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Luxembourg

Finance, Space, and the Bridge to Europe

Oct 2023

Introduction

Luxembourg, positioned in Northern Europe between France, German and Belgium, plays in role in Europe that belies its small size. With 2500 square kilometers and a population of only 645,000 (of which 304,000 are foreign residents), its economy has grown in specialized directions that make Luxembourg a global factor in a number of key sectors. Most important are banking and financial services, and space. It has also positioned itself as an entry point for U.S. companies looking to test the European market.

This reflects its continuing evolution from an historical base in manufacturing and particularly in coal and steel. The discovery of iron ore in Southern Luxembourg in the 1870s launched the steel industry, leading to the creation of major steel mills in the 1880s. By 1974 steel accounted for 25% of GDP and 50% of industrial added value, employing 27,000 people out of a national population of 375,000. After a crisis in the steel industry in the 1970s the economy re-tooled. Today ArcelorMittal is the largest steel company, but the steel sector only accounts for 1.3% of GDP and 3460 employees.[1]

Ranking in Economic Indexes

Luxembourg ranks competitively in a range of global indexes:

- The IMD World Competitiveness Index ranks Luxembourg #13 in the world, behind the UAE and ahead of Canada, based on criteria including economic performance, government efficiency, business efficiency, and infrastructure, and #7 for talent.[2]
- The fDi European Regions and Cities of the Future index ranks Luxembourg #4 overall in its small European cities rating, and #3 for economic potential. In the category of small European regions Luxembourg ranks #5 for connectivity and #4 overall.[3]
- The Global Financial Centres Index ranks Luxembourg as the 19th leading financial center in the word out of 120 centres measured. Within that index it ranks #13 for finance, #12 for government and regulatory environment, #5 for investment management, and #4 for human capital.[4]

A Global and European Financial Center

Banks

Luxembourg has evolved to become a major European and global center for financial services. The transition began in the 1960s with Luxembourg became a center for trading European debt and a laboratory for the single European currency. German banks arrived first, joined soon after by U.S. banks such as San Francisco's **Wells Fargo**, which came in 1968. Today 123 banks from 26 countries operate in Luxembourg, with a focus on corporate banking and €600 billion in private banking assets under management. Eighty-five percent originates from within Europe. With a small domestic market Luxembourg's base is global, with only five banks operating in the country being Luxembourg headquartered.

Investment Funds

Significantly, in 1988 Luxembourg became the first European country to embrace in national law the 1985 European Directive 85/611 ("Undertakings for Collective Investment in Transferrable Securities" or UCITS) which created a framework for the management and sale of mutual funds. That legislation enabled UCITS funds raised from the public and invested in listed securities to be freely sold in any European country, creating for the first time a unified European market for mutual funds.

Today UCITS funds, which are open to global investors, account for 75% of collective investment by small investors in Europe.[5] The legislation also set in motion the establishment of a Luxembourg mutual funds industry. As the first mover in the industry and with a low competitive tax rate, Luxembourg succeeded in attracting a growing number of international funds while at the same time expanding its overseas reach, starting with Hong Kong and Singapore. With that a European product became a global product.

The other important innovation in Luxembourg was the development of a toolbox, starting with an "umbrella fund" structure under which one overarching legal entity could have multiple sub-funds that investors could switch between without incurring tax liability. In the European context this framework was unique to Luxembourg.

Asset management for global investment funds is at the heart of the industry, where Luxembourg functions as the second largest global center for investment funds and the largest in Europe. Though not a headquarters city for financial institutions, it often serves as their European headquarters. Luxembourg's strength lies in product development, compliance, risk management, and increasingly in sustainable finance. Luxembourg-domiciled investment funds are active in 80 countries, with €5.5 trillion in assets under management, and account for 57% of all global funds with cross-border distribution. 76% of the top 58 asset management funds in the world have their first domicile in Luxembourg, with 22 being American. Leading mutual funds from the United States include the Bay Area's **Franklin Templeton**, Blackrock, Fidelity, JP Morgan Asset Management, Invesco, T Rowe Price, Goldman Sachs, and Vanguard. By asset type, 49% of these funds invest in equity, 27% in bonds, 11% in mixed assets, 2% money market, and 11% in alternatives.[6]

With approximately €4,000 billion in assets under management, Luxembourg is home to one third of European UCITS funds. It is also home to 13% of alternative investment funds in Europe, with €950 billion under management.[7] In this category it particularly serves as a base for private equity and hedge funds. Nineteen of the top 20 private equity firms in the world have Luxembourg operations.[8]

Payments

Luxembourg has established a particularly strong base in payments, with sixteen payments companies operating in-country including leading global firms such as Alipay (China), Rakuten (Japan), Amazon Payments (with 3,000 employees), and Bay Area-based PayPal and Airbnb.

