

Ireland: Small nation, big impact

Having generated spectacular GDP growth in previous years, the Irish economy's performance in 2020 has taken the world by surprise

According to Ireland's Tánaiste and Minister for Enterprise, Trade and Employment Leo Varadkar, "The pandemic and Brexit have combined to bring unprecedented economic challenges and volatility to our enterprise sector. But with every challenge comes new opportunities."

The small, most-westerly member of the European Union (EU) went into 2020 as the bloc's fastest-growing economy, having transformed itself from a sleepy agrarian nation into a prosperous, outward-looking global hub for forward-focused industries in recent decades. It emerged from the year in exactly the same position by recording economic growth of 3.4 percent, the only positive result across the whole of the EU. That impressive performance has continued into 2021—in April, the Irish central bank raised its 2021 growth forecast to 5.9 percent.

This success is down to buoyant exports in sectors like pharmaceuticals and technology, which are led by global giants that make up a large proportion of the country's economy. With the support of Apple, Google, Facebook, Twitter, Intel, Pfizer, Johnson & Johnson and many others, Irish exports reached a historic high of €160.8 billion in 2020. Varadkar highlights the fact that, although multinationals played a crucial role, Ireland is actually a twin-engined economy, with numerous indigenous small and medium-sized enterprises (SMEs), many of which are also exporters. "Irish SMEs account for almost 70 percent of employment. Their value is pretty enormous. The strength of our exporters overall means that our total income tax take was only down 1 percent last year and corporate tax was up, so we're able to finance the social and health spending that we need at the moment," says Varadkar.

While exporters have shown resilience, other businesses have been less fortunate and the country's unemployment rate has climbed to nearly 6 percent. "Labor-intensive sectors have been hit hard, such as tourism, hospitality, travel, entertainment and, to a certain extent, retail and construction," Varadkar states. To mitigate the impact on jobs and businesses, the government has implemented a wide range of financial measures, including Ireland's biggest-ever state-backed loan guarantee scheme, he points out. "We've seen relatively few insolvencies, but the real test is going to be down the line when we start withdrawing temporary measures. However, we are a resilient, modern and capable country with determined people, and we're going to bounce back quickly."

The government is also using its enviable fiscal position to boost investment



Leo Varadkar
Tánaiste and Minister
for Enterprise, Trade
and Employment



Built in 2003, the iconic Spire of Dublin towers over the capital

in areas that will drive future economic and social growth and sustainability. For example, 2020 saw the public research and development budget expand to €869 million, as Ireland seeks to become a global leader in innovation. "That's an 8 percent increase at a time when other countries would have been pairing back budgets and there will be continued increases in government investment. A lot of the investment is done through my department and a lot through our new dedicated Ministry for Further and Higher Education, Research, Innovation and Science," he explains.

Varadkar was a central figure in the negotiations between the EU and the U.K. regarding Brexit, which culminated in Ireland's closest neighbor leaving the bloc at the end of 2020. In his view, "Brexit isn't good for Ireland, it isn't good for Britain and isn't good for Europe, but it has happened and we have to deal with the consequences. There are risks for Ireland, particularly when it comes to our exporters." However, Conor O'Kelly, CEO of the National Treasury Management Agency, which is responsible for managing the state's assets and liabilities, believes Irish businesses have prepared for those risks. "The vast majority are ready for dealing with the U.K. in its new capacity."

"Brexit also brings opportunities. The strongest we see are for further investment to come in from companies that want a base in Europe."

Leo Varadkar
Tánaiste and Minister for Enterprise, Trade and Employment

"Brexit also brings opportunities," adds Varadkar. "The strongest we see are for further investment to come in from companies that want a base in Europe: Ireland's place in the world is in the eurozone at the heart of the EU." Martin Shanahan, CEO of investment promotion agency IDA Ireland agrees: "The fundamentals of what investors are looking for from Ireland haven't changed—education, consistency of pro-enterprise policies, innovation, research—those things remain." Ireland has the additional advantage of being English speaking, which is particularly vital for U.S. firms, notes Varadkar. Accounting for over 60 percent of investment into Ireland and 31 percent of Irish exports, the U.S. is a close ally and this relationship appears to have been strengthened by the election of President Joe Biden, who talks with pride of his Irish heritage. Welcoming Taoiseach Micheál Martin to a green-lit White House for a virtual St. Patrick's Day celebration in March, Biden said: "Everything between Ireland and the U.S. runs deep, our joys, our sorrows, our passion, our drive and our unrelenting optimism and hope."

Phenomenal success in attracting FDIs

Multinational companies in key Irish sectors helped mitigate the impact of the pandemic, says Martin Shanahan, CEO of IDA Ireland

How important is foreign direct investment (FDI) to Ireland and how much did it contribute to the economy's 3.4 percent growth in 2020?

The evolution of the Irish economy is largely connected to FDI. Having started as an inward-looking protectionist economy, Ireland began to look outward for trade and investment in the 1950s, with its investment promotion agency IDA Ireland being established 72 years ago. In recent times, Ireland has seen substantial growth in FDI, with hugely positive knock-on effects for the economy. Indeed, sectors dominated by FDI—like financial services, technology, pharmaceuticals and life sciences—really drove Ireland's recovery from 2008's financial crisis.

Between 2015 and 2019, Ireland had its strongest-ever run of FDI wins and investment proved to be very resilient through 2020, both in terms of existing investors and new ones. Over the year, IDA won 246 investments, which was only marginally down from the previous year where we had 250. That strong performance is reflected in our national accounts, with our corporation tax take holding up during this crisis, largely driven by multinationals that contribute over two-thirds of it. Employment in the FDI sector also grew in 2020. For the most part, existing investors continued to operate during the pandemic as many are involved in manufacturing industries such as pharma, medtech and microelectronics that were designated as essential services. Obviously, there are sectors that have been severely impacted, including tourism, hospitality, retail and construction. However, the presence of multinationals in key industries has certainly enabled us to mitigate the impact of the crisis.

"The availability of talent is the number one criterion for investors, as Ireland's highly skilled and talented workforce is widely recognized."

Martin Shanahan, CEO, IDA Ireland

Why are so many investors attracted to Ireland?

The availability of talent is the number one criterion for investors, as Ireland's highly skilled and talented workforce is widely recognized. This availability is a result of several factors: we start developing our talent at the primary-education level and have one of the highest participation rates in third-level education in the Organisation for Economic Co-operation and Development. Ireland has also been very successful at attracting talent from Europe and further afield—lots of people want to live, work and avail themselves of the opportunities here. Plus, Ireland has invested in research centers to support innovation in key sectors, and has a very attractive research and development tax credit rate and patent box.



Dublin is the leading destination for multinational headquarters

Our extraordinarily stable pro-enterprise and pro-business policies are important as well, and we have one of the most consistent, competitive and transparent taxation regimes in the world. The fact that we are an extremely open, outward-looking and engaging economy is also key, as is our membership of the European Union (EU). Being English-speaking is an additional advantage, particularly in attracting investment from North America. We have diversified our source markets in recent years, but the U.S. still represents more than 60 percent of our FDI and will remain a key focus for us. As U.S. companies think about internationalizing, which is what successful businesses do, we want Ireland to be their number one choice.

We have also seen significant investment as a result of Brexit: more than 90 companies have made investment decisions directly because of the U.K. leaving the EU, with over 6,000 jobs connected to those. Investors post-Brexit have a choice, they can invest in Ireland, where there is unfettered access to the European market, or they can invest in the U.K., which no longer has the same degree of access.

What is IDA's approach to promoting FDI, particularly when it comes to attracting multinationals?

We have 24 offices across the globe, but our approach is that we don't stop at the point where we have attracted investment in, we work with those investors to make sure they are successful here. We have companies that have established facilities in Ireland that have become critical to their global corporate entity and which drive forward innovation within their enterprises. Looking at the businesses that have evolved here over long periods—such as Apple, which has been here since 1980—we've worked and continue to work with them, both in Ireland and at their corporate headquarters, to support their ongoing development. IDA is very good at understanding the companies, their needs and priorities, and ensuring that our offering is aligned. It's not a light-touch sales or marketing approach, it's really deep analysis.

Global leaders in a lot of industries are now based here. In the tech sector, we have Google, Facebook, Apple, Intel, IBM and so on; in pharma, we have every leading worldwide brand, including Pfizer and Johnson & Johnson, and we have many global enterprises in medtech and international financial services. We are leveraging that multinational presence to help grow indigenous businesses and make sure that the benefits of FDI are felt in all parts of the economy. That approach toward FDI has proved to be very positive for Ireland.



Martin Shanahan
CEO
IDA Ireland

A sustainable and inclusive recovery

"Together we will build a stronger and more resilient Ireland," declares Minister for Finance and Eurogroup President Paschal Donohoe

Last fall, you presented a budget unprecedented in size and scale to meet the double challenge of COVID-19 and Brexit. What were the main characteristics of that budget?

Our budget was about the state providing income and investment at a time when uncertainty prevailed. In the past, our budgetary policy had been to increase capital spend when the economy was already growing very quickly. What we've done in this budget is to step in and provide certainty about public capital investment. The second dimension is certainty of income for citizens who lost their job as a result of COVID-19. We have compensated these workers with a higher level of income support. For companies that were viable but facing pressure, we introduced an income subsidy scheme. We will need the Irish government to continue to intervene within our economy to ensure we are on a pathway of sustainable economic growth across the coming years, because it's going to take more than a single year to undo the harm that was caused in 2020. While I'm confident of seeing a rebound in 2021, I'm more focused on having sustainable recovery over a number of years.

