

Why

Luxembourg

November 2021



**The attractiveness
of Luxembourg
as a business hub**

15€



In association with

LUXEMBOURG TIMES

A M C H A M LUXEMBOURG
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ArcelorMittal

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Inventing smarter steels for a better world





REINVENTING ITSELF IS ONE OF LUXEMBOURG'S STRENGTHS.

The diminutive size of the world's only surviving Grand Duchy has historically meant other countries decided over its geopolitical fate. But the fact Europe's powers did not see it as a competitor also meant Luxembourg was left alone when mapping its economic future. More perhaps than any other country in Europe, that has enabled Luxembourg to successively expand into new directions to increase the wealth of its citizens. From a world player in steel, it moved into private banking, then became a world player again in fund management and tax structuring. More recently, Luxembourg has opened its doors for companies exploring space, an effort that is also beginning to show early signs of bearing fruit.

Looking at it from the outside, it is almost as if Luxembourg is being run as a business itself. It retains whatever works. What doesn't withers away naturally. It is that fundamentally nimble approach that has brought Luxembourg great successes. Its economic output is among the highest in the world compared to the size of its population and it easily has the fastest growing population in Europe - a continent in which many countries have seen the number of residents decline. In a region that otherwise does not stand out for economic performance, Luxembourg is a powerful growth engine.

Needless to say, Luxembourg's unique economic status has brought with it a set of unique challenges. In a country where three out of four workers are foreigners - so do not have the right to vote - it is difficult to see how to ensure political accountability over the long term. The country also needs to work much harder to deal with pollution, even as it markets itself as the place to be for sustainable finance. Finally, its very business success has awakened some sleeping giants and the country can no longer rely on jurisdictional advantages over its neighbours. This has forced Luxembourg to engage with its EU partners - and those in the OECD - on areas such as tax harmonisation. But they are not issues that will harm Luxembourg's long-term success as a place to do business. It is just a sign the country is coming of age.

Douwe Miedema
Editor-in-Chief, Luxembourg Times

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My colleagues and I in the American Chamber of Commerce in Luxembourg are very pleased to partner with the Luxembourg Times to publish: Why Luxembourg?

We encourage everyone to read this publication, share it with your friends, and especially to bring the contents to the attention of your business friends around the world who are looking for a European hub location. Luxembourg is the best European location for international companies and their employees to establish themselves and their European Headquarters. We win in all company related categories of economic, digital, safety and governmental policies and practices... while also offering the best personal quality of life considerations for employees and their families. Read this publication to learn more.

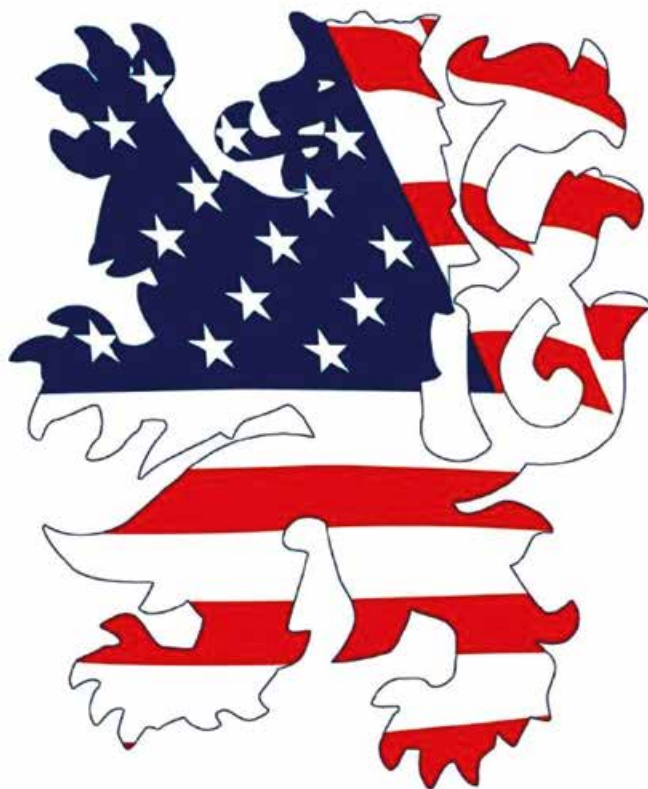
As we begin to exit the Covid medical emergency there is an urgent need to relaunch the full range of economic activities to return our country to full and inclusive prosperity for all of our inhabitants and our businesses. In addition to taking care of our own rebuilding, now is the time for us to reach-out around the world to find and bring to Luxembourg other great companies with whom we can share the many advantages of Luxembourg while benefiting from their dynamism, energy and ideas to make Luxembourg even better than it already is, for the benefit of all who live and work here... and their families. We hope this publication will serve as that invitation to all who read it.

For 22 years it has been my privilege to work with and serve as the Chairman and CEO of what has grown over a 25 years period from a small bilateral Chamber of Commerce into the largest private international Chamber of Commerce in Luxembourg, a melting pot business organization with a membership that has: 30 % US member companies, 20% Luxembourgish companies and 50% global companies of origin from around the world.

We are very proud to be a melting pot, international Chamber of Commerce, which serves and supports all of our members equally regardless of the country of their passports. Our 17 committees (with a new Space Committee and a new Digital committee coming very soon) monitor, inform and support every sector of the Luxembourg business economy and we fight with all of our wisdom and energy every day to make sure Luxembourg is and stays the very best business location in all of Europe. Our 30 plus events per year are unparalleled for networking, our weekly digital Newsletter and our 400 page Doing Business in Luxembourg (DBIL) book powerfully keep our members informed and with our Member Benefits Club ensure we support our members and their needs to a very high standard of excellence.

Find out more and consider to join us by clicking here <https://www.amcham.lu/membership/> or by contacting us at www.amcham.lu, email: info@amcham.lu, or by telephone at (352) 431756. With respect and our very best wishes,

Paul Michael Schonenberg
Chairman and CEO AMCHAM Luxembourg



AMCHAM.lu

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08

Why

Luxembourg

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**Today
Luxembourg
is already
a high-tech
centre
of excellence.**

”

Franz Fayot, Minister of the Economy

INTERVIEW

“GLOBAL PLAYERS OF ALL SIZES USE LUXEMBOURG AS A GATEWAY TO EUROPE AND BEYOND”.

With its flourishing and dynamic economy, Luxembourg presents itself as a particularly attractive international hub in the heart of Europe. Franz Fayot, Minister of the Economy, talks about the country's strengths and his vision for the future.

How would you describe Luxembourg and its economy to economic actors who know little or nothing about the country? And why should international players willing to invest in Europe pay attention to Luxembourg?

What opportunities can they see?

Franz **Fayot**: Over the past decades, Luxembourg has made its mark internationally as a reliable and innovative partner. The country is best described as a world-renowned international business location, a secure and reliable hub for cross-border activities in a number of fields, including key high-tech sectors like space or automotive. Global players of all

sizes use Luxembourg as a gateway to Europe and beyond, benefiting from its closeness to decision-making centres and its excellent access to worldwide markets. International companies are also attracted to Luxembourg because they value the country's sound macroeconomic foundations and the stable political environment.

What are the major challenges, risks and opportunities related to the country's economy?

Luxembourg has been committed to green transition and the digital transformation, even long before the pandemic and the associated

economic crisis of 2020. Sustainable growth is an essential aspect of our economic development and diversification policy. Considering the lessons learned from the pandemic and looking at global trends, it is obvious that the path we are already on is the right track to follow. Across all sectors, decarbonation, sound use of resources, circularity and digitalization are key. Of course, we also identified some other important challenges to make the economy more resilient to a crisis: these include the reindustrialization of Europe, especially the need to protect our manufacturing industry from lower quality and from more CO₂ intensive products im-

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**Our industry
is becoming
increasingly
technological
and low
emission.**

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ported from third countries, and aiming for a stronger internal European market. The COVID-19 crisis has also highlighted the urgent need to design smarter, stronger and more diverse supply chains that are resilient and can withstand crises.

Today, the economy must change, evolve towards sustainable models.

How is Luxembourg accompanying this transition, with what ambitions?

Our country is ideally positioned to accelerate its transition while coming out of COVID-19 and to relaunch and further modernize its economy. Luxembourg is providing an ideal business environment for combining successful economic development with long-term sustainability. At the ministry of the Economy, we developed a roadmap called “Our economy of tomorrow” to accompany the transformation of the Luxembourg economy by 2025. The roadmap addresses the industrial innovation policies, regulations, financial instruments and actions necessary to support the rapid emergence of a competitive, resilient and sustainable economy. We have for instance implemented a new aid measure for companies that have suffered the impact of the COVID-19 crisis. By means of subsidy levels of up to 50%, this aid encourages firms to carry out economic development, digitalization and environmental protection projects. An additional level of subsidy is awarded for projects that include a circular economy aspect.

How is the strategy for transforming the industry, based on the conclusions of the Rifkin process, taking shape?

The Rifkin process was conducted in 2016 to support Luxembourg’s ecological and digital transition that was already ongoing at that time. The reflections carried

out during this participatory process subsequently contributed to the orientation of the country’s economic policy towards more sustainability. We have broadened the initial perspective of this process because the current context has changed: the pandemic has revealed certain vulnerabilities in society and the economy, and the megatrends identified through the Rifkin process have accelerated significantly with the pandemic. In addition, new international and EU obligations have arisen from the challenges posed by climate change, with the aim of drastically reducing greenhouse gas emissions. The resilience of the economy and society has thus become another key issue. Luxembourg Strategy, the foresight unit of the Ministry of the Economy, was established at the end of 2020 in order to continue and extend the collaborative process for transforming the economy initiated in 2016 with the Rifkin process. Through foresight and different modelling and planning initiatives, this unit supports the transformation of the national economy to make it more sustainable and more competitive.

Luxembourg’s economy was built on the steel industry, then on the development of financial activities. How is it seeking to diversify today?

Luxembourg is a country in a constant state of transformation, having reinvented itself in a changing world more than once. So does its economy. Throughout its history, Luxembourg has evolved from an agricultural country first to an industrial state, and later to a world-renowned financial business centre. These days, another transformation is underway, backed by an economic diversification programme that places particular emphasis on innovative technologies in various fields, including clean technologies,

smart mobility, health technologies, space and logistics. Many international groups have set up their global or European headquarters, R&D centres and other operations here. The Ministry of the Economy invests considerable effort to support these entrepreneurs developing innovative activities from Luxembourg.

How do you see the Luxembourg economy developing in the future?

Both digitalization and circularity will contribute to the further diversification of the economy, as drivers for the sustainable transition. Luxembourg’s integrated ecosystem is an important enabler of the implementation of a circular economy that will increase the overall efficiency of our national economy and reduce its ecological footprint. Today Luxembourg is already a high-tech centre of excellence. Since many years, digitalization takes a predominant role in the development of our economy. In the short and midterm, we





aim at consolidating our position as the most progressive and attractive environment in the EU for the digital and data economy.

Can you remind us of Luxembourg's ambitions in the space sector and what led the country to invest in this direction?

Space is high on the agenda in Luxembourg's ambitions. For more than three decades, Luxembourg has been at the forefront of commercial space activities, at first thanks to the « Société Européenne des Satellites » (SES), created in 1985. Today, it is the operator of the world's first telecommunications satellite network and a real Luxembourg success story. In 2016, we launched the SpaceResources.lu initiative, positioning the country as the European hub of space resource utilization. In 2020, together with ESA we created the Luxembourg-based "European Space Resources Innovation Centre". The project is further strengthening Luxembourg's interna-

tional position and reputation in this area by continuing the activities planned under the SpaceResources.lu initiative, adding to them an additional research dimension that does not exist elsewhere in Europe. All these advances underline the strategic decision of the present and past governments to actively and continuously develop and extend the local space industry and to further diversify Luxembourg's economy.

Beyond Finance and Space, what are the industrial ambitions of Luxembourg?

The industrial sector in Luxembourg is currently seeing numerous investments with the aim of expanding or modernizing existing facilities, building new ones and fostering innovation. Many of those investment projects are led by international players, convinced of the quality of Luxembourg's location and infrastructure. As Ministry of the Economy, we encourage and

financially support the adoption of new technologies like robotics or augmented reality in factories and engineering centres. Thus, our industry is becoming increasingly technological and low emission. It is producing more and more things with high added value: companies like Ceratizit, Rotarex or ArcelorMittal deliver products that are at the forefront of their sector. We absolutely want to preserve this, and even develop it, particularly by working in partnership with research: the link between industry and RDI is increasingly strong. The future of a country like Luxembourg -highly developed, rich, with a strong social policy- lays in a decarbonated, knowledge-based and strongly digitalized economy. ■

209,014
NON-RESIDENT WORKERS

465,000
NUMBER OF WORKERS

634,730
TOTAL POPULATION

Overview

LUXEMBOURG IN FIGURES.

The figures often speak
for themselves. Through this
series of figures, we offer you
a direct overview of Luxembourg
economy, population and nature.
Welcome to Luxembourg!



**2,586 KM²**

TOTAL AREA OF THE COUNTRY

91,400 HECTARES

WOODED LAND

131,592 HECTARES

UTILISED AGRICULTURAL AREA

68.3 %

EMPLOYMENT RATE

€6,285

MONTHLY MEAN DISPOSABLE INCOME PER HOUSEHOLD

€63,015

AVERAGE ANNUAL GROSS EARNINGS (FULL-TIME WORKERS)

38,684

NUMBER OF ENTERPRISES

1,872

NUMBER OF FARMS

2,439

NUMBER OF NEW BUILDINGS (2019)

€1,235,786

AVERAGE HOUSE PRICE (1ST QUARTER OF 2021)

€724,831

AVERAGE APARTMENT PRICE (1ST QUARTER OF 2021)

853,911

FREIGHT IN LUXEMBOURG AIRPORT

127

NUMBER OF BANKS

26,334

NUMBER OF EMPLOYEES IN THE BANKING INDUSTRY

€5,487.5 BILLIONS

NET ASSETS UNDER MANAGEMENT IN INVESTMENT FUNDS

95 %

HOUSEHOLDS HAVING AN ACCESS TO INTERNET

\$73,205 BILLIONS

GROSS DOMESTIC PRODUCE – GDP (2020)

\$116,921

GDP PER CAPITA (2020)

€13,270 MILLIONS

TOTAL EXPORTS (2019)

€20,365 MILLIONS

TOTAL IMPORTS (2019)

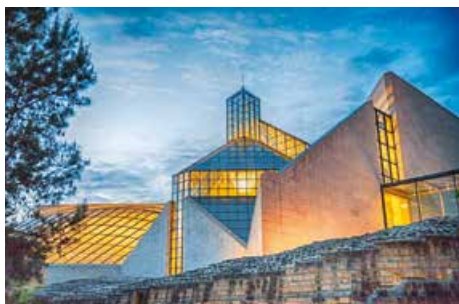
OUR SELECTION

10 LUXEMBOURG HIGHLIGHTS YOU DON'T WANT TO MISS.

①



②



③



④



⑤



①

Luxembourg Little Switzerland

The Mullerthal Region, located in the East of the country, is also called "Little Switzerland". This region owes its nickname to its hilly landscape, characterized by surprising rock formations and beautiful rivers. Experienced hikers will enjoy the many trails of the region, including the Mullerthal Trail: 112 km of happiness! ■

②

Mudam

The Mudam – Musée d'Art Moderne – is worth visiting not only for its collections and programs – including painting, sculpture, video art – but also for its building, designed by the Chinese American architect Ieoh Ming Pei. The Mudam is located right next to the historic Fort Thüngen, in the centre of Luxembourg. From there, you can admire views of the city across the valley. ■

③

Philharmonie Luxembourg

The Philharmonie Luxembourg is one of Europe's most renowned concert halls. Situated on the Place de l'Europe, on the Kirchberg, it is visited every year by more than 150,000 music lovers. They are attracted by the great design of the building (from French architect Christian de Portzamparc) but also, obviously, by the Philharmonie's rich program ranging from classic to jazz and contemporary music. ■

④

Esch 2022

Second largest city of the country, Esch-sur-Alzette has a rich industrial history. It is now converting into a city dedicated to science and culture, with the university and the famous concert hall "Rockhal". Esch-sur-Alzette has been chosen to be the European capital of culture in 2022. Conferences, festivals and other events will be organized all along the year. Check the full program on www.esch2022.lu ■

⑤

Schueberfouer

True highlight on the Luxembourg City calendar, the Schueberfouer is the largest fair in the Greater Region. This delightful experience for young and old has been founded by John the Blind in 1340. It is now a magical collection of fun fair stands, Ferris wheel, roller coasters and of course countless dining and drinking stalls. A must do if you are in the country at the end of August/beginning of September! ■

Luxembourg is way more than just banks and financial services. If you've just landed and it's your first time in the country, you have to experience the nature, history, cultural landmarks or commercial gems giving to the Grand Duchy a very special glow.