"We chose Luxembourg in a post-Brexit context, for its central location, because it is a major financial center and because many payment services are already there. Everybody in Luxembourg is familiar with the complexity of payments in the e-commerce sector". — Airbnb[9]

CASE STUDY:

Franklin Templeton

With a presence in Luxembourg for over 32 years, Franklin Templeton International Services S.a.r.l was first established to take advantage of the UCITS regulatory framework, where the country had first mover advantage in Europe. The initial focus was on fund services, but as more of those services were offshored in the early 2000s the focus shifted to management governance – making the Luxembourg entity responsible for investment management, risk management, administration, and product marketing, monitoring and performing due diligence for its service providers.

Currently, Franklin Templeton's international cross border funds are publicly registered for distribution in over 50 countries. The flagship fund has multiple sub-fund and asset strategies (e.g., single country, regional and global funds) and nearly 1000 discreet share classes. Assets under management total $90 billion, supported by European branches across the region that handle sales and other functions, with Luxembourg serving as the company's EU headquarters.

Craig Blair, Senior Vice President and Country Head, observes that "Luxembourg is very attractive, multinational, and at the center of Europe" and that the Luxembourg financial regulator, while approachable, is a strong competent authority. He notes, however, that the cost and compliance burden for firms is growing due to increased demands from authorities for data, and pressure from other countries in the EU to increase regulation. The level of regulation within the EU is growing, he says, constraining the powers of local authorities to use their discretion and stifling the ability of the market to innovate and develop products that better meet investors' needs.[10]

CASE STUDY:

Paypal

With 100 employees, Paypal's European headquarters has been based in Luxembourg since 2007, where it operates as a licensed bank serving the European market, with activity focusing on online and cross-border payments. From Luxembourg it interacts with national and European regulators and institutions. Claire Alexandre, PayPal's head of government affairs for the EMEA region, points to the importance of the country's regulatory approach, which she describes as "pragmatic and forward looking". It's easy, she notes, to have conversations with government leaders, who in turn work to solve problems fairly. The talent base, she says, is strong and a focus on technology and on fintech in particular supports innovation: "We see a willingness to always stay ahead."

Asked about the value of being in Luxembourg Alexandre also points to Luxembourg's utility as a pilot market to test future European offerings. The latest example is cryptocurrency, where Luxembourg is the first country on the continent where PayPal offers a crypto payments service.[11]

A player in Luxembourg's digital economy, PayPal has entered into a five-year agreement with the National Research Fund (FNR) and the University of Luxembourg to create a PayPal-FNR Pearl Chair in Digital Financial Services, with the goal of deepening research on fintech and how it impacts the economy, society and government.

Fintech

Two fields have recently emerged as priorities in the financial services sector: fintech and green finance.

Fintech is seen as not a sector to itself but more as a driver of innovation in the traditional financial sector. **LHoFT (Luxembourg House of Financial Technology)**, a public-private initiative, serves as a strategic hub, providing co-working space and shared facilities to support fintech startups and facilitate their interaction with more established financial services companies. It also serves as a base for global fintech startups coming to Luxembourg to explore the EU market. Major areas of focus include payments, regtech (technology for regulatory compliance), fundtech (for wealth management), insurtech (insurance), security and authentication, alternative lending, and blockchain and tokenization.[12] AI, with a focus on data-driven intelligence and decision-making, is an underlying thread.

The creation of LHoFT in 2016 gave Luxembourg's approach to the digitalization of financial service a strategic grounding. As stated by LHoFT CEO Nasir Zubairi, "the question was how to drive the entire sector forward, including traditional financial services. How do new and older companies collaborate to create economic value? Looked at this way, we see fintech as an enabler."[13]

The global dimension is important, as 90% of the facility's residents come from other countries and use LHoFT as a soft-landing platform where they can meet other ecosystem players. In the Bay Area LHoFT has a cooperating relationship with Mountain View's **Plug and Play**, where the two organizations exchange information on the companies they serve, with the aim of building connections and developing shared opportunities.