"What we've done in this budget is to step in and provide certainty about public capital investment."

Paschal Donohoe, Minister for Finance

Since July 2020, you have been president of the Eurogroup, the forum for the eurozone's finance ministers. How would you assess the European Union's (EU's) economic response to the pandemic and how should its member states approach their post-COVID recoveries?

The EU responded to this challenge in a way that is making a real difference. I believe in the impact of the recovery and resilience fund, an initiative that is going to make a very meaningful difference. Indeed, the European dimension of supporting the rebuilding of an economy could be the difference between a rebound and a recovery. The role of the European Central Bank has also been remarkable. As dark as circumstances are at the moment, the work of the EU has prevented even greater challenges and laid the foundations for Europeans to be able to recover from this terrible disease.

We need to pave the way for an inclusive recovery, one that ensures that those who've been hurt most by COVID-19 aren't the ones who have to pay the most. As we are restructuring and re-engineering our economies, we also have to look at how we can do this in a way that responds to the climate change that we have a moral duty to do more on. Finally, we need to have a recovery that is really European. How the French economy recovers is important for how the Irish economy recovers, for example, so how we use our interdependence



Paschal Donohoe
Minister for Finance

to help each other recover better is key. Across Europe and within Ireland, if we work together we can rebuild lives and help people who've been hurt. We will do that. If we all work collectively we will get to a point later on this year at which we can feel that we all have better days ahead.

What are the implications of Brexit for Ireland?

We have put a huge amount of effort and focus on dealing with Brexit over the last four years. Many of the effects of this have been very practical. For example, we now have a new direct ferry

route to France. We've increased the capacity of direct ferry services between our two countries as France is now our entry point into the EU, where far more of our goods will circulate than in the past. We also put substantial effort into supporting our exporters to get ready for new customs requirements and regulations that they have to meet. Probably the most important area of focus has been on how we get the balance right between having an arrangement with the U.K. that respects the peace process on our island and avoids the risk of a hard border on our island, but at the same time ensures that Ireland continues to be a core member of the European single market.

In the short to medium term, Ireland may do a bit better than we would have anticipated—for example, in financial services. Yet other parts of our economy, such as agriculture, will suffer in trade terms, and the negative effects will outweigh any positive gain we may make in other sectors. In the long run, our membership of the European project continues to be the most important foundation for the long-term political and economic development of Ireland.

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‘We’re comfortable we can sustain the borrowing’

Ireland’s excellent standing with the international credit community has allowed it to accelerate strategic investments to support and develop its businesses

In May 2020, Ireland rapidly implemented a €2-billion Pandemic Stabilization and Recovery Fund (PSRF) targeted at larger, commercially viable businesses impacted by the COVID crisis.

“Policymakers wanted to make sure there were no medium-sized or large enterprises without the capital support, equity support or whatever part of the capital structure that they needed. We’ve made some very significant investments in Irish companies to help them get through the pandemic,” explains Conor O’Kelly, CEO of the National Treasury Management Agency (NTMA), the body responsible for managing the state’s assets and liabilities that is overseeing PSRF.

“We already had the plumbing in place to react very quickly, as PSRF is a sub-portfolio of our established Ireland Strategic Investment Fund (ISIF). It was easy to pivot, change focus and get money out into the marketplace,” he notes. Set up in 2015, the €8.6-billion ISIF sovereign development fund is an unusual investment vehicle with a unique double bottom line, O’Kelly reveals. “It’s mandated to invest for commercial return and for economic impact. What differentiates our capital from other capital available for good companies is our long-term horizon. Our focus is on key themes such as regional development, climate change, new technology and housing.”

In 2020, ISIF committed €430 million to Irish investments, taking its total commitments to €5 billion. As proof of its success, the fund generated returns of 8.8 percent in 2020 and has made more than €1.7 billion in gains since 2015. On top of this, it has attracted private-sector and third-party co-investments worth another €8.6 billion. These investments cover projects as diverse as a precision engineering company, a whiskey distillery, a state-of-the-art film studio campus, a provider of energy efficiency solutions and a new aircraft hangar for Shannon Airport.

ISIF’s most recent commitment came in March, when it invested €42 million in fintech firm Stripe’s latest round of funding, which puts a valuation of €80 billion on a business founded by two Irish brothers. “This is the start of a partnership with one of the most successful next-generation companies in the world,” according to O’Kelly, who adds that NTMA’s investment will bring over 1,000 new jobs to Ireland and accelerate its technology ecosystem. To encourage more entrepreneurs, ISIF also invests in international venture capital funds and private equity firms, he says. “In exchange for our investment, we



Conor O’Kelly
CEO
National Treasury
Management
Agency



NTMA’s headquarters at Treasury Dock, Dublin

ask them to come here, set up shop, invest and connect with Irish companies. That helps build our ecosystem.”

Among its other activities, NTMA is tasked with borrowing for the exchequer and managing the national debt. The country has been able to sustainably fund PSRF along with the government’s other COVID support measures because it’s in a strong position to borrow: in 2020, the NTMA reached its target of €24 billion with two long-term bonds at negative interest rates. “In the 2008 financial crisis, Ireland put its foot on the brakes. This time, it’s more like it is putting its foot on the accelerator. We’ve had to borrow heavily, as other nations have done, but we’re comfortable we can sustain the borrowing for three reasons: the strong position we were in coming into the crisis, our current interest bill and the position of the European Central Bank,” states O’Kelly.

Between 2014 and today, Irish bonds have gone from being rated as sub-investment grade to AA- by Moody’s, he comments. “We’ve also moved from heavy budget deficits to recording a primary surplus for the second year in a row in 2019, while the average interest rate on Ireland’s debt has fallen from

“We’ve made some very significant investments in Irish companies to help them get through the pandemic.”

Conor O’Kelly, CEO, National Treasury Management Agency

over 4 percent to below 2 percent and it’s going to fall further. That’s a good reflection of our debt sustainability.” In addition, investors are continuing to buy Ireland’s bonds at low yields because of the resilience seen in its economy over the last year. “Partly, that’s because many companies here have accelerated their progression during the pandemic due to changing global behaviors. Ireland’s high exposure to pharma, tech and multinationals has meant that we’ve been very resilient regarding employment and tax revenues,” he says.

The fact that Irish institutions and companies have navigated the changes brought about by COVID, as well as Brexit, is appreciated by investors, he believes. “That track record gives them confidence that we can adapt to whatever the future brings. It’s not a question of will there be another shock, it’s what shape will you be in when it happens. When you’re small like Ireland, you get knocked about by all sorts of things that happen around the world. That makes us want to continually improve, prepare and be ready for the next time. Irish policymakers have implemented that mindset in the country and they deserve a lot of credit for it.”

Intellectual property as a resource

Ireland’s business leaders believe the country is economically and socially richer as a result of its embrace of foreign investment

“Ireland is a frontier economy in a world that is now driven by intangible assets,” claims Danny McCoy, CEO of Ibec, the country’s largest lobby and business representative group.

“We’re experiencing an intellectual-property resource boom. It’s not a traditional natural resource boom but there’s no other way to describe it other than as a boom, because no normal economy could grow by over 100 percent of gross domestic product (GDP) in the short time frame that Ireland’s has.” The country’s openness to the world put it in the perfect position to attract significant amounts of foreign direct investment (FDI), particularly from multinationals. That phenomenon has had a dramatic impact and turned the country into a globalized hub for intellectual property, he says. “We showed the right characteristics to reap the benefits of the way the world had changed.”

McCoy is dismissive of suggestions that FDI may boost GDP but brings few other benefits. “There are people that still talk about Ireland having a



The Daniel O’Connell monument in Dublin

gap between what is produced here and what is owned here. That gap isn’t significant now—you don’t see an explosive difference between GDP and gross national product.”

In fact, some investors like Medtronic, Ingersoll Rand and Allergan are no longer foreign, having changed nationality to become Irish, he notes. “When their profits are repatriated, they go to Ireland, not from Ireland. The FDI business model has been such an effective generator of resources and cash in recent years and that has also ended up in the pockets of Irish households, as we’ve seen a huge surge in their income growth, way ahead of all other European Union (EU) member states.”

Thanks to its membership of the EU and its business model, the country has transformed itself in just a couple of generations, he states. “Ireland has become a wealthy society and, for the first time in our history, our destiny is in our own hands. We are nouveau riche, but we have the capacity, the infrastructure and the wealth to make it sustainable.”



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Tertiary education: Ireland sets the bar higher

A new ministry prioritizes education in combination with research, innovation and science to power Ireland’s economy and society forward

“Ireland’s higher education system reflects the values that we have as a country: outward looking, inclusive and collaborative,” states Minister for Further and Higher Education, Research, Innovation and Science Simon Harris.

It’s also one of the world’s best education environments, with all seven of its public universities ranking in the world’s top 700. “80 percent of graduates are in employment nine months after graduating and the quality of their education receives an 86 percent satisfaction rating from employers,” notes Michael Horgan, chairman of the Higher Education Authority, which leads the strategic development of tertiary education and research.

“While I’m very proud of our system, we need to continue to reform it,” asserts Harris. “The establishment of the Ministry for Further and Higher Education, Research, Innovation and Science in 2020 was an important statement of intent from the government as to the focus we want to place on higher



Ireland’s seven universities offer a wide range of degree programs

education. This is a department of the future.” A significant recent change in Ireland’s higher education landscape has been the launch of technological universities (TUs), a type of institution that’s adding diversity and an applied industrial focus to the sector. Formed by combining the forces of successful institutes, the first to be created—TU Dublin and Munster TU—have had a big impact in a remarkably short period of time.

