ESPI

European Space Policy Institute

Executive Summary

Emerging Spacefaring Nations

Review of selected countries and considerations for Europe

Report:
Title: "ESPI Report 79 - Emerging Spacefaring Nations – Executive Summary"
Published: June 2021
ISSN: 2218-0931 (print) • 2076-6688 (online)

Editor and publisher:
European Space Policy Institute (ESPI)
Schwarzenbergplatz 6 • 1030 Vienna • Austria
Phone: +43 1 718 11 18 -0
E-Mail: office@espi.or.at
Website: www.espi.or.at

Design: copylot.at

Cover page picture credit: ESA

Table of Contents

About Emerging spacefaring nations

The ongoing evolution of the space sector is driven by multiple interrelated trends characterised by the rapid growth of the number of actors conducting space activities, including new companies and new countries. Over the past ten years, more than 20 countries have established a national space agency, and the number of countries with at least one satellite in orbit has increased from 50 to 82 in only a decade.

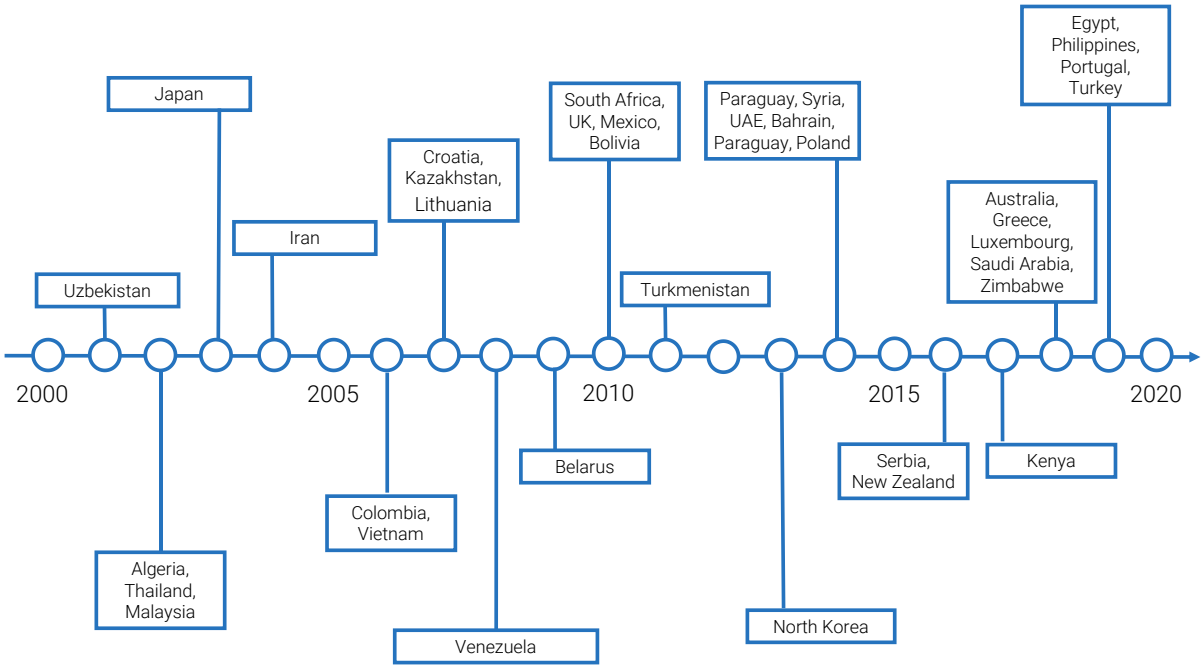


Figure 1: Creation of space agencies since 2000 (ESPI database)

Whereas most of the new players still have limited capabilities to access, operate, and benefit from space assets, some are now engaged in a quick transition, aiming to become full-fledged spacefaring nations, (i.e., nations with the capacity to autonomously engage in a wide spectrum of space activities). Although these "emerging spacefaring nations" pursue different objectives and are developing their space capacity and autonomy at a different pace and along different priorities, their transition is marked by important milestones, including for example:

- Adoption of a space policy/strategy, often in conjunction with a legal regime for space activities,
- Foundation of a national institution specifically in charge of space activities (e.g., space agency),
- Establishment of a national space programme with a dedicated budget and covering multiple projects,
- Acquisition of space capabilities from third countries for national purposes,
- Development of domestic industrial means for the development and/or operation of space systems,
- Development of domestic access to space capabilities (e.g., spaceport, launch system),
- Participation in international programmes and/or space diplomacy.

For the purpose of this research, an "emerging spacefaring nation" is defined as a country that is increasing its effort in the space domain and which is in the process of establishing broader autonomous capacities to access, operate in space, and benefit from a variety of space activities.

A number of countries meet this definition. The emergence of new spacefaring nations accelerated considerably over the last decade as many countries are raising their ambitions in the space domain and mobilising more resources for the sector. Notable examples of emerging spacefaring nations include Argentina, Brazil, and Mexico in Latin America, South Africa, Egypt, Saudi Arabia, Iran, United Arab Emirates, and Turkey in Africa and the Middle East as well as Australia, New Zealand, Indonesia, Vietnam, Malaysia, and South Korea in the Asia-Pacific region.