Green Finance

Sustainable finance - providing financial capital to advance a sustainable future - is a priority in Luxembourg's economic strategy, and since 2017 the country has been at the forefront in the development of green finance initiatives and vehicles. This includes funds with a sustainability focus, green bonds, and climate-related bonds, all seen as tools to advance the transition from carbon fuels to clean energy. A first mover in the field, Luxembourg is the world's leading site for the listing of green bonds and home to the **Luxembourg Green Exchange**, the world's first platform for the listing of sustainable, social and green securities. Europe is home to 83% of global sustainable fund assets, with Luxembourg its leading center and 34% of assets managed by sustainable funds in Europe domiciled there.[14]

Globally, Luxembourg ranks #5 in the world (behind only London, New York, Stockholm and Geneva) in the Global Green Financial Index, which evaluates 86 financial centers for their green offerings. Cities in the Index are evaluated across two main dimensions: the depth to which green finance has penetrated its business activity (i.e., the prevalence of green financial services and products), and the quality of products and services on offer.[15]

Supporting this drive, the non-profit Luxembourg Sustainable Finance Initiative implements the Luxembourg Sustainable Finance Strategy, engaging stakeholders and promoting and developing initiatives, with cross-sector working groups on education and training, climate reporting and measurement, ESG data, and innovation.[16] Innovation is also supported by the International Climate Finance Accelerator, a unique two-year program that supports emerging fund managers with financial assistance and training in the field of climate action. To date the accelerator has supported 6 cohorts and 28 fund managers through 17 training workshops.[17]

Global Green Finance Center Rankings

GGFI 11 Rank	Centre	GGFI Dimensions			
		Green Finance Depth		Green Finance Quality	
		Rank	Rating	Rank	Rating
1	London	2	316	1	326
2	New York	1	319	2	322
3	Stockholm	3	314	6	307
4	Geneva	8	307	3	313
5	Luxembourg	4	312	14	304
6	Amsterdam	12	305	4	310
7	Los Angeles	8	307	6	307
8	Copenhagen	14	304	5	309
9	Washington DC	8	307	10	305
10	San Francisco	6	308	17	303
11	Singapore	5	309	20	301
12	Zurich	15	303	8	306
13	Sydney	12	305	17	303
14	Edinburgh	17	302	10	305
15	Seoul	6	308	23	298

Source: Global Green Finance Index 11, April 2023

Cybersecurity

The Luxembourg House of Cybersecurity (LHC) is home to an array of cyber related activities that create leading-edge infrastructure to support the financial services sector. Its services include a lab for vetting and testing ideas, tools and solutions, supported by cybersecurity experts from the Computer Incident Response Center Luxembourg and the National Cybersecurity Competence Center Luxembourg, both of which are hosted by LHC. Room 42, also at LHC, offers a game-based cyberattack simulation exercise.[18]

Luxembourg's Positioning Within Europe

The Swiss Economic Institute ranks Luxembourg as the 12th most globalized economy in the world based on a range of economic, social and political criteria (trade, financial, interpersonal, informational, cultural and political).[19] An accessible regulatory environment is part of the attraction. No less important, however, is the country's multilingual and multicultural environment. A small market by itself, Luxembourg's location between France, Germany and Belgium gives it a central position in Northern Europe. Multiple languages are spoken, and English (which serves as a primary language for contracts) is spoken universally. Seventy-four percent of Luxembourg's workforce is composed of foreign nationals either residing in Luxembourg or entering from neighboring countries (26% are nationals, 27% are foreign residents residing in Luxembourg, and 46% commute cross-border).[20] With this multinational base (approximately 250,000 people commute cross-border each day[21]) the 2022 IMD World Competitiveness Talent Index ranks Luxembourg #7 in the world for talent out of 63 countries studied.[22]

Luxembourg is also home to the highest percentage in Europe of workers aged 25-34 with tertiary level education.