“We are also looking at making sure that there are more education pathways and we need to change the conversation about lifelong learning: your education journey doesn’t end when you leave school or college, it’s something we need to dip in and out of. Our job is to break those silos and that’s why we are investing more than ever before in education,” claims the minister. For example, places available in further education were ramped up by 245,000 in 2020 and the country is rolling out upskilling programs such as Skills Connect, he comments. “That targets people who have lost jobs in sectors badly hit by COVID and matches them up with training, mentorship and support for the jobs of the future.” In addition, the government wants to almost double Irish apprenticeship numbers and is now financially incentivizing employers to hire them.

A major concern to Harris is that no citizen is left behind. “In Ireland,



Simon Harris
Minister for Further and Higher Education, Research, Innovation and Science

“There is a once-in-a-generation opportunity to get people excited about science and research, and that requires government investment.”
Simon Harris, Minister for Further and Higher Education, Research, Innovation and Science

roughly 16 percent of adults have literacy challenges, around 25 percent have numeracy challenges and about 50 percent have digital-skills challenges. So, I’m developing our first adult literacy, numeracy and digital skills strategy across all government departments and agencies.” His ministry has also increased funding for Ireland’s renowned research and innovation ecosystem, he says. “Research, innovation and science were important in our last economic recovery and will be even more important now, because the world isn’t going back to normal; instead, we should be focused on how to get to a better normal. Science and research are often seen as remote and abstract—last year they became very real. There is a once-in-a-generation opportunity to get people excited about science and research, and that requires government investment.”

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Brexit is an opportunity for Irish higher education

Ireland is now the premier EU destination for students seeking high-quality education in English



Over one in ten students in Ireland are from overseas

Ireland has the ability to become a global hub for learning, according to its Higher Education Authority, which believes that, the country can attract more international students and researchers post Brexit.

Andrew Deeks, president of University College Dublin (UCD), agrees. “Although we regret the U.K.’s decision to leave the European Union (EU), Brexit is very much an opportunity for Irish higher education.” UCD is ranked within the top 1 percent of higher education institutions worldwide, is one of Europe’s leading research-intensive universities and—although the new TU Dublin may have just overtaken it—it currently rates as Ireland’s biggest university. “We now stand as the largest English-speaking university within the EU, which puts us in a unique position, particularly in terms of Erasmus,” says Deeks. Erasmus is the world’s most successful student mobility scheme, which has given millions of Europeans the opportunity to study in other countries across the bloc since 1987. To the surprise of many, the U.K. chose to opt out of the program when it left the EU. “However, the holy grail of an English-language education is still available in Ireland,” notes Philip Nolan, president of Maynooth University, an institution located just outside Dublin that is number 43 in the Times Higher Education World University Rankings for universities under 50 years old.

Language is not the only advantage of studying in Ireland, claims Deeks. “The quality of the education and of the student experience are right up there with the best.” Irish university research is also world class, he asserts. “At UCD, for example, we’ve increased our research output by more than 30 percent over the past seven years. The U.K. has bought into some strands of the EU’s key

funding program for research and innovation, Horizon Europe, but not all. So we’re in a very good position to take a leadership role in some areas.” The Australian-born president also recommends Ireland as a place to live and work. “It’s a country of opportunity, open, flexible, engaged and it welcomes everyone, including people such as myself from the other side of the world. It’s also small, in three hours from Dublin you can drive anywhere, which makes engagement with the multinationals here very accessible for students.”

Ireland’s universities have extensive international connections as well. At present, over one in ten of their students are from overseas and all universities have impressive networks of international research and education partners. However, cautions Nolan, “Our system’s strength is based on global connectedness but this is quite Anglophone. As a society, membership of the EU has been transformative, it has made us cosmopolitan and world open. Education also needs to recalibrate its orientation to become more Eurocentric.”

Minister for Further and Higher Education, Research, Innovation and Science Simon Harris concurs. “I’ve made it clear that I want a significant ramping up of Ireland’s involvement in all international activities. I want us to really deepen our roots across the EU.” On the other hand, he’s keen to stress that the U.K. remains an important partner. “I’ve taken a decision to ensure students from Northern Ireland can continue to access Erasmus by registering in Irish institutions, which is a sign of our commitment that young people in Northern Ireland don’t miss out on opportunities. We want to build a new and deep relationship with Britain and will be looking for every opportunity to collaborate with it.”

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Located on the west coast, Galway has become a magnet for international students that flock to the university's stunning campus

On a visit to Galway on Ireland's west Atlantic coast in 1963, John F. Kennedy highlighted its closeness to the U.S., remarking that, if the weather and your eyesight were good enough, you could see Boston from the city's bay.

Voted one of the world's friendliest, the cosmopolitan city makes an ideal gateway between Europe and the U.S. for businesses and students, asserts Ciarán Ó hÓgartaigh, president of the National University of Ireland (NUI) Galway. "The city is at the center of things as, geographically and mentally, we are open to the world. At the same time, there is a sense of being at the edge here. Galway is different to anywhere else." This unique position has shaped the research-led institution that is recognized as being among the top 1 percent of universities in the QS World University Rankings and currently boasts 19,000 students studying a wide range of programs in over 60 disciplines. "It brings us a singular advantage in perspective. NUI Galway values respect, openness, excellence and sustainability, and offers an interesting mix of being locally focused with a very strong international profile in our areas of expertise. Being on the edge gives us a sense of curiosity to push the envelope and think about what's over the horizon, while being in the center means we are very much part of the world; we are integrated not remote," Ó hÓgartaigh states.

"Being on the edge gives us a sense of curiosity to push the envelope and think about what's over the horizon."

Ciarán Ó hÓgartaigh, President
National University of Ireland Galway

The university's commitment to its region was confirmed in 2020, when it announced development plans for a substantial new innovation district in Galway. As well as providing extensive facilities for research and education, the regeneration project will enrich the city with additional sports and cultural spaces. "Galway is very well known for its arts and creativity. Being close to that creates a special vibrancy to the education here that is unique," he explains.

NUI Galway also has distinct strengths in its research programs that are focused on five main themes: enhancing public policy, creativity and innovation, the use of technology and analytics for understanding the world, human health and wellbeing, and sustaining people and talent. Notably, it is renowned as a center of excellence in medtech, with the university being at the heart of a major hub for the sector in Galway that includes both local entrepreneurs and international companies, Ó hÓgartaigh notes. "We have built good industrial and clinical connections that proved to be very strong in developing responses to COVID-19. For example, early on in the pandemic, we had colleagues that



NUI Galway campus extends over 105 hectares along the River Corrib

quickly found flexibility in the use of ventilators, which meant you could use them for more than one patient. That was a key breakthrough."

NUI Galway's global role in advancing medical understanding of COVID-19 can also be seen in the work of its spinout Aquila Bioscience's on infection control and the university's leadership of a €10-million European research project on managing pandemics. "We also understood that COVID isn't just a medical emergency, it's a social one as well. As the crisis evolved, other research issues became important, such as reimagining humanity, social science, broader perspectives and finding solutions in more than one discipline," claims Ó hÓgartaigh. Marine and environmental sustainability are further research specialties of the university. "Because of our location, we have unique insights to offer that are informed, for instance, by our Atmospheric Research Station at Mace Head on the very western edge of Europe, an unrivalled location from which to measure air quality coming in from and going out onto the Atlantic."

The university has created a powerful network of global collaborators for its research, as well as its educational programs in areas like analytics, medicine and business, he asserts. "Internationalization is crucial to the university. If we are to expand in quality, almost like a company, we need to do so through international markets. Our students need that international perspective too."

This openness to the world is reflected in the diversity of nationalities that make up NUI Galway's student body. "We appeal to international students because we are expert at some things, including our five research focuses," continues Ó hÓgartaigh. "Galway also has its own particular view of the world and the location is great. It's not just about student recruitment, but the student experience. That needs to be excellent and it's something we have invested in heavily. Even during COVID-19, we have attracted a very strong population of international students, which is a benchmark of our success."

2021's Brexit implementation will further boost NUI Galway's internationalization, he believes. "As people start to realize what Brexit actually looks like, more international institutions are contacting us about collaborations in various areas. Our connections to European research funding also make us enticing to international faculty and we have actually recruited a number of leading people out of the U.K. recently. Additionally, the U.K.'s withdrawal from Europe's Erasmus exchange program will have a potential impact—Ireland is now the only English-speaking country in the European Union, bar Malta, which makes Galway more attractive than ever for foreign students."



Ciarán Ó hÓgartaigh
President
National University of Ireland Galway

Technological universities: A critical addition to the education mix

Ireland's new class of universities are bringing innovative, industry-focused diversity to higher education

According to Minister for Further and Higher Education, Research, Innovation and Science Simon Harris, "Higher education is changing in Ireland and our technological university (TU) agenda is one of the most exciting parts of the reform."

For decades, Ireland's institutes of technology have been providing invaluable vocational and professional skills and qualifications to the population. In 2018, the government legislated for the best of these to combine resources and form regional TUs, novel institutions that blend the advantages of the institutes with those of traditional universities, such as greater emphasis on research and internationalization.