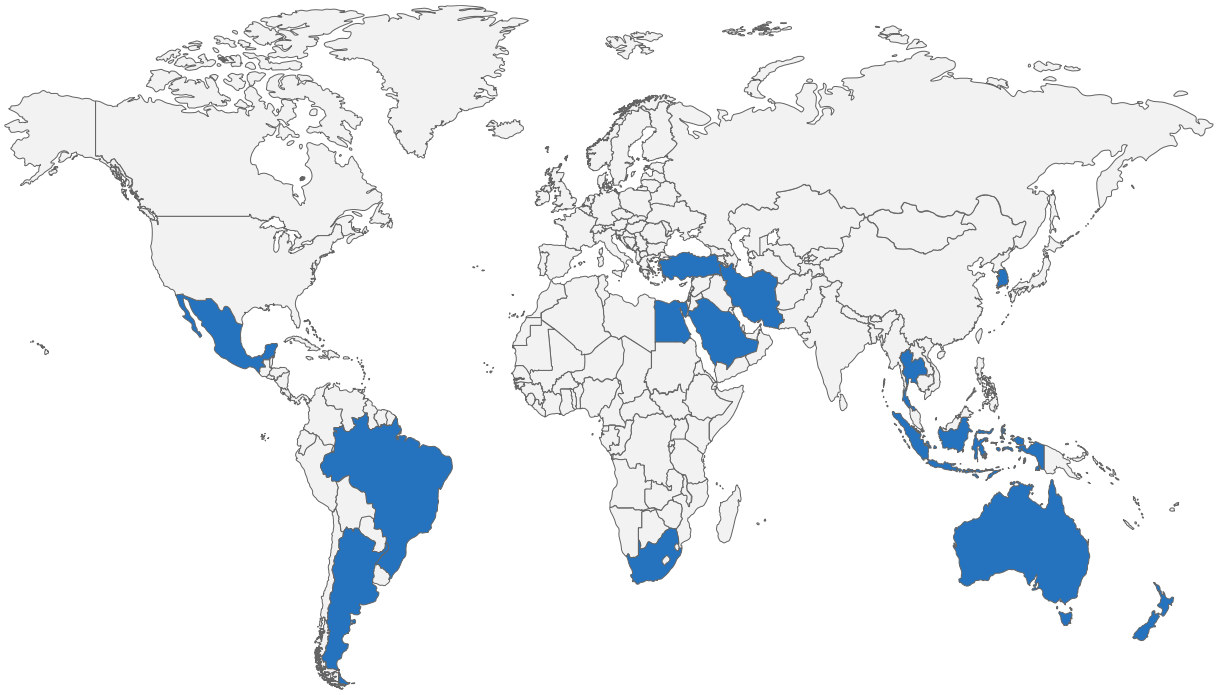


Figure 2: Emerging spacefaring nations highlighted on a map

This list does not aim to be comprehensive, but rather to highlight the global dimension of the emergence of new spacefaring nations as well as the diversity of regions and countries concerned. Several other countries could also be considered emerging spacefaring nations.

The emergence and development of new state actors has far-reaching implications for the future of the space sector and for the international space community, including Europe. In this context, ESPI seeks to raise awareness among European decisionmakers about this developing international situation and about the opportunities and challenges associated with the emergence of new spacefaring nations in the global space arena. With this objective, this report provides a review of space strategies, policies, programmes, and sector developments in selected emerging spacefaring nations and discusses implications of current and future developments in emerging spacefaring nations for Europe, in particular with regards to cooperation and international diplomacy.

ESPI selected four case studies to provide an illustrative overview of the variety of emerging spacefaring nations in terms of objectives and priorities, space programmes, history, industrial development, as well as political system, socio-economic development, and international diplomacy:

- the United Arab Emirates (UAE),
- Australia,
- Argentina
- South Korea.

The United Arab Emirates

Main actors – The UAE's main institutional actors are the Council of Ministers, Telecommunications Regulatory Authority, UAESA, MBRSC, and Space Reconnaissance Center. The industry is still nascent but counts the two communication operators Yahsat and Thuraya, and companies providing services derived from satellites such as Stratign and Farmin. The research landscape is more developed, with different universities at the forefront of space research. This includes Khalifa University of Science and Technology, American University of Ras Al Khaimah, Higher Colleges of Technology, NYU Abu Dhabi, Zayed University, University of Sharjah, and UAE University.

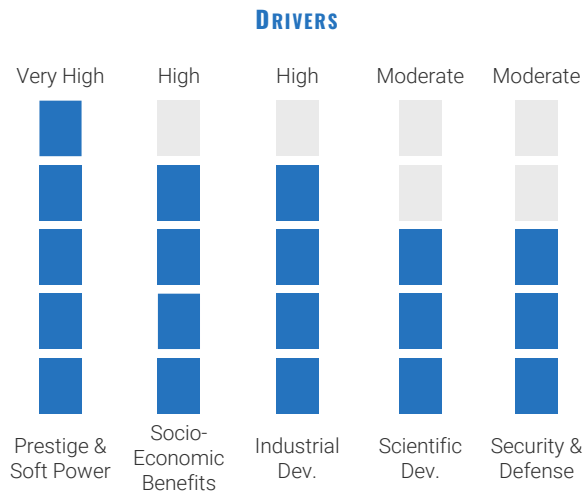
Domestic policy and legal instruments – Space activities in the UAE are framed by the:

- National Space Policy
- National Space Strategy
- MBRSC Strategy 2021-2031
- Federal Law no. 12
- Regulation on the Authorization of Space Objects
- Regulation on Registration of Space Objects
- Regulation on Human Spaceflight Activities
- Space Debris Mitigation Guidelines
- Insurance Guidelines
- EO Space-Based Data Policy Guidelines

International Law – The UAE ratified four of the five UN Space Treaties (Outer Space Treaty, Rescue Agreement, Liability Convention, Registration Convention) and other agreements, *i.e.,* ITU Constitution & Convention, ITU Radio Regulation, ITSO Agreement, IMSO Convention, ARABSAT Agreement.

