Field Listing
Space program overview

This field provides a general survey of a country's space program, including areas of expertise and focus, national goals, international cooperation, and commercial space sector activities if applicable.

Algeria

has a national space policy and a national space research program with stated goals of supporting internal development, managing resource usage, mastering space technology, and reinforcing national sovereignty; builds and operates communications and remote sensing (RS) satellites; researching and developing a range of space-related capabilities, including satellites and satellite payloads, communications, RS, instrumentation, satellite image processing, and geo-spatial information; has bilateral relationships with a variety of foreign space agencies and industries, including those of Argentina, China, France, Germany, India, Russia, Ukraine, and the UK; also a member of the Arab Space Coordination Group, established by the UAE in 2019 (2024)

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Angola

has a national space strategy with a focus on capacity building, developing space infrastructure, investing in domestic space sector, supporting socioeconomic growth, and establishing cooperation agreements with foreign technical and scientific institutions in the space industry; contracts with foreign companies to build and launch satellites; operates satellites; cooperates with a variety of foreign space agencies and industries, including those of France, Russia, and the US (2024)

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Argentina

has a long history of involvement in the development of space-related capabilities, including rockets and satellites; develops, builds, and operates communications, remote sensing (RS), and scientific satellites, often in partnership with other countries; developing additional satellites with more

advanced payloads; has a national space plan; contracts with commercial and other government space agencies for launches but has a domestic rocket program and is developing space launch vehicle (SLV) capabilities; cooperates with a broad range of space agencies and industries, including those of Brazil, China, the European Space Agency and its member states (particularly France, Italy), and the US; also has a commercial space industry, which includes efforts to design, build, and launch reusable small SLVs (2024)

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Australia

has a long history of involvement in space-related activities, including astronomy, rockets, satellites, and space tracking; develops, builds, operates, and tracks satellites, including communications, remote sensing (RS), navigational, and scientific/testing/research, often in partnership with other countries; develops other space technologies, including communications, RS capabilities, and telescopes; encouraging growth in domestic commercial space industry sector; cooperates with a variety of foreign space agencies and industries, including those of China, the European Space Agency/EU and their individual member states, India, Japan, New Zealand, South Korea, the UK, and the US; co-leads the Global Earth Observation System of Systems (2024)

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Austria

has a national space program and is a member of the European Space Agency (ESA); develops, builds, operates, and tracks satellites, including remote sensing (RS) and research/scientific satellites; works closely with member states of ESA, the EU, and the commercial sector to develop a range of space capabilities and technologies, including applications for satellite payloads, space flight, and space research; has also cooperated with other foreign space agencies and industries, including those of China, India, Russia, and the US (2024)

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Azerbaijan

national space program largely focused on the acquisition and operation of satellites; operates foreign-built communications and remote sensing (RS) satellites; has two satellite ground control stations; cooperates with a variety of foreign space agencies and commercial entities, including those of China, the European Space Agency (and individual member states such as France), Israel, Russia, Turkey, and the US; Azercosmos is the largest satellite operator in the Caucasus region (2024)

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Bahrain

space program in nascent stages and is focused on developing the capabilities to build and operate satellites; the NSSA's mission includes promoting space science, technology, and research, building capacity in the fields of satellite manufacturing, tracking, control, data processing and analysis, and remote sensing, developing space-related programs and space policy, and facilitating international cooperation; cooperates with a variety of foreign agencies and commercial entities, including those of India, Italy, Japan, Saudi Arabia, the UK, the UAE, and the US; also a member of the Arab Space Coordination Group, established by the UAE in 2019 (2024)

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Bangladesh

has a modest space program focused on designing, building, and operating satellites, particularly those with remote sensing (RS) capabilities; researching a variety of other space-related capabilities and technologies; has a government-owned company for acquiring and operating satellites (Bangladesh Satellite Company Limited or BSCL, established in 2017); has relations with several foreign space agencies and commercial entities, including those of France, Japan, Russia, and the US (2024)

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Belarus

has a modest national space program focused on developing remote sensing (RS) satellites; jointly builds satellites with foreign partners; develops some space technologies and components for space equipment, including satellite payloads and associated technology, such as optics and imaging equipment; has cooperated with a variety of foreign space agencies and commercial entities, including those of Azerbaijan, China, Kazakhstan, Russia, and Ukraine; has a state-owned satellite company (2024)

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Belgium

founding member of the European Space Agency (ESA), which acts as the de facto Belgian space agency as most programs are carried out under the ESA or bi-laterally with its member states; builds satellites, particularly research/science/technology and remote sensing (RS) platforms; also researches, develops, and produces a wide variety of other space technologies, including telecommunications, optics, robotics, scientific instruments, and space launch vehicle (SLV) components; supports the ESA's SLV program with economic assistance (6% of the funding for the Ariane-5 SLV, for example), as

well as legal, scientific, and technological expertise; hosts the European Space Security and Education Center (established 1968); participates in international astronomy efforts, particularly through the European Southern Observatory (ESO); participates in multiple ESA and EU space-related programs and research efforts; in addition to the ESA and EU and their individual country members, has cooperated with a variety foreign space agencies and commercial entities, including those of Argentina, China, India, Russia, South Africa, UAE, Vietnam, and the US (2024)

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Bhutan

has a small, recently established program focused on acquiring satellites and developing the capabilities to manufacture satellites; cooperates with India and the US (2024)

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Bolivia

has a small space program focused on acquiring and operating satellites; operates a telecommunications satellite and two ground stations; has cooperated with China and India and member states of the Latin American and Caribbean Space Agency (ALCE) (2024)

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Brazil

has an active program with a long history; develops, builds, operates, and tracks satellites, including communications, remote sensing (RS), multi-mission, navigational, and scientific/testing/research; satellites are launched by foreign partners, but Brazil has a long-standing sounding (research) rocket and space launch vehicle (SLV) program and rocket launch facilities; cooperates with a variety of foreign space agencies and commercial entities, including those of Argentina, Canada, the European Space Agency and individual member states (particularly France and Germany), India, Japan, Russia, South Africa, South Korea, Ukraine, and the US; has a state-controlled communications company that operates Brazil's communications satellites and a growing commercial space sector with expertise in satellite technology (2024)