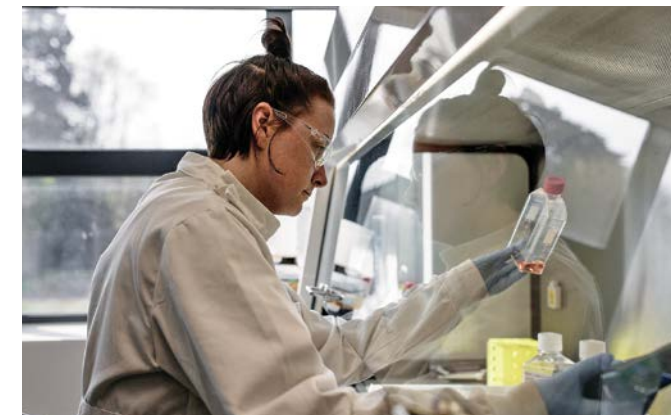
Of the 11 TUs planned, two have been set up so far. The first of these was TU Dublin, a partnership between some of the city's most renowned educators: Dublin Institute of Technology, Institute of Technology Blanchardstown and Institute of Technology Tallaght. With the three already having a decade-long history of close collaboration, TU Dublin hit the ground running when it opened its doors in January 2019. "It's not only the largest TU in Ireland, it's arguably the biggest university in the country overall and the largest English-speaking university in the European Union, courtesy of Brexit. We have nearly 30,000 students across our three campuses, 6,000 of them international, while our education portfolio covers everything from apprenticeships to PhDs," states its president, David FitzPatrick.

The perceived strengths of Ireland's TUs are deep historical links with local businesses, plus industry-focused approaches to education and research. This is particularly true of TU Dublin, notes FitzPatrick. "Pivotal to our remit and mode of operation is industry and business engagement. We cover the whole of the Dublin greater region and collaborate across a wide range of sectors. Critically, each of our campuses is closely located with centers of industry or business activity, including financial services, information and communication technologies, biomedical sciences and pharmaceuticals."

The university's heritage is evident in the practice- and skills-based education provided by its broad curricular models, says FitzPatrick. "Our research activity is also very closely linked to industry, with many of our research projects being led and informed by industrial partners." TU Dublin's expertise in applied research has resulted in a significant number of its projects becoming commercial ventures, he reveals. "We have an excellent track record in Ireland's



David FitzPatrick
President
TU Dublin



TU Dublin excels in research that can be commercialized

innovation space, with among the highest output levels of high-potential start-ups and spinouts, having probably delivered over 400 new businesses over the years. That testifies to our engagement in entrepreneurship and innovation."

As well as contributing to Dublin's economic development, the institution is addressing its social needs. "We are transforming the agenda by designing a university that delivers on equality of access and more agile, flexible education," comments registrar and deputy president, Mary Meaney. "TU Dublin wants to provide diverse pathways for people to engage in higher education. For example, the phrase "lifelong learning" is overused, but nowhere has really delivered on it properly. We have the chance to do that, as we can gear ourselves up with that perspective in mind from the start," adds FitzPatrick.

TU Dublin is also leveraging its new status to build its international connections, he says. "We have a strong record of collaboration, for instance we are a member of the European University of Technology Alliance, are engaged with European mobility initiatives for students and staff, and have been co-de-

"We have an excellent track record in Ireland's innovation space, with among the highest output levels of high-potential startups and spinouts."

David FitzPatrick, President, TU Dublin

veloping engineering programs with China's Nanjing Technical University for over 10 years. But an advantage of becoming a university is that the label carries weight and opens up opportunities for us in the international marketplace."

As a symbol of TU Dublin's ambitions, it is investing over €500 million in a new, state-of-the-art city campus in the center of the capital. "This is the largest investment ever in Irish higher education. We will remain a three-campus university, but we are bringing our city-center buildings into one space so that our faculties of business, science, engineering, creative and performing arts and humanities can better interact, which will drive our research and education forward," he explains. The development is set to regenerate and revitalize the area around TU Dublin's Grangegorman campus, which was previously the site of a jail and mental hospital, FitzPatrick reveals. "It's a dramatic cultural change for how people view the area. The new model is one of education, research and advancement rather than oppression." This is reflective of TU Dublin's overall goals, he says. "Our tagline is creating a better world together. We want people to come into our community, learn, develop, research and then go out and have an impact in the wider world."

Universities connected with enterprises

Dublin City University utilizes its multidisciplinary and entrepreneurial mindset to transform lives and society

A major strength of the Irish higher-education system is its ability to regularly reinvent itself to ensure the employability of the country's workforce.

A prime illustration came in 1980, when Ireland's response to high unemployment was to launch Dublin City University (DCU). "It was established to deliver applied, relevant education and research that is aligned with the needs of industry in the region. Very quickly, it became defined as Ireland's university of enterprise and, today, it ranks number one in Ireland and 19th in the global QS Graduate Employability Rankings," states Daire Keogh, DCU's president.

The Sunday Times University of the Year for 2021 nurtures 18,500 students from 55 countries and is known for delivering real and positive impact, putting people first and adapting to changing demands, he adds. "DCU is the antithesis of an ivory tower: we are tuned in to the needs of people, the economy and society. We have retained the agility of a young university; remaining



DCU Alpha innovation campus, host to Ireland's largest cluster of Internet of Things, sensor tech and data analytics companies

in perpetual startup mode, purposefully different, focused and excellent. DCU has an unequalled multidisciplinary and entrepreneurial mindset, and we constantly harness the resources of our five faculties to expand our exceptional learning environment." Those resources cover science and health, engineering and computing, humanities and social sciences, a business school and Ireland's only university faculty of education.

DCU's close industrial engagement is evident in its continually evolving programs, which also highlight a commitment to innovation, he notes. "For instance, we've just launched a DCU Futures program to co-create Education 4.0 with industry partners." The institution also consistently tops the Irish university sector in terms of intellectual property licenses and contributes to the national innovation ecosystem through DCU Invent, its commercialization and industry interface unit. "The flagship of our endeavors is the DCU Alpha campus," Keogh asserts. "It has attracted a community of innovative indigenous and multinational companies that are developing groundbreaking products in connected health, clean energy and the Internet of Things in partnership with the university's researchers."



Daire Keogh
President
Dublin City
University

"DCU is the antithesis of an ivory tower: we are tuned in to the needs of people, the economy and society."

Daire Keogh, President, Dublin City University

Reflecting its mission to transform lives and society, sustainability is another core focus across the university's activities. "A good example is the DCU Water Institute, a cross-faculty research and education initiative that brings together academia, industry, agency and society. Another is our BSc in Global Challenges, a unique course that integrates social science and technology," he says. From its foundation, DCU has been a place-based university with a global perspective and it's well connected internationally. In partnership with the U.S.'s Arizona State University, it has established the Biodesign Institute Europe at DCU for collaborative applied research. It's also a member of the European Consortium of Innovative Universities, he enthuses. "This ambitious alliance will enable learners to combine studies in several countries. It's focused primarily on life-long learning and real-life challenges, with the first three-year phase being centered on sustainable cities and communities."

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A perpetual adjustment to labor market needs

Skilling, reskilling and upskilling the country’s businesses to keep them agile, equipped and ready for new ways of working is Skillnet Ireland’s mission

Skillnet Ireland is the business support agency mandated to increase competitiveness, productivity and innovation in Irish businesses through workforce development. How do you address those tasks?

People are Ireland’s greatest asset. But continuous investment in keeping our workforce skilled and agile is vital. Technology, new employment models, climate change and global competition are demanding new ways of working and new skills—in Ireland, we need to keep a continuous focus on this.

We use a specialized, enterprise-led approach to talent and people development. Skillnet Ireland operates at the intersection of government, the enterprise sector and the education system. From there, we can see what government wants, what businesses need, and what the education and training system can deliver. We work directly alongside businesses and in collaboration with Ireland’s vibrant enterprise sector, which is well organized into trade associations, industry groups and chambers of commerce. We help them identify the trends shaping their industries and figure out what that means in terms of the jobs of today and the future.

We’ve developed 70 Skillnet Business Networks throughout the country—each representing a specific industry, region or sector—with which we deliver business supports including upskilling and staff-development solutions that are closely aligned to their needs.

Skillnet Ireland is also focused on developing programs to help businesses navigate the macro trends that are shaping the landscape of business, such as climate action, innovation and digitalization. These are innovative programs that are developed by industry, are subsidized by government and which are having a significant impact in terms of staff engagement, staff development and, of course, business success.

Can you illustrate the impact of Skillnet Ireland with some examples?

Skillnet Ireland has been recognized by the European Commission and the Organisation for Economic Co-operation and Development as a best practice example of workforce development. In 2020, we supported 19,000 businesses—85 percent of which were small and medium-sized enterprises (SMEs) and micro-firms—and 70,000 workers. We delivered over 8,500 programs spanning industry and professional certified courses, management development programs, specialized upskilling, new industry and academia collaborations, and many innovation and research-based projects.

One flagship project is our Future Dynamics initiative, which facilitates new programs in partnership with industry, academic institutions and other stakeholders. We have developed many innovative programs through this



Paul Healy, Chief Executive, Skillnet Ireland

initiative across a wide range of areas including aviation leasing, sustainable finance, artificial intelligence (AI), fintech, digitalization of manufacturing, data science, animation, organic farming, connected health and wind energy. All address business opportunities and offer excellent career development pathways.

What are the priorities of Skillnet Ireland’s new Transforming Business Through Talent 2021-2025 strategy?