International Cooperation – The UAE entertains bilateral cooperation with ESA, CNSA, UKSA, Australian Space Agency, CSA, JAXA, Roscosmos, State Space Agency of Ukraine, ASI, DLR, Swedish National Space Agency, CNES, ISRO, Bahrain National Space Science Agency, Algerian Space Agency, Kazcosmos, NASA, USSTRATCOM, US FAA, Luxembourg Ministry of Economy, South Korea Ministry of Science. It is also engaged in the International Charter Space and Major Disasters (ICSMD), IAF, Space Frequency Coordination Group, COPUOS, COSPAR, Consultative Committee for Space Debris Systems (CCSDS), Arab Space Cooperation Group, ISECG, International Committee on Global Navigation Satellite Systems (ICG), Interagency Operations Advisory Group, Group on EO, Committee on EO Satellites, SpaceOps, and International Society for Photogrammetry and Remote Sensing (ISPRS).

Assets and activities – The UAE 2019 budget devoted USD 47 million to UAESA. Between 2000 and 2020, the country deployed 12 satellites: five for telecom, four for EO, and three for S&T and education. Overall, four small satellites were developed and manufactured in the UAE. A GNSS Augmentation System is underway and several space exploration missions focusing on Mars and the Moon are progressing. One Emirati astronaut trained at the Yuri Gagarin Cosmonaut Training Center and stayed aboard the ISS for seven days in 2019. A second team of astronauts was recently selected.



SELECTED MAIN ACHIEVEMENTS

- Rapid growth supported by increased public investments and ambitions
- Quick development of capabilities through knowledge transfer programmes
- Establishment of "Pan-Arab Group for Space Collaboration
- Comprehensive space policy and legal framework

FUTURE PLANS

- Ambitions to stimulate economic development as part of broader diversification efforts
- Continued development of national industrial base
- Development of a national PNT system
- Implement the national strategy to expand space exploration activities

Australia

Main actors – Institutional actors are varied in terms of focus areas and involvement, either dedicated to science and research or industrial aspects. They include the Australian Communications and Media Authority, Attorney-General's Department – Office of International Law, Austrade, Bureau of Meteorology, CSIRO, Department of Infrastructure, Department of Defence, Department of Environment, Department of Foreign Affairs, Department of Home Affairs, Department of Industry and Science, GeoScience, and Australian Space Agency. The industry is thriving with both established companies expanding their services (*e.g.*, Optus, NBN, Electro Optic Systems) and promising newcomers (*e.g.,* Fleet Space Technologies, Myriota, Inovor, Gilmour Space, Southern Launch). The research landscape is relatively advanced with world class universities (e.g., University of new South Wales, Australia National University) and Cooperative Research Centres (*e.g.,* SmartSat CRC, CRC for Space Environment Management).

Domestic policy and legal instruments – Space activities in Australia are framed by the:

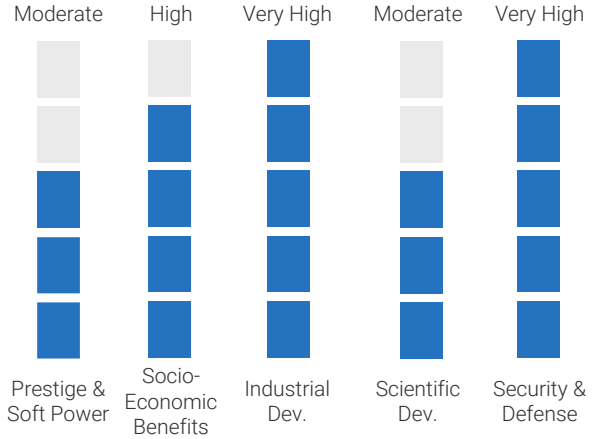
- Australian Civil Space Strategy 2019-2028
- 2020 Defence Strategic Update
- 2020 Force Structure Plan
- 2018 Space (Launches and Returns) Act
- 1997 Telecommunications Act
- 2001 Telecommunications Regulations
- 1992 Radiocommunications Act

International Law – Australia ratified the five UN Space Treaties and other agreements, *i.e.,* Nuclear Test Ban Treaty, Satellite Convention, Space Debris Mitigation Guidelines, Wassenaar Arrangement, Missile Technology Control Regime, SKA Construction Treaty, NPT, ENMOD Convention, ITSO Agreement, IMSO Convention, and ITU Convention & Constitution.

International cooperation – Australia entertains bilateral cooperation with JAXA, UAESA, NASA, UKSA, CNES, ESA, CSA, and the European Commission. It is also engaged in the ICSMD, IAF, Space Frequency Coordination Group, COPUOS, COSPAR, CCSDS, ISECG, ICG, Interagency Operations Advisory Group, Group on EO, Committee on EO Satellites, ISPRS, International Space Environment Service, APRSAF, WMO, and Asia Pacific Telecommunity.

Assets and activities – In 2019, Australia allocated AUD 73.2 million to the space sector (without taking defence spending into account). Defence is investing USD 5 billion over the decade. Between 2000 and 2020, the country deployed 21 satellites: 11 for telecom and ten for S&T and education. Overall, 13 small satellites were manufactured indigenously. Australia provides EO applications although it does not yet possess EO systems. It is operating a Ground-Based Augmentation System and is developing a Satellite Based Augmentation System. Three private companies (Southern Launch, Gilmour, Black Sky Aerospace) and one non-profit (Australian Space Research Institute) are working on launch vehicles.

