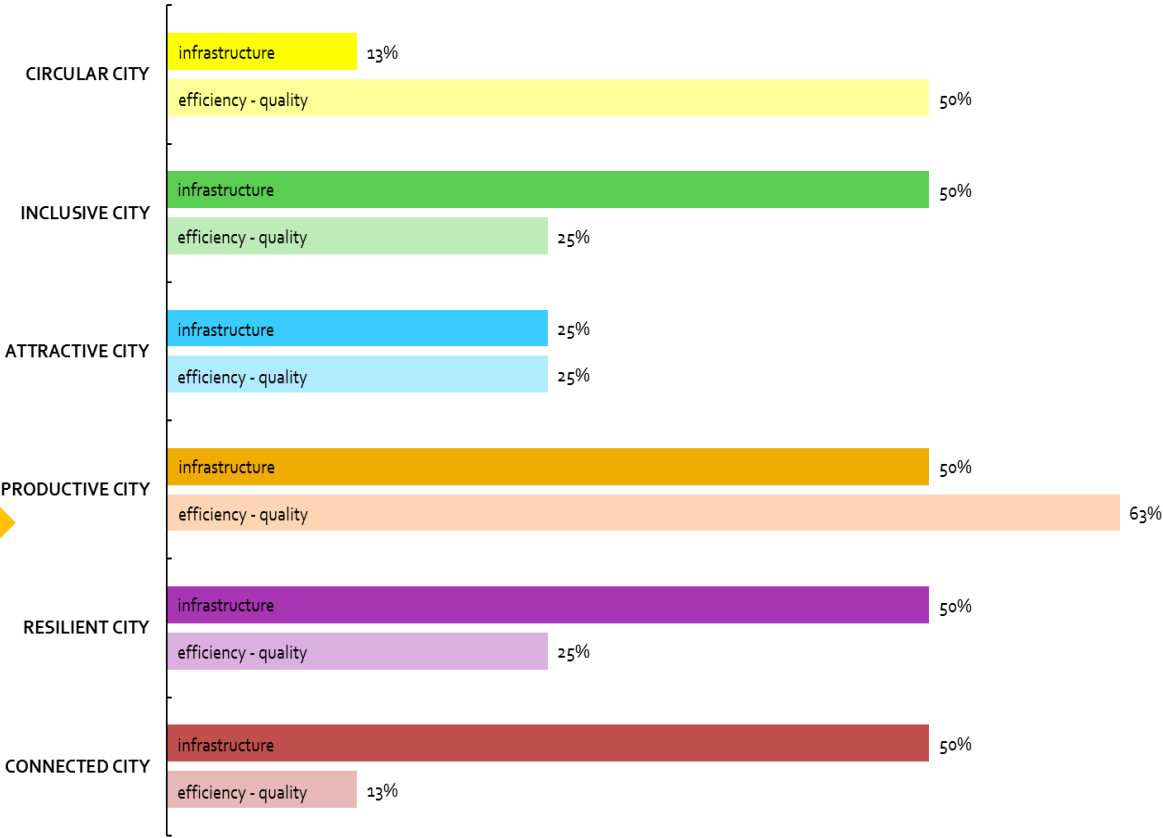
Specific maturity of each perspective of the city based on infrastructure / service availability and their relative performance

