EXPLORING SPACE TECHNOLOGIES FOR SUSTAINABLE DEVELOPMENT AND THE BENEFITS OF INTERNATIONAL RESEARCH COLLABORATION IN THIS CONTEXT

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AGENDA

1. SPACE APPLICATIONS FOR THE SDGS
2. TECHNOLOGICAL DEVELOPMENTS AND CAPACITY CONSTRAINTS
3. INTERNATIONAL SCIENTIFIC RESEARCH IN SPACE
4. POLICIES AND STRATEGIES
5. GUIDING QUESTIONS

SPACE CONTRIBUTION TO THE SDGS

FOOD SECURITY AND AGRICULTURE

SUPPORTING FARMERS

- WMO Agricultural Meteorology services to farmers, herders and fishermen
- AfriScout application supporting pastoralists in Ethiopia, Kenya, and Tanzania

NATIONAL CROP MONITORING

- Bangladesh's geospatial agency used EO data to estimate the production of its two major crops, Boro and Aman rice
- In 2016, Canada first to replace farm survey with remote sensing approach for crop yield estimates

REGIONAL/INTERNATIONAL ASSESSMENTS

- FAO Global Agro-Ecological Zones data portal
- WFP Support to Global Humanitarian Risk Mapping (SpaRC) project
- USDA World Agriculture Supply and Demand Estimates (WASDE) report

HEALTH APPLICATIONS

Space-based technologies for global health

Improving Public Health

- **Monitoring infectious disease (e.g.,** Malaria, Cholera, Polio)
- Telemedicine and tele-health

Enabling microgravity medical research

- High-quality protein crystal growth for new drug design
- Applications in infectious diseases, cancer, and lifestyle-related diseases

NATURAL RESOURCE AND ENVIRONMENTAL MANAGEMENT

DISASTER RISK REDUCTION AND HUMANITARIAN CRISES

Local, national and global applications

DISASTER RISK REDUCTION AND PREPAREDNESS

Detecting disaster risks and hazards for floods, volcanoes, droughts, earthquakes, flooding, and tsunamis through EO data and advanced meteorological tools.

MANAGING EVACUATIONS AND HUMANITARIAN CRISES

Satellite telecommunications, satellite imagery for planning evacuations and humanitarian relief, and crowdsourcing platforms for emergency response.

ADDITIONAL APPLICATIONS

- Bridging digital divide
- Estimating national and urban poverty
- Innovations for renewable energy
- Industrial applications