Drivers



Selected Main Achievements

- Establishment of a national space agency in 2018
- Development of a strategic relationship with the United States
- Involvement of universities in research & development and manufacturing

Future plans

- Form partnerships with like-minded actors in the Indo-Pacific region
- Establishment of a Space Division in the Air Force
- Continue the development of SSA to enable "space control"
- Increase autonomous capabilities

Argentina

Main actors – Most actors have institutional roots. Government entities include CONAE, Ministry of Science, Interinstitutional Council for Science and Technology, Chief of Cabinet of Ministers, National Atomic Energy Commission, National Scientific and Technical Research Council, Federal Council of Science and Technology, National Communications Entity, National Institute of Industrial Technology, and Ministry of Defence. The industry covers most segments of the value chain and companies are increasingly vertically integrated. Notable actors include ARSAT, INVAP, Veng, Satellogic, Innova Space, GSATCOM, LIA Aerospace, and TLON Space. In terms of universities and research centres, the field is populated by University of Comahue, National University of San Martin, University of Cordoba, National University of La Plata, Applied Mechanical Resting Group (GEMA), Aerospace Technological Center (CTA), Gulich Institute, Colomb Institute, and Teófilo Tabanera Space Centre.

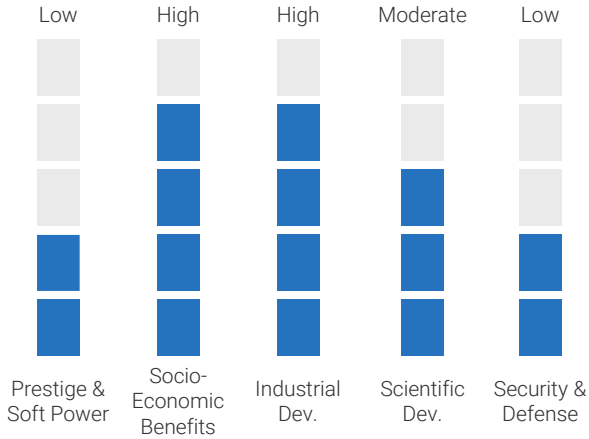
Domestic policy and legal instruments – Space activities in Argentina are framed by the:

- National Space Plan
- Argentinian Geostationary Satellite Plan
- Connectivity National Plan
- Law 26.092 of 2006 on the Creation of ARSAT
- Law 27.208 of 2015 on the Development of the Satellite Industry
- Decree of Necessity and Urgency 58/2019 modifying Law 27.208

International Law and Cooperation – Argentina ratified four UN Space Treaties (Outer Space Treaty, Rescue Agreement, Liability Convention, Registration Convention) and other agreements, *i.e.,* Nuclear Test Ban Treaty, ITSO Agreement, IMSO Convention, and ITU Constitution and Convention. Argentina entertains bilateral cooperation with AEM, ASI, CNES, JAXA, ESA, AEB, Technical University of Denmark (DTU), National Institute of Aerospace Technology (INTA), Polish Space Agency, Mexican government, CNSA, Roscosmos, DLR, INPE, UKSA, China Academy of Space Technology, Netherlands Institute for Space Research, Swedish National Space Agency, Norwegian Space Agency, State Space Agency of Ukraine, NASA, NOAA, CSA, CSIRO, and Belspo. It is also engaged in the ICSMD, IAF, Space Frequency Coordination Group, COPUOS, COSPAR, Group on EO, Committee on EO Satellites, ISPRS, International Space Environment Service, WMO, and Latin Society in Remote Sensing and Spatial Information Systems.

Assets and activities – In 2020, CONAE's budget accounted for ARS 3,748 million. Between 2000 and 2020, the country deployed 28 satellites, all manufactured indigenously: two for telecom, 22 for EO, and four for S&T and education. In terms of launch vehicles, CONAE and Veng have restarted efforts on Tronador III and initiated VLE, while CITEDEF is working on Aguila IV. Private companies have recently initiated their own development with LIA Aerospace (Zenit & Procyon) and TLON Space (Aventura I).

Drivers



Selected Main Achievements

- Development of industry by transferring knowledge and capabilities from civil nuclear sector
- Partnerships between CONAE and Argentinian universities
- Partnerships with both China and the United States

Future plans

- Continue telecommunications programmes to provide digital services to rural areas
- Increase data storage and processing capabilities
- Construction of Tronador launch series
- Establishment of a Latin American Space Agency

South Korea

Main actors – The principal institution involved in space activities is the Ministry of Science and ICT. Others include the National Space Council, Ministry of Trade, the Ministry of National Defense, KARI, Korea Astronomy and Space Science Institute (KASI), Korea Institute of Geoscience and Mineral Resources (KIGAM), Electronics and Telecommunications Research institute (ETRI), and Agency for Defense Development (ADD). The industry is fairly developed with companies active in most segments of the value chain, but they generally do not offer end-to-end products. KAI, Satrec, and KT sat are amongst established actors and Perigee is gaining traction with its micro launcher project. Several universities contribute to space activities, such as Korea Advanced Institute of Science and Technology (KAIST), Korea Aerospace University (KAU), Seoul National University (SNU), Yonsei University, Chungnam University, Chosun University, and Kyung Hee University (KHU).