BALANCE OF THE CITY PERSPECTIVES



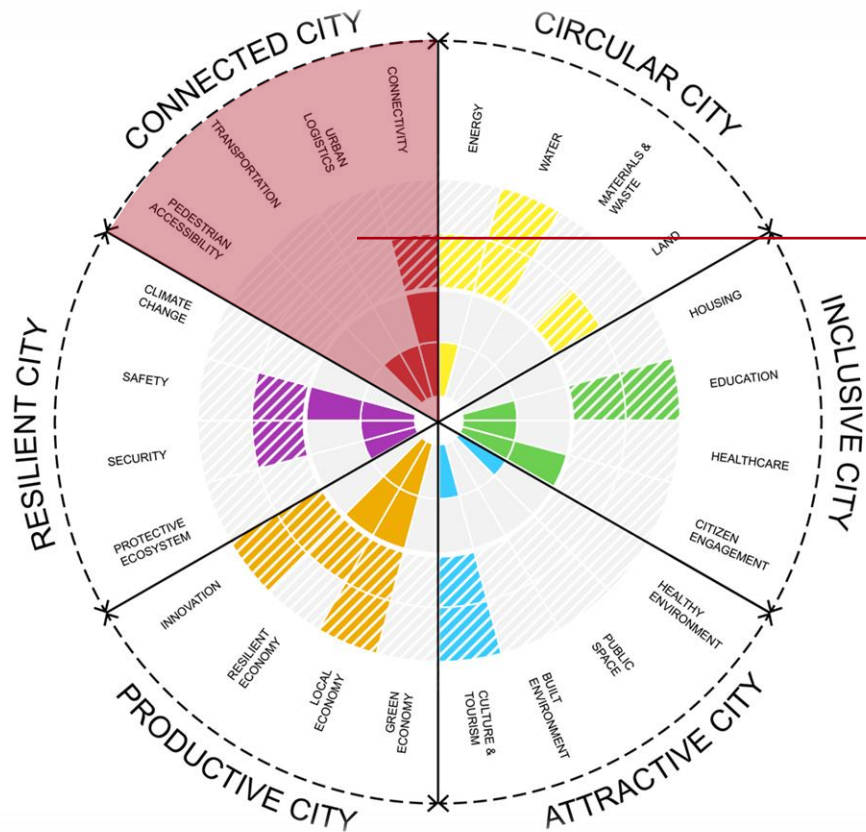
Abidjan is a productive city and is positioning itself as the economic lung of Ivory Coast

MATURITY RATE



Towards solutions which can actually deliver measurable impact on the maturity of the city while reinforcing its DNA => co-creation with stakeholders

- Prioritization with the city of perspectives to focus on for the development of a roadmap
- Identification per perspective of solutions and projects which can serve this ambition for the city and its stakeholders



Program for pedestrian accessibility

- Planning a pedestrian and bicycle area management program (safety and pedestrian awareness in the development of transport infrastructure)
- PMR – person with reduced mobility