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Gastronomie

Luxembourg is a country largely characterized by agriculture. Cereals, meat, wines, vegetables are still widely produced in Luxembourg and these products have inspired a unique gastronomy. Bouneschlupp (beans soup), Gromperekichelcher (potato pancakes), Judd med Gaardebounen (smoked pork collar with broad beans)... You can try those dishes in most of Luxembourg traditional restaurants. ■

7

The Moselle and its wines

One of the major rivers of Luxembourg, the Moselle forms a natural boundary with Germany. For centuries, the river has dug a deep and beautiful valley which is now renowned for its vineyards. Don't hesitate to visit an estate and to taste their Riesling, Auxerrois or Pinot Gris. But the Moselle Valley is also a great spot for outdoor activities: swimming, water skiing, Nordic Walking... ■

8

Shopping

Luxembourg has one of the highest ratio of commercial spaces per inhabitants in Europe. You will have the choice between large commercial malls such as Royal Hamilius, Cloche d'Or (in the capital), City Concorde, Belle Etoile (Bertrange), Topaze (Mersch), or small boutiques proposing renowned international brands or more specialized, local products. ■

9

Belval blast furnaces

A few decades ago, Belval was a rich industrial area where huge amounts of steel were produced and sent all over the world. This activity has slumped in the 70's and Belval has now deeply changed. But as a memory of the past, the blast furnaces have been renovated and it is now possible to visit one of them (blast furnace A). Climbing 180 steps to reach a height 40 meters, you will enjoy a wonderful view of the surroundings. ■

10

Castles

Luxembourg counts more than 50 castles, located all around the country: large restored castles such as Vianden, Beaufort, Bourscheid, Bourglinster or Clervaux, but also majestic castles ruins. If you are a walking fan, you can also follow the national hiking trail of the "Valley of the 7 castles" that runs through the idyllic Valley of Eisch, in the western part of the country. Ready for your medieval adventure? ■



luxembourg
city tourist office

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Explore Luxembourg City
through the legend
of Count Siegfried
and mermaid
Melusina





Tonika Hirdman, Director General of Fondation de Luxembourg

“SMALL CITY, COSMOPOLITAN FEEL”.

In 2006, my family and I were looking to leave Sweden and move abroad for a few years, as far away as possible—somewhere like Hong Kong, Shanghai, or Singapore. I had a meeting with one of the senior managers at the company I was working for, ABN AMRO, about a transfer, and that evening, he called to ask if I'd be interested in an opportunity in Luxembourg.

After arriving, my very first impression was that it was a little bit too quiet for my taste. But Luxembourg has this tendency of growing on you, and after a few months, once my boys were in school and we had made friends, I started liking it very much. I especially appreciated the high quality of life and the vast green spaces. Coming from Sweden, nature is very important to us and on the weekends we go for walks in the woods all around Luxembourg or on bicycle tours.

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**Luxembourg offers
entrepreneurs
a stable political
and economic
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along with
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business-friendly
leadership.**

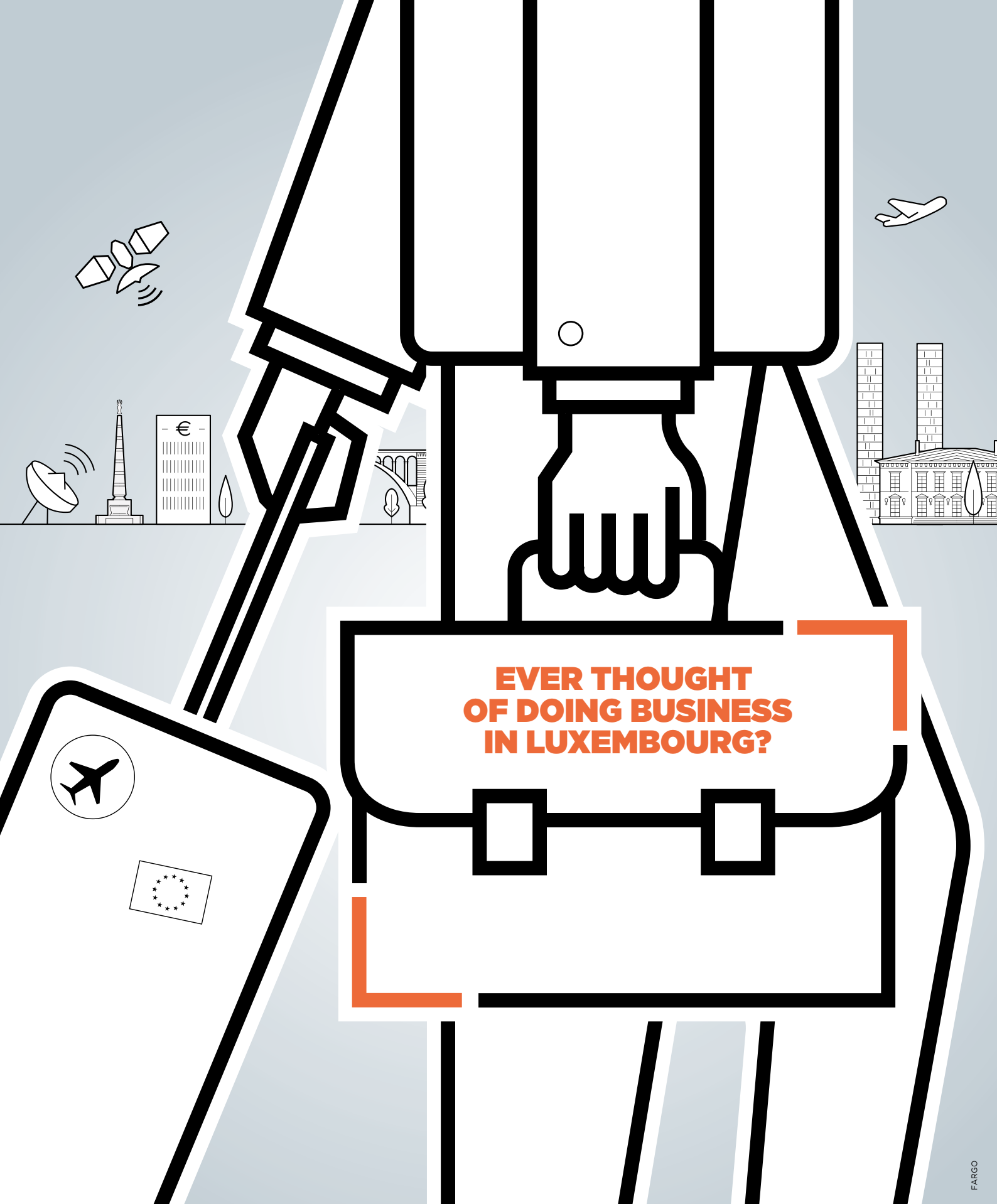
When the Luxembourg government decided to launch Fondation de Luxembourg in 2008 as a major philanthropic foundation, I thought it was a fantastic opportunity and I applied to help set it up. I've now headed the organization for 12 years, managing 90 foundations with founders from all over Europe.

I believe that Luxembourg offers entrepreneurs a stable political and economic environment, along with very pragmatic and business-friendly leadership. We have a very productive economy with strong social protection, as well as a long history of welcoming new businesses. Other draws include the sustainable finance mindset and ambitions of Luxembourg, the impressive language skills and the very helpful administration.

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There's also the central location of Luxembourg in Europe: Paris, Brussels and Frankfurt are all within a few hours reach.

This cosmopolitan feel and role as a capital city, financial centre, and a centre for European Union institutions, in combination with being a small city, where it's friendly, less stressful, and easy to get around, are all reasons why I call Luxembourg home. ■



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INTERVIEW - MICE

“EVERY TYPE OF EVENT CAN BE HELD IN LUXEMBOURG.”

Every year, Luxembourg hosts numerous international events. The Meetings, Incentives, Conferencing, Exhibitions (MICE) business has developed considerably in recent years, thanks to the country's many assets. Morgan Gromy, CEO of Luxexpo - The Box, shares his views on the evolution of this sector.

What makes Luxembourg an attractive place to hold events, congresses or international conferences?

Morgan Gromy: Until now international event organizers were rather looking for bigger capital cities, like Prague, Vienna, Barcelona, or Paris. Notwithstanding this, commonly called “hidden gems” – lesser-known but charming places – were in the ascendent due to the participants' expectations of novelty. Luxembourg with its beautiful cities, villages, landmarks, and landscapes became an insider tip over the years.

That being said the country undoubtedly benefits from its well-connected airport, the short distances – also in terms of interpersonal relations – the presence of important headquarters, European institutions and innovative clusters as well as the uniquely multilingual population. All those ingredients make the perfect mix to organize successful events, congresses or international conferences.

An average of 100 events are organized each year at Luxexpo The Box (pre COVID times). We benefit from a very dynamic domestic market and we organize 8 big fairs ourselves. This track record constitutes a salient point when discussing with decision makers and organizers.

How are event promoters' expectations changing? And how can we better meet them from Luxembourg?

I think that the pandemic has radically changed customers' expectations in a way that makes Luxembourg even more attractive: the need to reconnect with nature, the desire for authentic experiences, and the request to limit unnecessary travel.

However, paying attention to events' ecological footprint is not new. The trend has only

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**We are
convinced that
the future will
be all about
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meaningful
experiences.**
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been accelerated by the pandemic which offered a proof of concept for online meetings. The demand shall consequently shift towards greener events having hybrid and/or multi-hubs formats with interactions both on-line and offline between several venues, thus curbing CO₂ emissions related to business trips. As a service provider, we have and will invest further in technological solutions.

How does Luxembourg intend to position itself with regard to this type of activity?

The Luxembourg Government has implemented a strategy to welcome more events and improve its position in several international rankings. Business events are considered as an important tool to showcase the assets and the competitive edges of the country, attract talents and develop the economy. According to the national strategy, Luxembourg will welcome and organize events related to science

and research as well as to the key sectors of the economy.

At Luxexpo The Box, we fully endorse this strategy and have therefore reorganized a part of our company to meet national strategic goals. Our sales department is currently refining its knowledge in a number of key areas in order to better and more effectively serve the interests of all stakeholders.

How has the MICE offer developed in Luxembourg in recent years?

The MICE offer is continuously evolving to meet customers' new expectations. Over the past years, we have noticed an increasing demand for entertainment and gamification. Participants want to live and enjoy event experiences. Even business events embrace the festivalisation trend where formats, contents and audiences mix, which ultimately leads to a blurred B2B and B2C differentiation.

During the raging pandemic, we witnessed an escalation of protective gear, panels, etc. At Luxexpo The Box we decided to counter steer and offer first-class meeting experiences that are not only attractive in terms of design but that also comply with all health & safety regulations in a subtle and pleasant way. Being one of the first venues to offer such a safe and engaging space despite ongoing restrictions, was a milestone for us and has helped many other venues and hotels in Luxembourg rethink their concepts and provide new ways to interact. We are proud to contribute to Luxembourg's image as a creative and innovative country.

What types of events can Luxembourg host?

Every type of event can be held in Luxembourg. We particularly recommend holding events related to the key sectors of our local



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Business events are considered as an important tool to showcase the assets of the country, attract talents and develop the economy.

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aware of appropriate household insurance, Domaines Vinsmoselle sponsored our speak-easy to launch the rebranding of Poll-Fabaire, and the Fédération Luxembourgeoise de l'Ameublement supported our prize-draw “spend a night at the fair” to showcase the best of furniture and design in a beautifully designed show room. And all this concept can be used in all MICE sectors and for all customers.

Our goal is to be part of this transformation. By 2028, the construction of the new building will have been completed - our new venue will rise up in height rather than in width. We have drafted an exhaustive white paper encompassing all our thoughts and ideas about the characteristics and requirements of the new congress and exhibition centre with the goal of having the right infrastructure to address future challenges. ■

economy: information and communication technologies, finance, green finance, aerospace, the automotive sector and smart mobility, industrial production, logistics and maritime, audiovisual production, circular economy and health technologies. In this way, organisers can forge new, interesting connections and collaborations, ensuring a tangible legacy.

How will the ecosystem evolve in the future? And what role does Luxexpo The Box intend to play in this ecosystem?

Even if digital solutions, online meetings, and webinars were in high demand over the past 18 months, we are quite confident that the future will not only be digital and that the

public will opt for real, authentic experiences in person. The MICE branch will propose hybrid, multi-hubs and green events to customers. Meetings will become a little smaller, more locally focussed, with digital bridges spanning from one continent to another. Customers will assess if the meeting / event is worth the trip. Therefore, we will bet on global events in the future, with local parts on a global stage.

We are convinced that the future will be all about engaging and meaningful experiences. For HOME EXPO 2021, we proposed new presentation concepts to our customers instead of a traditional booth: AXA Luxembourg was sponsoring our escape game where the participants become burglars to make them

22

Why

Luxembourg



Nicolas Mackel, CEO Luxembourg for Finance

02

INTERVIEW

“LUXEMBOURG, WHERE FINANCE GOES INTERNATIONAL.”

Luxembourg has a globally significant financial sector. In terms of the volume of business conducted, it was recently ranked eighth in the world and first in Europe by the UK-based analysts New Financial. CEO of trade development body Luxembourg for Finance Nicolas Mackel explained the reasons for this success.

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**This international
focus runs
through each
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in our financial
industry.**

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What are the keys to Luxembourg's success as a financial sector?

Nicolas Mackel: Luxembourg has built an ecosystem that is particularly suited to certain activities. Our flagship industry is the investment fund sector, and Luxembourg has a critical mass of expertise in the different strands of activity. This extends from servicing and distributing basic products investing in bonds and equities, through to giving life to highly sophisticated private asset strategies. The creation of this ecosystem has been so complete, and the track record so impressive, that it has become common-sense for asset managers to locate their funds here. The same goes for wealth management where Luxembourg has built varied expertise for managing people's assets cross-border. Similarly for insurance – life and non-life, and reinsurance – and capital markets. More recently we have seen increasing numbers of payments operations base themselves here, with players like PayPal and Amazon Pay

being the most high-profile examples. In all these areas, we have the expertise locally. On top, our regulators understand understand both the technical and entrepreneurial needs of businesses, while remaining focused on their role to protect investors and the financial system.

How does the country's international focus add to attractiveness?

Luxembourg's unique selling proposition is the international dimension of the exper-

tise here, which is particularly useful for the multi-jurisdictional business in which we specialise. This is achieved thanks to a multinational, multilingual workforce which brings together expertise and knowledge about the legal, regulatory and cultural frameworks across Europe, but also in Asia, the Americas and Africa. Nearly half of Luxembourg's population are non-nationals, and our workforce is boosted each day by another half thanks to cross-border commuting from France, Germany and Belgium. This international focus runs through each of activities in our financial industry. If you're an asset manager and want to distribute a fund in numerous jurisdictions, the best place to do this is Luxembourg. Our wealth managers are used to dealing with highly complex personal and professional needs. For example, a typical client might be an entrepreneur from France with a factory in Czechia, a spouse and a second home in Sweden, and kids studying in the UK. A Luxembourg private bank or fam-



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We're confident that Luxembourg has the expertise to help the industry make the sustainability transition.

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ily office can help them manage their assets efficiently now and into the future.

How important is it that Luxembourg's economy is strong?

It's a fundamental question of the country's stability. Very few countries have triple A rated sovereign debt and this is significant. Our national debt is below 30% of GDP, compared to 90% in the EU as a whole. For investors, that triple A stands for stability and predictability. It tells them that the pressure to increase taxes in Luxembourg is much less than it is in other countries, and this brings political stability. This is coupled with regulatory stability. In other countries, there are more frequent changes in political personnel, and the temptation for the new leaders is to make regulatory changes to be seen as a reformer. But in this country the goal is to steer a steady ship, keeping rules predictable over the long term. If changes are needed, the regulator works with the relevant professionals to explain the new expectations.

Speaking of regulation, what part does that play in this story?

Our regulators – the CSSF and the insurance specialist CAA – have changed in line with the evolutions of regulatory frameworks since the last financial crisis. Regulation has become far more complex. To manage this, the CSSF for instance has nearly tripled in size over the last 10 years. While their primary concern is to enforce regulations, they do this with an understanding of the constraints faced by businesses, and they work with them to help them become compliant in an intelligent fashion.

They make themselves available to discuss with existing and potential market players, as they want to understand market needs. This increases the chances of meeting regulatory requirements without stifling business growth, and generally helps the regulator improve the way they work. Their intention is

not to lie in wait until somebody does something wrong and then issue a punishment, but they are pro-active and open to discussion. It also helps that you can talk to and report to the regulators in multiple languages, including English. Luxembourg's multiculturalism and multilingualism also help when dealing with international regulators, something that is often a key part of organising cross-border operations.

Can you give an example of how the market responds to Luxembourg's offering?

A real-life test for Luxembourg was Brexit. You could see what choices the industry was making players reached a decision as they sought to maintain their access to European clients and markets. First of all, they asked themselves where they have operations and where existing activity could be enhanced. Often that meant Luxembourg. Otherwise, they had to make a choice between different locations. So for example, Luxembourg, not being a trading or an investment banking hub, was not really considered in these areas, and these activities most often went to Paris and Frankfurt. But for investment fund distribution, wealth management, payments, insurance etc, Luxembourg was often quite high up on businesses' checklists and frequently came first.

It is difficult to quantify this inflow. Several companies converted relatively small operations into larger ones. Independent studies suggest nearly 100 firms have relocated activities. Brexit has confirmed and consolidated Luxembourg as a centre of excellence for certain activities.