Domestic policy and legal instruments – Space activities in South Korea are framed by the:

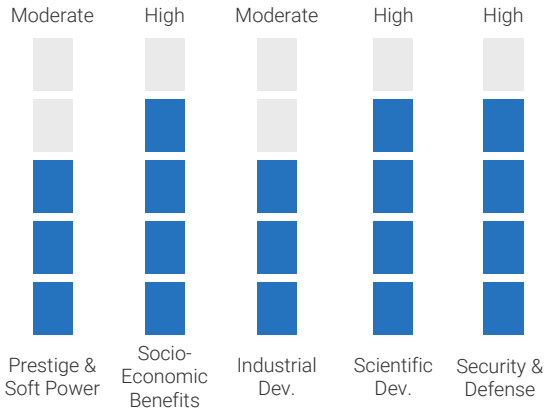
- 2018-2022 Promotion Space Development Basic Plan
- 2018 Defense White Paper
- 1987 Aerospace Industry Development Promotion Act
- 2005 Space Development Promotion Act
- 2007 Act on Compensation for Damage caused by Space Objects
- Several ICT related acts

International Law – South Korea ratified the Outer Space Treaty, Rescue Agreement, and Liability Convention, and has acceded to the Registration Convention. It is a Party to other agreements, *i.e.,* the Nuclear Test Ban Treaty, Convention on the distribution of Programme-Carrying Signals Transmitted by Satellite (BRS), ITSO Agreement, IMSO Convention, and ITU Constitution and Convention.

International cooperation – South Korea entertains bilateral cooperation with ESA, JAXA, Vietnam National Space Centre, CNES, Thailand Geo-Informatics S&T Development Agency, DTU, Peruvian Space Agency, ISRO, Roscosmos, DLR, CONAE, Philippines Advanced S&T Institute, MBRSC, NASA, Vietnam Academy of S&T, Ethiopia Adama University, NOAA, Russia Khrunichev Center, and Romanian Space Agency. It is also engaged in the ICSMD, IAF, Space Frequency Coordination Group, COPUOS, COSPAR, CCSDS, ISECG, Space Ops, Interagency Operations Advisory Group, Group on EO, Committee on EO Satellites, ISPRS, International Space Environment Service, APRSAF, and the Asia Pacific Telecommunity.

Assets and activities – The budget allocated to civil space activities in 2020 reached USD 537 million. 2000 and 2020, the country deployed 31 satellites, five for telecom, ten for EO, and 16 for S&T and education. It has manufactured 31 small to large systems. KARI is developing the Korea Augmentation Satellite System (KASS) and Korea Positioning System (KPS). KASI and ADD work on SSA, through developing surveillance technologies, *etc.* As regards space exploration, KARI set the Korean Lunar Exploration Program. A South Korean astronaut spent ten days aboard the ISS in 2008. For launch vehicles, KARI developed the KSLV family and Perigee is working on Blue-Whale 1.

Drivers



Selected Main Achievements

- Comprehensive policy and legal framework to enable and regulate space activities
- Development of autonomous telecommunication, EO, science and technologies, as well as launching capabilities
- Development of advanced manufacturing capabilities

Future plans

- Construction of a PNT system
- Expansion of space exploration activities
- Transfer some responsibilities of KARI to the private sector for the development and manufacturing of space assets
- Create synergies with the Fourth Industrial Revolution

Emerging spacefaring nations: pursuing autonomy for different objectives

The selected case studies show that the concept of an "emerging spacefaring nation" encompasses very different actors with varying sets of technical capabilities, resources, focus areas, and ambitions.

Some commonalities among emerging spacefaring nations can be identified, particularly in relation to the pursuit of technical and political autonomy, which is a central driver for the development of their national space activities. Emerging spacefaring nations have rising national space ambitions, but often possess limited domestic capacities. Closing this gap, including for critical areas of their national programmes, is a shared concern among emerging spacefaring nations. These countries seek to build on a mix of international partnerships, technology transfers, and capacity-building programmes to achieve a greater level of autonomy.

Their national space ambitions are shaped by different drivers, which are common across the spectrum of space actors, but influence developments in individual emerging spacefaring nations at varying degrees:

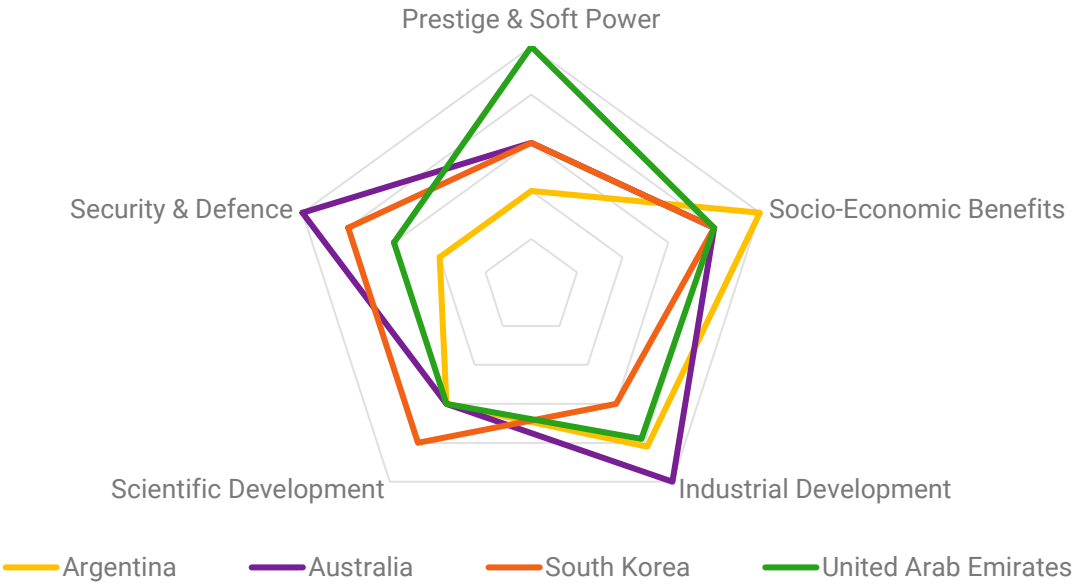


Figure 3: Mapping drivers of the four analysed emerging spacefaring nations

All four selected countries are looking to generate significant socio-economic benefits, recognizing the multitude of ways space-based systems and space-derived data can contribute to national development, while supporting governmental policies and the wider economic landscape. Governments often publicise socio-economic benefits in order to create public support for public spending. Regarding security and defence, space systems are often dual purpose and civilian satellites can also contribute to national security objectives of emerging spacefaring nations. Space-related defence policy objectives can vary from one country to another depending on geopolitical contexts, strategic culture, and perceptions of space as an operational domain. The importance of other drivers such as scientific and industrial development or prestige and soft power also varies according to the broader political, economic, and diplomatic context of the country.

Irrespective of the specific commonalities and differences, the emergence of new powerful actors in the space arena can be expected to have implications for the international space community and, hence, also for European stakeholders, both at the European as well as the national level.

IMPLICATIONS FOR EUROPE

Europe and emerging spacefaring nations: state of affairs

Europe boasts a rich history of cooperation in space with emerging spacefaring nations, both at the national and the pan-European level. This cooperation has taken place on various planes, in different frameworks, and across various space fields, including satellite telecommunications, remote sensing, launch services, and science and exploration. Cooperation with Europe played a role in the emergence of some countries on the space scene, as many cooperation agreements included know-how, and technology transfer.

ESA level

As a space agency, ESA's approach to international cooperation has typically been driven by the potential of programmatic opportunities rather than by a foreign policy agenda. ESA has already worked with many emerging spacefaring nations and their national space agencies since the inception of their programmes. This has enabled ESA to gain a more informed understanding of their motivations and enabled ESA to define and tailor its relationships and engagement and directly or indirectly support European industrial exports, among other benefits. In addition, the Agency has diversified its engagement with emerging spacefaring nations by exploring other means of support e.g., through relevant international organizations.

EU level

The European Union already engages in space matters with Australia, Brazil, South Africa, and South Korea through the European Commission and European External Action Service, which are involved in a variety of bilateral and multilateral channels. Engagement with these countries has been driven by a mix of programmatic and political objectives, that are often interlinked. These include contributing to the implementation of European space programmes and their market uptake, supporting European research and innovation, promoting dialogue to facilitate institutional and industrial cooperation and regulatory convergence, and reducing safety and security risks. The fulfilment of these objectives has been pursued through three main tools and mechanisms, i.e., space dialogues, cooperation in EU flagship programmes (namely Copernicus and EGNSS), and participation in EU Framework Programmes.

Industrial level

At the industrial level, Europe's relations with emerging spacefaring nations have mainly taken place in the area of satellite exports. Although over the past two decades Europe's top customer has been the United States, more than 30 satellites have been purchased by emerging spacefaring nations such as Brazil, Egypt, Saudi Arabia, South Korea, Turkey, the UAE, Indonesia, and Thailand. Demand from these countries has taken place mostly in the context of one-time contracts that reportedly required significant efforts in terms of capacity building, technology transfer and technological adjustments to local standards. Besides satellite exports, the European industry's engagement with these countries also entailed the provision of launch services. Europe provided launch services to all four of the analysed actors and regularly also provides them to other emerging spacefaring nations.

Other types of commercial and industrial relations between Europe and emerging spacefaring nations such as cross-border investment, joint-ventures, establishment of local offices and factories, or other industry-to-industry cooperation arrangements have been very limited so far.

Stakes for Europe

The ways in which ESA, the EU, and European industry are interacting with emerging spacefaring nations is changing as these countries further develop domestic capabilities, articulate new operational needs, and (re)define long-term ambitions.

In order to contextualize trends, identify opportunities and challenges, and evaluate potential scenarios stemming from the increase of the number of emerging spacefaring nations, ESPI organized a dedicated workshop where European stakeholders (EU, ESA, industry) were asked to identify possible challenges and opportunities associated with emerging spacefaring nations and sort the identified trends by likelihood of occurrence and relevance for Europe. The results of this exercise were then aggregated and are summarised in the figures below.

Figure 4: Mapping potential opportunities by relevance and likelihood (source: ESPI)

