INTERSESSIONAL PANEL OF THE UNITED NATIONS COMMISSION ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (CSTD)

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Contribution by Egypt

to the CSTD 2019-2020 priority theme on “Exploring space technologies for sustainable development and the benefits of international research collaboration in this context

DISCLAIMER: The views presented here are the contributors’ and do not necessarily reflect the views and position of the United Nations or the United Nations Conference on Trade and Development
Egyptian Space Agency

UN CSTD Intersessional Panel 2019-2020, Geneva
Nov. 2019
AGENDA

1. About EgSA,
2. Principles of Egyptian Space Policy and strategy,
3. Egyptian Space Program Pillars,
4. EgSA Infrastructure and Activities,
1. About EgSA

Established in August 2019.

Egyptian Space Agency is a Governmental Organization aims at acquiring and localization of Space Technology and Satellite Launching capabilities towards the accomplishment of The National Sustainable Development Strategy “Egypt-SDS 2030” Objectives.
Egyptian Space Agency

Agency Supreme council
Chaired by
The President of Egypt

Board of Directors
Chaired by
The Prime Minister

EgSA
CEO
Departments
Egyptian Space Agency

Vision

Egypt is a responsible user for outer space having the ability to carry out space missions serving its national development and security objectives, and competent of being an active member in global space initiatives.

Egypt will be capable of carrying out deep space missions to explore and use space resources.
Egyptian Space Agency

Mission

To promote the peaceful use of space, develop space systems at the national level through investment in human capital development, leveraging the space industry for sustainable future, supporting research and development, drive innovations, enhancing space outreach, and developing of reliable, responsive and viable economical solutions to serve the national objectives.
2. Principles of Egyptian Space Policy and strategy
Egyptian Space Policy Principles

1. Using space technology to support applications in Earth observation, Navigation, Communications and space science.

2. Building reliable and sustainable platform responding to social, economic, political and environmental challenges in a well-coordinated, integrated and responsive way.

3. Developing regulatory framework that supports Egypt sustainable development strategy SDS-2030, as a responsible user of outer space.

4. Creating sustainable regional collaboration framework taking into consideration international obligations and mutual benefits.
Egyptian Space Strategy Framework
Demand Driven Approach

- African Space Policy & strategy
- Climate Change & Green House Effect
- Group on Earth Observation-GEOSS
- Egypt Sustainable development strategy 2030
- UN 2030 Agenda for Sustainable Development

6 Strategic objectives

Egyptian Space Strategy

SDGs
Strategic Goals & Objectives

Goal-1: Localization of Space technology and building national capacity

Strategic objective-1.1: Building space systems.

Strategic objective-1.2: Investment in research and development at universities and research institutes.

Strategic objective-1.3: Support National industrial capabilities.

Goal-2: Addressing national and regional needs

Strategic objective-2.1: using outer space for monitoring Egyptian territory,

Strategic objective-2.2: support/create private sector investment-PPP,

Strategic objective-2.3: contribute/initiate regional space mega project,

Strategic objective-2.4: sustain/promote infrastructure capabilities and operation.

Strategic objective-2.5: Inspire And Engage The Public In Aeronautics and Space Science.

Goal-3: Exploration of outer space

Strategic objective-3.1: Support deep space monitoring and studies,

Strategic objective-3.2: Send unmanned Missions to moon and asteroids.
3. Egyptian Space Program Pillars
National Space Pillars
Addressing Strategic Objectives

Space Applications and ROI

International collaboration Pillar

Regulatory framework Pillar

Space Systems Pillar

Outer Space Exploration Pillar

Space Usage Enablers

Building capacity Enablers

Human Capital Development Pillar

Infrastructure Pillar
National Space Pillars 2030 Programs

Infrastructure and industrial capabilities
- Space City-2030
- Space Access Port-2030
- Industrial capability Assessment

Human and research capacity development
- Space outreach program
- Educational space program
- Research and development program
- Continues Support and training program