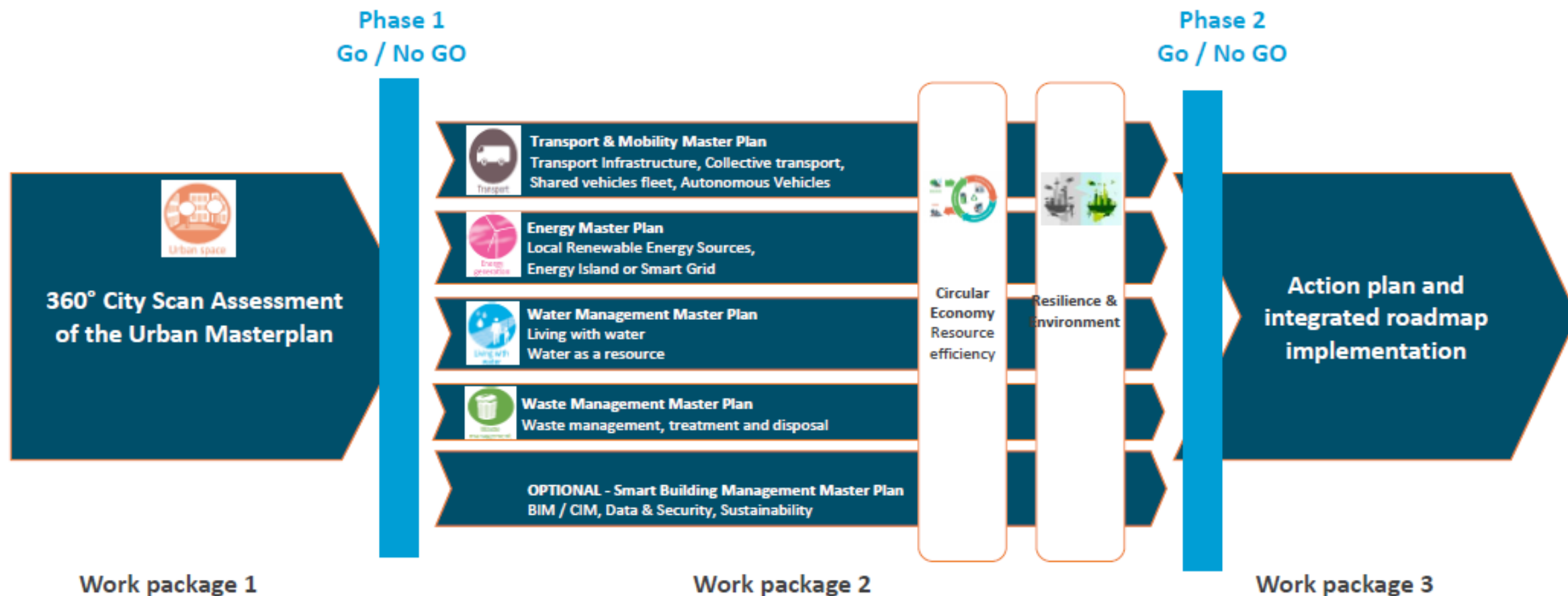
Development of virtual services

- Promotion of e-services (promoting digital channels)

Program for Urban Mobility and Transport

- Congestion control
- Realization of a global household survey on the theme of urban transport in Abidjan
- Optimization of mobility management
- Design of parking plans integrated with transport systems
- Quality public transportation programs

An integrated approach to design better cities



URBAN DESIGN & DEVELOPMENT



Spatial Design
Master Planning
Civic Architecture
Water Urbanism
Integrated Solutions
District Heating/Cooling Systems
Micro-grids



100

cities

27% of
urban population

€26

billion
investment

70% government |
30% PPP

ICT

enabled
infrastructure

7 key components

INDIA'S SMART CITIES PROGRAM

Making 100 cities in India more resilient, attractive and sustainable. We are doing master planning, smart city proposals, bid process management, preparation of feasibility reports and project management with KPMG & PwC.



MASTERPLANNING METRO BAGUIO

The main goal of this project is to formulate a master plan for the BLISTT growth center. This master plan, with a strong focus on sustainable urban infrastructure development, will guide decision-makers in the preparation and approval of plans, policies and projects to help to evolve metro Baguio, and thus ultimately improve the quality of life of its citizens.





GREATER SPRINGFIELD AUSTRALIA'S NEWEST EMERGING CITY

We performed a city scan, and an urban and energy masterplan/roadmap to develop integrated solutions for Springfield, a fully planned city with the ambition to go zero net energy by 2038. ENGIE entered into a 50-year strategic alliance with Springfield City Group and will invest in renewable energies and services.



MOBILITY



Smart & Sustainable Mobility
Mobility Studies
Roads & Highways
Bridges & Tunnels
Urban & Heavy Rail



PLUG MY CAR

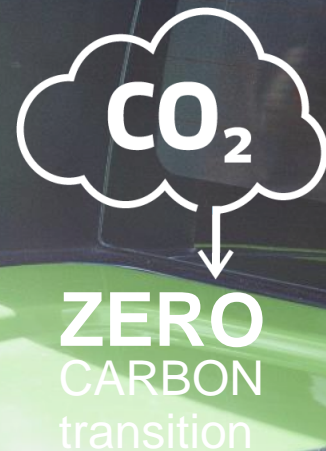
Digital platform for a fully shared autonomous EV mobility in Brussels. We bring innovative concepts and solutions that combine energy and mobility expertise.

0 CO₂ emissions

200.000 less parking spaces

83.000 shared vehicles

35.000 charging points



GREEN BUSES FOR FLORIANOPOLIS

The Superintendency for the development of Florianópolis' Metropolitan Region wishes to integrate the transport systems of 8 municipalities and renew the city's diesel engine bus fleet. We will benchmark various clean bus technologies and the associated infrastructure options by conducting a total cost of ownership analysis to provide Florianópolis the best possible advice.





BRUSSELS MOBILITY 2040

An ambitious prospective and multidisciplinary study. Mobility is no longer considered from a transport perspective only. It is now analysed based on intermodal themes, taking into account governance, behavioural changes, the use of dashboards, big data, digitalisation, electrical vehicles, integration in smart cities,

150 KILOMETERS IN 25 MINUTES

By using an electric motor to accelerate and decelerate an electromagnetically levitated pod through a low-pressure tube, the hyperloop will be able to get you from Mumbai to Pune in just 25 minutes. Tractebel is a technical partner in this hyper-innovative project. Our mission involves the technical review of the alignment and station location and layouts, the assessment of tractions, rolling stock and signaling systems, the operational plan and cost estimates, the integration with other transport modes and bid process management.