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Bulgaria

has a long history of involvement in space-related activities going back to the 1960s; develops, produces, and operates satellites, mostly with foreign partners; researches, develops, and produces other space technologies,

including those related to astrophysics, remote sensing, data exploitation, optics, and electronics; has specialized in producing scientific instruments for space research; has more than 20 research institutes; Cooperating State of the European Space Agency (ESA) since 2015; cooperates with a variety of foreign space agencies and commercial entities, including those of the ESA and EU (and bi-laterally with their member states), India, Japan, Russia, and the US (2024)

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Canada

has a substantial program, a national space strategy, and a long history of developing space-related technologies; designs, builds, operates, and tracks communications, remote sensing (RS), multi-mission, and scientific/testing satellites; has an astronaut program (train in the US); designs, builds, or contributes to a variety of other space-related programs, including space telescopes, planetary probes, sensors, and robotic systems (such as the Canadian-made robotic arms used on the US Space Shuttle and the International Space Station); participates in international space efforts and cooperates with a variety of foreign space agencies and commercial entities, including those of Argentina, Brazil, the European Space Agency (ESA)/EU (and their member states), India, and particularly the US; ESA Cooperating State since 1979; has a robust commercial space sector that is involved in satellite communications, optics, space exploration, navigation, and space science (2024)

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Chile

has a space program with a considerable history and largely focused on the acquisition and operation of satellites; operates foreign-built satellites and satellite ground stations; building small remote sensing (RS) satellites; researching and developing additional capabilities and technologies associated with the production of satellites and satellite sub-systems; is a world leader in astronomy and astrophysics (Chile's Atacama Desert, where the skies are exceptionally clear and dry for more than 300 days a year, is home to more than a dozen astronomical observatories including the Cerro Tololo Inter-American Observatory, the Las Campanas Observatory, and the European Southern Observatory); Chile is also home to several astronomy institutes; has established relations with space agencies and industries of Canada, China, France, India, Israel, Mexico, Russia, the UK, and the US (2024)

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China

has a large, comprehensive, and ambitious space program and is considered one of the World's leading space powers; capable of manufacturing and operating the full spectrum of space launch vehicles (SLVs) and spacecraft, including human crewed, satellite launchers, lunar/inter-planetary/asteroid

probes, satellites (communications, remote sensing, navigational, scientific, etc.), space stations, and re-usable space transportation systems, such as orbital space planes/shuttles; trains astronauts (taikonauts); researches and develops a range of other space-related capabilities, including advanced telecommunications, optics, spacecraft components, satellite payloads, etc.; participates in international space programs, such as the Square Kilometer Array Project radio telescope project and co-leads (with Australian and Japan) the Global Earth Observation System of Systems; has signed space cooperation agreements with more than 30 countries, including Brazil, Canada, France, and Russia, as well as the European Space Agency (note – the US NASA is barred by a 2011 law from cooperating with the Chinese bilaterally in space unless approved by the US Congress; the US also objected to China's participation in the International Space Station program); has a space industry dominated by two state-owned aerospace enterprises but since announcing in 2014 that it would allow private investment into the traditionally state-dominated space industry has developed a substantial commercial space sector, including space launch services (2024)

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Colombia

has a small program focused on acquiring satellites, particularly remote sensing (RS) satellites; operates satellites and produces nanosatellites; researches other space technologies, including telecommunications, satellite navigation, and astronautics; has relations with a variety of foreign space agencies or commercial space industries, including those of Denmark, India, Russia, Sweden, the US, and some members of the Latin American and Caribbean Space Agency (ALCE) (2024)

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Costa Rica

has a small, recently established program focused on promoting the use of space to develop the country's economy and industry, including acquiring and utilizing satellites; has built a remote sensing (RS) cube satellite; has relations with the space agencies and commercial space industries of the US, members of the European Space Agency, and members of the Latin American and Caribbean Space Agency (2024)

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Cote d'Ivoire

has as small, nascent program focused on acquiring a remote sensing (RS) satellite for purposes detecting illegal gold mining, facilitating access to drinking water, mapping deforestation, and national security issues (2024)

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Denmark

a member of the European Space Agency (ESA) and fully integrated within its structure; participates in ESA programs, particularly those linked to human spaceflight and satellite-based remote sensing activities, as well as technology programs involving telecommunications and navigation; independently builds and operates satellites, particularly those with meteorological, science, technology, and signal/traffic monitoring capabilities; conducts research and development of such technologies as measurement and instrumentation systems, microwaves, remote sensing, electromagnetic systems, astrophysics, geomagnetism, etc.; in addition to cooperating with the ESA and EU, as well as bi-laterally with member states, it has relations with the space agencies and industries of Canada, India, Japan, and the US (2024)

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Ecuador

has a small program focused on acquiring or manufacturing satellites; builds scientific satellites; conducts research and develops some space-related technologies; has established relations with the space agencies and industries of China and Russia, as well as the Latin American and Caribbean Space Agency (ALCE) and its member states (2024)

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Egypt

has a growing program with a focus on developing the capabilities to manufacture satellites and associated support infrastructure; seeks to become a regional space power; operates satellites; builds satellites jointly with foreign partners but developing localized satellite manufacturing capabilities; acquiring through technology transfers and domestic development programs other space-related technologies, including those related to communications, Earth imaging/remote sensing (RS), and satellite payloads and components; cooperating on space-related issues with a variety of foreign governments and commercial space companies, including those of Belarus, Canada, China, the European Space Agency and its member states (particularly France, Germany, Italy), Ghana, India, Japan, Kazakhstan, Kenya, Nigeria, Russia, South Africa, Sudan, Uganda, Ukraine, the UAE, and the US; also a member of the Arab Space Coordination Group, established by the UAE in 2019; has a commercial space sector that focuses on satellite communications, satellite design and production, RS, and space applications (2024)

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Ethiopia

has a small space program with a focus on acquiring and operating satellites, as well as research and astronomy; jointly builds satellites with foreign partners and operates and exploits remote sensing (RS) satellites; developing the ability to manufacture satellites and their associated payloads; involved in astronomy and in the construction of space observatories; cooperates on space-related issues with a variety of countries, including China, France, India, Russia, and multiple African countries, particularly Kenya, Rwanda, Sudan, Tanzania, and Uganda; shares RS data with neighboring countries (2024)

