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The SciTech leverages urban development
-- an example of integration of geospatial technology with building information model

GONG Ke

World Federation of Engineering Organizations (WFEO)

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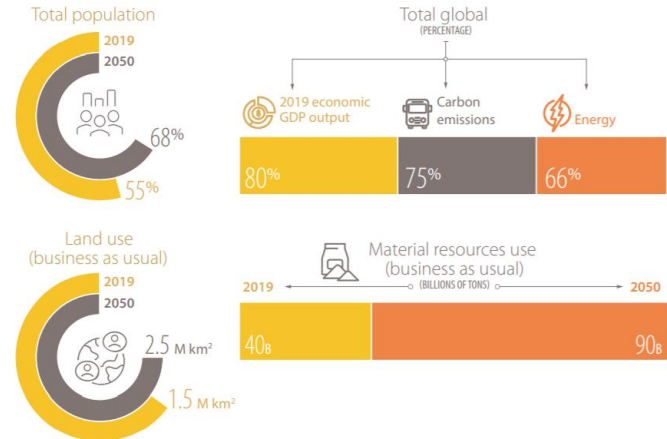Official partner of UNESCO (associate status)

"**Sustainable cities are central to achieving all 17 Sustainable Development Goals**, because if current trends continue, by 2050 cities will contain approximately 70 per cent of the world's population and produce 85 per cent of global economic output".

In fact, all issues related to sustainable development are also concentrated in cities. Therefore, "**cities can become sustainable development leaders and laboratories** for the world at large."
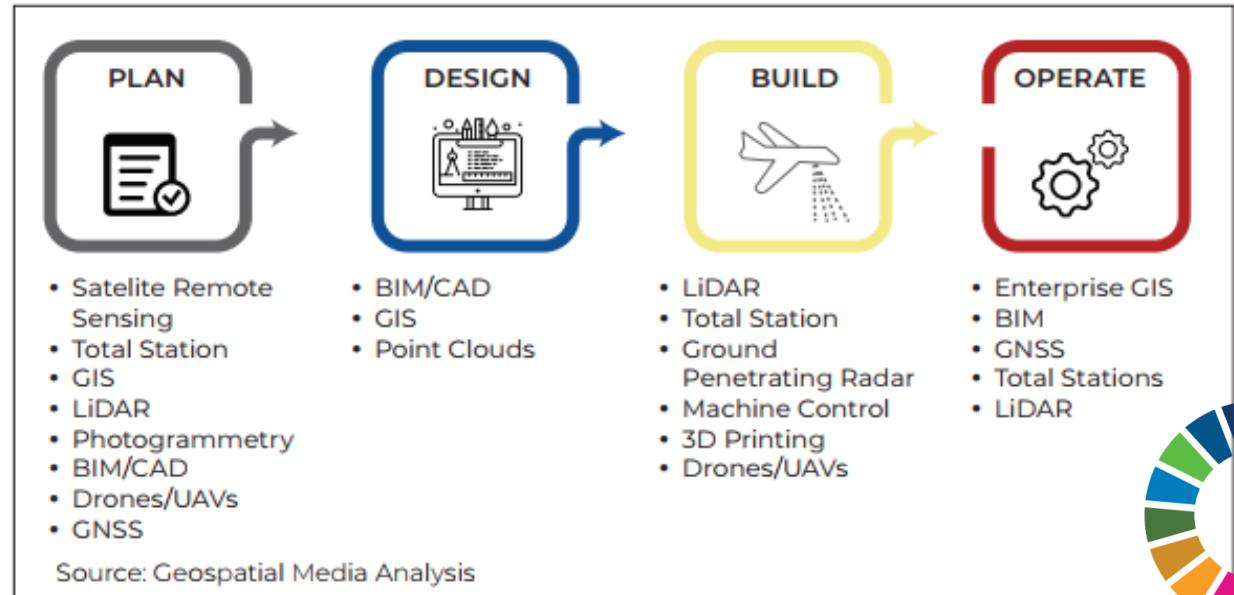
In GSDR 2019, urban and peri-urban development is identified as one of the six entry points for successful transformations.

THE FUTURE IS NOW
SCIENCE FOR ACHIEVING SUSTAINABLE DEVELOPMENT
GLOBAL SUSTAINABLE DEVELOPMENT REPORT 2019

Total population
2019
2050
68%
55%

Total global (PERCENTAGE)
2019 economic GDP output — 80%
Carbon emissions — 75%
Energy — 66%

Land use (business as usual)
2019
2050
2.5 M km²
1.5 M km²

Material resources use (business as usual) (BILLIONS OF TONS)
2019 — 40B
2050 — 90B

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Response to the GSDR, WFEO worked with UN-GGIM and WGIC together, released a white paper to show an example of using the lever of science and technology on the entry point of urban development.

White Paper

The value of Integrated Geospatial and Building Information Modelling (BIM) solutions to advance the United Nations Sustainable Development Goals (Agenda 2030) with specific focus on resilient infrastructure

PLAN

- Satelite Remote Sensing
- Total Station
- GIS
- LiDAR
- Photogrammetry
- BIM/CAD
- Drones/UAVs
- GNSS

DESIGN

- BIM/CAD
- GIS
- Point Clouds

BUILD

- LiDAR
- Total Station
- Ground Penetrating Radar
- Machine Control
- 3D Printing
- Drones/UAVs

OPERATE

- Enterprise GIS
- BIM
- GNSS
- Total Stations
- LiDAR

Source: Geospatial Media Analysis

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- The Integration of Geospatial technologies and BIM provides multiple scale models supporting safe, smart, inclusive and resilient infrastructure and city planning and management.

- The paper briefly introduces the 4IR technologies and analyses the need of resilient infrastructure, elaborates the geospatial and BIM solution and gives insights by 11 cases. The paper also addresses the challenges of adoption of the model and makes recommendations for the way forward.

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People centric governance and planning

- Life first and health first
- Human rights and inclusion in crisis

Smart city to public health crisis with ICT infrastructure

- Big-Data – Integration ... ... Geospatial + BIM
- AI – City Br... ... ...

Resilient city to public health crisis among many others

- city-science based city planning and development
- development of people centric AI enabled city-science and engineering

This work is preliminary and we are going to further and deepen this work, and to make it a part of a more comprehensive and multidisciplinary urban sciences and engineering, on which a broader collaboration is needed.

Thank you