12th

Most globalized economy in the world

74%

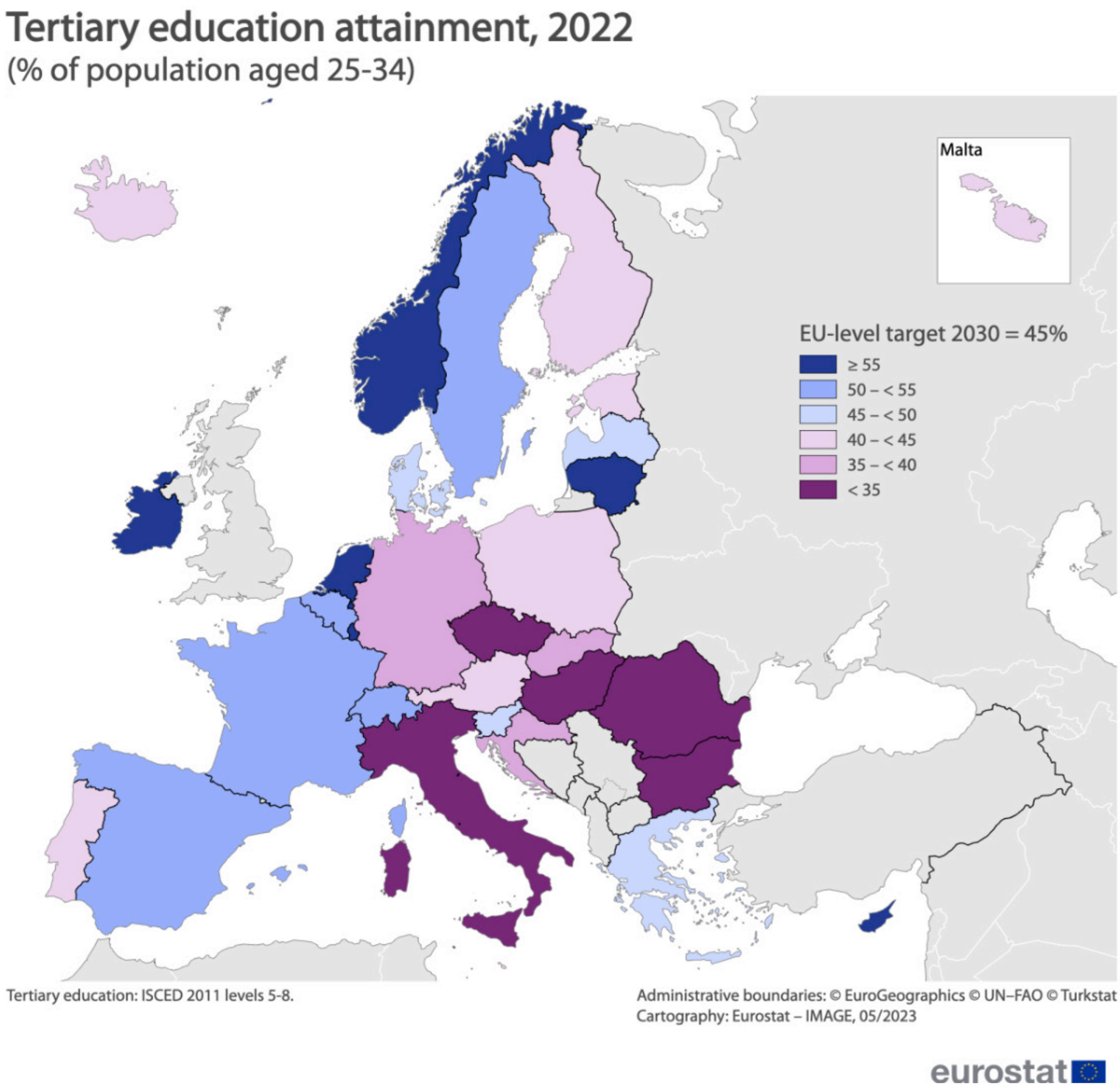
of workforce are foreign nationals

7th

in the world for talent out of 63 countries studied

250,000

workers commute cross-border each day



The Impact of Brexit

Luxembourg has been a beneficiary of Brexit, with 95 financial services companies having relocated activity from London as UK-based financial services serving European markets were shifted EU members.[23] Other leading destinations for this realignment were Paris, London, Frankfurt, Amsterdam and Dublin.

Though a direct beneficiary of Brexit and deeply embedded in the EU, Luxembourg did not favor the UK's departure. London had historically been supportive of the market-based, lighter-touch regulation favored by Luxembourg and other small European countries such as Ireland, and its departure exposed Luxembourg to increased regulatory pressures from within the EU.