What is the next big challenge?

Financial services are rushing to embrace the sustainable investing trend that is being driven by client demand and regulatory push. Making sense of these requirements and enabling ESG strategies to be implemented is a considerable challenge, one that Luxem-

bourg's service providers embraced years ago. For example, the LuxFlag ESG investing label was founded in 2006 and the Luxembourg Stock Exchange listed the first ever green bond in 2007. We're confident that Luxembourg has the expertise to help the industry make the sustainability transition. ■

FIRST LARGEST INVESTMENT FUND CENTRE IN EUROPE, NUMBER 2 GLOBALLY

Luxembourg's investment fund sector is the most dynamic sector, with its products powering pension plans, insurance policies, personal savings/investment and more in Europe and beyond. With net assets of €5.65trn in August 2021 it accounts for over a quarter of the European total, putting it behind only the US globally. The Grand Duchy has the EU's largest wealth management sector, organising complex personal financial arrangement with full tax transparency. There were €505bn assets under management in this activity in 2021.

Cross-border expertise in particular has attracted around 85 insurance and 194 reinsurance companies. From wealth management focused life insurance, to non-life activity and captive reinsurance, many of the industry's biggest names are in the Grand Duchy. Capital markets activity includes hosting the leader for international securities listings and green bonds, the Luxembourg Stock Exchange, Clearstream and other post-trade service providers, and being the location for 1,300 securitisation vehicles.

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FOCUS - GREEN FINANCE

PIONEERING SUSTAINABLE FINANCE.

Seeking to make green and socially responsible finance a real lever for growth, Luxembourg has set up several initiatives designed to accelerate the financial sector's transition to greater sustainability.

Luxembourg, as a renowned financial centre, has been a long-term supporter of sustainable finance. For example, the country has been home to microfinance institutions since the early 1990s, and now 76% of European microfinance funds are based in the Grand Duchy, making the country a leading provider of inclusive finance. In 2007, it became the location for the world's first green bond, issued by the European Investment Bank.

Over the years, market players have expanded their range of products and services to support sustainable projects thanks to increasingly innovative investment vehicles. The Luxembourg financial centre now accounts for more than 20% of the assets under management in ESG (environmental, social and governance) funds.

An innovative stock exchange

The financial centre is also home to the Luxembourg Green Exchange (LGX). It was set up in 2016 by the Luxembourg Stock Exchange (Bourse de Luxembourg), largely in response to the Paris Climate Agreement and the United Nations' 17 Sustainable Development Goals, and with the desire to speed up the transition to a more sustainable economy and to mobilise capital to achieve this aim. The LGX is the first platform in the world dedicated to the listing of green, socially responsible and sustainable securities. *"Today, the LGX is a real success. Five years after the platform was launched, we have more than 1,000 sustainable bonds issued by at least 200 international issuers from 40 different countries, amounting to a combined value of EUR 550 billion,"*

Julie Becker, CEO of the Luxembourg Stock Exchange and founder of the Luxembourg Green Exchange, explained. Despite stiff competition, the LGX also accounts for more than 50% of green, socially responsible and sustainable bonds listed worldwide.

The Luxembourg Stock Exchange has received international recognition for its commitment to sustainable finance. In 2020, it won the United Nations Global Climate Action Award in the category 'Financing for Climate Friendly Investment', for having enabled faster financing of climate-friendly investments. In 2021, and for the fifth consecutive year, it was also awarded 'Stock Exchange of the Year' for its pioneering efforts in facilitating sustainable investment, improving knowledge and awareness of sustainable finance, and pro-



Julie Becker, CEO of the Luxembourg Stock Exchange and founder of the Luxembourg Green Exchange

viding access to comprehensive sustainability data.

Building on a rich ecosystem

At the same time, Luxembourg has also been developing the labelling of sustainable funds. To address this, LuxFLAG, a financial labelling agency and the result of a public-private partnership, has been set up. It awards labels to ESG, climate, environmental and microfinance funds. As of 1 July 2021, 354 investment products—an increase of 74% over the previous year—had been labelled, amounting to 154.77 billion in assets.

In 2020, the government also started working with the University of Luxembourg to develop a research programme in the field of sustainable finance and a master's degree in sustainable finance. And in 2021, the government adopted a strategy for sustainable finance. Developed by the Luxembourg Sustainable Fi-

nance Initiative (LSFI), in collaboration with financial sector stakeholders, the strategy sets out a plan of measurable actions to support the financial sector in its transition to sustainability and to further position Luxembourg as an international centre for green and socially responsible finance.

Today, a whole ecosystem is being deployed in the service of sustainable finance in Luxembourg. As a pioneer in this field, the country has sought to support the growth of this emerging market from the outset, but also to constantly innovate in order to anticipate trends in the sector.

An issue that can no longer be ignored

At a time when both environmental and social issues are so pressing, there is an urgent need to move towards more inclusive and greener finance. “While significant progress has already been made, and although sustainable



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According to the ‘Global Green Finance Index’ published in April 2021, Luxembourg is the sixth greenest financial centre in the world, after Amsterdam, Zurich, London, Oslo and San Francisco.

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finance has been growing rapidly in recent years, it still makes up only a small part of the financial sector,” emphasised Julie Becker. “We need to go further if we are to meet the challenges facing the world. Finance must serve the real economy, which is in the midst of a transition to a low-carbon economy. Finance will thus inevitably become sustainable by default.” Investors also want more transparency. “They want to know how their investments will be used, which projects their investments will be supporting, what environmental or social impact they are contributing to, what is the sustainability strategy of the companies they invest in,” said the CEO of the Luxembourg Stock Exchange. Sustainable finance is transparent finance, and that is the future. In seeking to make sustainable finance a crucial element for the development of its market, Luxembourg has understood this. ■

FOCUS - FINTECH

A YOUNG AND THRIVING FINTECH SECTOR WITH BIG AMBITIONS.

By providing a rich, supportive environment for today's FinTech pioneers, Luxembourg is leading the way for tomorrow's financial services industry.

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Long known for its role as a major financial hub, Luxembourg is now rapidly positioning itself as a centre for FinTech. Taking a top-down approach, the country has quickly accelerated the growth of this new sector through an ambitious strategy coupled with targeted investment. As a result, there are now well over 250 FinTech firms based in Luxembourg, up from just a small handful a few years earlier. At the heart of this success story stands the Luxembourg House of Financial Technology (LHoFT), with CEO Nasir Zubairi at its helm.

A strategic home for FinTech

The story of the LHoFT began just over five years ago, when Luxembourg's Minister of Finance, Pierre Gramegna, entrusted public-private agency Luxembourg for Finance to develop a strategy around the digitalisation

of finance, after taking note of the rapid progress taking place in other financial centres. It was around this time that Zubairi, an experienced FinTech entrepreneur, was asked to advise on the strategy and came up with the idea for the LHoFT as an innovation hub and co-working facility for FinTech start-

ups. He was soon tasked with setting up the project, which was created as a public-private partnership between the Luxembourg government and the financial industry. By April 2017, the new FinTech hub launched in temporary premises at the House of Entrepreneurship in Kirchberg, moving to its modern multi-story home near Luxembourg City's main train station in April 2018.

The LHoFT now sits at the centre of the local FinTech ecosystem, bringing together stakeholders from across the board. *“We act as a cog in the wheel to align, introduce and connect stakeholders both domestically and internationally. From traditional institutions to FinTech firms, venture capitalists, advisory firms, the government and regulators, everyone needs to come together to create a hospitable environment,”* explains Zubairi.



Nasir Zubairi, CEO of the Luxembourg House of Financial Technology (LHoFT)



The LHoFT itself acts as a welcoming base for both local and international startups looking to launch in Luxembourg. “We give them a soft-landing platform where they can get comfortable in Luxembourg and easily get going,” says Zubairi. “We also work closely with other European hubs to develop the FinTech services sector as a whole,” he explains.

The right environment for financial innovation

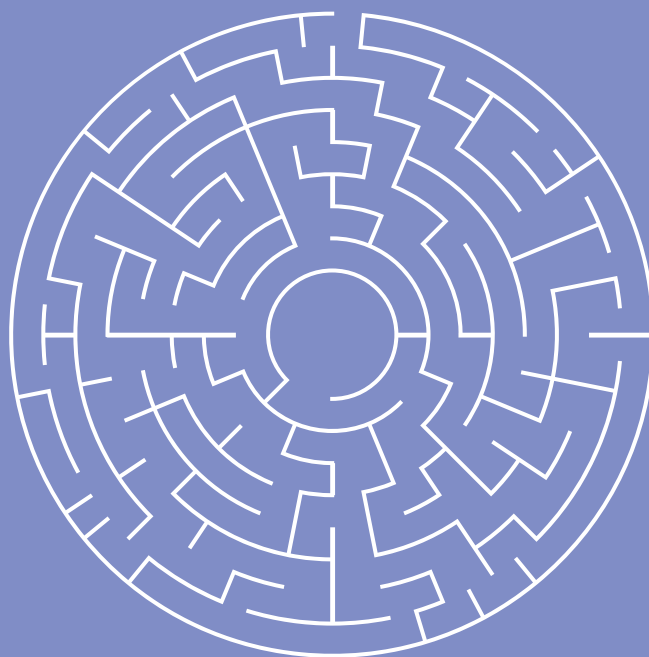
The FinTech sector is based around digitalising financial services through innovation. With the increasing number of regulations in the financial sector coupled with the lightning fast speed of technological progress, financial institutions can be left stuck in the past. “As

tech companies are very good at innovation, marrying the two and leveraging both sets of competences just make sense,” explains Zubairi. As the majority of businesses in Luxembourg are B2B, the local FinTech industry and traditional financial services are not in competition but instead can focus on mutual cooperation.

Luxembourg also boasts uniquely attractive conditions for FinTech entrepreneurs. The country is a hub for some of the biggest payment firms in the world – including Satispay, Paypal, Airbnb payments, Amazon, Apple, and Alipay – making the right connections is a comparative breeze. “It’s easy to connect with senior people in Luxembourg, and those

people are well connected themselves,” says Zubairi. “Controlling five trillion in assets in a small country where you get to know everyone means that sales cycles tend to be a lot shorter for FinTech firms,” he explains.

One of only two finance hubs in Europe after Brexit, alongside Dublin, Luxembourg also offers skillsets and services geared towards doing business internationally and has the unique advantage of a workforce fluent in multiple languages. “Something we take for granted is the language skillset,” notes Zubairi. “English is critically important for global business and though we sit in the middle of the EU, you can do everything in English – from getting a regulatory licence to draft-



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From traditional institutions to FinTech firms, venture capitalists, advisory firms, the government and regulators, everyone needs to come together to create a hospitable environment.

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ing a legal agreement. Nowhere else in the EU does that happen,” he says. The country also offers the right legal environment for using blockchain and for digitalising assets, key elements in FinTech, with a number of enabling laws enacted in recent years.

Access to accelerated development and financing

Beyond offering a favourable environment, Luxembourg also provides two dedicated FinTech startup acceleration programmes delivered by the LHoFT. CATAPULT: Kickstarter is aimed at early-stage startups developing solutions relevant to Luxembourg and offers the chance to receive 50,000 euros in subsidies in partnership with the Ministry of the Economy. CATAPULT: Inclusion Africa is provided through the LHoFT Foundation and is aimed at startups focusing on promoting financial inclusion while creating links between Africa and Europe.

A track record of success

Since the launch of the LHoFT just over four years ago, the innovation hub has already celebrated many milestones and successes. “Our facility is currently completely full – there isn’t even one desk available. But we expect some firms to move out soon as they have grown rapidly,” says Zubairi. Members and alumni have already accessed over €1 billion in venture capital and very few businesses have

failed. “We try and nurture the right companies. We’re honest about whether the Luxembourg market is right for their business or not” explains Zubairi.

Many LHoFT alumni have scaled quickly, such as mobile payment provider Satispay, tokenization platform VNX and cryptocurrency exchange bitFlyer. Open banking platforms Finologie and LUXHUB are both doing well across Europe, while HQLAx is using its location in Luxembourg to service a pan-European customer base. A number of promising startups are currently making waves, including CATAPULT alumni Koosmik, which offers an alternative banking application in Mali, and OKO Finance, which provides insurance for smallholder farmers. Other up-and-coming names are ANote, which uses blockchain for digital music rights management and Hacknowledge, which provides cybersecurity management solutions for financial services.

Zubairi explains that the LHoFT is always open to welcoming new entrepreneurs into its fold. “We’re happy to chat and talk through opportunities as well as put you in touch with the right people. We’re really here to hold your hand in setting up and scaling your business in the EU,” he says. ■



We ensure that everyone in our community becomes inspired, resilient and passionate about achieving what matters, anywhere in the world.

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Why

Luxembourg



Marc **Serres**, CEO of the Luxembourg Space Agency

DISCOVER

A DIVERSE, RESILIENT SPACE SECTOR.

Luxembourg's growing space sector niche is an ideal case study of how this country facilitates multi-faceted, cross-border ecosystems which allow business and research to thrive. Dr Marc Serres, CEO of the Luxembourg Space Agency explained the unique nature of the public-private partnership at the heart of this environment, and the resultant value-added output.

Around 60 companies employing more than 1,200 people constitute Luxembourg's space sector. Their activities encompass everything from the provision of satellite communications and related services, through to the development of materials for use in spacecraft, as well as cutting edge research into space law. It is a diverse range of niche activity, but with the common thread of the country working from a foundation of expertise, open mindedness, and international connections.

Unique national strategy

"This is very different from how other countries approach this challenge," said Dr Serres discussing how the Grand Duchy approaches the management of its space strategy. Most countries take a national-centred view of how state and economic forces should be mobilised. Luxembourg does not have that option. Many also focus on how the public sector can drive this industry, but again, the Grand Duchy lacks the fiscal power to be tempted to go heavily in this direction.

"The country's outlook is reflected in the founding of SES at the beginning of the 1980s," he noted. The drive to create one of the leaders of global satellite communications was founded on an international outlook, and the desire to create a commercially successful

**“
In Luxembourg
we have space
companies
that are active
throughout
the whole value
chain.
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company. Also central is that the country is able to take a targeted strategy to European and global forums, both to build partnerships and to explore potential growth niches.

Entrepreneurial state

So it was in the early 1980s when the country developed its strategy to use the geostationary satellite orbit assigned to it by the International Telecommunication Union. There could never be any question of considering using

this to only serve Luxembourg's 999 square miles/2,586 square kilometres surface area. Rather, the inspiration was the radio industry which has been using transmitters located in the Grand Duchy to broadcast across Europe since the 1920s. Nor were there any options for relying on state contracts, so the Luxembourg government worked with private investors to found SES.

Nevertheless, this was still a risky, speculative venture. The potential business case was impressive, but the reliability of the technology was largely unproven and future market reaction was a matter of conjecture. There were no lead customers when the company was founded in 1985. Yet the government and private investors were still willing to take the leap, and SES's first satellite Astra 1A was launched in 1988.

The gamble paid off. There was pent up demand for satellite TV broadcasting in Europe. This sector flourished quickly, enabling the firm to grow to become a leading global player offering a wide palette of services now also including a host of data, teleco and internet services. It now has more than 2,000 employees around the world, generating €1.9bn in sales.

Diverse space cluster

This success spawned a cluster of space-related activity as the bright people who worked



in and around SES took advantage of the opportunities in Luxembourg and Europe. *“Our objective is to facilitate the development of the Luxembourg ecosystem in which entrepreneurs can take the initiative”*, Dr Serres explained. Good ideas backed with sustainable business plans are supported over the long term, both through state support but also organically. This dynamic has been at the heart of Luxembourg space strategy ever since SES became established, and the government asked itself *“what now?”*

This diversification has been impressive. Amongst the 60 companies present in the country is LuxSpace, part of the German OHB group, which employs around 50 people in Luxembourg to manufacture and operate clusters of microsatellites and offer value adding services. Their speciality is tracking shipping and fishing fleets as they sail across the world's seas. US firm Spire employs 30 people in Luxembourg, they too use data gathered from the group's microsatellite networks, with their focus being weather and maritime related services.

Unusual niches

Euro-Composites from Echternach employs more than a thousand people making sophisticated materials for a range of clients, including several major aerospace players. The SES Chair in Satellite Communications and Media Law at the University of Luxembourg contributes to local and global debates on how space activities should be managed. This is a somewhat tangential development, but adds an extra dimension to how local decision makers consider next steps. It also underlines the country's all-round commitment to adding value in the space sector.

Luxembourg has also positioned itself as a player in the global space resources effort.

The idea of mining rare minerals in space and bringing them back to earth sounds ambitious, but it is an area that excites industry players and is attracting global investment. Efforts need to be federated and legal norms established to ensure this work is conducted as effectively as possible. The Grand Duchy is working to play its part.

Leveraging institutions

Membership of the European Space Agency (ESA) since 2005 has been an important step. It is another example of how Luxembourg's voice can be amplified when it is involved in multilateral discussions, and allows it to play to its strengths by targeting relevant niche activity. This also opens doors to talking to global industry leaders. They know that conversations with players in Luxembourg might eventually filter through to discussions at ESA as it enacts policy and plans future strategy. The Luxembourg Space Agency was founded in 2018 to coordinate national strategy within this framework.

