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United Arab Emirates

Overcoming Space accessibility's challenges and barriers – UAE achievements

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Space Benefits and trends

Space brings benefits to countries...

Socioeconomic, open access to the knowledge-based economy and exploration

Capacity building in Science, Technology and Innovation

Bring important benefits to the people worldwide: navigation, communication by satellite, Earth observation for monitoring in case of natural disasters or humanitarian aids

Food security, resource management, and climate change studies

A high profile, hi-tech sector, ability to motivate and inspire new generations into science, mathematics and technology

...Trends

- Unprecedented increase in number of spacefaring nations, nearly 50 space agencies throughout the world
- An increase number of satellite operators and lunching states
- The increase stimulated by emerging national space program in Middle East, North Africa, Far East and India
- .. and by Increase number of commercial firms venturing into space inclusive e.g. space tourism, small satellite constellations
- Space activity is no longer confined to exploration and scientific research but a contributor to development of Earth
- Rapid increase in innovation based on space science and space technology

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Issues and Challenges

Key issues...

- Investment in science and technology strengthen economic growth and development
- Space development require multi-year high investments
- Earth is under pressure from climate change and from degradation processes such as desertification
- An increasing number of people rely on space-based positioning and navigation systems
- Improving the accuracy of global land cover maps and positioning remains a key challenge

… create set of challenges

- Countries wants to move up the value chain, to diversify its economy and business exchanges
- Create and retain highly skilled engineers and professionals to build local capacity and knowledge in space technologies skills for utilizing data obtained from space
- Building expensive space assets and ground infrastructure,
- Governments face societal challenges: environment and natural resources monitoring; Increased mobility of people and goods; crisis management and disaster recovery; high-speed access to information; and homeland defence & security.
- Demand for scientific data in new areas that are difficult to acquire
- The ability to creating sustainable development in space technology and applications, presents the most significant challenge

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Opportunities to Overcome Challenges

Developing countries challenges...	… can be overcome by
Located in geographic regions that experience a disproportionately large amount of natural disasters - cyclones, earthquakes or volcanoes -,have more vulnerability and difficulty during recovery.	• Lowering entry barriers for new spacefaring nations is an essential factor for great power strategic competition in space • The higher education sector: an opportunity to create professional training with international partners to address these capability gaps. • International cooperation: offers good opportunities for capacity building in space technologies and application, space science and space exploration, Earth observation, communications and etc. • Partnerships: for long-term strategies to develop the indigenous space industry. • Innovation and technology transfer: to stimulate, foster and manage the transfer of technology to and from the space sector. • The industry: the role of industry ranges from provision of turn-key systems, to provision of training and joint development of satellites in partnership with emerging space countries
Obtaining timely information about the state of their environment, maintaining a complete communication infrastructure, managing safe transportation and contributing to experimental scientific research.	
Access to data is insufficient, and both the infrastructure development and its utilization require a high degree of skill.	
The development of space application products and services will require the creation of additional capabilities in industry	
Maintaining a high quality research and education infrastructure to participate in space science.	

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Sustainable development goals

… could the sustainable development goals

… resolve and mitigate challenges

- How and in what capacity would the UN, pioneered spacefaring nations and industry …
  - support developing countries to catch-up and close technological gap?
  - Easing entry barriers?
  - Easing access to space data?
  - Provide financial support?
  - Developing local capabilities?
  - .. Etc?
- How these goals will be followed up and monitored its achievements?
  - What are the monitoring tools?

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Toward sustainable development – UAE Case

National Space Program

	ST&I Roadmap *A road to prioritize, guide and direct R&D activities*	EMM *Emirates Mars Mission*	Earth Observation Satellites *For science and EO*	Small Satellite Program *For science and EO*	CubeSat Program *For education and technology demonstration*	Mars City *A dedicated R&D city to simulate Mars environment*	Human Flight Program *A sustainable program to send astronaut to ISS*
1 Space Exploration	◑	●	○	○	○	◑	◑
2 Earth Observation	◔	○	●	●	●	○	◔
3 Science	◑	◑	◔	◔	◔	◕	◑
4 Technology	◑	◑	◑	◑	◔	◔	◔
5 Education	◔	◔	◔	◔	●	○	◔
6 Manufacturing, Assembly, Integration and Testing	◔	●	●	●	●	◔	○
7 International Collaboration	◑	●	◑	◑	◔	◕	●

Degree of benefit: ○ None ● Very strong

Recommendations

- **National programs and sustainable development goals:**
  - UAE Space Agency to map national program to sustainable development goals
  - Report existing achievements and future initiatives
- **Monitoring the progress:** Monitoring the implementation of sustainability development goals and results e.g. the Space Capacity Index (SCI) is an option.
  - Investigate and analysis the progress and development patterns made by developing countries
  - Propose and exchange conceptual development models that can be benefited by other laggard countries
  - Address and promote successful cases
- **An international integration solution database:** Building an an international integrated database on applications could be an option e.g. The development of a results-based management approach for space capacity-building, based on a Space Solutions Database (SSD)
  - Open platform to code and analysis data
- **Industry contribution:** a low cost option to access space for science and technology for education purposes and capacity build up e.g. Dream Chaser
  - A sustainable low cost service business model