BUILDINGS & COMPLEX STRUCTURES



Tertiary Buildings

Complex Buildings (data centers, hospitals)

Industrial Buildings

Sports & Leisure

Airports and Transport Terminals





EXPANDING CHENNAI'S AIRPORT TERMINAL

With over around 23 million handled passengers, 570 aircraft movements and 30,000 passengers per day, Chennai International Airport is the third busiest airport in India. For the expansion of its terminal, we provided schedule management, quality management including factory inspection & testing, and project management services



ULTRA ENERGY EFFICIENT DATA CENTRE

The Atlas data centre has been awarded with the Highly Commended – Sustainable Project Prize. Innovative technologies have been deployed to create a green environment within the architectural and structural requirements. The data centre is the first Tier IV constructed facility certified site in Turkey. We (RED) were the lead design consultant.

TECHNICAL ADVISORY FOR INNOVATIVE HOUSING

Affordable housing solution :a community composed of, a solar, smart, energy-positive, self-sufficient, self-financing and carbon positive modular home.



ENVIRONMENT & CLIMATE CHANGE



Strategies, Policies & Governance

Urban Resilience

Climate Adaptation & Mitigation

Environmental & Social Impact Assessments

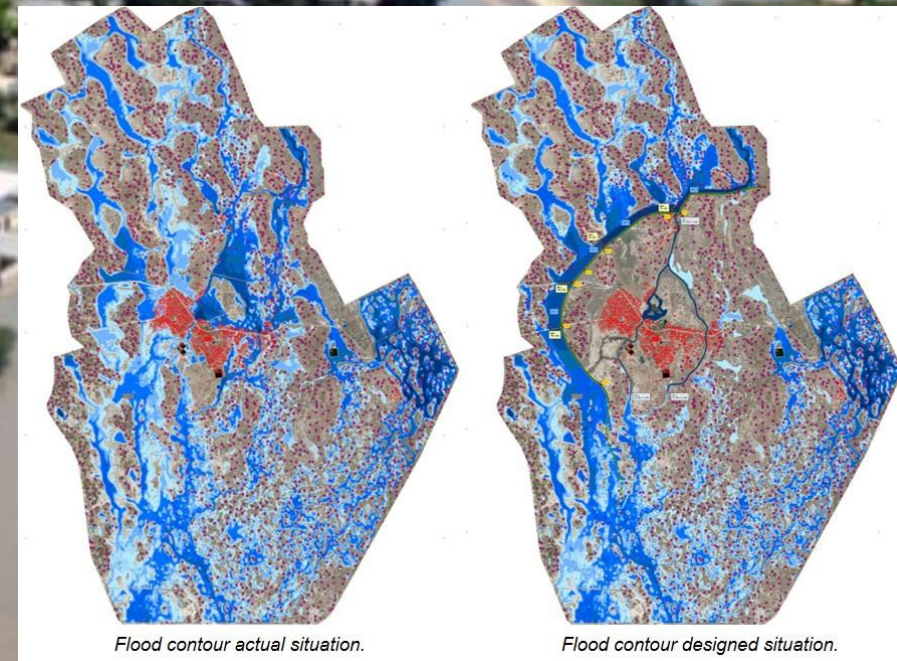
Waste Management





MITIGATING FLOOD IN OSHAKATI

Situated 100 km north of Etosha National Park, Oshakati is one of the largest towns in northern Namibia and regularly suffers from heavy floods during the rainy season. Together with IMDC, we give technical expertise for the development of a permanent solution, consisting of a dyke with bridges and sluices.



MANAGING WASTE IN 6 MUNICIPALITIES

Bangladesh is one of the most densely populated countries in the world with about 156 million people living on ca. 150,000 km² of land. The country's high urban density results in a high concentrations of waste, environmental and health challenges. Through Ecorem, we provided design supervision and construction consultancy, public and environmental services, program management, institutional support and capacity building.



FROM WASTE TO ENERGY

Bangladesh's Sustainable Renewable Energy Department Authority wants to develop solutions to address its exponential waste production and energy dependence. In this context, we – through Ecorem – were entrusted by a feasibility study



Let's keep in touch

etienne.drouet@tractebel.engie.com

mia.quimpo@tractebel.engie.com

▶ tractebel-engie.com

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