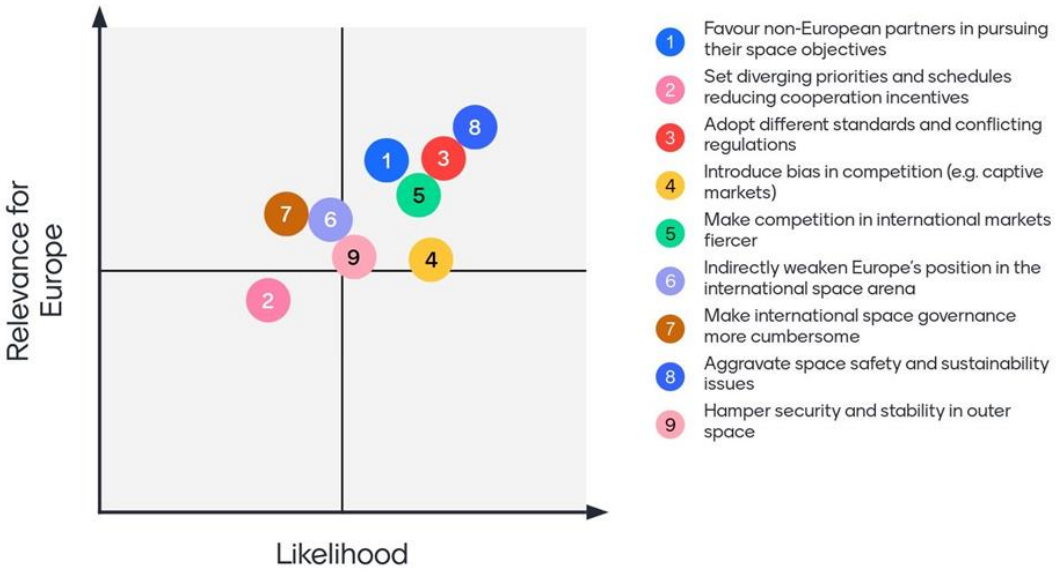


Figure 5: Mapping potential challenges by relevance and likelihood (source: ESPI)

Some of the identified challenges and opportunities are characteristics of the broader globalisation, diversification, and intensification of space activities and are not only related to the emergence of new state actors in the space sector.

Implications for Europe of the emergence of new spacefaring nations can be grouped into three core areas:

- Programmatic and operational implications,
- Industrial and commercial implications,
- Diplomatic and political Implications.

Programmatic and Operational

The first set of implications is related to European programme development and to the achievement of European ambitions in space. The emergence of new actors on the global space scene offers unique opportunities, enabling Europe to further build upon existing and new cooperation arrangements with these countries. This prospect may offer the opportunity to share some costs for European missions and/or to expand their impact with hosted payloads, instruments, or experiments. Furthermore, this would also allow Europe to promote common standards and best practices. Closer partnerships could facilitate European efforts to gain access to specific territories for ground segments and infrastructure (e.g., in the southern hemisphere), while increasing synergies in data exploitation, especially targeting downstream services addressing global challenges.

Industrial and Commercial

New possibilities are also expected to emerge on the industrial and commercial fronts. European industry may benefit from increased foreign ambitions as they could increase demand, at least in the short-term, offering commercial opportunities for exports and satellite launches. In the long run, this demand might phase out as developments in these countries reach a point where local industry can satisfy institutional demand. Such prospects will likely impact the satellite manufacturing market first and then the launch services market. The emergence of industrial competitors in emerging spacefaring nations may become a challenge in the longer term. This provides opportunities for deepened B2B partnerships and investments. Europe should therefore continue making efforts to assure regulatory convergence and a global level playing field, including fair trade and open competition on the basis of reciprocity.

Diplomatic and Political

The final set of implications relates to the development of a new diplomatic and political landscape as a consequence of new state actors raising their ambitions and actively participating in international dialogues and negotiations with potentially different perspectives on issues at stake. Establishing appropriate relations with emerging spacefaring nations would likely support European diplomatic efforts, for example to promote responsible behaviour in outer space for a safe, sustainable, and secure space environment. Space cooperation can be an effective and multifunctional tool for the broader European diplomatic agenda and provides a wide range of opportunities for cooperation arrangements to tackle a variety of socio-economic, environmental, and security-related challenges relevant to Europe and foreign partners.

Enhancing European engagement with emerging spacefaring nations

Shifting the focus to the global space environment at large, it can be observed that the drivers and goals pursued by emerging spacefaring nations are similar to those of established spacefaring nations and space powers such as the US, Russia, and China. Europe and emerging spacefaring nations have similar interests and objectives which provides opportunities for increased cooperation and support to European efforts at the diplomatic, programmatic, and industrial levels.

It would be critical that future EU diplomatic engagement towards emerging spacefaring nations is based more extensively on common positions shared by all European stakeholders. Specifically, it would be essential that the posture and action of the major European constituencies (ESA, the EU, and their Member States) are not only coordinated but also mutually enforcing and able to establish proper links between programmatic, industrial, and political objectives. Achieving concerted policy actions among all European constituencies is a challenge given the fragmentation of European efforts. This would imply appropriate processes and coordination schemes to formulate consistent diplomatic positions and initiatives and would contribute to enhancing Europe's influence in international negotiations with the ultimate objective to promote and safeguard Europe's interests. This is actually a broader challenge for Europe that goes beyond relations with emerging spacefaring nations and concerns the way Europe engages in space diplomacy at large.

The EU does not need to have a dedicated strategy for emerging spacefaring nations. Each emerging spacefaring nation is different and has a different type of relationship with both the EU and ESA based on past and current economic, political, geopolitical, and military cooperation. In addition, their status as emerging spacefaring nations is temporary, which would make a dedicated strategy inadequate. However, European cooperation with emerging spacefaring nations has to be consistent with the EU foreign policy. In terms of policy documents, the EU would rather need an EU space industrial strategy and an EU space security policy, which would provide a vision, principles, and guidelines for cooperation with foreign actors, including emerging spacefaring nations.

The need for these two EU policies is broadly recognized by institutional and industrial stakeholders alike and reflections are ongoing. As also articulated in ESPI Report 75, these two policy frameworks should themselves be drafted to consider not only "internal", but also "external" aspects, including:

- Relevant external actions to promote European positions and protect European interests on the international stage,
- Appropriate mechanisms to promote a coherent diplomatic engagement by:
    - enhancing the coordination between European stakeholders
    - ensuring consistency between internal and external actions
- Mandates to ensure appropriate representation in relevant fora with appropriate initiatives.

