Developing Space: Political and Socio-Economic Rationales of Emerging Space Programs

Sandra Cabrera-Alvarado  
*Mexican Space Agency*

Sara Langston  
*University of Sydney, Australia, langstos@erau.edu*

Tanay Sharma  
*Space Generation Advisory Council*

Follow this and additional works at: [https://commons.erau.edu/publication](https://commons.erau.edu/publication)

Part of the *Air and Space Law Commons*
DEVELOPING SPACE: POLITICAL AND SOCIO-ECONOMIC RATIONALES OF EMERGING SPACE PROGRAMS

Sandra Cabrera-Alvarado
Space Generation Advisory Council (SGAC)/Mexican Space Agency (AEM), Mexico,
sandra.cabrera@spacegeneration.org

Sara Langston
University of Sydney, Australia, langstonsara@gmail.com

Tanay Sharma
Space Generation Advisory Council (SGAC), UK,
tanay.sharma@spacegeneration.org

IN SUPPORT OF THE UNITED NATIONS PROGRAMME ON SPACE APPLICATIONS
What is Space Generation (SGAC)?

- Global non-governmental organisation and network depending on the UNOOSA which aims to represent university students and young space professionals to the United Nations, space agencies, industry, and academia from the age of 18 to 35 years old
- Main events: Space Generation Congress (IAC) and Fusion Forum (NSS)
- Working Groups (7):
  - Space Law
  - YGNSS
  - Small Satellites
Why do they go to space?
Outline

- Rationales for a Space Program
- Developing Space Programs in Latin America
  - Mexico
  - Brazil
- Common Rationales
- Conclusions
Rationales for National Space Programs

- *Emerging and new actors*, whose interests are primarily driven by their national context and circumstances.

- *Established actors* drivers are to pursue advances in technological and scientific innovation.
Introduction.-Mexican Space Agency (AEM)

- July 2010 the Congress passed the law that established the AEM
- 2010 the board of governors is created formed by government representatives and academia who approve the AEM Space Program
- October 2011 AEM starts activities and programs

AEM Budget Evolution in Million US$

USD$ 1=MXP$ 12.86

<table>
<thead>
<tr>
<th>Year</th>
<th>FY Budgets</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>4</td>
</tr>
<tr>
<td>2013</td>
<td>7.6</td>
</tr>
<tr>
<td>2014</td>
<td>8.8</td>
</tr>
</tbody>
</table>

Mexico’s Space Law Framework and Rationales

- 2011 The General Guidelines of the Mexican Space Policy are established
- National Space Activities Program (PNAE)

<table>
<thead>
<tr>
<th>Strategic Goals (PNAE) 2011-2012</th>
<th>Drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creation of <strong>human capital and capacity building</strong></td>
<td>Education and workforce development</td>
</tr>
<tr>
<td>Development of <strong>scientific and technological research</strong></td>
<td></td>
</tr>
<tr>
<td>Support of <strong>industry and business competitiveness</strong></td>
<td>Economic growth</td>
</tr>
<tr>
<td>Development on <strong>international relations and security</strong> space topics</td>
<td>National prestige and leadership</td>
</tr>
</tbody>
</table>
The Mexican Space Program Priority Areas

- **Disaster Management**
  - Earth Observation (i.e. Early Warning System)

- **National Security and Surveillance**
  - Scientific and technological development R&D (Small satellites manufacture)

- **Telecommunications**
  - Communication Systems (i.e. Connectivity)
International Space Partners

MoU's collaboration
Brazilian Space Agency (AEB) Introduction

- 1961, the Organizing Group for the National Commission on Space Activities (GOCNAE) was created.
- 1971 the GOCNAE was substituted by the Institute of Space Research (INPE).
- Brazilian Committee on Space Activities (COBAE) was also established.
- AEB constitutes the largest space organization in Latin America with a budget of around US$219 million in 2012.
Brazil’s Space Law Framework

- The National Politics for the Development of Space Activities (PNDAE)
  - Principles, objectives and guidelines of the Brazilian National Space Policy
- The National Plan of Space Activities (PNAE)
  - Elements, priorities and activities of the space program
- The National System for the Development of Space (SINDAE)
  - Carries out the space activities
- The most comprehensive space regulatory framework in Latin America: including private/commercial actors and activities.
Brazil’s Rationales

- The PNAE goals are based on the PNDAE rationales
- YET PNDAE needs to be reviewed and updated

<table>
<thead>
<tr>
<th>Strategic Goals (PNDAE)</th>
<th>Drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science and technology competence</td>
<td>Security and defence</td>
</tr>
<tr>
<td>Support the Brazilian space private sector</td>
<td>Economic growth</td>
</tr>
<tr>
<td>Space systems development</td>
<td>Education and workforce development</td>
</tr>
</tbody>
</table>

Brazil plays a dominant role in Latin America
The Brazilian Space Program Priority Areas

- Earth Observation (CBERS)
- Infrastructure (Alcântara Spaceport)
- Telecommunications (SGDC government communications satellite system.)
- Meteorology
- Access to space (ISS)
Brazil International Space Partners
Trends in Latin America

- South-South cooperation is more frequently observed.
- Projects can only be done by governmental funding.
- Interest focus: Telecommunications, EO, small satellite industry, R&D.
Common Rationales of Emerging Space Programs

- Self-reliance
- Guarantee skill workforce
- Socio-economical benefit pursuit
- Space industry and infrastructure development
- Scientific-technological development
Closing Remarks

- **Strategy 1**: To cooperate with developed countries in specific areas of expertise and tech transfer
- **Strategy 2**: To identify a niche in the space industry
- **Strategy 3**: To innovate in space solutions due to tight funding
- **Strategy 4**: To accomplish short term projects in order to give to the population immediate results
Thank you
Merci

Sandra Cabrera-Alvarado
Co-Lead Space Law Group (SL)
Space Generation Advisory Council (SGAC)
Mexican Space Agency (AEM), Mexico,

sandra.cabrera@spacegeneration.org