RECENT TECHNOLOGICAL DEVELOPMENTS

MACHINE LEARNING

BIG DATA

CLOUD COMPUTING

EMERGING SATELLITE PLATFORMS

DRONES

3D PRINTING

CROWDSOURCING

PRIVATE SPACE ACTORS

CAPACITY CONSTRAINTS

BOTTLENECKS HINDERING SPACE APPLICATIONS

LACK OF AWARENESS

USER CHALLENGES

HIGH COSTS

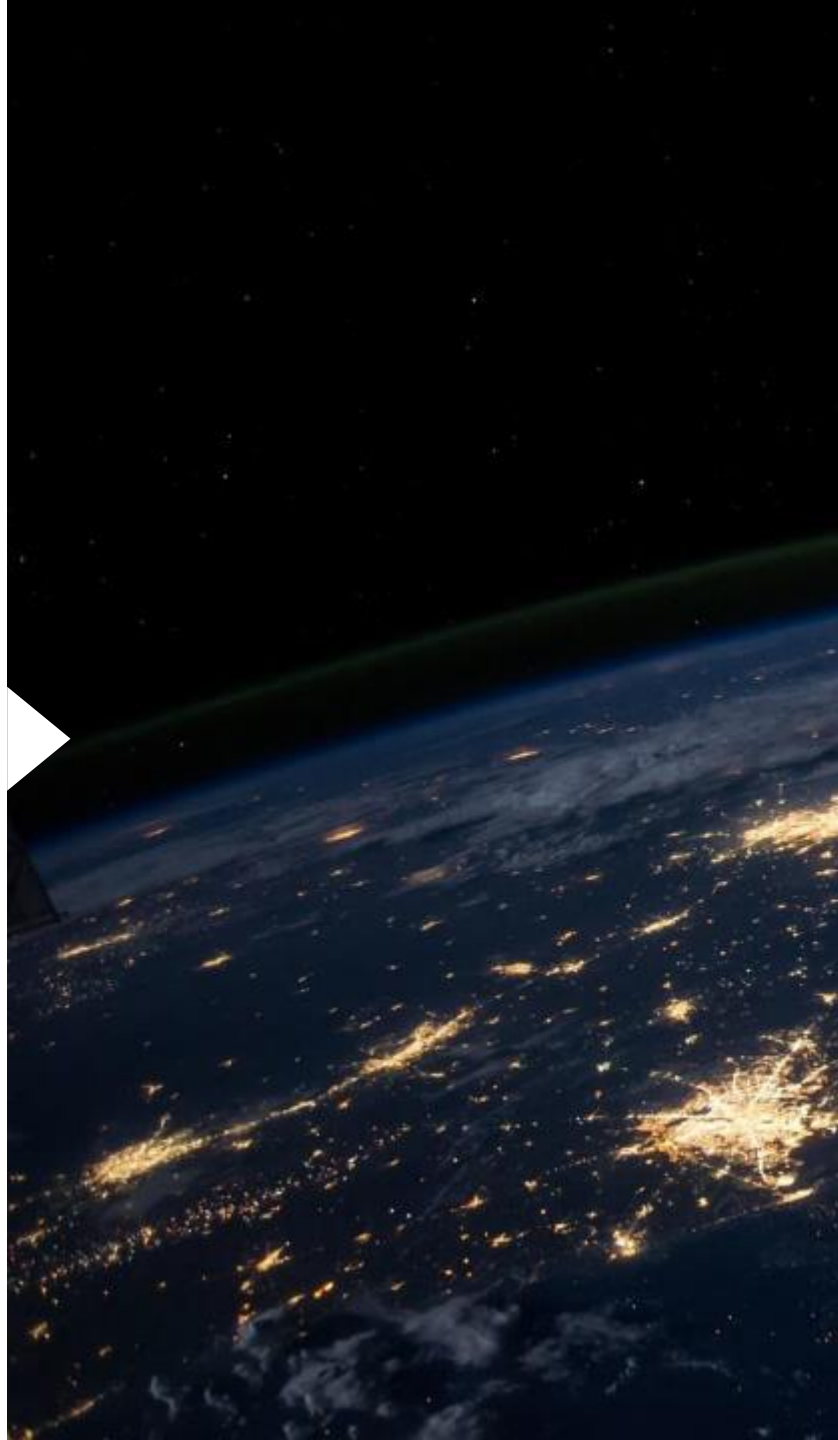
GEOGRAPHICAL CONSTRAINTS

FINANCIAL CONSTRAINTS

GOVERNANCE ISSUES

TECH AND SKILLS GAPS

RISKS OF SPACE TECHNOLOGIES



INTERNATIONAL RESEARCH IN SPACE

GLOBAL SCIENTIFIC COOPERATION

INTERNATIONAL SPACE STATION

Collaboration among space agencies of Canada, Europe, Japan, Russian Federation, and USA.

Three Laboratory modules (US Destiny, European Columbus and Japan Kibo) supporting a range of scientific and research activities.

EUROPEAN SPACE AGENCY

International collaboration involving 22 European Member States.

EU’s flagship programmes include European Global Navigation Satellite System (Galileo) and the Copernicus Earth observation programme

INTERNATIONAL RESEARCH IN SPACE

Humanitarian and Development Applications

DROUGHT MONITORING

ESCAP/RESAP

Regional Cooperative Mechanism for Drought Monitoring and Early Warning

DISASTER RISK REDUCTION

UN-SPIDER

Space-based information in disaster management and disaster risk reduction

ACCESS TO SPACE

KIBOCUBE

Helping developing countries deploy CubeSats through Japan's Kibo Lab.

NATIONAL AND REGIONAL POLICIES/STRATEGIES

NATIONAL

- Investing in satellite services, hardware, expertise and infrastructure
- Developing space programs (e.g., South Africa and Nigeria)
- Collaborating with technical and academic communities
- Sharing data for development through open data/science

REGIONAL

- Promoting regional awareness and consensus building
- Encouraging regional R&D, capacity-building, and data sharing

MULTISTAKEHOLDER AND INTERNATIONAL COOPERATION

MULTISTAKEHOLDER PARTNERSHIPS

- Encourage multi-stakeholder actors to continue to share EO digital public goods
- Build space for SDG-focused global and public-private partnerships

INTERNATIONAL COOPERATION

- Invest in multilateral mechanisms and platforms for sharing EO data assets
- Strengthen international cooperation on space-related R&D and capacity-building
- Leverage intergovernmental platforms for space

GUIDING QUESTIONS

SDG APPLICATIONS

How are space technologies addressing SDGs?

TECHNOLOGICAL CHANGE

How is rapid technological change impacting availability and accessibility of space for SDGs?

CAPACITY CONSTRAINTS

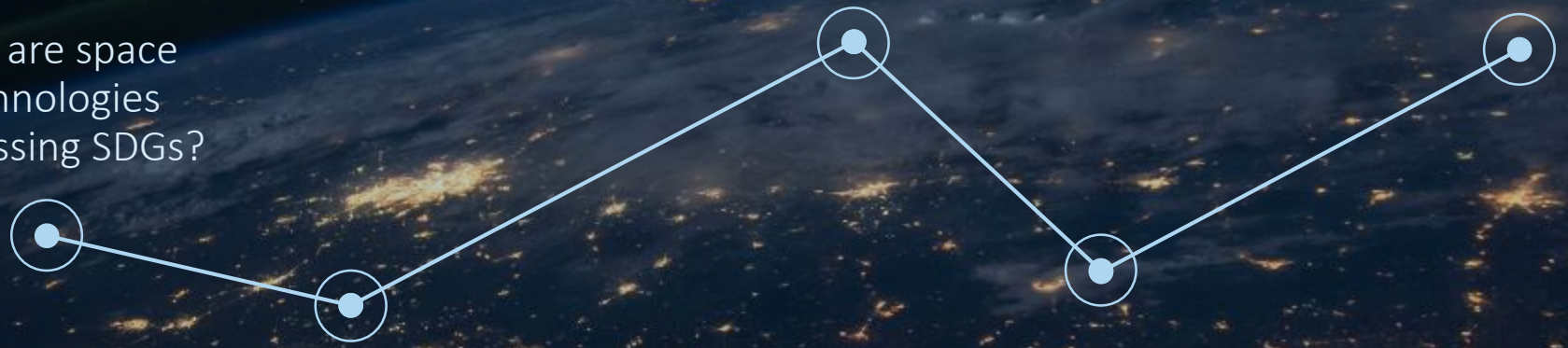
What are the most critical capacity and infrastructural constraints?

RESEARCH COLLABORATION

What are the opportunities and challenges of scientific research cooperation in space?

INTERNATIONAL COOPERATION

What are best practices for regional, multi-stakeholder and international cooperation?




THANK YOU