Yet Luxembourg's approach for working with an agency such as ESA is not to rely on research and development contracts handed down from on high. *“If you supply an agency on a long-term basis that is clearly a viable business model,”* said Dr Serres, but inherent in this is a potential lack of long-term sustainability if procurement policy changes or a project comes to an end.

“We see the research and development part not principally as an end in itself, but as leverage to help businesses position themselves on the commercial market,” he said. Thus this funding and these projects are used to develop capabilities and prove concepts to private industry partners. Each country has to decide on the balance they take between addressing public or private clients. *“Luxembourg is really*

at the extreme end of focusing on commercial opportunities,” he added.

Mobilising state funding

Even so, the state takes a central role mobilising this activity. Projects are augmented with national funding programmes, with backing either in the form of grants, loans or equity stakes. There is the space-focused fund Lux-IMPULSE which is managed by the LSA. This comes in addition to the range of innovation support offered to all businesses, whether they have been established in Luxembourg for many years or are new arrivals.

The state is also the prime mover behind the Orbital Ventures early-stage venture capital fund targeted at this sector. It was established in January 2020 with €70m capital provided by the Ministry of the Economy, but also space companies with a Luxembourg presence, local banks, Post Luxembourg and the national development bank the SNCF.

EU funding is also potentially significant. CASSINI is the European Commission's initiative for the space industry, which seeks to support entrepreneurs, start-ups and SMEs, with a budget of €1bn in play until 2027. As an EU member state, Luxembourg-businesses will receive their share of this funding. It also helps that the European Investment Bank and its European Investment Fund are located in the Grand Duchy.

Building economic resilience by creating a diverse economic structure has been central to government policy for over five decades. Then each sector attracted is then encouraged in turn to diversify. *“In Luxembourg we have space companies that are active throughout the whole value chain,”* said Dr Serres. This strategy is set to endure. ■

ATOZ TAX ADVISERS

“I BELIEVE THAT THIS MODEL IS OUR COMPETITIVE ADVANTAGE IN THE MARKET.”

We asked Keith O'Donnell, Managing Partner of ATOZ Tax Advisers, about his views, as a tax professional, on Luxembourg's financial centre and how ATOZ continuously aims to adapt to the evolving needs of its clients in this ever-changing environment.



“
Luxembourg
is a great place
to grow a European
or global business.
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Why choose Luxembourg for doing business?

Luxembourg is a great place to grow a European or global business.

With 50% foreign residents and another 185,000 non-residents coming to work each day, it's international by essence. Geographically, its location in the centre of Europe allows an easy flow of people and goods.

The political and administrative environment is outward looking and business friendly. Everyone understands the need to have a competitive environment to attract and retain businesses when you are a small open economy. Public finances are in good shape so the country can invest to retain this competitive edge and ride out the cycles when needed.

On a personal level, having arrived as a foreigner 25 years ago, I found it easy to settle and enjoy a world class quality of life. Thousands of people have the same experience each year, creating a deep pool of talent.

What about the Luxembourg tax system?

The attractiveness of the tax system is, of course, only one of many factors to be taken into consideration when choosing where to do business. In addition, in an ever-evolving tax environ-

ment at global and EU level, the room for tax competition has clearly decreased.

The challenge, to which Luxembourg constantly rises, is remaining competitive while being totally in line with international tax rules and best practices. Decisions taken by the OECD and the EU in recent years have been fully implemented in Luxembourg. However, prudent management of public finances in the past means that Luxembourg still has the capacity to keep a business-friendly tax system within this international framework.

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CFL MULTIMODAL

“LUXEMBOURG, IS A MAJOR LOGISTICS HUB IN EUROPE”.

Thanks to the development of numerous air, rail, and waterway links, Luxembourg has become a major logistics centre in Europe in the space of just a few years. Barbara Chevalier, Director of Strategy and Business Development at CFL Multimodal, looks back at this remarkable growth in a sector that is still expanding.

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up or organise
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and routes
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a supportive
environment.**

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What, in your view, are the strengths of the logistics sector in Luxembourg?

Barbara Chevalier: Our country has many advantages at the European level, starting with its location. This is an argument that a lot of people make, but the fact is, there is a high concentration of major industrial sites and ports within 500 kilometres of Luxembourg. We are also located near the Ruhr Basin, a strategic crossroads between Germany and Northern, Eastern, and Southern Europe. Because of its history and its multicultural character, Luxembourg can keep up contacts with all these regions. If I take our example, in the railway sector, we are now at the heart of the major north-south and east-west routes. The second advantage we have lies in our logistics infrastructure. The country has invested heavily in this area over the last 20 years. We now have an international airport with a high volume of freight activity, a multimodal rail hub, and a river port with first-class infrastructure, and that means we can play an important role in Europe.

The third advantage we have is the really stable social and economic environment here. A company that wants to set up or organise its

operations and routes in the heart of the European Union will find a supportive environment, top-quality infrastructure, and a highly competent workforce. The three modes of transport — air, rail, and river — provide complementary solutions that make it possible to handle the transport of all kinds of products, with considerable flexibility built in. Logistics parks have been developed around the three main centres, in which major logistics players have established themselves and enriched the local industrial sector.

How do you explain the success of the logistics sector today?

The industrial sector has been in Luxembourg for many years. The steel industry has left its mark on our history and, even if it is less active now, it is still with us. The country is also home to some large industrial concerns. In order to retain these, and serve them in the best possible way, there was a requirement to offer them an efficient global logistics infrastructure. In the early 2000s, finance became an



increasingly important part of the economic landscape. At that time, there was a real political will to reduce this dependence on the financial sector. The government launched a major diversification plan by identifying different sectoral pillars, including logistics. To support this commitment, the state invested heavily in infrastructure. However, in order to grow, we had to develop our offerings. Take CFL Multimodal, for instance: before 2006 we were running 3 to 5 rotations a week between the port of Antwerp and Luxembourg. And we were primarily serving local industry. In order to make it in multimodal logistics, which certainly has its challenges, we really had to find additional volumes. So we have gradually opened up new intermodal connections and picked up new routes.

What markets has CFL Multimodal identified?

We serve three main types of market. Of course, we continue to serve local players who need to transport their goods throughout Europe. But we also want to offer more and more solutions for the transit market. For instance, in order to allow an industrial sector in Poland to serve the French market, we created a route between Poland and Bettembourg, and another between Bettembourg and Lyon. The last type of market is the wider international market. For routes that start in regions

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**Even today,
75% of goods
are transported
by road. We are
convinced that,
for the major
European routes,
real alternatives
can be put into
place thanks
to rail.**

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outside the European Union, there had to be an entry point to the European market, and we are now taking up that role. All of this was made possible because there was an

ambitious political decision, which allowed for substantial investments. It is also worth mentioning the state's ambitions in terms of digitisation and support for innovation. CFL Multimodal has also made significant investments. For example, our entire fleet is equipped with sensors that allow us to locate any wagon in real time. This information is also provided to the customer, allowing them to track their goods at any time. There are very few rail companies in Europe that offer that option.

Our growth is based mainly around our site in Bettembourg-Dudelange, which is organised as a multimodal hub. The hub provides a range of services that are essential to the logistics sector. In addition to the terminal for loading and unloading containers and semi-trailers, we have developed various offerings such as a repair and maintenance service for trucks, a secure roadside centre where drivers can take their break, and a repair and maintenance workshop so that wagons and locomotives can avoid lengthy periods of downtime. The aim is to have it offer indispensable support to our customers.

How will the role played by rail develop within the overall transport ecosystem in 2021?

In 2019 we saw a significant change at the political level. Until that point, most of the



60% of EU GDP lie within 700 km of Luxembourg. The country is thus an ideal gateway to the 447 millions EU consumer market.

attention in the fight against global warming and CO₂ emissions had been focused on industry and energy. The transport sector, the second-largest producer of CO₂ emissions, had not been taken into account. Even today, 75% of goods are transported by road. We are convinced that, for the major European routes, real alternatives can be put into place thanks to rail. We regularly start up new intermodal connections between Luxembourg and specific regions that have large logistics flows, be they industrial sites or ports. On the other hand, we are looking for solutions with our customers to allow them to make greater use of rail. We are convinced that there is still room for significant growth here.

In terms of volumes, if we compare 2006, and the freight market was liberalised, to 2020, we have gone from 45,000 to 200,000 shipments. Initially there were 3 to 5 weekly connections between Antwerp and Luxembourg. There are now 60 weekly round trips to a good 10 different destinations. There are daily trips by rail to cities such as Lyon, Paris, Le Boulou on the Spanish border, Trieste in Italy (with sea connections to Turkey), Antwerp, Zeebrugge, and Ghent (with sea connections to the UK and Scandinavia), as well as to Kiel, Rostock, and Poznan farther east. Over the same period, CFL's freight operations have tripled their turnover and cut CO₂ emissions by a factor of 14, thanks to intermodal transport.



And are things going in the right direction when it comes to attitudes?

When I joined CFL Multimodal in 2010, the train was not a preferred solution. Five years later, the sector started to listen to us. Today, businesses in the sector are the ones who are coming to us. We are witnessing a real change in attitudes. But then there will still be some time between the moment the will to change arises and when that will is realised. We still have some way to go to simplify rail operations and make trade more fluid. For instance, there is currently no European licence for train drivers. Also, in order to drive within a foreign country, the driver must prove that they have a B1-level command of the national language. This is an issue for railway companies and infrastructure managers, but also for politicians. We hope that something will change on this front, and soon.

In order to further develop our business, we are constantly working on service quality,

punctuality, and how frequently trains travel their routes. Transit time must be as short as possible so that we can serve all types of industries and sectors. Today, we have a strong presence in the automotive, food, consumer goods, medical equipment, and pharmaceutical sectors. That said, of course, we have to be aware of our limitations. For quite a few routes, road transport is still the most reliable and the fastest means. But attitudes are changing.

What about the Chinese market?

We are confident that rail links to China will be expanded. In 2019, a train did a trial run between Chengdu and our multimodal hub. Shipping prices have soared in recent months, and there is a real advantage to use trains for this type of journey. At the moment, we do not have high enough volumes to ensure a regular route between Europe and Asia. But we would be able to offer this service if a major customer were to approach us. In the meantime, we offer connections to China via our intermodal links with Poznan and Rostock. ■



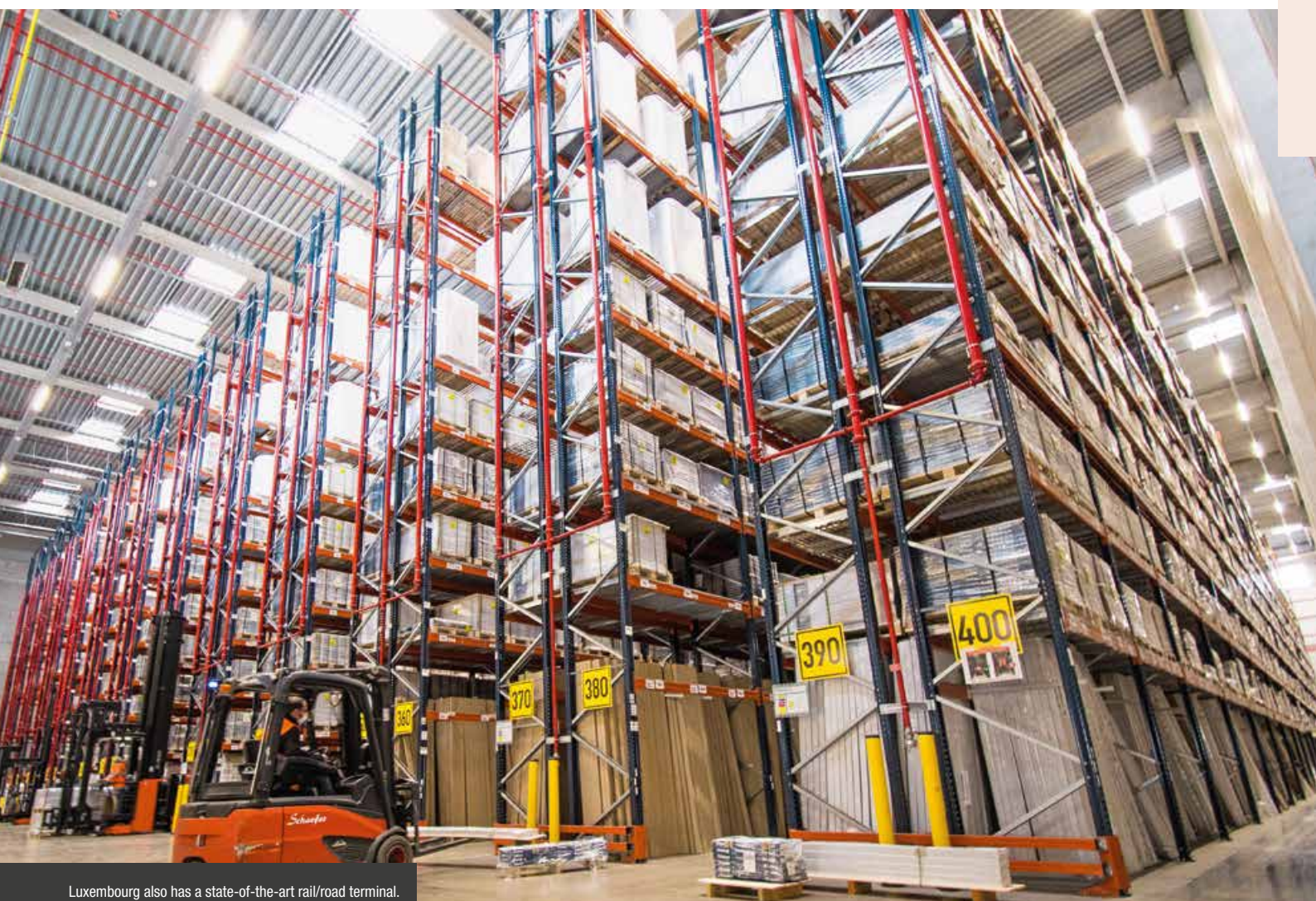
Over the last decade, Luxembourg has continuously improved its position as an intercontinental and multimodal logistics hub for value-added logistics activities.



Considering the size of the country, logistics and industrial hubs are always close to strategic infrastructure connecting Luxembourg to the rest of the world.



Located in the heart of Europe, Luxembourg provides global companies many strategic advantages for conducting business in, from and to Europe.



Luxembourg also has a state-of-the-art rail/road terminal.



Luxembourg is connected to the rest of the world through its leading European cargo airport.



The Mertert river port is the only trimodal platform (water/highway/rail) in Luxembourg.

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Max Gindt, Ministry of State - Department for Media, Telecommunications and Digital Policy

INTERVIEWS

DIGITALIZATION AS A TOOL FOR POSITIVE TRANSFORMATION.

Digitalization & new technologies are everywhere, shaping the way we live. For more than twenty years, with the aim of supporting the development of a digital economy based on better exploitation of data, Luxembourg has been investing actively in technology infrastructure and skills. We asked several players in the sector to give us their views on these developments and the future prospects for the Luxembourg digital ecosystem.

Max Gindt, Ministry of State - Department for Media, Telecommunications and Digital Policy

“BECOMING DIGITAL WITHOUT LOSING OUR VALUES.”

Launched by the Prime Minister in 2014, Digital Luxembourg is both a uniting force behind Luxembourg's digitalization movement & its biggest ally. Inclusive, multidisciplinary & fluid, it is a collaborative government initiative overseen by a dedicated team at the Ministry of State's Department of Media, Telecommunications & Digital Policy (SMC).

Can you describe the Digital Luxembourg initiative? Which objectives does it pursue?

Max Gindt: Launched in 2014, Digital Luxembourg is the result of the government's strategic commitment to a country that embraces digitalisation. This includes digital infrastructure, digital skills, fostering emerging technologies and creating an ecosystem which thrives on new opportunities, for example in the data

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**We will always
need talented and
diverse risk-takers,
maintainers,
developers,
innovators
and integrators.**

”

economy. Digital technology, backed by a strong infrastructure, has revealed its central role in our daily lives during the Covid crisis.

It is mainly through technology that we have managed to stay connected and keep the institutions functioning. We measure the value of innovation by the number of opportunities it creates, however, we don't pursue it as a fin en soi. Prime Minister Bettel has a very simple yet effective benchmark for this: if you can't explain innovation to your parents, you need to do better.

What have been the main investments made so far ?

The most recent investments are enabled by our new ultra-high broadband strategy, presented just a few weeks ago. This goes hand in hand with our sustained efforts to create a 5G ecosystem which holds new opportunities for the society, as we can see from the projects we have carried out in cooperation

with a hospital, for example. However, our investments are not exclusively of the monetary kind. Within our national AI strategy, we have asked Luxembourg's residents how they see AI, in order to better shape the government's policy when it comes to digitalization. It's not only about competitiveness, but also about the consequences of digitalization on the society. We are committed to the EU's way of becoming digital without losing our values. This is more than a slogan, this is a political decision, which is reflected in the way we will regulate AI systems in the future.

What are the main challenges to improve the digital ecosystem in Luxembourg?