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European Union

the EUSPA's mission is to provide a link between European users and space technologies and capabilities, including remote sensing (RS), satellite navigation, and telecommunications; it is responsible for the operational management of the European Geostationary Navigation Overlay Service (EGNOS) and Galileo satellite navigation programs; the EU has a space strategy, which includes encouraging investment in and the use of space services and data, fostering competition and innovation, developing space technologies, and reinforcing Europe's autonomy in accessing space

the ESA is a comprehensive space agency and active across all areas of the space sector outside of launching humans into space, including producing and operating satellites with a full spectrum of capabilities (communications, multipurpose, navigational, RS, science/technology), satellite launch vehicles (SLVs), space launches, human space flight (has an astronaut training program), space transportation/automated transfer vehicles, re-usable spacecraft, space station modules, spacecraft components, robotic space labs, lunar/planetary surface rovers, interplanetary space probes and exploration, space telescopes, research, science, technology development, etc.; ESA also participates in international space programs such as the International Space Station and works closely with Europe's commercial space industry; it also cooperates with a broad range of space agencies and industries of non-member countries, including China, Japan, Russia, and the US; many of its programs are conducted jointly, particularly with the US space program

Europe has a large and advanced commercial space sector capable of developing and producing a full range of capabilities and technologies; a key focus for both the ESA and EUSPA is encouraging the European commercial space sector; Europe is a global leader in satellite-based communications and hosts the headquarters of three of the world's major satellite communications companies (2024)

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France

has one of Europe's largest space programs and is a key member of the European Space Agency (ESA), as well as one of its largest contributors; has independent capabilities in all areas of space categories except for autonomous manned space flight; can build, launch, and operate a range of space/satellite launch vehicles (SLVs) and spacecraft, including exploratory probes and a full spectrum of satellites; trained astronauts until training mission shifted to ESA in 2001; develops a wide range of space-related technologies; hosts the ESA

headquarters; participates in international space programs such as the Square Kilometer Array Project (world's largest radio telescope) and International Space Station (ISS); cooperates with a broad range of space agencies and commercial space companies, including those of China, Egypt, individual ESA and EU member countries, India, Indonesia, Israel, Japan, Mexico, Russia, the UAE, the US, and several African countries; has a large commercial space sector involved in such areas as satellite construction and payloads, launch capabilities, and a range of other space-related capabilities and technologies (2024)

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Gabon

has a small space program focused on the acquisition, processing, analysis, and furnishing of data from foreign remote sensing (RS) satellites for environmental management, mapping, natural resources, land use planning, and maritime surveillance, as well as research and innovation; has relationships with Brazil, China, the European Space Agency (ESA) and its member states (particularly France), Kenya, Niger, Rwanda, South Africa, and the US; shares RS data with neighboring countries (2024)

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Germany

has one of Europe's largest space programs; is a key member of the European Space Agency (ESA) and one of its largest contributors; builds and operates satellites, satellite/space launch vehicles (SLVs), space probes, unmanned orbiters, and reusable space planes; conducts research and develops a range of other space-related capabilities technologies, including satellite payloads (cameras, remote sensing, communications, optics, sensors, etc.), rockets and rocket propulsion, propulsion assisted landing technologies, and aeronautics; participates in ESA's astronaut training program and human space flight operations and hosts the European Astronaut Center; participates in other international space programs, such as the International Space Station (ISS); hosts the mission control centers for the ISS and the ESA, as well as the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT); in addition to ESA/EU and their member states, has ties to a range of foreign space programs, including those of China, Japan, Russia, and the US; has a robust commercial space industry sector that develops a broad range of space capabilities, including satellite launchers, and cooperates closely with DLR, ESA, and other international commercial entities and government agencies (2024)

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Ghana

has a small, nascent space program focused on research in space sciences and exploiting remote sensing (RS) technology for natural resource management, weather forecasting, agriculture, and national security issues;

relies on foreign imagery for analysis but seeks to develop its own RS satellite capabilities; one of Africa's leaders in satellite dish research; trains aerospace scientists and engineers; has established relations on space-related issues with China, Japan, and South Africa; cooperating with Egypt, Kenya, Nigeria, Sudan, and Uganda to establish a joint satellite to monitor climate changes in the African continent; partner of the Square Kilometer Array (SKA) international astronomy initiative (2024)

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Greece

has a relatively new and growing space program focused on building and operating satellites; also researches and develops technologies in a variety of other space sectors, including such areas as remote sensing (RS), telecommunications, defense, environmental studies, and agricultural development; has a national space strategy; as a member of the European Space Agency (ESA), it contributes to, participates in, and benefits from ESA capabilities and programs; cooperates with space agencies and commercial space sectors of ESA and EU member states, as well as the US; has a robust commercial space sector that researches, develops, and produces a variety of space technologies and capabilities, including satellite components, electronics, sensors, and communications (2024)

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Hungary

has a history of involvement in space activities going back to the Soviet era; growing a modern space program focused on acquiring satellites and contributing to the European Space Agency (ESA); has a national space strategy; builds and operates satellites; researches and develops space technologies, including communications, navigation, and subsystems for satellites; has an astronaut corps; in addition to being an ESA member and cooperating with individual ESA and EU member states, particularly France, has relations with a variety of other foreign space agencies and industries, including those of Brazil, Israel, Russia, Singapore, Turkey, the UAE, and the US; national space strategy included the goals of fostering innovation and increasing Hungary's competitiveness in the commercial space sector (2024)

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India

has one of the world's largest space programs; designs, builds, launches, operates, and tracks the full spectrum of satellites, including communications, navigation, remote sensing (RS), and scientific/technology; designs, builds, and launches rockets, space/satellite launch vehicles (SLVs), and lunar/interplanetary probes; launches satellites for foreign partners; developing astronaut corps and human flight capabilities (with assistance from Russia, US); researching and developing additional space-related technologies and capabilities; has space-related agreements with more than 50 countries,

including China, France, Germany, Japan, Russia, and the US, as well as the European Space Agency; participates in international space projects such as the Square Kilometer Array (SKA) radio telescope; has a government-owned company under the administrative control of DOS; NewSpace India Limited (NSIL) is the commercial arm of the ISRO with the responsibility of researching and developing space-related technologies and promoting India's growing space industry (2024)