Overall, embedding European "external actions" within a more coherent European space diplomacy, as well as a Europe-wide policy framework for space industry and space security matters will be an essential condition to effectively seize the manifold opportunities and address the inherent challenges raised by the emergence of new spacefaring nations in the international arena.

About ESPI

Policy & Strategy

Economy & Business

Security & Defence

International & Legal

ESPI is the European think-tank for space. The Institute is a not-for-profit organization based in Vienna, World capital of space diplomacy, providing decision-makers with an informed view on mid to long-term issues relevant to Europe's space activities since 2003.

ESPI is supervised by a General Assembly of member organizations and supported by an Advisory Council of independent high-level experts.

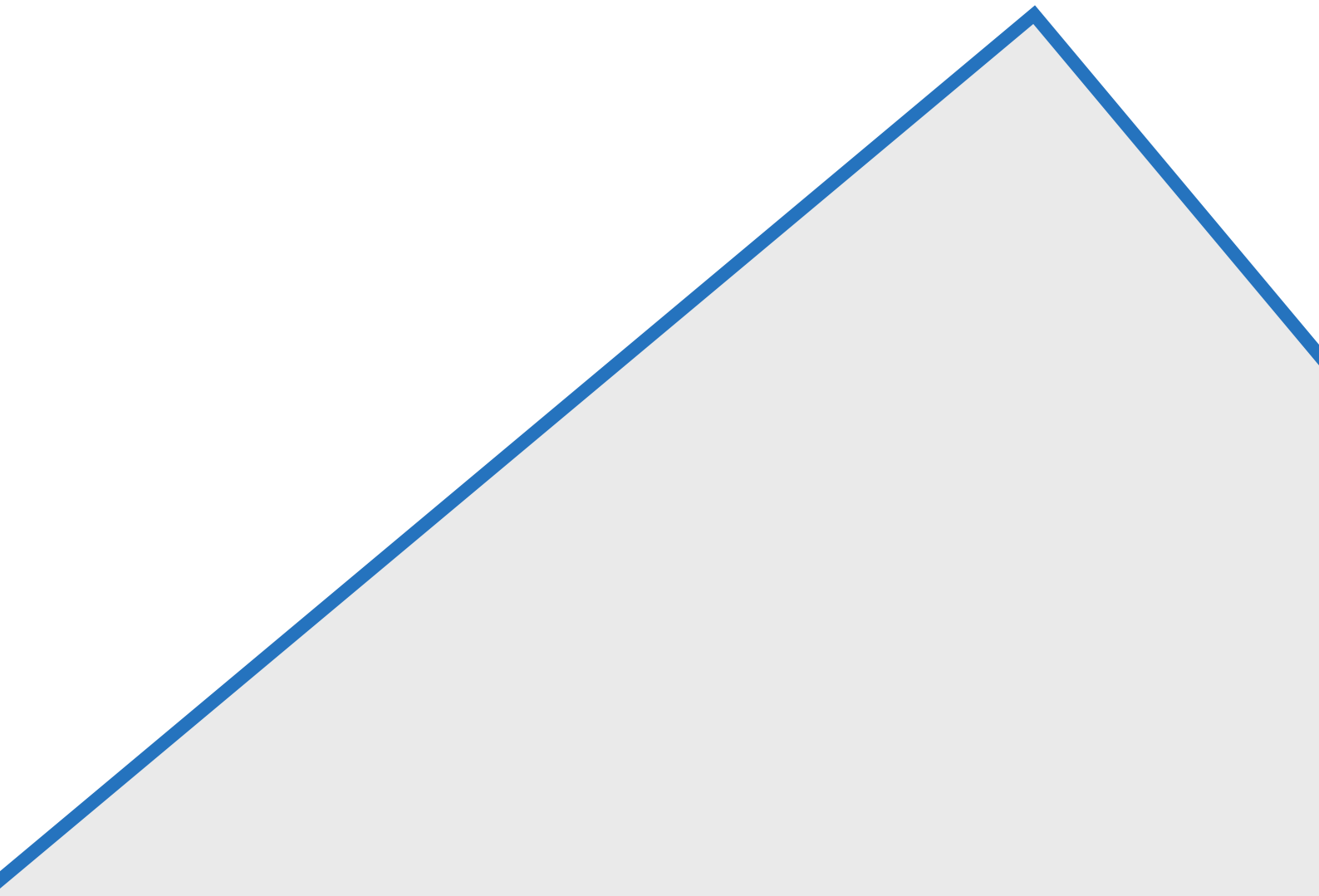
ESPI fulfils its objectives through various multi-disciplinary research activities leading to the publication of books, reports, papers, articles, executive briefs, proceedings, and position papers, and to the organisation of conferences and events including the annual ESPI Autumn Conference.

Who we are	What we do
Independent think-tank specialised in space policy	Research and analysis on major space policy issues
Multinational team with interdisciplinary expertise	Monitoring of global space trends and policy developments
Part of a network of European and international partners	Organization of thematic conferences and workshops

Download our reports, check our events and subscribe to our newsletter online

www.espi.or.at

Schwarzenbergplatz 6 | A-1030 Vienna, Austria | (Entrance: Zaunergasse 1)
Phone +43 1 718 11 18 - 0 | E-Mail: office@espi.or.at



www.espi.or.at