The challenges are not radically new ones, honestly. One of the main priorities is to find talented people. I am not talking exclusively about developers, but rather talented people that can do the various new jobs in an increasingly data-centric economy. We will always need talented and diverse risk-takers, maintainers, developers, innovators and integrators.

Another challenge is the resource footprint of digital infrastructure. Clearly, a more balanced

awareness of the positive sides and negative sides of different technologies is becoming more mainstream. An example here are the frequent stories of bitcoin's energy use, whereas we also see a lot of far more efficient blockchains that deliver real efficiency gains. The recently created Luxembourg Blockchain Lab will deal with such challenges and will show us how to use the benefits of blockchain without the negative aspects of the early days. We need to think about tomorrow's market since it will most probably not accept energy-squandering technology. ■

Cliff Konsbruck, Director of POST Telecom

“THE ECONOMY DEVELOPS MORE AND MORE INTO A DATA DRIVEN ECOSYSTEM.”

As a historical and central player in the Luxembourg economy's digitalization, POST accompanies the players in their transformation process, enabling them to innovate using the latest technologies.

How have you evolved in the Luxembourg digital ecosystem?

Cliff **Konsbruck**: POST Luxembourg's historical telecommunication activities, initiated in 1880 with the set-up of the first telephone network in the Grand-Duchy, have been expanded ever since – always with one major accent: offering the best customer service and supporting the national economy. Over the years, POST's portfolio has evolved from telephony services to high performance connectivity and IT services, including data centres with Tier IV security levels, high performance network, international data connections to the major international Internet exchange point, IT integration services, cloud solutions, IT development services, and even cyber security solutions and data intelligence services. Ever since the deployment of the initial telephony infrastructure, all additional layers have been built to meet the digital needs not only of the businesses, but of the economy as a whole.

How does a group like yours contribute to the digital transformation of the economy?

The economy develops more and more into a data driven ecosystem. A data driven economy requires highly performant and stable infrastructures. In this perspective, POST Luxembourg continuously invests into its “Network of the Future” by increasing the ca-

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A data driven economy requires high performant and stable infrastructures.

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capacity of its 4G mobile network, deploys its 5G network, which has been launched in October 2020, increases the footprint of its fibre optical network, develops Cloud services as well as data and cyber security services.

The 5G network is not only complementary to the fibre optic network in order to meet the increasing data traffic needs of private and professional customers, but it also offers the possibility to develop new applications and services. As part of this process, we accompany the digitalization of the economy, while being in close contact with the industry. By consulting the companies, specific uses of the 5G network are designed together and POST Luxembourg can precisely align its network infrastructure with the future needs of the companies – always with the aim of offering the best quality of service.

From infrastructure development to the digital transformation of players, what are Luxembourg's major digital assets?

The IT environment in Luxembourg can rely on state-of-the-art infrastructures. The stability

of the infrastructures provided in Luxembourg is one of the drivers for the digitalization process. Reliable, performant and stable services are mandatory for companies to confidently transform manual, analogue workflows into highly automated digital processes. In addition, the proximity between the different players on the Luxembourg market offers the possibility to maintain very close contacts, which is a major driver for innovation.

How can we assess the maturity of economic players with regard to digital technology?

Corporates and institutions are aware of the benefits digital innovation can offer in terms of flexibility and productivity, as well as customer experience. Unfortunately, this awareness is not yet widespread among small and medium-sized enterprises, which often concentrate so much on their day-to-day business that there is no focus on digital transformation.

What are the major challenges to be met in order to make Luxembourg a digital nation?

From POST Luxembourg's point of view, the main challenge lies in human resources, the skills and the expertise needed in the field of a digital economy. The required profiles are often very limited in Luxembourg and in the Greater Region. Many European countries find themselves in a similar situation. ■

Cliff Konsbruck, Director of POST Telecom



LUXEMBOURG DIGITAL INNOVATION HUB

DRIVING ENGAGEMENT WITH THE DATA ECONOMY.



Arnaud Lambert, Director - Luxembourg Digital Innovation Hub at Luxinnovation



Nicolas Sanitas, Senior Advisor and Digital Community Coordinator at Luxinnovation

Drawing on its rich digital ecosystem, Luxembourg wants to bring economic stakeholders into the heart of the data economy. Luxinnovation, through the Digital Innovation Hub, has the task of translating the Ministry of the Economy's vision into action in a practical manner, by encouraging businesses to take part in a digital innovation process with a sustainable development perspective.

Digital technology is now ubiquitous in the daily lives of individuals and business. "Digital technology is playing an increasingly central role in business strategies, which must meet the new expectations of a clientele used to dealing with technology on a daily basis. It is a driving force for streamlining and increasing the efficiency and fluidity of interactions, as well as improving the user experience," commented Arnaud Lambert, Director of the Luxembourg Digital Innovation Hub (L-DIH). "Digital technology must enable everyone to perform better within an interconnected value chain."

Building the data economy

For many years now, Luxembourg has been investing in the development of a vast digital ecosystem, to help Luxembourg-based businesses take their place within the data economy. This vision is now reflected in the national "data-driven innovation" strategy. "When I arrived in Luxembourg in the mid-1990s, I took part in

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**Digital
technology
is now
an essential
component
of innovation.**

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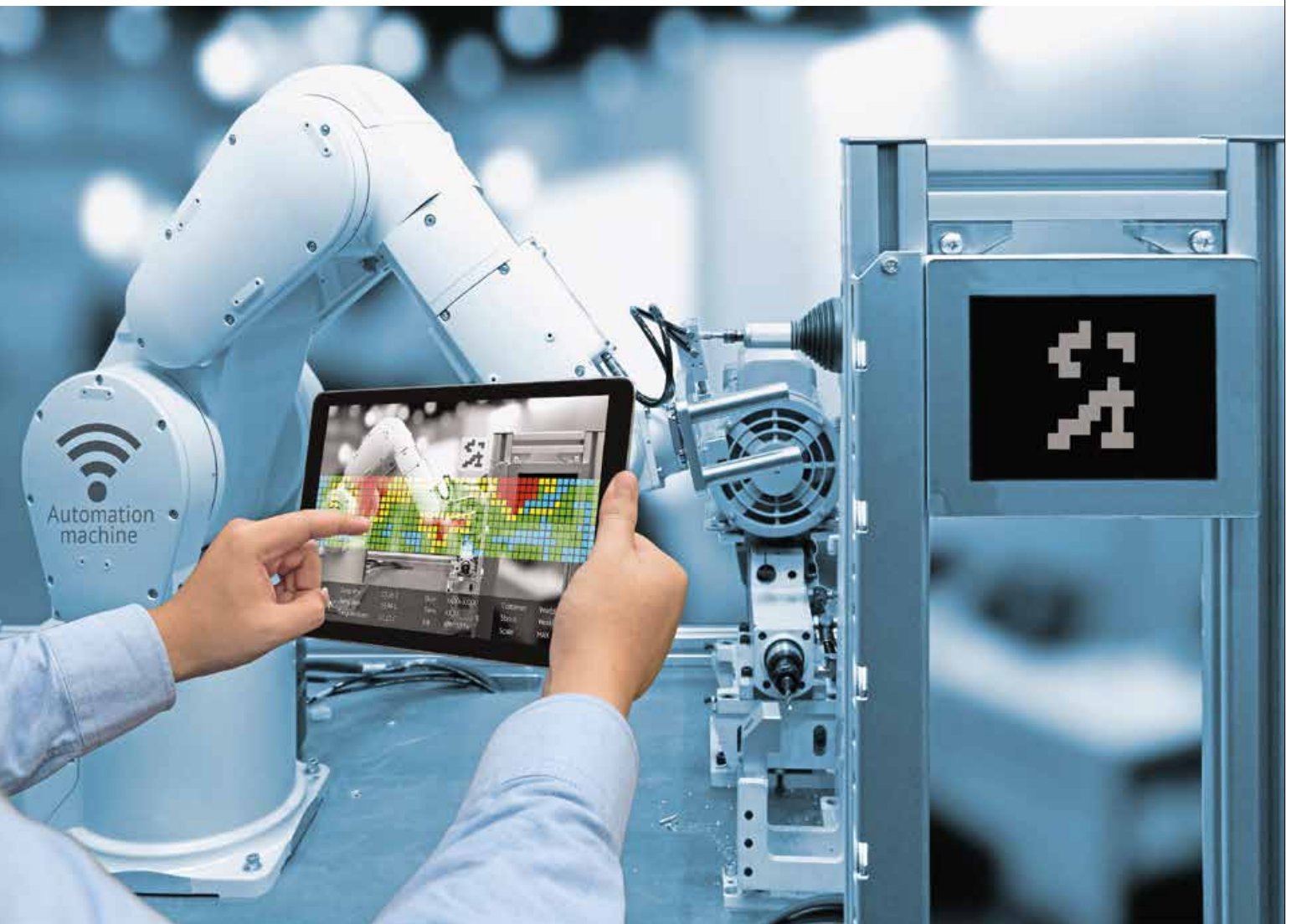
discussion groups whose purpose was to work out how to make Luxembourg the European Silicon Valley," said Arnaud Lambert. "Since then, Luxembourg has come a long way, with notable successes such as Skype and SES Astra. Most importantly, the country's infrastructure is among the most advanced, with the highest density of Tier IV data centres in Europe and one of the most extensively connected. Today, the chal-

lenge is to build our talent on these capabilities, to take advantage of the emerging data economy."

There is now no doubt that future growth will come from better data use, through new applications, the development of new knowledge and innovative approaches that increasingly incorporate technology. "The economy is changing, moving towards new models with more circularity, and where the limits set by the availability of resources are being pushed back. Digital technology drives innovation and creates value based on the efficient use of information," continued Arnaud Lambert. "Our role is to guide stakeholders in this direction, by providing them with practical support."

Not just a question of making changes: using digital technology to innovate

The L-DIH doesn't just want businesses to carry out the necessary digital transformation, it wants to enable them to get a better view of all the opportunities for innovation offered by digital technology. "The idea is not to settle for



replicating an existing way of doing things with digital technology, but to envisage a more fundamental change by considering future prospects in the data economy and sustainable development fields,” Arnaud Lambert explained. “There is a need for innovation today and digital technology is now an essential component of innovation.”

Strategic positions

In support of this digital innovation approach, Luxinnovation is involved in several strategic projects with a European scope. In addition to the DIH, which has counterparts in the other member states of the European Union who want to develop synergies, the agency plays an active role in the GAIA-X project. The premise of this European project, which supports the development of a reliable and sovereign digital infrastructure and ecosystem in Europe, is to generate innovation and new data application services. In particular, Luxembourg intends to contribute by offering new perspectives for the health sector. Luxinnovation is also involved in the National Competence Centre in High-Perfor-

mance Computing, associated with MeluXina, the Luxembourg super-computer, one of the few in Europe that is geared to both the business and academic worlds.

Inspire, support, implement

“By being involved in all these projects, we contribute to the growth of economic activity and accelerate the transformation of businesses within a new, more digital and more sustainable economy,” said Nicolas Sanitas, Senior Advisor and Digital Community Coordinator at Luxinnovation. “Engaging stakeholders in this process means, first and foremost, a human investment. We need to enable businesses to meet and exchange ideas, to inspire them and create new synergies leading to innovation projects. Beyond that, we are there to guide them in the implementation of their projects and to enable them to access the aid available.”

In addition, Luxinnovation is working to enrich the Luxembourg digital ecosystem, to help all businesses find the right expertise and be

able to expand throughout the European market from their Luxembourg base. *“Today, in the small country that is Luxembourg, we have identified 350 businesses that are active in the digital sector, covering all sectors. The ecosystem is not complete but it is already substantial. We are forging links with neighbouring regions to meet specific needs, and guiding our entire economy along the path towards a new economy.”* ■



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www.dih.lu

FOCUS - HIGH PERFORMANCE COMPUTING

IN THE ERA OF SUPERCOMPUTERS.

Luxembourg is home to a supercomputer with immense computing power. The new machine is in fact one of the most powerful in Europe. It is known as MeluXina and has been operational since June 2021. But what will it be used for?

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**While most
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Luxembourg's high performance computer MeluXina was officially launched on June 7 putting the country on the global map of computer super powers. The new hardware is capable of processing large volumes of data, carrying out thousands of billions of operations per second. To be exact, the Luxembourg supercomputer will have a calculating power of 10 petaflops - literally ten million billion operations per second. MeluXina's performance should be able to reach the top 50 of the 500 most performant supercomputers world ranking.

Gaining momentum in research

Supercomputers can process large volumes of data and perform complex calculations at high speed in areas such as modelling and simulation, big data analysis and artificial intelligence. But that's not all. They can also give new opportunities to companies to innovate and remain competitive in an ever-more digital world. Above all, MeluXina will be the main ally of time and calculation consuming fields, such as research and economics. It's a tool with many uses: more accurate design of complex parts, reduced time-to-market for products and reduced material costs.

“While most HPCs in the world are focused on academic research, Luxembourg has decided that its HPC should also meet specific business needs and that is what makes it so

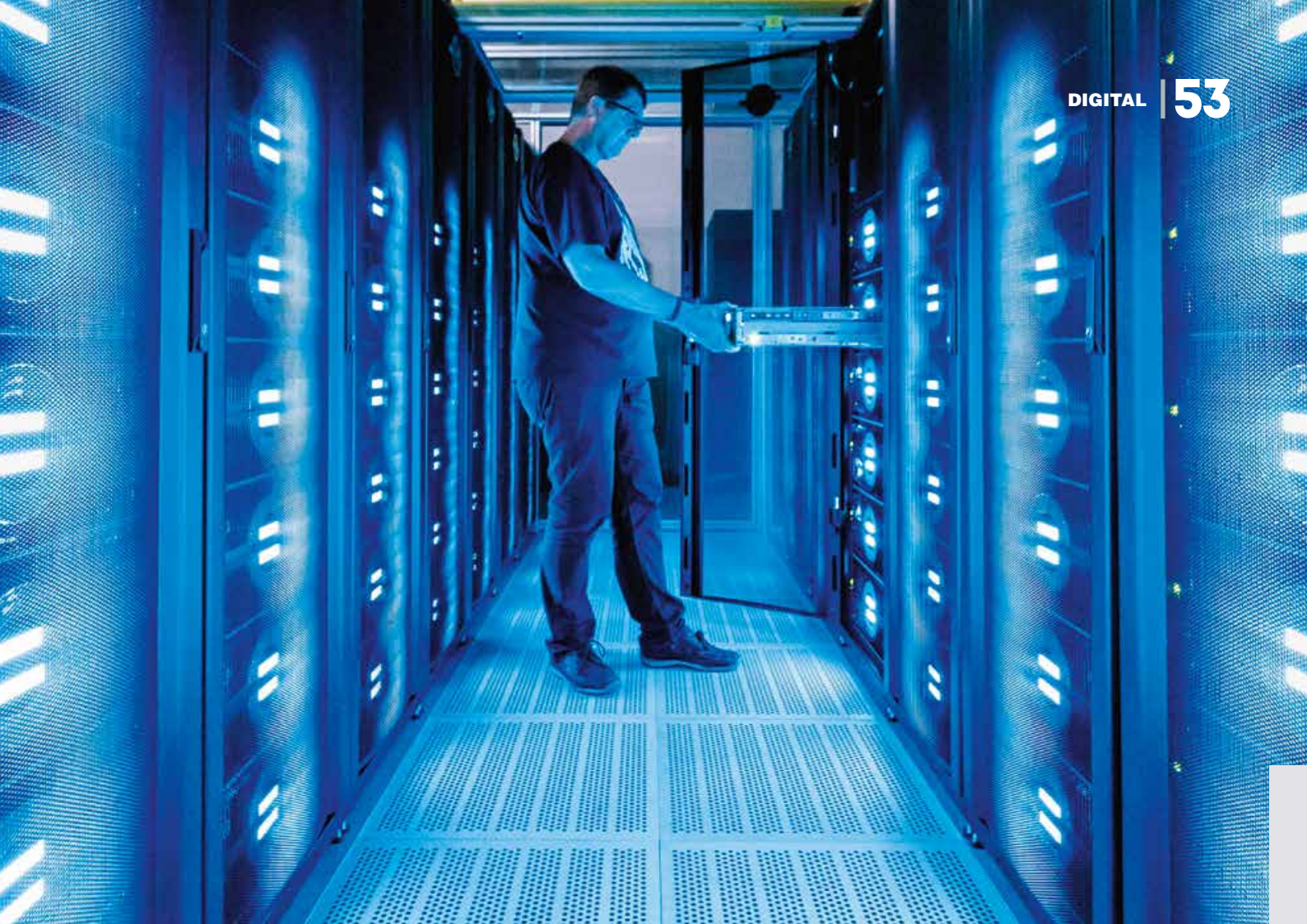
special”, recalled Franz Fayot, Minister for Economic Affairs, during the inauguration. In a mapping of the potential market, about 750 public and private entities have been identified as potential users of which about 20% can be considered as high potential users. The user, that were identified are active in all of the priority sectors that are relevant to the country, be it industry, telecommunications, finance, health, education, construction, logistics, or trade.”