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Indonesia

has had a space program since the 1960s that has focused largely on rocket development and the acquisition and operation of satellites; operates satellites; manufactures remote sensing (RS) satellites; has a sounding (research) rocket program geared towards development of an indigenous orbital satellite launch vehicle (SLV) and independent satellite launch capabilities; researching and developing a range of other space-related technologies and capabilities related to satellite payloads, communications, RS, and astronomy; has relations with several foreign space agencies and industries, including those of France, Germany, India, Japan, Russia, and the US (2024)

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Iran

has an ambitious civil and military space program focused on acquiring and operating satellites and developing indigenous satellite/space launch vehicles (SLV); designs, builds, and operates satellites, including communications, remote sensing (RS), and scientific; manufactures and operates SLVs; researching and developing other space-related capabilities and technologies in such areas as telecommunications, RS, navigation, and space situational awareness; UN Security Council and other international sanctions against Iran's weapons of mass destruction program have severely limited Iran's cooperation with foreign space agencies and commercial space industries; in recent years, however, it has cooperated with North Korea and Russia on space issues; Iran has also had relations with regional and international space organizations, such as the Asia-Pacific Space Cooperation Organization and the International Telecommunications Satellite Organization; it was a founding member of the UN Committee on the Peaceful Uses of Outer Space (COPUOS) established in 1958 (2024)

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Israel

has an ambitious space program and one of the most advanced in the region; designs, builds, and operates communications, remote sensing (RS), and scientific satellites; designs, builds, and operates sounding (research) rockets and orbital satellite/space launch vehicles (SLVs); launches satellites on domestic and foreign rockets; researches and develops a range of other space-related capabilities with a focus on lightweight and miniaturized technologies,

including small satellites with high resolution RS imaging and communications capabilities; has relations with a variety of foreign space agencies and space industries, including those of Canada, the European Space Agency (and individual member states, such as France, Germany, and Italy), India, Japan, Mexico, and the US; has a substantial commercial space sector, including state-owned enterprises, in areas such as launchers, propulsion, satellite manufacturing, particularly micro- and nano-satellites, payloads and applications, RS, communications, and ground stations (2024)

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Italy

has one of the largest space programs in Europe; is a key member of the European Space Agency (ESA) and one of its largest contributors; designs, builds, launches, and operates communications, remote sensing (RS), and scientific satellites; designs and manufacturers sounding (research) rockets and orbital satellite launch vehicles (SLVs); hosts the ESA Center for Earth Observation; has astronaut cadre in the ESA astronaut corps; researches, develops, and builds a range of other space-related technologies and participates in a wide array of international programs with astronauts, cargo containers, construction, expertise, modules, scientific experiments, and technology; outside of the ESA/EU and their individual member states, has cooperated with a variety of foreign space agencies and industries, including those of Argentina, Brazil, Canada, China, Israel, Japan, Kenya, Mexico, Russia, South Korea, Thailand, the UAE, and the US; participates in international space projects such as the International Space Station (ISS); has a considerable commercial space industrial sector encompassing a wide range of capabilities, including manufacturing satellites, satellite payloads, launch vehicles, propulsion systems, cargo containers, and their sub-components (2024)

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Japan

has one of the world's largest and most advanced space programs with independent capabilities in all areas of space categories except for autonomous manned space flight; designs, builds, launches, and operates the full spectrum of satellites, including communications, remote sensing (RS), astronomical observation, scientific, and navigational/positional; designs, builds, and independently launches satellite/space launch vehicles (SLVs) and other spacecraft, including interplanetary and Lunar probes, space station modules and space labs, and space transportation systems; has a wide range of research and development programs, including reusable SLVs, space-based astronomy, spacecraft components, robotics, solar sails, radio waves, and space plasma; has an astronaut training program; participates in international space programs, including the International Space Station (ISS), leading the Asia-Pacific Regional Space Agency Forum, and co-leading the Global Earth Observation System of Systems; cooperates with a variety of foreign space agencies and industries, including those of Canada, the European Space Agency (ESA) and its individual member states, India, Russia, the UAE, the US, and a range of other countries and space agencies throughout Africa, Europe, and the Asia-Pacific regions; has a substantial commercial space industry that develops an array of space-related capabilities and technologies, including

satellites, satellite payloads and subcomponents, and SLVs; in recent years, the Japanese Government has encouraged and supported the development of space startup companies (2024)

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Kazakhstan

has an active and ambitious space program that originated with the former Soviet Union; focused on the acquisition and operation of satellites; builds (with foreign assistance) and operates communications, remote sensing (RS), and scientific satellites; building space infrastructure, such as launch and testing facilities, ground stations, and rocket manufacturing; has an astronaut (cosmonaut) program; has relations with a variety of foreign space agencies and industries, including those of China, France, Germany, India, Israel, Italy, Japan, Russia, Saudi Arabia, Sweden, Thailand, Turkey, Ukraine, UAE, and the UK; has state-owned and private companies that assist in the development and building of the country's space program, including satellites, satellite payloads, and associated capabilities; they also work closely with foreign commercial entities (2024)

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Kenya

has a national space strategy focused on acquiring and applying space technologies and applications for agriculture, communications, disaster and resource management, security, urban planning, and weather monitoring; jointly develops and builds nanosatellites with foreign partners; operates satellites; researching and developing satellite payloads and imagery data analysis capabilities; has cooperated on space issues with China, Japan, India, Italy, and the US, as well as a variety African partners, including Egypt and South Africa; developing a satellite imagery/geospatial analysis and data sharing portal that contains 17 years of satellite imagery for other African countries, including Ghana, Senegal, Sierra Leone, and Tanzania; cooperating with Egypt, Ethiopia, Ghana, Nigeria, Sudan, and Uganda to establish a joint remote sensing (RS) satellite to monitor climate changes on the African continent (African Development Satellite program) (2024)

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Korea, North

North Korea's leader has emphasized the development of space capabilities, particularly space launch vehicles (SLVs) and remote sensing (RS) satellites; manufactures small satellites; manufactures and launches rockets/SLVs; note – the SLV program is closely related to North Korea's development of intercontinental ballistic missiles (2024)

note: further details about the key activities, programs, and milestones of the

country's space program, as well as government spending estimates on the space sector, appear in the Space Programs reference guide