To some re-degree location decisions have been based on where different EU-serving business lines best fit. Banks have gravitated to cities such as Frankfurt, while asset managers have shifted to Luxembourg or Dublin, which were already fund management hubs. More than half of the financial services firms either relocating from London or strengthening their base in Luxembourg post-Brexit have come from the asset management sector, spanning real estate, insurance (AIG, USAA, Liberty Mutual), alternative funds, and private equity.[24]

Digital Strategy

In a move to further diversify its economy Luxembourg is positioning itself as a European ICT and data hub, building on a competitive IT ecosystem through three core components: high performance computing, a National Data Exchange Platform, and a National Sovereign Cloud. Together they aim to create an integrated data ecosystem that attracts and supports companies doing business in the EU.

High Performance Computing: **MeluXina**, an 18 petaflop supercomputer ranked as the 10th fastest in Europe and the 36th fastest in the world[25], provides access to high performance computing for private companies, focusing on simulation and large scale data analytics. Targeted applications include climate prediction, mobility, smart buildings, and smart grids.

A *National Data Exchange Platform*, now being developed, will enable companies to find and share data.

The *National Cloud* provides secure on-demand cloud services with high-band connectivity, large-scale data storage, and edge computing for IOT and mobility devices. The technology for the National Cloud comes from **Google**, with the national cloud structure built on top. Operated by the Luxembourg-Belgian company Proximus and LuxConnect, the data on the national cloud will reside in data centers located in Luxembourg, to which Google will not have access. This strategy addresses EU concerns regarding data privacy and possible access by the U.S. government to data held on U.S. platforms. Starting with neighboring Belgium and the Netherlands, Luxembourg's sovereign cloud will be marketed to other European countries. This structure hasn't been attempted elsewhere, making Luxembourg once again a first mover.[26]

Overall, Luxembourg hosts 23 data centers, including 9 with Tier IV certification (the highest of four classifications levels, providing complete fault tolerance and redundancy). That infrastructure has helped attract U.S. companies such as AWS (Amazon Web Services), which has its European headquarters and 3200 employees in Luxembourg.

The University of Luxembourg plays a significant role in the country's digital strategy through the **Interdisciplinary Center for Security, Reliability and Trust (SnT)**. SnT conducts long-term ICT research with a focus on socio-economic impact and helps commercialize research through collaboration with private companies. With close to 500 researchers and staff, 69 industry partnerships are in place and half of the center's PhD candidates work with industrial partners. An Acceleration Programme supports aspiring scientist entrepreneurs, with five companies spun off to date.

SnT's approach is broadly focused on data, algorithms and software that address the Center's four strategic priorities: space systems, fintech, cybersecurity, and autonomous vehicles and IoT. In fintech, SnT works with the Bay Area's **PayPal** on the testing of technology to ensure no-fault software, and with Bay Area cryptocurrency company **Ripple** on payments. In space, its focus is on communication, networking, geolocation, and mission-critical software. Farther down the road, quantum communications and post-quantum security are emerging areas of interest. In 2022 snT, with SES and the Ministry of Media, Connectivity and Digital Policy started work on a national quantum communications network, beginning with a testbed for post-quantum security.[27]

Startup Environment

Domestically, Luxembourg's startup ecosystem, created over the last decade, has been supportive of early-stage companies but is challenged when it comes to scaling and access to later stage venture funding. Attracting talent is also a challenge due to the high cost of living and of labor. Internationally, Luxembourg presents itself as a friendly base for startups from abroad that are looking to enter European markets. In this respect Luxembourg is positioning itself as a pilot market for companies that want to test their products in a European environment before expanding to other countries.

LuxInnovation, the country's innovation agency, focuses on the ecosystem, working to fill gaps through access research and to national and EU funding, as well as attract companies from outside Luxembourg. Its activities support companies of all kinds in their innovation projects – including established companies that need to modernize or digitize to develop new products. It also supports early-stage startups with an acceleration program and a startup mapping project, startupluxembourg.com, that aims to make Luxembourg startups more visible worldwide. The key industries that Luxinnovation is focused on, besides space and finance, are mobility, supply chain solutions, green construction, and smart cities/buildings, with the goal of attracting flagship projects.

Startups coming to Luxembourg are eligible under the **Fit 4 Start** program for free access to co-working space, six months of coaching, equity-free co-funding of up to €150,000, access to MeluXina, and in some cases innovation subsidies through the Ministry of Economy. Other support can come from programs under the European Investment Fund, based in Luxembourg, with which the government cooperates.