Our strategy has three focuses: digitalization, supporting SMEs and climate action. When it comes to digitalization, we collaborate widely with industry partners, IDA Ireland and major technology companies in Ireland. As a result, we have carved out a niche in supplying the unrelenting demand for highly specialized technology skills. We’ve developed strong positions in AI, blockchain, data science, fintech, cybersecurity and boosting female participation in tech, for example. We also look at digitalization for smaller firms and are extensively involved in supporting them on their digital journey. The climate emergency will impact almost every business and job over the coming decades and Skillnet Ireland has already built strong positions in sustainable finance, renewable energy, sustainable construction and clean water. In 2021 and 2022, we intend to increase our focus on sustainable practices in SMEs and on retrofit.

“We have carved out a niche in supplying the unrelenting demand for highly specialized technology skills.”

Paul Healy, Chief Executive, Skillnet Ireland

What has been Skillnet Ireland’s response to the COVID-19 crisis?

We have been determined to play the fullest role in the national response by leveraging our deep roots within Ireland’s SMEs and service sectors. We rapidly developed our Skills Connect initiative, through which we have secured the commitment of over 400 companies, including some of the largest in Ireland, to host work placements and on-the-job upskilling for jobseekers. Skills Connect is now empowering thousands of impacted workers from customer-facing service sectors to secure new job opportunities in areas offering much greater employment potential, such as technology, agri-food, medtech, logistics, healthcare, energy efficiency, law, cybersecurity and customer experience. The COVID-19 crisis also presents us with an opportunity to reset the SME sector, to build new models, to reengineer existing ones and to boost resilience in our small firms in particular.

The apprenticeship revolution is on

Further education and training prioritizes skill building, inclusion and facilitating new learning pathways

Two-thirds of Irish school leavers go straight into tertiary education. “That’s impressive but it’s not sustainable and doesn’t fit with the skills that we are going to need in the future. We have to persuade a bigger proportion of them to go into further education, training (FET) and apprenticeships,” claims Andrew Brownlee, CEO of SOLAS.

In 2013, the government set up SOLAS to do just that. With a budget of around €800 million a year, this agency works in close collaboration with the country’s regional Education and Training Boards to provide over 25,000 FET courses and programs that are currently supporting about 200,000 learners. A transformation in Irish apprenticeship provision is a key example of how the agency has catalyzed FET, states Brownlee. “We’ve always had a strong system for traditional trades, but we’ve expanded the provision to offer 58 different apprenticeships, covering areas like sales, software development, pharmaceuticals, engineering, financial services and hospitality. There are now almost 20,000 apprentices in Ireland, the number has doubled in five years.”

SOLAS’s conviction is that FET is for everyone in every Irish community, he stresses. “It doesn’t matter what your level of education is, or your stage of life or career. We will give you a credible pathway to take you as far as you want to go.”

While both learners and employers are highly satisfied with its accomplishments, SOLAS has more ambitious goals and recently implemented a strategy to achieve them, Future FET: Transforming Learning 2020-2024, which is based on three pillars. The first concerns building the skills that Ireland needs to drive the economy. The second is

a strong focus on inclusion, with the development of basic skills being linked to further learning. “Thirdly, we need to facilitate more accessible and relevant FET pathways. That means, for instance, growing our apprenticeship schemes and more modular offerings, so people can dip in and out of FET throughout their lives to continually upskill. That’s essential for a sustainable economy.”

One example of SOLAS’s targeted approach to upskilling and reskilling is its provision of free or subsidized FET courses that are tailored to employees of individual industries. Another is its online e-college that offers free and open access to digital-skills courses, while the agency’s latest initiative is Skills to Compete. Aimed at those who have lost jobs to the pandemic in areas like retail and hospitality, this will retrain them for careers in other, technology-driven sectors. Brownlee believes that Ireland’s strong higher-education system has played a significant role in attracting inward investment. “Now we can also show investors that we respond effectively to the evolving skills needs of the future world of work.”



Andrew Brownlee
CEO
SOLAS

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Innovation and research pushed up as national priorities

Ireland steps up its game and announces an ambitious new research strategy to boost capacities

The Irish government is deeply committed to the development of research, according to Taoiseach Micheál Martin. “Investment in science isn’t an option for Ireland, it’s absolutely essential.”

At the center of the country’s innovation ecosystem is Science Foundation Ireland (SFI), which oversees 23 percent of government spending on research and development (R&D). “I see SFI as the foundation for the future. We fund absolutely cutting-edge research and talent that makes a difference to our society and economy,” says its director general, Mark Ferguson. The extensive network of talent that SFI has nurtured proved vital to the country’s response to COVID-19. However, cautions deputy director general Ciarán Seoighe, “You can’t turn on epidemiologists, immunologists and other capabilities overnight. You have to build them in your system over many years. COVID isn’t the only challenge we face and we need to ensure we have the capabilities to address other pressing issues like climate change and the impact of artificial intelligence (AI) on jobs, as well as capitalize on the opportunities presented by emerging technologies.” At about 1.1 percent of gross domestic product (GDP), Ireland currently spends less than others on R&D, but it is the most efficient R&D country in Europe, Ferguson stresses. “Since 2008, we’ve focused on efficiency and extracting maximum innovation output from our investment. That was the right strategy, but efficiency only takes you so far. We need to grow public and private investment, which is about talent, collaborative programs, spinning out disruptive companies, funding fundamental research and putting a bit more

“I see SFI as the foundation for the future. We fund absolutely cutting-edge research and talent that makes a difference.”

Mark Ferguson, Director General, Science Foundation Ireland

fuel in the tank.” In March, SFI launched an ambitious new five-year strategy: Shaping Our Future. This aims to help the country take its R&D spend to 2.5 percent of GDP by 2025, a goal shared by the government, which has boosted the agency’s €200 million annual budget by €10.8 million this year. “Ireland wants to be a global leader in research and innovation. It will invest and collaborate nationally and internationally with researchers, funders and companies to achieve that,” Ferguson asserts.

SFI’s strategy has two overriding objectives: delivering today and preparing for tomorrow. To deliver tangible benefits today, the agency wants to grow and evolve the research and talent it supports. In terms of research, SFI funds both individual projects and a network of hubs that specialize in particular domains. “Our SFI Research Centres pull together the excellence that is distributed across our universities. We have 16 and our ambition is to increase that to around 20.



SFI Research Centre for Smart Manufacturing, University of Limerick, Ireland

SFI allocates about €600 million over six years to them that is matched by industry and European Union funding, which we have been very successful in securing,” explains Ferguson.

Those centers are already powerful forces in many areas that will drive Ireland’s future economy, he notes. “We are leaders in a number of sectors. For example, the APC Microbiome Ireland SFI Research Centre is number one in the world for citations on gut microbe interactions.” Other strengths include big data, AI, agritech, advanced manufacturing, medtech, neuroscience, therapeutics, renewable energy and the bioeconomy. Ferguson thinks the opportunities in these sectors are enormous for Ireland. “There’s a huge wave of discovery, rapid application and innovative businesses being formed in information and communication technologies, life sciences, the green revolution and AI. So SFI’s programs must be leading edge, focused and encourage both fundamental discovery and commercial application.”

SFI has always recognized the need to foster talent at all levels and it supports Irish researchers from PhD students upwards. “Now we want to ensure there are mechanisms for people to progress easily into either industry, their own companies or academia. We also want to attract more high-potential international students and senior academics into Ireland. Stars matter, as they act like catalytic multipliers to improve our research ecosystem,” he notes.

The second part of SFI’s new strategy, preparing for tomorrow, involves guaranteeing that this ecosystem is joined up, cohesive and embedded in the fabric of society, he says. “The community has shown great cohesiveness and collaboration during the pandemic. I think we can build on this approach to provide solutions to many other challenges. Collaboration is core to what we do and most of the exciting research at the moment is collaborative, with the top talent in academia and industry driving new discovery together. We are also planning on intensifying our international collaborations.” Additionally, states Seoighe: “We want to be producing really skilled individuals. Our goal is to provide the world’s most sought after PhDs and we are changing our PhD programs to include an industry connection. Then finally, we want to be doing more horizon scanning to get first-mover advantage on new technologies and emerging fields. Ireland’s research ecosystem is highly interconnected and agile and we will continue to leverage that tactical advantage.”



Mark Ferguson
Director General
Science Foundation
Ireland



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Our ocean is our greatest national resource

To protect and develop its marine environment and economy, Ireland has become a leader in ocean knowledge, research and innovation

At 880,000 square kilometers, Ireland’s marine territories are ten times the size of its landmass and they play a rich role in its economy through sectors such as fisheries, aquaculture, ports and shipping, technology, tourism and green energy.

“Our ocean is our greatest national resource. Recent estimates suggest the overall turnover of Ireland’s ocean economy in 2019 was €5.8 billion,” states Michael Gillooly, joint acting CEO of the Irish Marine Institute. This state agency is responsible for the country’s renowned marine research, technology development and innovation (RTDI), as well as promoting ocean-based economic development, creating employment and protecting the precious marine environment, he says. “Our aim is to be a global leader in ocean knowledge, and to empower Ireland and its people to safeguard and harness our ocean wealth.”

Since its establishment in 1991, the institute has led and collaborated on many national, European Union (EU) and Atlantic-based RTDI projects. Gillooly explains why it’s such a sought-after partner for international research centers, universities, industry players and public bodies: “We have an obvious geographical advantage as we are on the western fringe of the EU but central to its operation and we are on the Atlantic. This provides the opportunity of using Ireland as a locus for RTDI. Ireland is often described as the ideal place to innovate, as it is small enough to test, but large enough to demonstrate.”