Korea, South

has a growing and ambitious space program focused on developing satellites, satellite/space launch vehicles (SLVs), and interplanetary probes; has a national space strategy; manufacturers and operates satellites, including those with communications, remote sensing (RS), scientific, and multipurpose capabilities; manufactures and launches SLVs; developing interplanetary space vehicles, including orbital probes and landers; participates in international space programs and has relations with an array of foreign space agencies and industries, including those of Australia, the European Space Agency (ESA) and its member states (particularly France, Germany, Italy, Spain, UK), India, Israel, Japan, Peru, Russia, UAE, and especially the US; has a robust and growing commercial space industry that works closely with government space program in the development of satellites and space launch capabilities; the South Korean Government has said it aims to capture 10% of the global space market by 2045 (2024)

note: further details about the key activities, programs, and milestones of the country's space program, as well as government spending estimates on the space sector, appear in the Space Programs reference guide

Luxembourg

aims to be the commercial space hub for Europe; LSA established largely to develop space policy, encourage and coordinate commercial space ventures, support space education, and to promote the country's space-related capabilities internationally; has a national space strategy; has set up policy and funding initiatives (such as LuxIMPULSE) aimed at encouraging space research, development, innovation, and entrepreneurship and attracting space-based industries; focused on developing commercial satellites and infrastructure (Luxembourg is home to some of the largest commercial satellite companies in the world), as well as other space sector capabilities and technologies, such as autonomous vehicles, robotics, remote sensing (RS), communications, and software; member of the European Space Agency (ESA), participates in ESA programs, and cooperates with individual ESA and EU member states; also has relations with other foreign space agencies and industries, including those of Canada, China, Japan, New Zealand, South Korea, the UAE, and the US (2024)

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Malaysia

has a growing space program focused on the areas of remote sensing (RS), communication, and navigational services to support domestic economic sectors; also seeks to promote a domestic space industry; acquires, manufactures, and operates satellites; conducts research in RS capabilities and space sciences such as astronomy, atmospherics, space environment, and weather; has an astronaut training exchange program with Russia and has relations with a variety of foreign space agencies and industries, including those of the European Space Agency and some of its individual member states, India, Japan, Russia, South Korea, the UK, and the US (2024)

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Mexico

the AEM's focus is on coordinating Mexico's space policy and the country's commercial space sector, including developing specialists, technologies, and infrastructure, and acquiring satellites; manufactures and operates communications and scientific satellites; conducts research in a range of space-related capabilities and technologies, including satellites and satellite payloads, telecommunications, remote sensing, robotics, Earth and weather sciences, astronomy, and astrophysics; has relations with a variety of foreign space agencies and commercial space industries, including those of Argentina, Brazil, Chile, the European Space Agency (ESA) and its member states (particularly France, Germany, and the UK), India, Peru, Russia, Ukraine, and the US; leading member of the Latin American and Caribbean Space Agency (ALCE) (2024)

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Netherlands

has an active space program focused on the added value of space on science, the economy, and society, as well as the development of cutting edge space technologies and services based on satellite data; builds and operates satellites; researches and develops technologies related to astrophysics, telecommunications, remote sensing (RS), propulsion systems, atmospheric measuring instruments (such as spectrometers), planetary/exoplanetary research, and robotics; active member of the European Space Agency (ESA) and participates in the construction of ESA satellite launch vehicles (Arienne and VEGA) and in the ESA astronaut training program; participates in international space programs and with other foreign space agencies and industries, including those of Japan, the US, and members of the EU; has a robust commercial space sector tied in to the larger European space economy (2024)

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New Zealand

the New Zealand space sector model is mostly based on commercial space; NZSA and CSST primarily focus on developing space policy and strategy, bringing commercial space talent to New Zealand, and encouraging the commercial development of space technologies, particularly satellites and satellite/space launch vehicles (SLV); manufactures and launches satellites; builds and launches commercial SLVs; researches and develops a range of other space-related technologies, including propulsion systems; has a national space strategy; participates in international space programs and partners with a range of foreign space agencies and industries, including those of Australia, Canada, the EU and its member states, the European Space Agency (ESA) and its member states, South Africa, and the US; has a small, but growing commercial space sector (2024)

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Nicaragua

stated mission of the space agency is to promote the development of space activities with the aim of broadening the country's capacities in the fields of education, industry, science, and technology; has cooperated with China and Russia; is a signatory of the convention establishing the Latin American and Caribbean Space Agency (ALCE) (2024)

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Nigeria

has a formal national space program, which is one of the largest in Africa; focused on acquiring satellites for agricultural, environmental, meteorology, mining and disaster monitoring, socio-economic development, and security purposes; designs, builds (mostly with foreign assistance), and operates satellites; processes overhead imagery data for analysis and sharing; developing additional capabilities in satellite and satellite payload production, including remote sensing (RS) technologies; has a sounding rocket program for researching rockets and rocket propulsion systems with goal of launching domestically produced satellites into space from a Nigerian spaceport by 2030; has relations and/or cooperation agreements with a variety of foreign space agencies and industries, including those of Algeria, Bangladesh, Belarus, China, Ghana, India, Japan, Kenya, Mongolia, South Africa, Thailand, Turkey, the UK, the US, and Vietnam; has a government-owned satellite company and a small commercial aerospace sector (2024)

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Norway

has a broad and active space program coordinated with the European Space Agency (ESA) and the EU; jointly designs and builds satellites with foreign partners, including communications, remote sensing (RS), scientific, and navigational/positional; operates satellites; develops and launches sounding rockets; researches and produces a range of other space-related technologies, including satellite/space launch vehicle (SLV) and space station components, telescopes, and robotics; conducts solar and telecommunications research; participates in international space programs, such as the International Space Station; hosts training for Mars landing missions on the island of Svalbard; active member of the ESA and cooperates with a variety of foreign space agencies and industries, including those of Canada, ESA/EU member states, Japan, Russia, and the US; has an active and advanced space industry that cooperates with both the NOSA and foreign space programs and produces a variety of space-related products, from terminals for satellite communications and technologies for RS satellites to sensors for gamma radiation in deep space (2024)