Supported by the Chamber of Commerce, the **House of Entrepreneurship** also supports entrepreneurs with services including advice, access to finance and state aid, workshops, and networking. Included under its roof is a House of Sustainability, that focuses on sustainable development.[28] Startups in the health and medical devices sector have access to the House of Bioheath, a 15,000 square meter lab and office facility that supports R&D, and the Health Technologies Business Incubator, a 300 square meter lab space that's also hosts startups and spinoffs. Other sectors of interest include smart mobility (Amazon Europe is headquartered in Luxembourg), and industry 4.0. Dedicated innovation campuses for space, mobility, and healthtech are in the works with others being planned.

Commercial Space

Luxembourg is also a major hub for commercial space activity. The industry began with **SES**, a private satellite communications company founded in 1985. Backed by the government in an early effort to diversify the country's economy, SES has since grown to become a leading global broadcast and data satellite communications provider. It currently operates 70 geostationary satellites serving seven of the world's top ten telecommunications companies, four of the world's six major cruise lines, one billion TV viewers, and 58 government agencies.[29]

Unlike other countries where space programs focus primarily on defense, Luxembourg's is oriented toward civil space. In 2005 Luxembourg joined the European Space Agency and in 2008 the government released its first space policy, designed to stimulate growth in the sector. By 2015 Luxembourg was home to 20 space-related companies. Approximately 80 space-related companies and research bodies currently have a presence, both home-grown and from other countries.[30] Most focus on satellite communications but the range has broadened in recent years to include earth observation, space navigation, and the generation and use of space-based data. What is not yet part of its industry is vehicle launch or launch technology.

The **Luxembourg Space Strategy** carries this process forward with a distinct commercial focus. Sustainability is a priority, with targets that include the sustainable development and use of space resources, traffic management in space, the management of space debris, and the servicing of satellites currently in space.

The **SpaceResources.lu initiative**, launched in 2016, particularly focuses on the utilization of resources found in space such as water, metals or gasses that, if developed, could have commercial potential, and on strategies to utilize those resources both on earth and in space (for example as life support for astronauts, as propellants for launch and other space vehicles, for the construction of space-based infrastructure, or for the manufacturing of equipment in space). Those resources are seen as supporting longer and deeper space missions, new and larger space structures, and a permanent human lunar presence.

As described by **Luxembourg Space Agency** Executive Committee member Dr. Mathais Link, "not everything we use in space needs to be launched from Earth. The idea is actually to not launch from Earth but instead to use materials already found in space." One element of the initiative is legal, since the rules for the development of space resources aren't yet clear at the international level. Finance is also important, since to grow the sector requires investors. As described by Dr. Link, "Markets can be imagined but they don't exist today. We're launching a new industry."[31] Two major conferences in Luxembourg carry this conversation forward: Space Resources Week, the largest in the world in the field of space resources utilization, and New Space Europe, which parallels the New Space conference held in Silicon Valley.

Tasked with implementing the space strategy, the business-oriented Luxembourg Space Agency supports ecosystem development, including talent development and international partnerships. Together with the Agency, the University of Luxembourg supports two space-related master's degree programs, one (Interdisciplinary Space Master) on entrepreneurship and engineering, and the other on space law. Public research includes emerging fields such as space and quantum communications.

Luxembourg has a deep history of engagement with the European Space Agency (ESA), and through ESA is a partner with NASA in the Artemis project to return humans to the Moon. International relationships extend to the Bay Area through the Luxembourg Space Agency's participation in the **SETI Institute**'s Frontier Development Lab (FDL), an interdisciplinary PhD and postdoctoral applied AI research program that leverages space and earth data to accelerate discoveries that address high risk/high reward challenges. Areas of inquiry include planetary defense, planetary science, heliophysics, disaster management, astrophysics, astronaut health, climate adaptation, and resilience and energy futures. Luxembourg is a sponsoring partner in FDL, sending graduate students to the program since 2017.[32]

Under an MOU signed with NASA in 2019, Mountain View's **NASA Ames Research Center** is also a research partner with snT through its project on autonomous navigation by moon rovers.

Other anchors in the space ecosystem include the **Luxembourg Institute of Science and Technology** and **Orbital Ventures**. The Luxembourg Institute of Science and Technology focuses on applied research, including remote sensing, materials, earth observation, and 3-D printing in space. Orbital Ventures, supported by funding from the European Investment Fund and Luxembourg's Ministry of the Economy, invests in early-stage companies. Created in 2020 and managed by Promeus Ventures, the fund targets opportunities in telecommunications; robotics, sensors and data; earth observation and environmental monitoring; transportation and logistics; and space resources utilization and exploration.[33] Internationally the fund works to attract business to Luxembourg by investing in companies that establish a presence, but also invests in companies located outside of Luxembourg where there is a local spillover effect.