Other advantages include the country’s significant capacities in cutting-edge digital technologies across private and public sectors, he adds. “Ireland is a key global player in marine data, science and modeling, and is well positioned to apply new technologies, practices and tools to a rapidly expanding wealth of data to accelerate capabilities for marine science, innovation and management.” The institute can also call on substantial research assets. It has a workforce of about 200, which is bolstered by numerous external service providers, research and post-graduate students. “We also have many laboratories, two marine research vessels that are among the most intensively used of their type in the world, a new state-of-the-art multi-purpose research vessel under construction, a remotely operated vehicle and a very broad range of observing infrastructures including weather buoys, a cabled observatory in Galway Bay and sea-level gauges,” Gillooly points out.

The Marine Institute is engaged in research and data gathering across a broad variety of areas. Among its biggest current national projects is INFO-MAR, the first digital mapping of the Irish marine territories, he reveals. “This is one of the largest civilian seabed-mapping programs in the world. The am-



Michael Gillooly
Joint Acting CEO
Marine Institute



The Marine Institute utilizes substantial research assets

bition is to have Ireland’s entire seabed mapped by 2026 because, once you’ve mapped your territory, then you can understand and sustainably manage the resources that are there.”

Valued at €1.1 billion in 2020, Ireland’s seafood resources are the bedrock of its ocean economy, with the country’s waters being some of the most productive fishing grounds in Europe. “However, we are not just focused on fish stocks but on the whole ecosystem, and the environment in which they live in order to support development of ecosystem-based fisheries management,” Gillooly stresses. “Sustainability is ingrained into the Marine Institute. We have a wider role in the national marine biodiversity program under the European Maritime and Fisheries Fund and are Ireland’s national coordinator of the EU Data Collection Framework. In recent years, the Marine Institute’s Research Funding Program, together with partners such as Science Foundation Ireland, has provided €5 million in funding for research on biodiversity, ecosystems and food webs, and over €8 million for projects in the area of bioresources.”

The shipping and maritime transport sector is another important contributor to the economy: it generates €2.3 billion a year in turnover according to the latest figures, employs over 5,000 people and 90 percent of Irish trade is moved through its sea ports. “The institute’s Irish Maritime Development Office supports the development of this sector and provides economic and technical advice to government on shipping. It’s been very busy for the last five

“Ireland is a key global player in marine data, science and modeling, and is well positioned to apply new technologies, practices and tools.”

Michael Gillooly, Joint Acting CEO, Marine Institute

years providing robust analysis, data and projections in preparation for Brexit. Over the last 12 months or so, 24 new routes have been established between Ireland and continental Europe, a trend that will continue, with many port projects in the pipeline that are valued in excess of €1.5 billion,” Gillooly says.

As Ireland recovers from COVID-19 and Brexit, he believes that the main challenges that the Marine Institute needs to address are the impacts of climate change, including warming seas, acidification, loss of biodiversity, weather and storm surges. “We want to expand our research portfolio and further develop the ‘blue’ agenda by focusing on areas such as the circular economy, blue energy, blue growth and building marine components from the European Green Deal and other programs. Through all that we do, we aim to generate greater awareness of the value of our ocean and to inspire a new generation of ocean champions.”

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COVID redefined universities' role

RCSI University of Medicine and Health Sciences supports national and international responses to public-health crises

“This pandemic has shown us the important contribution that universities worldwide can make to societies,” asserts Cathal Kelly, CEO of RCSI University of Medicine and Health Sciences.

All Irish universities have mobilized resources in response to COVID, but RCSI's activities have proved particularly critical in helping to tackle the crisis. Founded in 1784 as the Royal College of Surgeons in Ireland (RCSI), the world-class university is in a unique institution, Kelly says. “We are completely focused on health education, research and outreach to make an impact: RCSI has achieved Ireland's highest position in the Times Higher Education Impact Rankings 2021, coming joint second in the world for UNSDG 3 good health and wellbeing. We are also Ireland's only independent not-for-profit university, we combine being a university with having a significant postgraduate training body and we are the most internationally focused of Ireland's universities.”

Headquartered in central Dublin, RCSI also runs two medical schools in Malaysia, a university in Bahrain, a training institute in Dubai and it collaborates with China's Soochow University. On top of this, and in partnership with the Irish government, RCSI is the largest Western supporter of surgical training in East, Central and Southern Africa. “In March, we consolidated our commitment to global health and equity of access to surgery with the launch

“RCSI has achieved Ireland's highest position in the Times Higher Education Impact Rankings 2021, coming joint second in the world for UNSDG 3 good health and wellbeing.”

Cathal Kelly, CEO
RCSI University of Medicine and Health Sciences

of the RCSI Institute of Global Surgery. As a result of the pandemic, we see increased pressures on under-resourced health services in developing countries and hope our new institute will be a leader in the response to this,” he states.

In Dublin, RCSI offers education through a wide variety of schools and postgraduate faculties. During the crisis, many of its academics have become household names, Kelly reveals. “They've played a leading, trusted role in informing the public through the media and supporting government.” Over the last year, RCSI has also accelerated its teaching programs, so that its graduates could contribute to the health service's frontline efforts more quickly. Some of those programs are extremely innovative, he notes. “For example, we were the first to introduce graduate-entry medicine and nurse prescribing to Ireland. The world faces a public-health crisis with an aging population, more complex illnesses, more expensive treatment and limited resources. We think every health professional group needs to extend its scope of practice. We'd like to introduce new professions as well, which is why we have established a Foundation School of Physician Associates.”



RCSI focuses on healthcare research that translates into medical innovation

The university has also recently launched the RCSI Centre for Positive Psychology and Health. “COVID has taken its toll on mental health. The center is focused on building resilience and wellbeing, using the tenet of lifestyle medicine,” he explains. Overall, Kelly believes it's time for a fundamental rethink about healthcare education. “We need to equip professionals with the skills to absorb and understand new knowledge that has been created exponentially, to collaborate with their patients and their own life skills.” This innovative philosophy led the university to appoint Ireland's first chair in simulation to head RCSI SIM, a interdisciplinary center of simulation education and research at its Dublin campus, he comments. “It contains many elements of a real hospital setting and students can develop skills before engaging with patients. The state-of-the-art facilities embody our commitment to healthcare simulation and preparing learners across professions and training levels to provide outstanding and compassionate team-based patient care.”

Like its education, RCSI's research is innovative and influential, with its field-weighted citation impact being the highest in Ireland and twice the world average. According to Kelly, “We focus on research that translates medical innovations into new diagnostics and treatments. Our expertise is in bioengineering, neurological and psychiatric disorders, population health, vascular disease and oncology, particularly breast cancer. It has very high impact and involves almost 3,000 international collaborations.” Over the last 12 months, RCSI's researchers have supported Dublin's hospital system by, for example, setting up PCR testing and providing buffers. They have also made vital discoveries to advance global understanding of COVID-19, including developing the Dublin-Boston score to predict which patients will develop severe illness and identifying that the virus causes inflammation of the vascular system. One reason that RCSI is a magnet for research and educational talent is the quality of its campus. Having invested over €100 million in its facilities in the last decade, it has recently received European Investment Bank funding for a major new academic building in central Dublin. “My aspiration for RCSI is for it to continue supporting Ireland's soft-power role internationally, as well as being a valued Irish brand that attracts international students and investment around healthcare technology and research,” concludes Kelly.



Cathal Kelly
CEO, RCSI University of Medicine and Health Sciences

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Cork: A dynamic economic powerhouse

As Ireland's second-biggest city implements ambitious development plans, it continues to get the balance right between attractive business environment and quality of life

Nestled in an idyllic location on Ireland's south coast, the Financial Times ranked Cork fifth in Europe for economic potential in its 2020 Tech Cities of the Future list.

The city has come a long way since it was razed by British forces during the Irish War of Independence 100 years ago, says Lord Mayor Joe Kavanagh. "Our economy was burnt to the ground but, today, Cork is going from strength to strength. In fact, many now consider it to be the real capital of Ireland." That's certainly the case for a lot of multinationals, with the city and its surrounding region having a track record of attracting investors, states Conor Healy, CEO of Cork Chamber of Commerce. "In 2020, Apple celebrated its 40th anniversary of operations here. Similarly, Pfizer came in 1969, which led



Cork's population could grow 50 percent to 350,000 by 2040

to most large U.S. pharma companies investing in the region. And we continue to see new investments across those core sectors."

He explains why companies are drawn to the city: "Cork has got the balance right between attractive business environment and quality of life. Investors require a strong talent pool and skilled workforce, and we produce graduates of the highest level at University College Cork and Munster TU. It's also a cost-competitive, very livable city that's a thriving location for arts and culture, and which is focused on sustainability as a platform for its future development." Cork is accessible as well, boasting Ireland's second-biggest airport and seaport, he adds. "Our connectivity makes us an easy location. We're positioned as the access point for U.S. companies moving into European and global marketplaces." That connectivity is growing. Last year, a weekly direct maritime freight service to the U.S.'s East Coast started. "It's been extremely successful and is full most weeks," reveals Eoin McGettigan, CEO of the Port of Cork, who notes that the modern deepwater facility in the world's second-largest natural harbor is also seeing more traffic to mainland Europe as a result of Brexit.



Conor Healy
CEO, Cork Chamber of Commerce

"Cork will be the fastest-growing city region in the country. That will involve a lot of government investment across a range of projects."