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country's space program, as well as government spending estimates on the space sector, appear in the Space Programs reference guide

Pakistan

space program dates back to the early 1960s but funding shortfalls and shifts in priority toward ballistic missile development in the 1980s and 1990s hampered the program's development; more recently, the program has regained attention and become more ambitious, particularly in acquiring satellites and reaching agreements with other space powers for additional capabilities; manufactures and operates satellites; researching and developing other space-related capabilities and technologies, such as satellite payloads and probably satellite/space launch vehicles (SLVs); also conducts research in such areas as astronomy, astrophysics, environmental monitoring, and space sciences; has relations or cooperation agreements on space with China, Russia, and Turkey (cooperated with the UK and US prior to the 1990s) (2024)

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Paraguay

has a small, recently established space program focused on the acquisition of satellites, satellite data, and the technologies and capabilities to manufacture satellites, as well as promoting in-country expertise building and space industry; a priority is acquiring remote sensing (RS) capabilities to support socio-economic develop, including resource mapping, weather, and crop monitoring; has built a cube satellite with foreign assistance; operates satellites; cooperates with foreign space agencies and industries, including those of India, Japan, Taiwan, the US, and member states of the Latin American and Caribbean Space Agency (ALCE) (2024)

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Peru

has a small space program focused on acquiring satellites, applying space applications such as data satellite imagery, and building small rockets; has built a small science/technology satellite; operates satellites and processes satellite imagery data; builds and launches sounding rockets with goal of developing a satellite/space launch vehicle (SLV); researching, developing, and acquiring technologies for manufacturing satellites and satellite payloads with a focus on remote sensing (RS) capabilities; member of Latin American and Caribbean Space Agency (ALCE); cooperates with a variety of foreign space agencies and industries, including those of Brazil, China, the European Space Agency and individual member states (particularly France and Germany), India, Russia, South Korea, Thailand, and the US, as well as signatories of the Latin American and Caribbean Space Agency (ALCE) (2024)

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Philippines

has a small and ambitious space program focused on acquiring satellites and related technologies, largely for the areas of climate studies, national security, and risk management; also prioritizing development of the country's space expertise and industry; manufactures and operates satellites (mostly micro- and nano-sized), including remote sensing (RS) and scientific/experimental; has relations with a variety of foreign space agencies and industries, including those of China, the European Space Agency and some of its member states, Japan, Russia, and the US (2024)

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Poland

space program is integrated within the framework of the European Space Agency (ESA); builds satellites, including nano/cube remote sensing (RS) and educational/scientific/technology satellites; researches and develops communications, RS, navigational, and other scientific applications for satellite payloads; creating infrastructure for receiving, storing, processing and distributing data from meteorological and environmental satellites; researches and develops other space-related technologies, including sensors and robotic probes for interplanetary landers, and launcher systems; participates in international space programs and cooperates with a variety of foreign space agencies and industries, including those of Brazil, Canada, China, ESA/EU member states (particularly France, Germany, Italy), India, Japan, Mexico, Russia, Ukraine, UK, and the US; has a growing commercial space sector with more than 300 active enterprises (2024)

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Portugal

has a national space program which is is integrated within the framework of the European Space Agency (ESA); builds and operates satellites; researches and develops a range of space-related technologies with an emphasis on small/micro/nano satellites for remote sensing (RS), navigational, science/technology, and telecommunications, as well as satellite launch services; in addition to the ESA/EU and their member states, cooperates with the space agencies and industries of a variety of countries, including those of Algeria, Angola, Brazil, China, India, Japan, Morocco, South Korea, and the US, as well as such international organizations and projects as the Europe South Observatory (ESO) and the Square Kilometer Array (SKA) Observatory project; one of the objectives of the country's national space strategy (Portugal Space 2030) is to increase the annual outcome of space related activities in the country to about $500 million by 2030 (2024)

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Romania

space program is integrated into the European Space Agency (ESA) and dates back to the 1960s; program is involved in the development and production of a wide range of capabilities and technologies, including satellites, satellite/space launch vehicles (SLVs), remote sensing, human space flight, navigation, telecommunications, and other space-related applications; in addition to the ESA/EU and their member states (particularly Bulgaria, France, Germany, Hungary, Italy), it cooperates with a variety of other space agencies and commercial space entities, including those of Azerbaijan, China, Japan, Russia, and the US; also participates in international programs; has an active space industry sector with over 50 entities involved in space-related activities (2024)

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Russia

has one of the world's largest space programs and is active across all areas of the space sector; builds, launches, and operates rockets/space launch vehicles (SLVs), satellites, space stations, interplanetary probes, and manned, robotic, and re-usable spacecraft; has astronaut (cosmonaut) training program and conducts human space flight; researching and developing a broad range of other space-related technologies; participates in international space programs such as the International Space Station (ISS); prior to Russia's 2022 full-scale invasion of Ukraine, Russia had relations with dozens of foreign space agencies and commercial entities, including those of China, the European Space Agency (ESA), India, Japan, and the US; Roscosmos and its public subsidiaries comprise the majority of the Russian space industry; Roscosmos has eight operating areas, including manned space flights, launch systems, unmanned spacecraft, rocket propulsion, military missiles, space avionics, special military space systems, and flight control systems; private companies are also involved in a range of space systems, including satellites, telecommunications, remote-sensing, and geo-spatial services (2024)

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Rwanda

has a small program focused on developing and utilizing space technologies, such as satellite imagery for socioeconomic development and security purposes; operates communications and remote sensing (RS) satellites; the RSA is responsible for regulating and coordinating the country's space activities and encouraging commercial and industrial development; has established ties with the space agencies or industries of several countries, including France, Israel, Japan, the UAE, and the US (2024)

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Saudi Arabia

has an ambitious and growing space program; manufactures and operates communications, remote sensing (RS), and scientific satellites; develops a range of satellite subsystems and payload technologies; SSA's missions also include accelerating economic diversification, enhancing research and

development, and raising private sector participation in the global space industry; is the main founder and financier of the Arab Satellite Communications Organization (Arabsat; launched in 1976; headquartered in Riyadh, Saudi Arabia and the primary satellite communications service provider for over 170 million persons in the Arab world); cooperates with the space agencies and industries of a wide range of countries, including those of Belarus, China, Egypt, the European Space Agency and its member states (particularly France, Germany, Greece, and Hungary), India, Kazakhstan, Morocco, Russia, South Africa, South Korea, Ukraine, the UAE, the UK, and the US; member of the Arab Space Cooperation Group (established by the UAE in 2019 and includes Algeria, Bahrain, Egypt, Jordan, Kuwait, Lebanon, Morocco, and Sudan) (2024)