Separately, the Fit4Start startup program also offers a dedicated space track, and **ESRIC** (the European Space Resources Innovation Center, a partnership of the Luxembourg Space Agency, the European Space Agency, and the Luxembourg Institute of Science and Technology) facilitates research and cooperation with industry on the use of space resources and development of a future space economy. ESRIC is home to the world's first incubation program dedicated to space resources utilization. To participate companies needn't be based in Luxembourg, but by being engaged at an early-stage it encourages companies to establish themselves in Luxembourg later.

Coming in the future is the Luxembourg **Space Campus**. With groundbreaking planned for 2024 and an opening in 2026, the campus will have two sites, one providing facilities for private companies and the other dedicated to public research. The Luxembourg Space Agency will locate its headquarters at the first site, which will include an incubator and a 3000 square meter test center, while the second will host the laboratories of ESRIC and SnT.[34]

While Luxembourg's successful drive into space continues to support its strategy of economic diversification, some in industry question the country's current policy direction, citing a recent revisions to the Space Law that were not written in consultation with industry, new complexity in the licensing process for satellite launch and operations, and more complex and less useable programs to support R&D.

CASE STUDY:

Spire

Spire Global is a global space cloud data analytics company that uses satellites to provide maritime, weather and aviation tracking and data analytics. Founded in 2012, in a San Francisco garage, where its first satellite was built, its first launch came nine months and by 2017 it was operating a satellite constellation with full earth coverage. Revenues grew rapidly, after five years reaching $100 million. To date Spire has attracted $425 million in funding.

With satellites covering the earth 100x each day, Spire now operates the world's largest satellite constellation using RF (Radio Frequency) technology to track and observe what is happening on and around Earth. Its datasets, drawn from the world's largest network of multi-purpose low earth-orbit satellites, use earth observations to inform decision making in the maritime, aviation, supply chain and logistics industries, weather forecasting, global security, and earth intelligence R&D. Global from the start, the company initially established two overseas offices, in Singapore and the UK, positioned to be eight time zones apart. When the UK left the European Union, however, Spire needed a European site and evaluated several options. Its choice was Luxembourg, due in large part to the country's proactive space strategy at that time. According to co-founder Peter Platzer, "Luxembourg saw a good opportunity to diversify its economy through the growing space sector. They have a strong track record of choosing a strategic sector and building it up through smart policies." In space, this started with investment in SES thirty years ago, where government became a shareholder and provided contacts to anchor R&D locally. He notes that "There is no successful space company in the world that I am aware of that doesn't do half or more of its business with government. This makes the governmental role in creating a strong space sector uniquely important compared to other industries."

Luxembourg hosts the company's second largest global office, which connects to sites in Boulder (Colorado), Cambridge (Ontario), Washington, D.C., Singapore, Glasgow, Oxfordshire, and San Francisco. While manufacturing is concentrated in Glasgow, its other sites are all multipurpose. Activity in Luxembourg includes science, engineering software development, product development, sales, finance and HR. The company's CFO and SVP of global engineering are located in the Bay Area, while its COO and its CTO (Co-Founders) are based in Luxembourg. Activity in San Francisco includes software development, product development, satellite operations, launch, finance, communications, brand, and ground station operations.[35]

Bay Area Connections: Two-Way Investment

A favorable FDI environment built on supportive government policies, stable economic conditions, diverse human resources and advanced infrastructure is attracting investment from the Bay Area.

Bay Area to Luxembourg Investment

Since 2012, there have been 23 investment deals by Bay Area companies into Luxembourg. From March 2015 through March 2023 there were 9 deals totaling $1.38 billion. A large part of that number came from a $1.18 billion investment in 2017 by Google in ICT and electronics for cloud computing. In July 2017, Google invested $1.18 billion (€1.1 billion) to create a 25-hectare (2.69 million square foot) data center, the largest investment in the country's history. Google operates five other data centers in Europe with two in Ireland, and one each in Finland, the Netherlands, and Belgium. Since 2005, Google has invested more than $3 billion in Luxembourg and is expected to create 471 jobs as the company expands its operations.

Other areas of Bay Area investment in the same period include Financial Services ($23.8 million), Software and IT Services ($15.5 million) and Professional Services in Space and Defense ($7.5 million).

