WHERE SPACE CAN PLAY A ROLE IN BHUTAN?

UNITED NATIONS/UNITED ARAB EMIRATES HIGH LEVEL FORUM
SPACE AS A DRIVER FOR SOCIO-ECONOMIC SUSTAINABLE DEVELOPMENT
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PRESENTED BY: YESHEY CHODEN

• MINISTRY OF INFORMATION AND COMMUNICATIONS, ROYAL GOVERNMENT OF BHUTAN
• KYUSHU INSTITUTE OF TECHNOLOGY, JAPAN
OUTLINE

• Introduction to Bhutan’s space initiative
• Situation analysis
• Conclusion
• Recommendation
BHUTAN

Map of South Asia

- Area: 38,390 sq.km
- Population: 0.8 Million
- Government: Constitutional Monarchy
THE BEGINNING OF SPACE IN BHUTAN

- A vision of His Majesty the King of Bhutan
- Started in 2016
- Government taking the lead: Division of Telecom and Space, Ministry of Information and Communications

His Majesty Jigme Khesar Namgyel Wangchuck, 5th King of Bhutan
CAPACITY BUILDING using BIRDS Project

• Joint Global Multi-Nations BIRDS Project

• BIRDS-1: Japan, Ghana, Mongolia, Nigeria, Bangladesh (5 countries)

• BIRDS-2: Japan, Bhutan, Malaysia, Philippines (4 countries)

• Design, develop, test and launch 1U CubeSat at Kyushu Institute of Technology, Japan

• Hands-on experience and learning at low cost
BHUTAN’S FIRST SATELLITE PROJECT

Objectives

• To enhance socio-economic development by using space science and technology
• To develop first satellite of Bhutan
• To develop capability in space science and technology

Members of BIRDS-2 project with faculty of Kyushu Institute of Technology, Japan
SITUATION ANALYSIS

Economy:

● Agriculture & Forestry, Hydroelectric power, Tourism, Construction

● Import (USD 1 bn) >> Export (USD 0.5 bn)

● Expenditure (USD 0.56 bn) >> Revenue (USD 0.26 bn)
  ○ Grants: USD 0.16 bn
Education:

- Adequate primary, secondary schools and teachers

- High enrollment rate at primary level: 98%
  - Transition rate: 92% Primary to lower, 87% lower to middle, 71% middle to higher

- Unemployment: 2.5% (youths: 10.7%)
  - Major employment: agriculture and forestry
  - Mismatch of skills
Health:

• Widespread health infrastructure across the country

• Shortage of health workers: 3.3 doctors/10,000 persons

• Telemedicine (pilot project)
Environment:

- Maintain 60% forest coverage at all times (constitution)
- Degradation of forest (forest fire, landslides, construction/mining)
Telecommunications:

- 2 Service Providers: 1 state owned & 1 private operator
- Heavily rely on terrestrial infrastructure: fiber optic cables network
- Satellite communications: minimal usage (remote connectivity)
- No international redundancy
Broadcast:

• 1 broadcaster: state owned

• Two channels

• National coverage

• Indian satellite service
Meteorology:

- Service from Japan Meteorological Agency (JMA)
- Part of WMO (World Meteorological Organization)

GLOF Early Warning systems:

- Commercial satellite services (Iridium)
- USD 0.02M/yr
Geospatial Information System:

• National Committee for coordination
• Origin: Land use
• Repository for GIS data
• Discovery and dissemination of data
Needs/ Requirements

• Technical skills development

• Conservation of environment by resource mapping and monitoring

• International redundancy for communication

• 100% coverage for broadcasting network

• Disaster risk mitigation by early warning system

• Reliable communication during emergencies/ disasters
CONCLUSION

Explore innovative (NEWSPACE) approaches:

• Space governance: the changing role of government
• Facilitate participation of private entities
• Cost sharing/reducing mechanism
• Realise new market potentials using space applications
• Build capacity in multiple space disciplines: Holistic
• Foster international cooperation: international organizations, countries
RECOMMENDATION

Develop an approach for establishing a sustainable and progressive space program that can be used in other “emerging developing countries” in the “NEWSPACE age”
Thank you

e-mail: ychodern@dit.gov.bt