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Senegal

small, nascent program focused on acquiring satellites, largely for socio-economic development and research; conducts research in such fields as astronomy and planetary sciences; has cooperated with the European Space Agency, and the space agencies of China, France, Turkey, and the US (2024)

Slovakia

focused on the development of satellites, satellite subcomponents, and other space-related technologies; as a member state of the EU, it is actively involved in all key components of the EU space program, and Slovak researchers actively participate in a variety of EU and/or European Space Agency (ESA) space missions including the Galileo global navigational system program, Copernicus Earth observation satellite program, Rosetta comet probe, BepiColombo (Mercury planetary orbiter), and Jupiter Icy Moons Explorer (JUICE) mission; has more than 40 established companies actively involved in the space sector (2023)

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South Africa

the largest producer of satellites (particularly nanosatellites) in Africa; areas of focus for development include remote sensing (RS) capabilities, such as optical instruments and synthetic aperture radar systems, space engineering, ground support to space operations (tracking, telemetry, etc.), and space science, particularly astronomy; SANSA is responsible for aggregating RS data for southern African countries; has a sounding rocket program for carrying experimental payloads for research purposes; cooperates with foreign space agencies and industries, including those of China, France, India, Russia, and the US; participates in international programs such as the Square Kilometer Array (SKA) Project, an international effort to build the world's largest radio telescope by 2030; has a substantial number of state- and privately-owned aerospace companies, as well as academic and research institutions involved in space-related activities (2024)

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country's space program, as well as government spending estimates on the space sector, appear in the Space Programs reference guide

Spain

space program is integrated into the European Space Agency (ESA) and dates back to the 1940s; manufactures and operates communications, remote sensing (RS), and scientific/technology satellites; has developed sounding rockets; conducts research and development in a broad range of space-related capabilities, including astrobiology, astronomy, imaging/RS, materials, meteorology, optics, propulsion, robotics, satellites (particularly micro- and nano-satellites), satellite systems and subsystems, satellite/space launch vehicles (SLVs), and space sciences; participates in ESA, EU, and other international programs; hosts the European Space Astronomy Center (ESOC) and the ESA's Space Surveillance and Tracking Data Centre (ESAC); cooperates with foreign space agencies and industries, including those of ESA and EU member states and the US; has a considerable commercial space industry, which is involved in a wide range of space-related research, development, and production, including satellites and SLVs; the CDTI coordinates the activities of the commercial space sector (2024)

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Sweden

member of the European Space Agency (ESA) and program is integrated within the framework of the ESA; produces and operates satellites; builds and launches sounding rockets; involved in the research, development, production, and operations of a wide variety of other space-related areas and capabilities, including astronomy, atmospheric monitoring, geographic information systems, infrared imaging, meteorology, propulsion systems, remote sensing, satellite subsystems, spacecraft systems and structures, space physics, scientific research, stratospheric balloons, and telecommunications; conducts extensive bilateral and multilateral international cooperation, in particular through the ESA and EU and their member states, as well as with the US; has a robust commercial space industry involved in a broad range of space-related capabilities (2024)

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Syria

status unclear; has been handicapped by the impact of the civil war, including the loss of students and scientists who fled the country; had previously focused on satellite development and related space technologies, as well as scientific research; has relations with the space agency and space industries of Russia (2024)

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Taiwan

space program focused on the acquisition of satellites and the development of independent space capabilities, such as rocket manufacturing and satellite launch services; manufactures and operates remote sensing (RS) and scientific/research satellites; manufactures and tests sounding rockets; researching and developing other space technologies, including communications satellites, small satellites, satellite payloads and ground station components, spacecraft components, optical RS and telecommunications, navigational control, and rocket propulsion systems; has bi-lateral relations with the space programs of India and the US, but is blocked from participating in most international and regional space organizations due to political pressure from China; has a commercial space industry that provides components and expertise for TASA and is independently developing satellites and a small satellite launch vehicle (2024)

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Thailand

has an ambitious and growing space program focused on the acquisition and operation of satellites and the development of related technologies; operates communications and remote sensing (RS) satellites; manufactures scientific/research/testing cube satellites and developing the capabilities to produce RS satellites (has historically built satellites with foreign assistance); cooperates with a range of foreign space agencies and industries, including those of other ASEAN countries, China, France, India, the Netherlands, Pakistan, Russia, South Korea, and the US; founding member of the China-led Asia-Pacific Space Cooperation Organization (APSCO); has a growing space industry, including Southeast Asia's first dedicated satellite manufacturing facility, which opened in 2021 (2024)

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Turkey (Turkiye)

has an ambitious space program with a large focus on satellites, software development, ground station technologies, and building up the country's space industries; in recent years has also initiated a space launch program with the goal of placing domestically produced satellites into orbit independently and a probe on the Moon; manufactures and operates remote sensing and telecommunications satellites, as well as satellite components; has a space/satellite launch vehicle program; space sector is heavily import-reliant, particularly at the component level; has established relations with more than 25 foreign space agencies and corporations, including those of Azerbaijan, China, France, India, Japan, Kazakhstan, Pakistan, Russia, South Korea, Ukraine, and the US, as well as the European Space Agency; has state-owned rocket development and satellite communications companies, including some under the Ministry of Defense (2025)

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Turkmenistan

has a small space program focused on acquiring satellites and developing the infrastructure to build and operate satellites; particularly interested in remote sensing satellites for such purposes as monitoring its agricultural and transportation sectors, the oil and natural gas industry, and the ecology of the Caspian Sea; has cooperated with the space agencies and/or space industries of France, Italy, Russia, South Korea, and the US (2024)