Luxembourg to Bay Area Investment

Since January 2014, there have been 10 investment deals by companies from Luxembourg to the Bay Area totaling $354.5 million. Most have been concentrated in Santa Clara ($298.5 million) and San Francisco ($53.1 million) Counties. Napa County received $1 million for Agribusiness and San Mateo County received $1.9 million for Professional services in Real Estate. ICT and Electronics dominates with a total of $327 million, followed by Software and IT Services ($20.9 million) and Professional Services ($5.7 million).

Investments in Luxembourg by Bay Area Companies

Investing company	Project Date	CapEx ($ millions)	Jobs Created	County	Sector
Runa Capital	Sep 2022	$23.8	43	Santa Clara	Financial Services
Civil Maps	Sep 2019	$0.9	4	San Francisco	Transport Equipment
Airbnb	Apr 2019	$0.7	3	San Francisco	Tourism
CloudFlare	Mar 2018	$137.1	49	San Francisco	ICT & Electronics
Spire Global	Nov 2017	$15.7	58	San Francisco	ICT & Electronics
Google	Jul 2017	$1,179.9	471	Santa Clara	ICT & Electronics
Ripple Labs	Jun 2016	$4.0	11	San Francisco	Financial Services
Deep Space Industries (DSI)	May 2016	$7.5	8	Santa Clara	ICT & Electronics
TrueBear Corporation	Mar 2015	$9.9	49	San Francisco	Professional Services

Source: fDi Markets

Opportunities

Luxembourg's position as a business-friendly European economy suggests a range of opportunities for investment and other partnerships with Bay Area and other U.S. companies.

Finance

Luxembourg serves as a major European hub for financial services and has successfully attracted companies that have chosen to relocate their European operations from London post-Brexit. Potential fields for future growth with Bay Area and other companies include private equity and venture capital. Luxembourg also offers a platform for raising funds in Europe.

More strategically, Luxembourg is diversifying its offerings to new anchor activity in fields such as fintech and green finance. Green finance is a particular area of opportunity for companies from the Bay Area and California, where sustainability is a priority.

Space

Luxembourg's growing space sector also offers other opportunities. Institutional ties are in place with entities such as the SETI Institute and NASA Ames Research Center, but there is more room for private sector partnerships.

Digital Technology

As part of its diversification strategy Luxembourg is positioning itself as a European hub for AI and digital technology and as an entry point for U.S. companies into Europe, building on its geography and its potential to pilot services and technologies destined for larger European markets. Its investment in ICT infrastructure is an enabler, with health and mobility growing sectors. Luxembourg is particularly looking to Bay Area/Silicon Valley companies to fill ecosystem gaps and to deepen R&D ties in fields such as quantum computing and communications.

Europe

Luxembourg offers a supportive environment for finance, technology and other companies, with a business-friendly approach that can differ at times from the more aggressive Euro-centric regulatory policies favored in the EU. Those pressures push back the ability of countries such as Luxembourg to operate with their historical level of flexibility. Before Britain's departure from the EU it sat at the table of large economies and served as a counterbalance. Europe's smaller, more globally-oriented economies have now lost that cover, making EU-wide regulation and its impact on innovation a greater concern.

Talent attraction is another challenge, as Luxembourg is a high-cost country. With a small population, to support innovation and R&D it needs to both grow local talent and attract global talent. More aggressive measures may be needed to strengthen the country's global appeal, including tax reforms to address concerns raised by EU nationals who commute cross-border.

Notwithstanding, Luxembourg has positioned itself as a welcoming base for U.S. companies looking to do business in Europe. Characteristically, its motto for the development of external partnerships is "Let's Make it Happen."[36] With that, Luxembourg's practical approach and compact scale provide a favorable setting for deeper economic exchanges.

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Craig Blair, Senior Vice President and Country Head, Franklin Templeton International Services S.a.r.l.

Daniel Da Cruz, Consul General of Luxembourg

William Diamond, President & CEO, SETI Institute

Elaine Guillon, Trade Officer, Luxembourg Trade and Investment

Mathias Link, Director and Executive Committee Member, Luxembourg Space Agency

Nicolas Mackel, CEO, Luxembourg for Finance

Bjorn Ottersten, Director, snT

Peter Platzer, Co-Founder, Spire.

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Denise Voss, Chair, Luxflag

Nasir Zubairi, CEO, LHoFT

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