MeluXina is hosted in Bissen

Luxembourg's future supercomputer will be part of a large family of supercomputers linked throughout Europe in a European network known as EuroHPC – an initiative co-financed by the European Commission and 32 countries, and its headquarters are based in the Grand Duchy. “Our mission is to build a European ecosystem of high performance computing, and thus ensure that Europe becomes a global leader in supercomputing. We work with European participating States, the private sector to invest in European and national funds in research, innovation and deployment of these very fast supercomputers”, explained Josephine Wood, Senior Programme Officer at EuroHPC Joint Undertaking.

Operational by the end of 2022, the National Competence Centre for High-Performance Computing will be a one-stop shop for companies and will offer personalised professional support and technical expertise to set up HPC projects.

The new technological gem, costing 30.4 million euros, will be hosted, operated and marketed at the LuxConnect data centre in Bissen, and powered exclusively by green energy produced in part by Kiowatt, a cogeneration plant fuelled by scrap wood. ■





René Winkin, General Manager of FEDIL - The Voice of Luxembourg's Industry

INTERVIEW

“TODAY, LUXEMBOURG’S INDUSTRY IS HIGHLY PRODUCTIVE.”

René Winkin, General Manager of FEDIL - The Voice of Luxembourg’s Industry, discusses the challenges facing Luxembourg’s industrial players, and in particular the way in which they are transforming themselves to remain competitive and less resource-intensive.

Luxembourg’s economy was built on the basis of industry, through the age of the steel industry, and then diversified. If you had to paint a portrait of Luxembourg’s industrial base, what would it be?

René Winkin: After the steel industry has contributed to the country’s wealth and modernisation since the 19th century, its decline from 1975 onwards forced the Luxembourg economy to turn towards new activities and outlets. Industrial production has diversified considerably, particularly in the field of materials manufacturing and processing, where production is very often focussed on innovative products with high added value. Upstream of their production, both national companies and international groups established in Luxembourg reserve

an important place for their Research and Development activities and take advantage of the many synergies with research institutes and other institutions or agencies dedicated to innovation. As a result, the Luxembourg technology-driven ecosystem has attracted numerous start-ups in recent years, which also contribute to the country’s technological and industrial development, particularly in the field of future technologies, such as digitalisation and robotisation.

What are the main strengths of the Luxembourg industry today?

Today, Luxembourg’s industry is highly productive. It can rely on a reliable, versatile, and flexible workforce to face the present challenges of technological transformation with

confidence. Within international industrial groups, Luxembourg entities often perform corporate functions to take advantage of local internationally oriented management competences and skills.

What are the opportunities for foreign industrial players to consider Luxembourg as a place to invest?

The central geographical location of the Grand Duchy of Luxembourg is always a factor. Setting up as an industrial player in Luxembourg means working in an open, multinational, and multilingual context. Apart from the stability and predictability argument, companies will find in Luxembourg a favourable framework for innovation. In some cases, Luxembourg can even serve as a test bed

for the implementation of creative industrial ideas and the assessment of markets. The country's agility and its ability to adapt to new conditions and opportunities are considerable assets. In general, the paths are short and access to decision-makers easy, which can be important for investors launching new industrial activities

Industry is set to transform - there is a lot of talk about the Rifkin plan, about Industry 4.0. Can you remind us of the country's ambitions in this area? How is this transformation being implemented?

Digital transformation and technological transition are having a huge impact on our businesses, and it is important that they seize the opportunity and make the most of Industry 4.0 and related innovative technologies. Turning a blind eye to this issue is not an option.

In this context, FEDIL launched in 2016 the D4I - Digital4Industry initiative to inform and raise awareness among companies on topics and technologies related to "Industry 4.0". Following this initiative, we launched in 2018, in collaboration with Luxinnovation, a project to create a Luxembourg DIH (Digital Innovation Hub). Today, this one-stop shop is hosted and managed by Luxinnovation and actively contributes to the digital transformation by supporting companies in their reflections and strategies. It facilitates contacts between, on the one hand, companies that need access to skills, technologies, services and support mechanisms in the field of digitalisation and, on the other hand, suppliers of digital technologies and services that meet the needs of the industry.

Within the framework of the "Neistart Lëtzebuerg" aid programme, there has been a significant demand for investment aid for 'Industry 4.0' projects. This strong demand is a good sign and shows that Luxembourg companies have taken up the challenge of moving into the digital age.

Luxembourg's Data-Driven Innovation Strategy is materialising in new initiatives such as safe data storage, high performance computing or the data exchange platform. Data will considerably influence the diversification of our industry. In parallel, new training offers and education programmes are set up in domains like Cybersecurity, Artificial Intelligence, HPC and data analytics.

The energy transition part of the Rifkin strategy is intimately linked to the agenda of EU-climate



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Industries are obviously called upon to actively contribute to a more resource-efficient management.

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mate policy where Luxembourg's pledges look very ambitious. Materialising those pledges will entail challenges and opportunities for the industry.

What do you see as the major challenges facing Luxembourg's industry?

How can it maintain its competitiveness?

The major challenge for Luxembourg's industry lies in the energy transition with the particularly ambitious climate objectives that the Grand Duchy has set itself. To achieve this technological transformation, it must be able to attract a workforce that needs to be more and more qualified.

Furthermore, the various industrial players are suffering from the frictions that can be seen in international trade relations and even within the European Union, where the principles of the internal market are increasingly being called into question. As a matter of fact, Luxembourg's integration into the major economic areas with uniform rules is particularly important for the functioning of its economy in general and its industry in particular.

Today, we talk a lot about resource issues (land, water, skills, energy, etc.) when we talk about industry. In view of these issues, how can we continue to evolve?

The scarcity of certain resources probably excludes the one or the other type of activity, which is a pity in terms of diversification. Bottlenecks need to be clearly identified and transparently presented to potential investors to avoid unpleasant surprises. At the same time, the government has a duty to remedy possible resource problems, where solutions are within reach.

Industries are obviously called upon to actively contribute to a more resource-efficient management, by adapting their business model to the new constraints and opportunities in terms of resource use, by complying with circularity criteria and by optimising their internal productivity process. To facilitate this adaptation, the Luxembourg government offers several instruments to support and accompany companies that embark on this path. ■

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FOCUS - AUTOMOTIVE INDUSTRY

BUILDING TOMORROW'S MOBILITY.

Among the industrial players present in Luxembourg, there are many automotive suppliers. United around the Luxembourg Automobility Cluster, these players are involved in innovation projects with the ambition of rethinking the automotive industry and mobility from Luxembourg, especially in the field of autonomous and connected driving.

Luxembourg stands out for its ability to bring together players around major issues, supporting innovation to enable local companies to win new markets. In the industrial field, this approach is perfectly illustrated by the automotive sector. "The Luxembourg Automobility Cluster managed by Luxinnovation fosters innovation, business development and cross-sector cooperation by bringing together Luxembourg-based companies and startups active in the automotive industry and mobility sector, said Anthony Auert, Cluster Manager. Luxembourg offers excellent access to all major European development centres for automotive components businesses and new mobility solutions."

Creating emulation

Luxembourg is home to global players in the automotive sector such as Goodyear, Carlex and IEE, with production and, increasingly, innovation activities. Alongside these players, many SMEs and start-ups are serving the automotive sector or offering new solutions that aim to transform it. One example is Motion-S, a leading data-driven behaviour analytics solution provider in the mobility ecosystem. The company is creating solutions to understand how people move: how they drive, their environmental impact, their transportation mode, their potential activities, and overall context. This solution can for example be used by insurance companies to adapt insurance policies to drivers' profiles. Gathered within the cluster, more than 50 companies have the opportunity to establish partnerships with technology players, large service providers or public research centres, such as the Luxembourg Institute of Science and Technology (LIST), the SnT - Interdisci-

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**The ambition,
by creating
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plinary Centre for Security, Reliability and Trust, or the University of Luxembourg. "The ambition, by allowing all these actors to meet, to exchange, by creating an emulation, is to facilitate the birth of new collaborations. In this way, we can better promote existing skills in the sector, which are sometimes not well known by everyone, and facilitate the emergence of joint or cross-disciplinary projects."

Autonomous and connected driving

The cluster is exploring a number of topics, including improving manufacturing, electro-mobility and decarbonization of the transport sector, and the future of mobility through technology. In this particular area, Luxembourg intends to take advantage of its position at the heart of Europe to launch large-scale innovative projects.

The arrival of the 5th generation of mobile network technology (5G), artificial intelligence and the implementation of an innovation policy focusing on the development of data economy are essential factors for a reliable, high quality future mobility. In this context, Luxembourg initiated a cross-border automated driving project that encompasses a 215 km long circuit test.

"This cross-border digital testbed for autonomous and connected driving is a pioneering partnership between three neighbouring countries: France, Germany and Luxembourg. This project offers industry and academia an opportunity to test innovative mobility solutions on public roads with several border crossings on the same day, said Anthony Auert. The testbed successfully addresses the complexity of cross-border connectivity and infrastructure, taking into account legal, economic and social considerations. It offers developers of technologies for automated and connected driving as well as of related mobility services the opportunity to conduct tests in real-life traffic environment."

Mobility Innovation Campus

An innovation centre known as the Mobility Innovation Campus was established in 2016 in order to guarantee the implementation of these ambitions. Based in Bissen, this campus is fully dedicated to automotive research and development. With a capacity to accommodate 4,000 people, the campus will be the future showcase site of the sector. Innovations related to electro-mobility, self-driving and smart tyres, are currently in the process of being developed there. ■



The arrival of the 5th generation of mobile network technology (5G), artificial intelligence and the implementation of an innovation policy focusing on the development of data economy are essential factors for a reliable, high quality future mobility.



Sasha Baillie, CEO of Luxinnovation



Thomas Kallstenius, CEO of Luxembourg Institute of Science and Technology



Jens Kreisel, vice-rector for research at the University of Luxembourg



Andreea Monnat, deputy CEO of the National Research Fund

ROUNDTABLE

HOW LUXEMBOURG BUILDS INNOVATIVE GROWTH ECOSYSTEMS.

Luxembourg is investing in the future. Innovation based on both academic and applied research is a key element of the country's development and economic diversification strategy. By connecting its research ecosystem to various private sectors, the country stimulates R&D and innovation activities to generate value that directly benefits the society.

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**We understand
the importance
of a knowledge
workforce as
being central
to driving
innovation.**

Jens Kreisel, vice-rector for research
at the University of Luxembourg

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Embracing change

“The conscious desire for economic diversification has always been at the forefront of government policy. This effort is now more and more coordinated and focused,” says Sasha Baillie, CEO of Luxinnovation, the national innovation agency which works to help enterprises innovate in Luxembourg and to attract international investment and companies that are a perfect fit for the country.

The Luxembourg economy and its players have on more than one occasion demonstrated a real capacity to transform, diversify and innovate. The country has positioned itself as a pioneer in clearly identified sectors with a promising future. This is how the economy has constantly been able to evolve and adapt,

Businesses seeking a European hub find a unique growth-enabling ecosystem in Luxembourg. Thanks to a highly international workforce, the country is culturally as well as physically close to key markets. There is also a widespread, open-minded desire for private and public actors to cooperate for mutual benefit.

Many countries talk a good game about being “innovation nations”, but too often the temptation is to rest on prior achievements. Luxembourg does not have this option. Its small domestic market of 634,730 people means politicians and civil servants are as aware as businesses of their exposure to the tides of economic and technological change. Hence the country uses public-private part-

nerships to encourage established businesses to reinvent themselves, while enticing international innovators to move to the Grand Duchy.

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**Maintaining
a strong link
between private
companies
and research
players is
another
essential
component of
the development
process of
our economy.**

Sasha Baillie, CEO of Luxinnovation

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in the metallurgy sector, in finance and more recently in space, health sciences, logistics, e-commerce, etc.

Being aware of the risk of depending on a single economic pillar, in this case finance, the Luxembourg authorities have always put efforts into this diversification, investing today in the sectors that will drive the economy tomorrow. The challenge in recent years has been to nurture innovation to make it a driver of economic development and better anticipate change. *“The government indirectly supports innovation by investing in public and private research, development and innovation activities,”* says Sasha Baillie. *“The aim is to develop scientific and technological skills in areas that correspond to identified or presumed needs in the economy.”*

A young but efficient and dynamic ecosystem

From the 1980s, Luxembourg has developed a holistic ecosystem with complementary components: renowned public research organisations, attractive funding measures, clusters fostering the collaboration between private and public players, support for a vibrant start-up community and specialised organisations providing coaching and advice. Although innovation is central to the country's development strategy, in the eyes of outside observers, its actors may still appear to be young. The first public research centres were created at the end of the 1980s. The University of Luxembourg was only founded in 2003. However, Luxembourg's size, its agility, its ability to move quickly and to mobilise resources have enabled this ecosystem to quickly demonstrate its worth. Over the last fifteen years, the country has positioned itself as a global player in research and innovation. This achievement owes much to the construction of a coherent ecosystem, composed of actors working as a team.

“This amazing development has been made possible by the unique collaborative spirit of a small but powerful RDI eco-system, composed of a handful of ministries, the university, the 3 major research institutes – LIST,

LISER and LIH –, Luxinnovation and the Luxembourg National Research Fund (FNR). All of them work as one team,” explains Thomas Kallstenius, CEO of Luxembourg Institute of Science and Technology, one of the 3 research institutes.

LIST brings together diverse and complementary skills in the fields of information and communication technologies, environmental technologies, advanced materials and space. The ecosystem also includes the Luxembourg Institute of Socio-Economic Research, that focuses on social and economic policies, and the Luxembourg Institute of Health, a public biomedical research organization. The FNR is a funding agency for research.

Attract international talent

As a research university, the University of Luxembourg strives for excellence in its research activities and delivers research-led higher education across a wide variety of disciplines to form independent thinkers and enrich their personalities to prepare them well for the challenges of the professional world. Researchers teach students cutting-edge knowledge and seek to transfer their research results to industry, economy and society, both contributing to tomorrow's Luxembourg. It is one of the top 250 universities in the world

with top-level research in areas such as cybersecurity, telecommunication, systems biomedicine or materials physics. On the other hand, it helps develop the talent that will contribute to tomorrow's Luxembourg.

“People, people, people,” are the key ingredients that have powered the success of Luxembourg, according to Jens Kreisel, vice-rector for research at the University of Luxembourg. “We understand the importance of a knowledge workforce as being central to driving innovation, and we work hard as a country to attract international talent. One of the missions of the University of Luxembourg is to attract talent at different levels from bachelor's, master's and doctoral level,” Prof. Kreisel notes. He says that *“typically up to 40% of doctoral candidates stay in Luxembourg after their doctorate, providing an excellent pool of talent.”*

Innovation has been a central driving force in Luxembourg's development over the past decades and is stimulated by forward-looking governmental policies. One of the main priorities is to foster the data-driven economy. *“Our mission is to contribute to the transformation of Luxembourg into a smart, trusted and sustainable data-driven economy,”* explains Thomas Kallstenius. *“We want to achieve this by using our combined research and innovation competency within a limited number of research fields. Naturally, these fields need to respond to the main societal meta-challenges of our time: digitization and the internet of things, climate change and sustainability, and finally the reinvention of industry with new production processes and the development of new materials.”*

Contributing to the knowledge society

“In 15 years, an attractive and fertile research and innovation ecosystem has emerged and gained international recognition in a number of fields, such as ICT and data science, health and biomedicine, materials or education,” says Sasha Baillie. *“The major goal, now, is to consolidate those achievements and to accompany research and innovation activities in such a way that they serve the implementation of the Luxembourg 2030 vision of a sustainable knowledge society and hence contribute to the future prosperity of the country.”*

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Innovation can be very risky, but with our support we remove some of this risk to help companies add long term value.

Andreea Monnat, deputy CEO
of the National Research Fund

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This consolidation is illustrated today at the heart of the Belval campus, which has been developing in the south of the country since 2010. It now brings together the main players in research, fully participating in the development of the knowledge economy. This unique place in the world contributes to creating synergies between them, fosters the necessary emulation for innovation, and allows new ways of thinking to be explored.

Innovation close to business

“Establishing and maintaining a strong link between private companies and research players, fostering innovation in the private sector, is another essential component of the development process of our economy,” explains Sasha Baillie. *“With the exception of very large structures or international groups, companies do not necessarily have dedicated departments, staff or equipment for research and innovation. Relying on public and private research actors can therefore enable them to develop new products or services. Conversely, research centers, especially public ones, need companies to validate their proof of concepts. The worlds of research and business should therefore not be separated, but rather closely linked.”*

For example, in 2016, Goodyear and LIST announced significant research and R&D investment focusing on sustainable mobility and next generation materials. Together with LIST, Goodyear engineers have been focusing on making tires more environmentally



friendly in terms of materials, performance and the manufacturing process. Funded by Goodyear with support from applicable Luxembourg Government R&D State Aid, the five-year partnership secures vital R&D talent for the future of in Luxembourg and the automotive industry more widely. Additionally the FNR (Fonds National de la Recherche) has invested 2.68 Mio in the doctoral training program between LIST and Goodyear, funding 23 doctoral and post-doctoral researchers working on collaborative projects.