Building space systems
- Nanosatellite Program
- Experimental Satellite Program
- Operational satellite
- Space technology program
- Ground segment
- Space Launching program

Using space technology and return of investment
- Tele-Medicine
- Tele-Education

Outer Space exultation
- Outer Space monitoring Program
- Unmanned Moon mission

Regulatory framework and standard
- Regulatory framework
- Space standard

International collaboration

Human and research capacity development
Direct Priority Challenges

• Water resource management
• Climate change- GHG
• Securing local borders
• Investigation of National Resources (Gas, mineral)
• Reaching rural areas
• Urban planning
• Vegetation and irrigation
• Weather forecast
• Crises Management
Egyptian Space Agency – EgSA

Space Technology Pillar

- Artificial intelligence
- Space debris removal
- Space robotics
- Laser communication and ranging
- Internet of the things
- Imaging sensors fabrication
- Propulsion systems
- Material and Nanoscience
- Solar cells fabrication
- Harsh environment Batteries
Human capacity Development Pillar

- Dissemination of Space science and technology among students, researchers and young professionals,
- Expansion of Educational satellite program and support establishment of laboratories and creation of related curriculum.
- Joint research programs in space related fields, including specialized research teams in universities and research centers.
Outer Space Exploration Pillar

- Establishment of space weather monitoring center(s)
- Support astronomy and space geodesy
- Space debris and satellite monitoring centers
- Studies of remote planets, asteroids
- Preparation of astronauts – Egyptian Astronauts
- Participation in research at ISS
- Support interstellar and deep space studies
Cooperation With Universities And Research Centers

- Support joint research activities in space related fields;
- Support postgraduate studies in space related fields;
- Joint space research missions;
- Participate in development of curriculum;
4. EgSA Infrastructure & Activities
EgSA location

Space City Layout

EgSA
Egyptian Space Agency
Egyptsat-1 (2007)

- Remote sensing satellite
- Optical and infrared imaging capability,
- GSD 7.8 m
- Launched 17 April 2007
- Life time 3- 5 years,
- Joint project with Ukraine
Engineering Model Lab.

- Electrical ground support equipment,
- Mechanical ground support equipment,
- Clean room,
- Electromagnetic compatibility
Concurrent design center
Educational Satellite Lab.
Advanced Technology Space Systems lab.
Anechoic Chamber

- Aims of Antenna Measurements:
- Evaluation of designed antennas,
- Empirical validation for antenna analysis methods.

size: (m) 2 x 2 x 5
Ground control station
Ground data Reception Station

Satellite receiving station (ASWAN)
EgSA Activities & Initiatives
Experimental Satellite series

Nexsat-1
2015-2020

Nexsat-2
2020-2022

Nexsat-3
2021-2024

Nexsat-4
2022-2025

- Software and integration
- Communication system
- Camera system
- Power system
- SAR imaging
- Multi-communication system
Nanosatellite Series

• All Design, implementation and assembly of the satellite has been carried out at EgSA Labs
• Qualification testing has been done in Kyutech Japan
• Launching
  • August 2019 NARSSCube-2
  • Nov. 2019 NARSSCube-1
NARSSCube 1
NARSSCube 1 & 2
Educational Satellite project

- Aims at promoting National human capabilities at National universities
- 20 Egyptian universities participating
- Develop satellite systems as a graduation projects
African Development Satellite Initiative

• Understanding the negative impact of Climate Changes and Global Warming on the Development of our continent, Egypt declared, during The Seventh Tokyo International Conference on African Development (TICAD 7); its initiative to develop and launch a remote sensing mini satellite 55 Kg equipped with hyperspectral sensor (HS) payload for detection CO2 and Climate Quality

• So far, five countries have welcomed this initiative: Kenya, Morocco, Nigeria, Sudan and Uganda

• The first meeting to be held on 27-28 November 2019 at Egypt Space Agency head quarter

• New partners are welcomed
Thank you!