Conor Healy, CEO, Cork Chamber of Commerce

The port's traffic is likely to increase substantially further in the next 20 years as the government targets a dramatic rise in Cork's population and economy, while making it an even better place to work, live, visit and invest in. "Our national planning framework has specified Cork will be the fastest-growing city region in the country. That will involve a lot of government investment across a range of projects," Healy explains. In March, the Taoiseach announced a €353-million public investment in just one of those projects: Cork City Docklands, a regeneration scheme over 146 hectares that will create thousands of homes, offices and transport infrastructure, plus retail, leisure, cultural and social facilities. According to Kavanagh: "Cork is poised to be a key driver of Ireland's economic growth to 2040. There are fantastic days ahead of us."

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UCC is Ireland's leading university in the area of sustainability

Where the best and brightest talent converge

Cork leans on its research-intensive, collaborative university to fuel local industries, as John O'Halloran, interim president of UCC, explains

University College Cork (UCC) ranks in the top 2 percent of world universities. How does the prestigious institution contribute to Cork's dynamism and what makes it so attractive to potential students?

UCC is critical to Cork as we are the nexus between society and industry. We are enabling and enriching Cork culturally, but also delivering on its economic agenda. This is a research-intensive university and we connect the local ecosystem of industry, research and development. Our aim is to create an innovation city, supporting it and igniting it with others. In addition, via programs including entrepreneurship training, our graduates have provided employment for over 200 people in 10 years through spinout companies alone. We are also helping to make Cork a clean city: UCC was the world's first Green Flag campus and is ranked in the top-10 globally for sustainability in research and education.

For industries interested in investing in a special place with high-quality education, Cork is a place to be. And for students that want to change the world from a student-led, research-informed and practice-focused university, where sustainability is a core value, this is the place to be. Our retention rate from first to second year stands at 94 percent, the highest in Ireland. Our employability rate for undergraduates is 94 percent within six months of graduating and for postgraduates it is 95 percent. We also give incredibly good value for money.

What are UCC's strengths in research?

According to the Web of Science Group, Ireland has 32 pioneering scientists, 13 of which are at UCC. Innovation is core to what we are doing here, from the curriculum through to postgraduate programs and connecting with industry. Our Alimentary Pharmabiotic Centre is one of the largest of our many research institutes and its research is driving our region's successful food



An extensive research community exists within UCC

industry. Other programs that we are particularly renowned for are photonics in our Tyndall National Institute, Ireland's largest research center, sustainability at our Environmental Research Institute, our Institute for Social Science in the 21st Century and fintech at our Financial Services Innovation Centre. UCC is a digital university. When COVID arrived, we pivoted from being campus-based to digital in six hours and have continued our research right through the pandemic. I cannot emphasize the importance of this research enough, as some of the top experts in vi-ruses and public health are based at our university.



John O'Halloran
Interim President
University College
Cork

How active are you in sustainability and climate action?

We have really thrived in this area, not just because we are a green campus, but because we have an Environmental Research Institute. This year, uniquely, we set up a new program on sustainability for enterprise that was full within a few days. Everybody talks about sustainability but what does it actually mean for your economy, your investment, the decisions we make in everything we do? UCC is agile, responsive and our students are driving our green agenda. Because we are a green country, in name and action, there is a real opportunity for Ireland to continue its leadership role in this area.

"UCC was the world's first Green Flag campus and is ranked in the top-10 globally for sustainability in research and education."

John O'Halloran, Interim President, University College Cork

About 3,000 of UCC's 21,000 students come from over 100 countries outside Ireland. How international is the university overall?

We are a globally oriented university. Close to 30 percent of our staff are non-Irish, while our student body is increasingly international. We offer our staff and students an international experience at UCC. Our academic strategy sets out the ambition that every program will have an international dimension, which could be a placement or overseas visit. The Erasmus European Union student-exchange program is central to our success in this area. We have 700-800 students on Erasmus programs across Europe, with double that number coming into UCC. When it comes to research, that can only happen at a global level and we have networks for this across Europe and the world.

An ambitious climate bill to transform the country

Ireland aims for a paradigm shift in electricity, housing, heating and transport to meet its energy goals

In March, the Irish government approved its Climate Action and Low Carbon Development Bill, a landmark piece of legislation that commits the country to becoming a net-zero greenhouse gas emitter by 2050 at the latest.

“Our intention is to go from laggard to leader in this area. By 2030, we aim for a 50 percent reduction in emissions. That’s a radical ambition,” exclaims Eamon Ryan, Minister for Environment, Climate and Communications, and Transport. Over the last two years, the government has taken many steps that show its intent, he asserts. “For example, we have put a ban on fracking, stopped issuing oil and gas exploration licenses, changed our sovereign investment fund so it will no longer invest in fossil fuels, two peat-fired power stations closed recently and we will stop all coal- and peat-fired power generation within a few years.” Much more needs to be done, however. “To hit our targets, we must deliver 7 percent emission reductions every year between now and 2030,” says William Walsh, CEO of the Sustainable Energy Authority of Ireland (SEAI), the state body that—through advice, funding supports, research and policy analysis—is working with homeowners, businesses, communities and the public sector to lead the country’s energy transition.



Eamon Ryan
Minister for Environment, Climate and Communications, and Transport



William Walsh
CEO
Sustainable Energy Authority of Ireland

a renewable electricity support scheme to provide financial assistance to onshore and offshore wind, solar and other renewable-technology projects. This is auction-based and has gone well so far.”

Transport is the sector producing the highest greenhouse gas emissions in Ireland, he says. “SEAI is focused on promoting electric vehicles (EVs) for private motorists, commercial fleets and light goods. We currently have over 20,000 EVs on our roads, but must increase that very rapidly toward our ambitious target of almost 1 million by 2030.” Heating is another challenge, with Ireland ranking near the bottom in the European Union for its performance in renewable heat.

“Today, this comes mostly from biomass from the wood processing industry, but there is strong growth in heat pumps for ambient energy. SEAI is now administering a scheme for renewable heat that provides a contribution to generation by sustainable source,” Walsh comments.

As well as reducing its usage of fossil fuels, Ireland needs to raise its energy efficiency levels by 32.5 percent to meet the 2030 emissions target. As the CEO says, “That requires a paradigm shift in behaviors, motivations and incentivization for investments across the built environment, heat, electricity and transport.” Probably the biggest project in this area is a €286-million program to upgrade Irish homes to higher standards. “SEAI is the national delivery body for this: we must upgrade 500,000 homes to B2 energy rating by 2030. We have a target of 8,000 for this year and need to ramp that up to 55,000 per annum by 2024. We face several challenges. Firstly, demand generation and unlocking cheap finance for homeowners that are investing in retrofit. Secondly, we have around 3,000 people working in the retrofit industry at present—we need 30,000 trained and skilled people quickly,” he explains.

SEAI also operates programs to drive energy efficiency in businesses that include supporting investments with grants. And it plays a major role in reducing public sector energy usage, which fell 33 percent between 2008 and 2020. “In addition, we are building community engagement: in our rapidly expanding network, there are more than 500 sustainable energy communities, which might include, for example, a local football club, 100 homes, a community hall and supermarket. As always, SEAI’s financial supports are a key enabler of energy efficiency delivery,” Walsh remarks. Minister Ryan hopes that the good collaboration achieved in the pandemic replicates across the bigger climate and biodiversity crisis. “Time is running out,” Walsh stresses. “International cooperation, sharing information and solutions, is vital for our future.”



Offshore wind is a major opportunity for Ireland



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Irish bank takes firm action on climate change

“The sustainability agenda is at the very center of everything we do,” asserts the CEO of Ireland’s largest retail, commercial and corporate bank

Why has Allied Irish Bank (AIB) become one of Ireland’s champions of sustainability?

Our children and grandchildren will never forgive us if we fail to address the challenge of our generation, which is to stop and reverse the terrifying global phenomenon of climate change. AIB wants to play a leading role as a driver of the sustainability agenda, not only in the Irish context but internationally. This isn’t an attempt to gain market share, profile or profits; it’s a move by us to do our part, both as a business and by supporting our customers.



Colin Hunt
CEO
Allied Irish Bank

AIB has launched a €5 billion climate action fund. Can you share some of the bank’s other commitments toward creating a low-carbon economy?

We’re very enthusiastic about working with others on this. That’s why AIB was a founding signatory of the United Nations Environment Programme’s Principles for Responsible Banking. We’ve also introduced green mortgages, have further green products in development and we raised a €1 billion green bond in 2020—the first and only Irish bank to do so to date. The fastest-growing part of our lending book in 2018, 2019 and 2020 was our sustainable lending book, in terms of energy, climate action and infrastructure, and we want green lending to account for 70 percent of new lending by 2030.

AIB also has a net-zero commitment to reach carbon neutrality by 2030. Not only are we reducing our own carbon footprint, but we expect the people that work with us to do the same. We’re engaged with the entirety of our third-party supplier network on this and have changed our procurement codes to introduce sustainability as a key measure. There’s more to be done and there’s no question of us resting on our laurels. If anything, we’re going to increase the pace at which we advance on sustainability, with more products, more ambitious carbon targets and more ambitious deployment of capital.

How well has AIB been able to support its customers through COVID and has the crisis reduced external support for your climate action agenda?