In recent years, Luxembourg has set up several initiatives to strengthen the potential of companies in R&D and innovation, including the Luxembourg Cluster Initiative. It brings together different innovation actors and networks established in Luxembourg. Clusters are one of the actors of the national economy diversification policy in sectors such as health technologies, clean technologies, materials, wood, automobility or space. On the public research side, the FNR has developed and implemented several public-private partnership funding programs that support collaborative work and training of PhD students.

Virtuous circle

“The space sector is another example of an area of activity which has benefited from strong political support nationally, added to the ability of Luxembourg to make European and global connections,” notes Andreea Monnat, deputy CEO of the National Research Fund (FNR). *“Within just a few years they created the Luxembourg Space Agency, which plugs into the European Space Agency and thus opens up a variety of research projects to national players,”* she says. This has created a virtuous circle of attracting further skilled professionals and businesses to the cluster which had already grown around SES.

From this, the government was able to launch its space resources initiative, which contributes to the global drive that could one day see scarce materials brought from outside

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Our mission is to contribute to the transformation of Luxembourg into a smart, trusted and sustainable data-driven economy.

Thomas Kallstenius, CEO of Luxembourg
Institute of Science and Technology

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the earth's atmosphere. Although quite a way beyond technical possibility at the moment, Luxembourg is providing thought leadership in this area, including work at the University on the legal side of this activity. *“Innovation can be very risky, but with our support we remove some of this risk to help companies add long term value,”* Dr Monnat says.

How to make it happen

Luxinnovation is the contact point for businesses seeking to establish their business in the Grand Duchy. *“Our daily work is about connecting the right actors in our ecosystem and thus finding the solution that fits the individual needs of each company with an innovative project,”* says Ms Baillie. They put companies in touch with policymakers, government officials, research organisations, national business federations and advise them on potential funding instruments that could help them in developing their business in Luxembourg. ■

STARTUP LUXEMBOURG

LUXEMBOURG, A TRUE “START-UP NATION”.



Jonas Mercier, Startup Luxembourg Coordinator at Luxinnovation



Stefan Berend, Head of Start-up Acceleration at Luxinnovation

In just a few years, Luxembourg has developed an extremely attractive environment for the establishment and development of start-ups. Financing, advice, opportunities for growth in Europe: the country is a real haven for innovative companies.

In Europe, there is no shortage of contenders for the title of “start-up nation”. But not all of them have put their words into action in the way Luxembourg has. In the space of a few years, under the impetus of its Ministry of the Economy, the country has developed an ecosystem entirely dedicated to start-ups – young innovative companies – and scale-ups, which are slightly more experienced companies wanting to expand in Europe. Today, more than 500 start-ups are based in Luxembourg, taking advantage of a range of support measures made available by a number of organisations.

Luxinnovation, the spearhead

One of these, Luxinnovation, an Economic Interest Grouping (EIG) created in 1984, is a key player. Indeed, a large chunk of its activities are devoted to start-ups. “We offer tailor-made advice to each company and support them from creation to international development,” explained Stefan Berend, Head of Start-up Acceleration at

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**A single-entry
point for all
those seeking i
nformation
on the opportunities
offered by
the country.**
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Luxinnovation. This advice can take the form of support in defining a viable business model, but can also consist of sourcing the essential financing that will enable a start-up to develop. “Luxembourg is a financial centre, so there are a large number of investors, particularly in private equity, ready to invest in an entrepreneurial project that seems interesting to them,” he continued.

“We help start-ups to get in touch with these investors, notably by taking advantage of the network of organisations such as LPEA - Luxembourg Private Equity and Venture Capital Association - or LBAN - Luxembourg Business Angel Network.”

However, Luxinnovation does not only rely on private investors to grow the start-up ecosystem in Luxembourg. With Fit 4 Start, a public-private partnership, it manages Luxembourg’s flagship support programme, which can lead to funding of up to 150,000 euros. “Fit 4 Start aims to help both local and international companies,” said Stefan Berend. “Our aim is to encourage the creation of local start-ups, but also to enable international players to develop in Europe from Luxembourg.” Working closely with the government bodies, Fit 4 Start selects companies whose activities are in line with the Luxembourg economy’s strategic vision: ICT, healthcare, space and high performance computing. Beyond Fit 4 Start, many public subsidies can also be applied for by start-ups in Luxembourg, notably to support R&D. A public-private initiative, such as the



Digital Tech Fund, is another financing tool. In addition, there are also some fifteen incubators in the country.

Putting Luxembourg on the map

The goal now is to make this outstanding ecosystem famous on the international stage, with the aim of attracting a growing number of companies from around the world. Startup Luxembourg was created with this in mind. *“Growing numbers of organisations sharing the aim of supporting start-ups is a good thing, but it can lead to a lack of legibility for foreign players,”* explained Jonas Mercier, Start-up Luxembourg Coordinator at Luxinnovation. *“With Startup Luxembourg, we wanted to create a single-entry point for all those seeking information on the opportunities offered by the country.”*

Promoting Luxembourg as a business location, in the context of strong competition with cities such as Paris, Berlin or Amsterdam, is no easy task. In order to promote Luxembourg, Startup Luxembourg has relied on the country's



special features, starting with its small size. *“Contrary to what one might think, this is not a disadvantage,”* said Jonas Mercier. *“It is easier to set up contacts, to shorten access paths to the authorities or to political decision-makers. We are used to this in Luxembourg, but it is far from being a reality in cities like Paris, for example.”* This advantage is obviously one of the factors that is promoted abroad, via the offices of the Luxembourg Trade & Invest network, located in China, the United States, Israel, Russia, the United Arab Emirates, etc. But it is above all

the ability of Luxembourg-based start-ups to grow on the European market that is being highlighted abroad. *“We need both local and international driving forces to nurture our ecosystem. Significant growth is indeed one of our main objectives for the coming years,”* concluded Jonas Mercier. ■



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STARTUP

OUR SELECTION

6 LUXEMBOURG START-UPS TO WATCH.

In recent years, Luxembourg has been actively developing its start-up ecosystem. With its location in the heart of Europe, and its vibrant and multicultural environment, the Grand Duchy is an attractive place for young, innovative start-ups wishing to launch a project. Let's take a closer look at six of them that look particularly promising.

01

EMAILTREE

Would you like to be able to answer your emails in just a few seconds? You can, with EmailTree! This start-up specialises in artificial intelligence, and offers a platform that automates e-mail composition, management and classification. Email-Tree enables employees in an organisation to increase their productivity and spend their time on higher value-added tasks, while also improving customer service.

02

OUR CHOICE

Founded by Filip Westerlund, a Swede who came to Luxembourg to study psychology, Our Choice has produced a new kind of sneaker that seeks to be the polar opposite of fast fashion. These trainers, which are designed to last, be resistant and easily repairable, are made on demand, using natural and sustainable materials, in a circular economy logic. The first pair is now available for sale.

03

DATABOURG SYSTEMS

Following the terrible floods which hit Luxembourg and several other European countries in the summer of 2021, Databourg Systems should make it possible to anticipate these natural disasters better in the future. Developed at the University of Luxembourg, the start-up is based on a software solution that measures the quality of data transmission between satellites and ground terminals, determining the intensity of precipitation and therefore the risk of flooding.

04

KODEHYVE

Kodehyve is aimed at real estate agencies and developers. The start-up has devised a digital solution to facilitate project planning and management, as well as communication between employees and with clients. It's a way of working more efficiently while improving the customer experience. In June 2021, the start-up raised 1 million euros. Its ambition is to invest in several tight real estate markets such as Berlin and Geneva.

05

KOOSMIK

This fintech start-up is gaining momentum. Founded in 2017, Koosmik wants to promote financial inclusion. To do so, it provides bank account and mobile payment solutions to unbanked or underbanked individuals and professionals in Africa. An award-winner at the Consumer Electronics Show in Las Vegas, Koosmik now has more than 110,000 users in Togo, the country where it chose to start its project.

06

SALONKEE

Salonkee offers a complete technological solution to hair, beauty and massage salons in order to facilitate appointment scheduling, accounting and payments as well. Since its creation in 2017, the start-up has made great strides. After launching in Luxembourg, it has expanded into the Belgian and Swiss markets and now intends to expand Europe-wide, thanks in large part to its recent fundraising of €6.2 million in June 2021.



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FOCUS - CIRCULAR ECONOMY

DESIGNING OUT THE WASTE.

Luxembourg is moving from sustainability to the circular economy. Designing products and services differently should enable economic actors to adopt a virtuous approach.

The hot topic in our society at the moment is sustainability, but for Romain Poulles, what we should really be talking about is circularity. *"Sustainability as we implement it today in the economy is taking the 'less bad' approach – it's just an add-on to our existing system,"* he explains. The President of Luxembourg's High Council for Sustainable Development and the Luxembourg Center for Circular Economy, as well as a business owner active in construction and consulting, Poulles has a clear vision of what needs to change industry-wide to make real progress in addressing climate change and environmental degradation.

Society is currently based on a linear economy where we take raw materials from the earth and transform them into goods. Once they have been used, they reach the end of the line to become waste. *"Everything the economy does today ends up as waste. Even recycling is just one small cycle before becoming waste – it isn't the solution,"* says Poulles. *"Waste doesn't exist in nature – it's a manmade issue that exploded with the industrial revolution,"* he continues. In contrast, the circular economy begins with the step of designing out the idea of waste, with materials that cycle and are reused.

Innovation in products and processes

Progress in this direction can be seen, for example, in the construction industry, with a full

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Waste doesn't exist in nature – it's a manmade issue that exploded with the industrial revolution.

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value chain of players present in Luxembourg, according to Charles-Albert Florentin, Head of the Fit 4 Circularity programme at Luxinnovation. *"New buildings will come on the market applying different circular criterias such as deconstructability, modularity, sound materials, etc. Those buildings will act as banks of materials and will be deconstructed rather than demolished at the end of their life. The products and materials will then be reused,"*

he explains. The public sector is leading the way, with more than five hundred thousand square meters of 'circular buildings' already planned in the next ten years and the introduction of circular criterias in the tenders. As many industries need to confront growing shortages of materials and resources, there will be a new focus on durability, flexibility and reuse through innovative design of products and processes.

Fit 4 Circularity was launched several years ago to help businesses evaluate their current level of circularity and incorporate circular economy principles into their business. The initial version of the program proposed an audit of circularity followed by concrete recommendations. It has been recently redesigned to include collaborative research and development on innovative products, coupled with access to co-financing from the Ministry of the Economy. *"Innovation and collaboration between companies are the two key elements needed to support the transition towards a circular economy,"* explains Florentin.

Circular fashion as a way forward

One startup with circularity at its heart is the sneaker company OUR CHOICE. The entire business was designed based on the 2016 research report Circular Values Hill published by Circular Economy. *"We use very few raw materials and very few design elements, and the ones we use support the longevity of our*



Romain Poules, President of Luxembourg's High Council for Sustainable Development and the Luxembourg Center for Circular Economy



Charles-Albert Florentin, Head of the Fit 4 Circularity programme at Luxinnovation



The sneaker company, **OUR CHOICE**, designed its business with circularity in mind



Patrick de la Hamette, Founder of non-profit Digital Inclusion

product,” says founder Filip Westerlund. The sneakers are designed to last at least seven years, and the company offers customers a take-back scheme. “We can resell them with a commission or if they break, we can repair them. If we can’t repair them, we can reassemble or upcycle them, for example into key-chains. And if we can’t do that, then each ma-

terial is fully recyclable,” explains Westerlund. Originally inspired to create the shoes when cleaning up litter from his local beach, he emphasises that they are free of plastic, unlike most other brands on the market. As a psychologist by training, Westerlund sees each sneaker “as an intervention,” and is currently working to develop a marketplace for circular

fashion. “We all need to change our habits and it’s better to do that together,” he says.

Transforming waste into social inclusion

Acting as a bridge between our existing linear economy and the circular economy is the mission of the non-profit organization Digital Inclusion. Founder Patrick de la Hamette em-



Filip Westerlund, OUR CHOICE's founder, here with Franz Fayot, Minister of the Economy

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**If you explain
circular
economy to
a business
owner,
they quickly
under- stand
there's
a huge
opportunity.**

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phasises that in a country with high wages, repair and reuse cannot be sustainable if they produce less value than the cost of labour. Digital Inclusion's main activity is to collect unwanted electronic devices, such as computers, tablets and smartphones, repair and refurbish them through participative workshops, often attended by refugees, and then redistribute 100% of donations to those who cannot otherwise afford or access these devices. *“We refurbish devices for second use in their original function and produce social inclusion through access to the digital world and better access to the job market. This is more valuable in Luxembourg than the value of a used computer,”* says de la Hamette. He believes that not only do we have a new responsibility to those who cannot benefit from the digital age, but that the circular economy needs to be seen in the context of employment and solidarity. *“It's hard to have a sustainable model without the social aspect,”* he says.

A data passport on its way to international success

The wider concept of digitalization goes hand-in-hand with the circular economy, or the idea that *“waste is material without data”* as Poulles puts it. *“The first step is to add data*

to a product. Without data we can't reuse it or repair it,” he explains. To address this, Luxembourg has developed a ground-breaking open source material passport known as the Product Circularity Data Sheet (PCDS),

which is the basis for a new ISO norm and is part of a pilot project involving large international players. Applicable to any product, the PCDS provides information on materials used, repair, disassembly and reuse. *“This is the most promising concept coming out of Luxembourg,”* says Poulles.

To guide its transition towards circularity, Luxembourg published a National Strategy for a Circular Economy in February 2021, based on four pillars: awareness, information, education and implementation. *“Awareness has been rising, with the majority of people in business having now heard of the circular economy. There are also a number of new training initiatives, but the next step is helping people implement, and we're at the beginning,”* says Poulles. He remains hopeful, however, about the transformative power of the circular economy. *“I realised that people see sustainability as a constraint and not an opportunity...but if you explain circular economy to a business owner, they quickly understand there's a huge opportunity. When you design positive impacts into business, people start to feel good about it,”* he says. ■

The background of the entire advertisement is a photograph of a modern university interior. It features multiple levels with glass railings, colorful furniture (purple, yellow, green, and blue), and a high ceiling with exposed structural elements and hanging lights. The text is overlaid on this image.

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Why

Luxembourg



Laurent Witz, Head of Zeilt Productions, Oscar-winning filmmaker

rublot.

WITZ'S UNIVERSE

AN ANIMATION FILM BY LAURENT WITZ - SCREENPLAY BY LAURENT WITZ & JACQUES VITTEL - MUSIC BY JACQUES VITTEL

INTERVIEW

“A VISION OF OUR COUNTRY THROUGH ITS CREATIVITY”.

Head of Zeilt Productions, Laurent Witz is an Oscar-winning filmmaker, producer, writer, and director, and a pioneer of Luxembourg's animation industry.

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**If you want
to reach
excellence,
you need
to be excellent
everywhere.**

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What was your path to becoming a filmmaker and producer?

Laurent **Witz**: I spent five years studying art in France, then worked for a big animation company in Paris, Ex Machina, before coming back to this region 20 years ago. It was the very beginning of animation in Luxembourg then. I was self-taught in computer animation, specialising in 3D animation, and I worked for several animation studios before deciding to create my own company, Zeilt Productions, in 2007.

How has the local film industry developed since then?

The cinema industry only began 30 years ago in Luxembourg, so it's still a young industry. You need to start, learn, develop, then apply all that you have learned to become part of the international competition. And you need to push your ideas and your culture - it's a progression, and it has been very quick. Over the last five or six years, there's also been something of an acceleration within the industry.

How has Luxembourg come to be involved in international film productions, being such a small country?

This started thanks to government subsidies, which provide other countries with an incentive to work with Luxembourg on co-productions. And then it's up to us to deliver the quality of the project. However, subsidies aren't

automatic - there is high demand and strong competition for them. Each project needs to be submitted to the Film Fund Luxembourg, where a committee will evaluate the artistic quality of the project and its potential based on many criteria.

Luxembourg is a country that needs to work in cooperation with other countries and with talents from all around the world. For me this represents the future of Luxembourg and what creativity is to me - working together to help a project come alive from the first drawing to the real thing. Our short film based on Luxembourg's motto of 'Let's make it happen' won a competition from the Ministry of the Economy with this idea.

What was the story and process behind the creation of your Oscar-winning short film, Mr. Hublot?

The idea first came to me when I met Stéphane Halleux, a Belgian sculptor. I felt there was something that could be done with his steampunk sculptures. First, I had to write



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As a small country, Luxembourg can't compete on volume, so it focuses on quality and innovation.

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the story, find funding and create the team before beginning production. We not only had to adapt the sculptures to make the animation, but we had to imagine the entire universe of the film and how those characters are living in it. The Oscar win wasn't only about talent, but also due to the originality of the way we made the film.

Creating the animation was a three-year process, and it took two years just to find funding for the project. We had a small team, with only around 2-5 people working on it at a time. Although it was a short film, the intensity was the same as for a feature film. I needed to put in a lot of effort to reach the quality I wanted.

Everyone said we needed one to two million euros to make Mr Hublot, but we made it with only 200,000 euros. We focused on production value, quality, creativity, and organisation. If you want to reach excellence, you need to be excellent everywhere. We optimised many processes during the project, and we are still using these today.

What is the message behind the film?

