SpaceResources.lu
Vision, Goals, Challenges, Actions
LUXEMBOURG: Pioneering Space for 30+ Years

1985

SES established (1985) and launches first satellite (1988)

ESTABLISHES
International Partnerships and Joins ESA, Becoming a Major Contributor to Several European Programs

FACILITATES
Commercialization of Satellite Communications and Becomes Home to Leading Global Satellite Operators

2005

Collaboration Agreement Signed (2000); Becomes 17th ESA member (2005)

ENABLES
Market for Space Resources and Other Emerging Space Capabilities

2016

Space Resources Initiative formally announced by Government (2016)
Luxembourg’s
NATIONAL SPACE POLICY GOALS

Primary Goals

1. Generate New Economic Value

2. Increase International Collaboration

3. Continue SATCOM Leadership

“The efforts to put in place the necessary measures to support the continued strengthening of Luxembourg’s space sector clearly demonstrate the long-lasting commitment of the Government”

– Etienne Schneider, Deputy Prime Minister, Minister of the Economy
INVESTING IN KEY CAPABILITIES

Enabling Future Markets

Priority Space Capabilities for Luxembourg

Space-Based Value-Added Services

Ground Segment Equipment

Critical Satellite Sub-Systems and Components

Microsatellites and Miniaturized Payloads, Systems, and Structures

Systems and Enablers for Space Resource Utilization

**Strategic Mindset**: Luxembourg has identified at least five capabilities that it believes to be critical in particular high growth commercial space markets

**Forward-Looking Approach**: Luxembourg is always looking for the next critical space capabilities and has the flexibility and openness to evolve and adapt its priorities
NATIONAL VISION
Luxembourg’s Space Resources Initiative

Luxembourg aims to contribute to the peaceful exploration and sustainable utilization of space resources for the benefit of humankind.

“Luxembourg aims to contribute to the peaceful exploration and sustainable utilization of space resources for the benefit of humankind.”
DEMAND IS GROWING
And Capabilities Are Rapidly Improving

PIONEERS
Are Enabling Space Exploration and Will Require Space Resources

SpaceX
Plans Mars Settlement

UAE
Plans Mars Exploration & Settlement

Blue Origin
Plans Lunar Exploration

Bigelow
Plans Habitats in Cislunar Space

Advanced Materials
Miniaturization
Additive Manufacturing
Data Processing

TECH ADVANCEMENTS
are Enabling Commercial Exploration

ESA
Advocates for Moon Village

UAE
Plans Mars Exploration & Settlement

Blue Origin
Plans Lunar Exploration

Bigelow
Plans Habitats in Cislunar Space

Advanced Materials
Miniaturization
Additive Manufacturing
Data Processing

TECH ADVANCEMENTS
are Enabling Commercial Exploration
SPACE RESOURCES
Luxembourg’s Next Big Bet in Space

WHY?
Promote Space Resource Utilization

Space Resources Are **Available and Valuable**

Space Resources Part of **the Future Space Economy**

Space Resources Will **Enable Deeper Space Exploration**

Space Resource Tech Has **Near-Term Terrestrial Value**
## CHALLENGES

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<th>Technical</th>
<th>Regulatory</th>
<th>Financial</th>
<th>Business</th>
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<td>Capabilities to prospect, extract, transform and utilize resources in space still must be developed, tested, and matured</td>
<td>International &amp; domestic legal frameworks need to be developed/established to promote and protect investment, and ensure responsible activity and behavior</td>
<td>Significant financial resources with long-time horizons must be leveraged to enable private industry to develop and field critical systems</td>
<td>Need for understanding the value chain and for identification of opportunities and business cases with near-term potential to ensure incremental growth in a nascent market</td>
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**Luxembourg seeks to engage globally to address these challenges**
To unlock the vast potential of the space resources market, Luxembourg established a space resources strategy working along five pillars:

1. **PROMOTE SPACE RESOURCES**
   - Ensure national support and promote international cooperation

2. **BUILD REGULATORY FRAMEWORK**
   - Build clear legal framework and engage internationally

3. **DEVELOP TOP-TIER TALENT**
   - Promote long-term public support and workforce engagement through education and R&D

4. **OFFER R&D SUPPORT**
   - Provide dedicated support for industrial research and development activities

5. **ENABLE LONG-TERM INVESTMENT**
   - Develop investment Instruments focused on commercial space
Significant Results To Date

Implementation of Space Resources Framework...

Several companies have begun operations in Luxembourg

Five Pillars of Luxembourg’s Space Resources Initiative

1. PROMOTE SPACE RESOURCES
2. BUILD REGULATORY FRAMEWORK
3. DEVELOP TOP-TIER TALENT
4. OFFER R&D SUPPORT
5. ENABLE LONG-TERM INVESTMENT

And others...

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COMMERCIAL LUNAR

COMMERCIAL EARTH ORBIT
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