Irish banks have had a significant role to play in mitigating the damage to the economy. When the crisis first hit us in March 2020, the industry collectively came together and put in place payment breaks that were an important relief measure at a time of great worry for a lot of our customers, for example. I have to say that AIB responded to the challenge in an extraordinarily agile and responsive way, changing our products, policies and procedures, and moving to work from home. Like so many others, we did it in a very short period of



AIB raised a €1 billion green bond in 2020

time and, 12 months on, we are there for our customers and colleagues, and remain remarkably resilient. We entered this crisis in a position of capital and liquidity resilience and, today, we have among the strongest capital-liquidity positions of any bank in Europe.

There was a view at the start of the pandemic that this crisis was so severe, so present and so real that we had to sideline the sustainability issue to deal with the here and now. That’s absolutely false: the pandemic has exposed the frailty and the fragility of the world like nothing ever before. I believe it has actually moved the sustainability issue closer to the top of the agenda: the political agenda, the regulatory agenda, the investor agenda, the customer agenda, the business agenda.

What impact has the last year had on customers’ engagement with AIB?

We have 2.8 million customers. Roughly 40 percent of Irish individuals and businesses have their primary bank account with us, it’s an extraordinary franchise. The crisis accelerated their move toward greater use of digital. We’ve seen a 27 percent increase in digital engagement from our more mature customers, for example. Right now, we have about 40,000 customers physically passing the thresholds of our branches around the country on a given day. On the same day, 1.2 million of our customers will engage with us online.

“Roughly 40 percent of Irish individuals and businesses have their primary bank account with us, it’s an extraordinary franchise.”

Colin Hunt, CEO, Allied Irish Bank

Our stated purpose is to back our customers to achieve their dreams and ambitions, and our task is to deliver a complete suite of competitive products to them in the way that they want. So, we’ve been heavily focused on improving our digital capacity in recent years and invested about €1.4 billion between 2015 and 2016, chiefly on upgrading our information technology systems and digital capacity. We’re in the premier league in fintech and have the best Irish banking mobile app. The vast majority of our personal loans are completed online, we can do mortgage lending online and almost 90 percent of personal deposit accounts over the last year were opened online.

While we have seen a shift away from physical locations toward digital for everyday banking transactions, that doesn’t mean we’re not very committed to our network of 270 branches. I think it’s really important, it’s a shop window for AIB in the towns and cities of Ireland. It also highlights the fact that we are embedded in our communities.

Objective: 70% renewables by 2030

EirGrid is transforming Irish electricity by decarbonizing, enhancing and extending the national grid

“The grid is at the epicenter of Ireland’s ambition to produce an electricity system that is massively driven by renewables,” says Mark Foley, CEO of EirGrid Group, the national electricity transmission system operator (TSO).

In 2020, 43 percent of the power the country consumed was generated by renewables, mainly wind, he states. “EirGrid’s objective now is to deliver 70 percent by 2030. We’ve developed a strategy for this and have moved to delivery. I’ve reconstructed my organization and built the partnership model to ensure we get a huge part of the job done by 2025. If we do that, we know 2030 is secure.” EirGrid’s strategy covers six core areas, Foley reveals. “First, we must connect an awful lot more renewables, maybe around 10 gigawatts. Fundamental to Ireland’s goal is to build 5 gigawatts of wind farms in the Irish Sea, which has advantages for transmission: generation can be close to the shore and near the biggest electricity demand in Dublin.”

Secondly, the company is upgrading the grid to connect the new renewables with the demand sources so everyone has power when and where they need it. In January, the TSO reached a milestone in this area when it successfully tested its operations using 70 percent renewables. Allied to this, EirGrid is putting in place the technology for a renewables-based power system to work

reliably. “We have to add sophisticated electronics to guarantee the system remains stable and doesn’t collapse when loaded with renewables,” the CEO notes. He believes battery technology is revolutionizing the electricity sector. “What’s also interesting is what comes next, such as smart meters. There’s a universe of technological enablement coming down the tracks and the key thing is that we deploy it in the cleverest way.”

Next, EirGrid is increasing cross-border electricity interconnectivity by constructing the €1-billion Celtic Interconnector, which passes undersea between Ireland and France, and is being built in partnership with French TSO Réseau de Transport d’Electricité. “We’ve lost the U.K. from the European Union and I can’t overstress the importance of this project in giving us a link back into Europe. It’s critical, as it will allow us to export energy to France or import it when the wind isn’t blowing here,” he asserts. Fifthly, private-sector investment is crucial, he comments. “The market must evolve to support the transition: generators and service providers need to be incentivized.” The final part of its strategy concerns the ethos of the organization, which wants to be an exemplar of a low-carbon company and to gain its customers’ full support for its transformations, Foley concludes. “We’re engaging people across the country in informed conversations about our journey and helping them understand how EirGrid will enable a world free of carbon.”



Mark Foley
CEO
EirGrid Group

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Wind energy: Pivotal in the country's renewable ambitions

Supported by preeminent global offshore wind developers, Ireland seeks to harvest its green gold

Ireland has what it takes to be a European leader in renewable energy, according to international investors that have spotted its potential.

A pioneer in the sector, U.K.-based SSE Group, is a top provider of green electricity in Ireland, as well as having substantial renewable generation and distribution networks in Britain. “We joined the Irish market in 2008 and have invested to grow our business, contributing €3.8 billion to the economy in the past five years alone. We own and operate 28 onshore wind farms in Ireland, including its largest, the 174-megawatt Galway Wind Park, plus four efficient thermal power stations. Through our supply business, SSE Airtricity, we power over 750,000 home and business customers with green electricity and natural gas,” explains Stephen Wheeler, SSE’s Ireland country lead.



Ireland’s largest wind farm, the 174-megawatt Galway Wind Park

He welcomes the government’s new climate action bill. “The net-zero carbon by 2050 target is a game changer. Now, we must turn ambition into action by putting in place the policy frameworks to enable the investment needed,” he asserts. SSE is a principle partner to the United Nations Climate Change Conference, COP26, for which it is providing expertise to support the delivery of an impactful event, Wheeler points out. “With COP26 only months away, SSE is calling for a rapid acceleration of efforts to show the world that Ireland is ready to be a frontrunner in the energy transition.”



Stephen Wheeler
Ireland Country Lead
SSE

SSE and Ireland need to work on five priorities to deliver a green economy, he says. “Top of the list is offshore wind. SSE Renewables’ 520-megawatt Arklow Bank Wind Park Phase 2 project off Wicklow’s coast could be operational by 2025, finally kick-starting Ireland’s offshore wind revolution. We are also progressing two other major projects and envisage 3 gigawatts of offshore capacity by 2035.” SSE’s second priority is to expand its onshore wind farms. “We’re proud of our record in developing these responsibly and creating a positive legacy for the communities in which we operate by contributing, for instance, around €1.5 million a year to support local energy efficiency measures.”

Efficiency and decarbonization of heating and transport are also priorities. “SSE Airtricity provides customers with a one-stop shop for home energy upgrades, but we need reliable grants to support families and businesses in reducing their carbon footprint and their bills. We also need attractive incentives for heat pumps and electric vehicles,” Wheeler states. Finally, SSE is also working with academics and industry peers on research into energy storage, hydrogen and other emerging technologies that will be key for decarbonization. “Our vision is simple: we want to be a leading energy company in a net-zero world. By focusing on the priorities above, we can protect our planet, reboot the economy, support thousands of jobs and increase Ireland’s self-sufficiency and security. SSE looks forward to partnering with the government to deliver on these ambitions.”

For Kevin O’Donovan, managing director of Statkraft Ireland, subsidiary of one of Europe’s largest renewable traders that entered the country in 2018, the journey toward wind energy is an exciting one. “I don’t think the country grasped the capability it has in wind that is far greater than it’s ever going to have domestic demand for. It’s now on the path toward harnessing that.”

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Decarbonizing the transport sector

Substantial investment in public transportation systems will drive socio-economic inclusion up and emissions down



Investment of over €2 billion is planned for Ireland’s bus network

“There are three technological revolutions taking place in the world: digital, clean energy and transport. Transport has been our weakness,” admits Eamon Ryan, Minister for Environment, Climate and Communications, and Minister for Transport.

Addressing this weakness by promoting the electrification of vehicles is vital if Ireland is going to meet its climate-change commitments, as transportation currently accounts for the country’s largest share of greenhouse-gas emissions. Also crucial is making it easier for people to leave their cars at home. “The government is switching its spending: we’ve allocated 20 percent of our overall budget to walking and cycling lanes, and investment in new public transport now has to be twice the investment made into new roads,” he says.

“Public transport can play a central role in achieving the government’s emission targets as it is, by definition, a sustainable mode of travel,” states Lorcan O’Connor, CEO of CIÉ Group, the sector’s largest operator with a portfolio that includes the national rail network and passenger services, plus

bus companies offering urban and inter-urban routes across the country. Electrification is a major focus for CIÉ. “We are in the process of delivering an investment program of over €2 billion for Dublin. Once complete, almost all commuter train services in and out of the capital will be electrified. We are also transitioning our bus fleet to zero-emission vehicles.”

Additionally, Ireland is boosting existing public services and introducing new ones covering and connecting both urban and rural areas to create balanced regional development, notes O’Connor. “There are important rail investment plans, particularly around Cork, Limerick and Galway. There is also a significant plan for the bus network countrywide that envisages investment by the government in excess of €2 billion over the next few years. This is designed to increase capacity, the modal share of buses and regional connectivity, and will result in a real step up in the quality of services. With all of the investment that is planned, we can expect a huge shift toward public transport in the coming years, which will help ensure we meet those climate-change targets.”

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