The idea for the plot came from discussions on how people are living today. The way we work in our society is becoming crazy – always 'faster faster' and more mechanical, with everything split into tasks. It's also about relationships, about feeling alone and living alone. This was reflected at the start of the pandemic, when many were living alone at home without the possibility to go outside and many people experienced mental difficulties as a result. The important thing for me in this film is showing that there is a light in the dark and the possibility to follow this light to leave the dark behind.

What impact has your Oscar win had on your career and your production company?

Before Mr. Hublot, there were just four of us at Zeilt Productions and now our core team has grown to number 40 people. Previously, we only worked on one or two projects at the same time, but now we're working on five to ten bigger productions simultaneously, including TV series and feature films.

When making movies, you're not doing something alone but with a partner, and all of the talents, artists, and technicians need to have trust in you. When you win an Oscar, that creates trust. It opens up a lot of possibilities because new partners know that you are able to reach a high level of quality. For artists, they can trust that you have the right ideas and that you really feel your work. It helps a lot to move forward. Winning the Oscar was perhaps also a milestone for Luxembourg, showing that there's a certain maturity in the

sector, and putting the film industry on the international map.

How did your recent co-production with Chinese streaming platform Tencent Video come about?

As I mentioned earlier, trust and confidence open doors. If you have that, partners take you seriously when you are pitching a new project, they know that it can be a very high-quality project. We created a new TV series, *Deep in the Bowl*, based on a French comic book, and Tencent fell in love with the project very quickly. They decided to be part of it from the very beginning and invest in it as one of their first international animated co-productions.

What are the key strengths of the wider creative industry in Luxembourg?

As a small country, Luxembourg can't compete on volume, so it focuses on quality and innovation. This is true across all sectors. Industries like cinema, animation, new media, augmented reality (AR), and virtual reality (VR) all focus on pushing the quality and as elsewhere in the world, many digital sectors are particularly dynamic. The multicultural character of Luxembourg is also a key strength for its creative industry. We know how to adapt to work with international partners and we can provide stories with messages that resonate internationally.

Our cultural institutions, such as the Luxembourg Philharmonic Orchestra and the Luxembourg Chamber Orchestra, are very talented, and venues such as den Atelier and Rockhal feature concerts by musicians from Luxembourg and all around the world. The National Audiovisual Centre (CNA) and national media



group RTL are also historic and very active institutions in Luxembourg.

The creative industry in Luxembourg also boasts notable successes across many other disciplines, including dance (TROIS C-L choreography centre), fashion, communication (agencies Binsfled, IP Luxembourg, and Vank-sen), theatre (the Grand Théâtre de Luxembourg and the Théâtre des Capucins), music, and art in general (MUDAM art gallery). There are also celebrated international events such as the Luxembourg Film Fest, ICT spring, Luxembourg Art Week, and Meet the Zebras (showcasing the creative industries).

What is the importance and impact of the creative sector on Luxembourg's economy and international reputation?

I have many things to say about that. The creative sector presents a vision of our country through its creativity, showing how dynamic we are and how we understand our time. Being creative is not only about following, but also about anticipation. You are creating the future and you need to ask yourself; do you only want to follow the future imagined by other countries or do you want to be part of creating the future? This is true for every sector, including culture, art, sport, engineering, etc.

Also, as Luxembourg becomes more involved in international projects, people in our industry from Europe and around the world hear about the projects being done here. This attracts new people to come and work here, but we also are faced with international competition in keeping our talent.

What are Luxembourg's ambitions for the creative sector?

Developing local talent is an important point, as well as developing strong relationships with partners from different countries. The aim is to take part in the best projects and to be seen as part of the international market, to show that Luxembourg exists as a partner, we can bring our own ideas to contribute to other projects. The virtual reality industry is a good example. Luxembourg is very dynamic in the international VR and AR scenes, with a lot of innovation and creativity. Companies like Wild Fang Films and a_BAHN are creating great interactive films and experiences. Three years ago, I also created a new company called Yaaargames, which focuses on creating real-time gaming projects using virtual reality and augmented reality. It was a way to say things are changing, that we need to try to understand other sectors.

How is the Luxembourg government supporting the growth and development of the creative industry?

The support structure is improving all the time, and we also have more opportunities coming from companies. Creating and developing talent is not only about government support. When companies grow and become more competitive, they are able to help their talent grow as well. The Film Fund is a very good support for our industry, but there is also Luxinnovation. Even in the cultural sector, there are some opportunities to receive support for innovation. There is also some support for promotion and networking, helping companies and talent to travel to different festivals and participate in training.

How is young talent being encouraged?

There are new BTS programmes (Higher Technician Certificates) available to young people now, in areas such as audio-visual, animation and gaming, as well as a Bachelor in Animation offered by the University of Luxembourg. These new elements are helping a lot to push and support our industry. For young directors there are also subsidies for developing new projects, which is a good way to start.

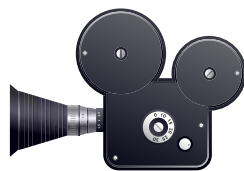
What are some recent successes you could mention in your industry?

Some notable successes include the animated film *Wolfwalkers*, which was nominated for an Oscar, the film *Deux*, which won a César Award, and *Capitani*, a TV series sold to Netflix. Other successes include *Zero Impunity*, *Bad Banks* and *Where is Anne Frank*.

What are your plans for the future of Zeilt Productions?

We plan to continue creating beautiful movies, pushing the quality and improving as much as we can each time. Developing our in-house talent is very important to us. As our talent grows, it pushes the company forward.

We're also putting a lot of focus on innovation, new technology, and new ways of making animation. From the beginning, the cinema industry has been about innovation, moving from black and white, to sound, to colour, to better quality and so on. Thinking of the future of our industry and our responsibility to it, we plan on having more co-productions with international companies, and developing more and more of our ideas. ■



WHAT TO SEE

10 REMARKABLE PRODUCTIONS „MADE IN LUXEMBOURG“.

For several years now, Luxembourg audiovisual productions have been invited to the red carpet at Cannes, the César Awards or the Oscars. Some of them have been honoured by one of these prestigious awards.

A fine recognition of a Grand-Ducal know-how that is increasingly acknowledged.

Here is a selection of 10 Luxembourg productions to see or re-see without delay

01



La Jeune Fille à la perle (2003)

This movie, adapted from a work of fiction by author Tracy Chevalier, tells a story about the events surrounding the creation of the painting “Girl With a Pearl Earring” by 17th century Dutch master Johannes Vermeer. Co-produced by the Luxembourg company DeLux Productions - which disappeared in 2014 - the film stars Collin Firth, Scarlett Johansson and Cillian Murphy, the hero of the Peaky Blinders series. The movie, nominated for the Golden Globes and Oscars in 2004, was shot in a former industrial site in Esch, transformed into a Dutch village for the occasion. For the record, this same site had hosted a few years earlier... Al Pacino for the film The Merchant of Venice. ■

02



Ernest & Célestine (2012)

Released in 2012, Ernest & Célestine, directed by Benjamin Renner, Vincent Patar, Stéphane Aubier and co-produced by Stéphan Roelants (Melusine Productions), is a reference in Luxembourg animation sector. The film, which has won numerous awards, including the Belgian Magritte and the César awards in 2013 for Best Animated Film, tells the story of a marginalised bear who takes in an orphaned mouse. It required several years of work by the French, Belgian and Luxembourg teams in charge of the project. Most of the production sets were made at Studios 352 in Contern. ■

03



À perdre la raison (2012)

In 2012, Belgian filmmaker Joachim Lafosse tackled a tragic story that shook the world: the murder of five children by their mother, Geneviève Lhermitte, in Nivelles, Belgium. Supported by the Film Fund and co-produced by Samsa Film (Bertrange-Luxembourg), this chilling work has won numerous awards, including four Magritte awards and the Best Actress Award at Cannes for Émilie Dequeenne. “À perdre la raison” was partly shot in Luxembourg with Grand-Ducal technicians and actors. Joachim Lafosse was again in the running at Cannes this year for Les Intranquilles, a film starring Leïla Bekhti, partly made in Luxembourg and co-produced by Samsa Film. ■

04



Mr Hublot (2014)

Mr Hublot marked a turning point in the history of Luxembourg cinema. On March 2nd 2014, for the first time, a Luxembourg production won an Oscar, the most prestigious award in cinema. This animated short film, which took three years to make, was entirely produced and manufactured in the Grand Duchy by producer Laurent Witz of Zeilt Productions (Mondercange) in co-direction with Alexandre Espigares, a former student of the Lycée Technique des Arts et Métiers de la Ville de Luxembourg. The 11 minutes short film will introduce you to the world of Mr Hublot, a taciturn accountant whose daily life is suddenly disrupted by the arrival of a robot dog. A duo as unlikely as endearing is born. ■



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05



Colonia (2015)

Released in 2015 in cinemas, Colonia is a German, Luxembourg and French production. The cast of this political thriller set in Chile in 1973 includes Emma Watson, Daniel Brühl and Luxembourg actress Vicky Krieps, who topped the Hollywood charts this year with M. Night Shyamalan's latest film, Old. Co-produced by a company based in Kehlen (Luxembourg), Iris Productions, and supported by the Film Fund, this movie by Florian Gallenberger's was shot for the most part in the Grand Duchy, in the Mullerthal region, in the casemates in Luxembourg, but also on the Belgian border, at the Musée de l'Ardoise in Martelange. ■

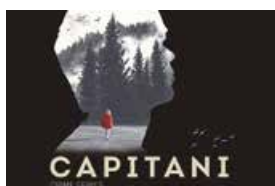
06



On a Magical Night (2019)

With its 4 Stars cast (Chiara Mastroianni, Vincent Lacoste, Camille Cottin, Benjamin Biolay, Carole Bouquet...), "On a Magical Night" was a big hit when it was released in 2019. Co-produced by Bidibul Productions (Luxembourg) and shot at Filmland Studios in Luxembourg, the film directed by Christophe Honoré follows Marie (Chiara Mastroianni), a collector of lovers who decide to leave her marital routine. She moves then into room 212 in the hotel across the street, with a breathtaking view of her flat, her husband and the life she shared with him. A critically acclaimed comedy-drama that offered Chiara Mastroianni the 2019 Cannes Interpretation Award. ■

07



Capitani (2019)

First broadcasted on RTL, the Luxembourgish TV channel, the Capitani series was exported to Netflix in early 2021. The first 100% Luxembourg production to be broadcast on the streaming platform was a real hit! The series directed by Christophe Wagner and produced by Samsa Film tells the story of Inspector Luc Capitani (played by Luc Schiltz), who is in charge of investigating the murder of a 15-year-old girl in a small village in the north of Luxembourg. After a thrilling and highly addictive first season, a sequel will be broadcast on RTL from February 2022. And in view of the success, it is not impossible that this second season will also be available on Netflix soon. To be continued... ■

08



Collective (2020)

A Luxembourg production twice nominated for an Oscar does not happen every year. Yet this is the case with the documentary "Collective", co-produced by Bernard Michaux and Samsa Film. This shocking thriller-like production highlights the corruption of the Romanian health system. Although it did not win an award at the prestigious Dolby Theatre in Los Angeles, the documentary was hailed by critics on the other side of the Atlantic, in the NY Times, Rolling Stone Magazine and the Washington Post. A gripping documentary to be seen without delay! ■

09



Bad Lucking Banging or Loony Porn (2021)

Behind "Bad Lucking Banging or Loony Porn" are Romanian director Radu Jude and the Luxembourg company Paul Thiltges Distributions (Kehlen), which co-produced the film with Croatia, Romania and the Czech Republic. This feature film exploring the intellectual, moral and political confusion of our contemporary societies won the Golden Bear for Best Film at the 71st Berlinale. This is the first time that a Luxembourg co-production has been awarded the most prestigious prize of the Berlin Festival. This is a great recognition for Paul Thiltges and Adrien Chef, who were responsible for the film's image, sound and special effects post-production. ■

10



Deux – Two of us (2021)

Eight years after Ernest & Celestine, another Luxembourg production has won the Salle Pleyel in Paris. "Deux" (whose English title is "Two of Us") is a comedy-drama nominated four times for the César, once for the Oscars and once for the Golden Globes. It finally won the prestigious César statuette in the Best First Film category. The feature film by Italian director Filippo Meneghetti, co-produced by Tarantula Luxembourg (Luxembourg), was partly shot in the Grand Duchy and made use of numerous Luxembourg technicians and actors. It tells the story of the secret romance between Madeleine and Nina, two sixty-year-old neighbours, which suddenly turns into a breathtaking thriller. A bold and poignant love story reminiscent of Michael Haneke's masterpiece "Amour", which won five César awards in 2013. ■

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INTERVIEW

“LUXEMBOURG, A GREAT INTERNATIONAL HUB FOR BUSINESS”.

Carlo Thelen, Director General of the Chamber of Commerce of the Grand Duchy of Luxembourg since 2014, has a very clear vision of the future development of Luxembourg and the challenges ahead. The country's great stability and ideal geographical location will continue to be major assets for companies seeking to grow their business.

“

**There are
many
attractive
companies
in Luxembourg
and there
is fertile
ground
for growth.**

”

Why is Luxembourg such an ideal place for businesses to develop?

Carlo Thelen: Luxembourg is characterised by a high degree of international openness, which is a consequence of its small size and its geographical position within Europe. For many companies, the country is also useful as a laboratory for testing new innovative products or services, in a relatively risk-free environment. French and German companies regularly do this, as Luxembourg is a melting-pot of German and French cultures. The country's stability is another major advantage. Luxembourg's strengths are the same today as they were yesterday. In addition to the triple A rating awarded by the rating agencies, there is reliable political continuity. This means that tax legislation will not change every other day, something which is hugely important for companies and financial markets. In Luxembourg, the rate of public investment remains high and the country has no difficulty in repaying its public debt. Finally, channels of communication to decision-makers or to policy-makers are more straightforward in Luxembourg, and this accessibility must be safeguarded.

Why does having a base in Luxembourg make it easier for companies to grow internationally?

The country has a large number of structures that facilitate the international development of companies based in Luxembourg: the Chamber of Commerce is a good example of this. It takes part in numerous economic visits abroad and has set up economic attaché posts in Paris, Berlin, Brussels and London. Their aim is to provide assistance to Luxembourg companies seeking to develop in these countries. Luxembourg has always looked

abroad because, given the size of the country, companies must necessarily develop their export capacity if they wish to increase their turnover. In this respect, even if exports today are mainly in services, it is essential to maintain a diverse economy, and a healthy industrial sector in particular. With the ecological transition, there is a risk that the price of many products and services will increase due to the rise in energy prices. In this context, the diversification of activities and the maintenance of a proactive policy, allowing us to develop abroad, are essential.

Is this ecological transition one of the main challenges on the horizon for Luxembourg's economy?

Absolutely, and for a very simple reason: Luxembourg is a small country that has to import all its energy from abroad. The importance of the energy transition that we are facing, moving from fossil fuels to renewable energies, must encourage us to secure our energy at a competitive price. New innovations and technologies are likely to emerge in the medium to long term and will probably be more efficient, cleaner, and cheaper than existing

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Carlo Thelen, Director General of the Chamber of Commerce of the Grand Duchy

technologies. Any situation of a 'technology lock-in' – where the government commits to the development of one specific technology rather than creating incentives and frameworks for companies to innovate – could eliminate the flexibility necessary to switch to the most suitable emerging technologies and should be avoided.

To face this challenge, the Chamber of Commerce often calls for “qualitative growth”. Can you tell us more about what this means?

The concept comes from the 'Third Industrial Revolution', proposed by Jeremy Rifkin. The aim, by extending this new concept of growth, is to try to do better with less, to be more efficient with everything we consume, whether it be energy, natural resources or even human resources. In the past, in Luxembourg as elsewhere, we have relied heavily on quantitative growth. But we have seen that this is not sustainable. The implementation of qualitative growth will require better training of employees, greater circularity, reduced use of energy, etc. We are therefore participating in the development of circular strategies, CSR

policies and more sustainable practices. In order to achieve this, digitalisation will be key because it allows for increased efficiency, improved working conditions, and so on.

The question of human resources is another crucial issue for Europe. How well is Luxembourg doing?

There are several issues to consider here, and even more so following the COVID crisis. In the sectors that suffered the most, such as hospitality, events, and restaurants, many employees have been forced to change sectors to survive. Especially in the lattermost case, they will not return to the restaurant business. People often talk about the difficulty of finding highly qualified staff, but unqualified staff are not always easy to find either. That said, to attract the right talent, you need to offer employees interesting jobs and development opportunities.

Fortunately, there are many attractive companies in Luxembourg and there is fertile ground for growth, even if the race for talent has become more and more challenging and these will not have too much difficulty in finding the

talent they need to continue their business. There is also a structural problem concerning how pensions will be financed over the next few decades. Finally, in order to maintain our competitiveness, we urgently need to think about an overhaul of wage indexation. To calculate index-linked salaries, we still take into account the price of petroleum products, alcohol and tobacco. This seems to me to be in contradiction with what the government is doing. Moreover, in the way it has been designed, the system does not have the social role it should have: low earners, who need it most, do not get much, while high earners receive a big increase to their salary. ■

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