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Ukraine

SSAU/NSAU inherited a large and well-developed space program when it took over all of the former Soviet defense/space industrial industry that was located on the territory of Ukraine upon the country's declaration of independence in 1991; prior to the 2014 Russia takeover of Crimea and support for separatists in Ukraine's Donbas region, Ukraine's space efforts largely provided support to the Russian space program, including the production of satellite/space launch vehicles (SLVs)/rocket carriers and their components; today, it develops and produces SLVs/rocket carriers, spacecraft, satellites, and satellite sub-components both independently and jointly with numerous foreign space agencies and private space industry companies, including those of Brazil, Canada, China, the European Space Agency (ESA) and its member states (particularly Italy and Poland), Japan, Kazakhstan, Russia (curtailed after 2014), Turkey, and the US; prior to the full scale Russian invasion in February 2022, Ukraine was producing more than 100 SLVs, SLV stages, or SLV engines annually, and since 1991, over 160 rockets and more than 370 spacecraft had been manufactured by Ukraine or produced with its participation; as of 2022, SSAU had 16,000 employees and controlled 20 state-run corporations in Ukraine's "space cluster," a region between the cities of Dnipro, Kharkiv, and Kyiv (note – Dnipro, known as Ukraine's "Rocket City," was one of the Soviet Union's main centers for space, nuclear, and military industries and played a crucial role in the development and manufacture of both civilian and military rockets); in 2019, the Ukrainian Parliament began allowing private companies to engage in space endeavors, including launching rockets into space and allowing companies to negotiate with foreign companies without the state's approval; previously, only state-owned companies could do so (2024)

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United Arab Emirates

has an ambitious and growing space program and is recognized as one of the leading programs in the region; focused on satellite development, including communications, remote sensing, and navigational; also placing emphasis on building expertise, infrastructure, ground stations, technology, and research and development capabilities to support its space program domestically; rather than building its own launch capabilities, has elected to utilize foreign partners to launch payloads from spaceports abroad; has looked to invest heavily in foreign commercial space companies and encourage global partnerships; has a foreign-assisted astronaut training program; seeking to establish UAE as an international hub for space education; has signed more than 25 cooperation agreements or memorandums of understanding with major global and regional players in the space sector, including the Arab Space Cooperation Group,

China, the European Space Agency (ESA), France, Germany, India, Japan, Russia, South Korea, the UK, and the US; sees the development of its commercial space industry as a key pillar for diversifying and developing the country's non-oil economy; dozens of space companies and entities operate in the UAE, including international and start-ups, plus several space science research centers (2024)

note: further details about the key activities, programs, and milestones of the country's space program, as well as government spending estimates on the space sector, appear in the Space Programs reference guide

United Kingdom

has a comprehensive space program and is active across all areas of the space sector outside of launching humans into space, including satellite/space launch vehicles (SLVs)/rockets and their components, space probes, satellites and satellite subcomponents, space sensors, spaceports, and various other space-related technologies; as a founding member of the European Space Agency (ESA), it is heavily involved in ESA programs and has bi-lateral relations with many members; is a close partner of the US NASA and since 2016 has forged over 350 relationships with international organizations across nearly 50 developing countries; has a large commercial space sector that produces SLVs, SLV components, satellites, satellite subcomponents and sensors, and other space-related technologies; the UK has a space industrial plan, and the UKSA has provided funding to encourage and support commercial space projects (2024)

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United States

has a large and comprehensive space program and is one of the world's top space powers; builds, launches, and operates space launch vehicles (SLVs)/rockets and the full spectrum of spacecraft, including interplanetary probes, manned craft, reusable rockets, satellites, space stations, and space planes; has an astronaut program and a large corps of astronauts; researching and developing a broad range of other space-related capabilities and technologies, such as advanced telecommunications and optics, navigational aids, propulsion, robotics, solar sails, space-based manufacturing, and robotic satellite repair/refueling; has launched orbital or lander probes to the Sun and all planets in the solar system, as well as to asteroids and beyond the solar system; has international missions and projects with dozens of countries and organizations, including such major partners as Canada, Japan, Russia, and South Korea, as well as the European Space Agency (ESA), the EU, and their individual member states; as of January 2025, more than 50 countries had signed onto the US-led Artemis Accords, whose purpose is to establish principles, guidelines, and best practices to enhance the governance of the civil exploration and use of outer space with the intention of advancing the Artemis Program, an international effort to establish a sustainable and robust presence on the Moon and an onward human mission to Mars; the US commercial space industry is one of the world's largest and most capable and is active across the entire spectrum of US government space programs; the majority of both NASA and US military space launches are conducted by US commercial companies; the US space economy was valued at over $200 billion in 2021 (2025)

note: further details about the key activities, programs, and milestones of the

country's space program, as well as government spending estimates on the space sector, appear in the Space Programs reference guide

Uzbekistan

has a small space program focused on acquiring satellites and developing the country's space industry; Uzbekcosmos largely sets state policy and shapes the strategic direction, development, and use of the country's space-related industries and technologies in key sectors, including cartography, environmental and disaster monitoring, land use, resource management, and telecommunications; also has an astronomy program; cooperates with foreign space agencies or commercial companies from a variety of countries, including those of Canada, China, France, India, Israel, Kazakhstan, Russia, South Korea, and Spain (2024)

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Venezuela

has a small program primarily focused on the acquisition of satellites and developing the country's space engineering and sciences capabilities; operates satellites and maintains two satellite ground control stations; has relations with the space programs of China and Russia (2024)

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Vietnam

has a growing space program focused on acquiring, operating, and exploiting satellites, as well as expanding domestic capabilities in satellites and associated sub-system production, space sciences, and technology applications; builds and operates communications and remote sensing satellites; conducting research and development on space science and applied space technologies, such as advanced optics and space data exploitation; has worked closely with Japan on its space program since inception; cooperation has included funding, loans, training, technical expertise, and data sharing; has also established relationships with the space agencies or commercial space sectors of some European countries (such as France), India, and the US (2024)

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Zimbabwe

has a nascent program with the goal of utilizing space technologies in economic development; particularly interested in remote sensing capabilities to assist with monitoring or managing agriculture and food security, climate change, disease outbreaks, environmental hazards and disasters, and natural resources, as well as weather forecasting; part of a joint project (BIRDS-5) with Japan, which seeks to promote the first steps towards creating an indigenous space program by designing, building, testing, launching, and operating the first satellites for participating countries (2024)

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