



Ireland: at the heart of global health & life sciences supply chains



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Ireland has earned an important place in the world's health and life sciences (HLS) value chain, with pharmaceutical exports alone of €80 billion annually.¹ While growth is strong as evidenced by recent investments including Eli Lilly and Company's €900 million manufacturing facility in Limerick and Takeda Ireland's Grange Castle cell therapy production facility valued at €60 million², Ireland must adapt quickly to remain a location of choice for foreign direct investment (FDI) while nurturing indigenous research and development (R&D).

Ireland: Dispensary to the World

Over the past two decades, Ireland has established itself as a critical hub for pharmaceutical, biotech, and biopharma manufacturing. Its strategic location within the European Union (EU), favourable tax environment, and skilled workforce have attracted 19 of the world's 20 largest multinationals, including Pfizer, Johnson & Johnson, and Amgen, turning Ireland into a top-tier player in the global HLS supply chain sector. As a result, Ireland accounts for around 10% of the world's total pharmaceutical exports and hosts some of the world's most advanced biopharma facilities and research centres, such as:

Recent pharma investments:

- **NIBRT (National Institute for Bioprocessing Research and Training):** A state-of-the-art training and research facility servicing biopharma companies.³
- **The Alexion manufacturing facility in Dublin:** A leading producer of rare disease therapies, known for cutting-edge manufacturing capabilities and high production standards.⁴



“Ireland provides organisations with a short supply chain compared to other geographical regions, particularly relevant after supply chain practice changes during COVID-19. We also provide access to three of the largest markets in the form of the UK, US, and the EU.”

Medical devices manufacturer, Limerick

- **Johnson & Johnson Innovative Medicine (formerly Janssen Sciences Ireland) Ringaskiddy facility:** A major site specialising in the production of biologics and next-gen therapies, which has seen significant investment in recent years.⁵
- **Pfizer's Grange Castle facility:** One of the largest biotech manufacturing sites in the world, playing a strategically significant role in the production of biologic medicines, including vaccines. It was key in meeting global demand for the COVID-19 vaccine, demonstrating Ireland's capability to scale up production rapidly in response to global health emergencies.⁶

Recent medtech investments:

- **Stryker's high-tech facility in Cork:** High-tech facility focusing on additive manufacturing, particularly 3D printing, to produce medical devices and components.⁷
- **Boston Scientific's Galway campus:** Manufactures a wide range of medical devices, including heart stents, valves, vascular balloons, and oesophageal stents.⁸

1 <https://www.cso.ie/en/releasesandpublications/ep/p-gei/goodsexportsandimportsdecember2023>

2 <https://prod-legacy.takeda.com/newsroom/featured-topics/grand-opening-of-takedas-new-production-facility-grange-castle-ireland/>

3 <https://www.nibrt.ie/about/#our-vision>

4 <https://www.fiercepharma.com/manufacturing/astrazeneca-chips-another-687-million-beef-alexions-manufacturing-capability-ireland>

5 <https://www.irishexaminer.com/business/companies/arid-41434924.html>

6 <https://www.europeanpharmaceuticalreview.com/news/177048/pfizer-1-2-billion-manufacturing-site-expansion/>

7 <https://www.tctmagazine.com/additive-manufacturing-3d-printing-news/latest-additive-manufacturing-3d-printing-news/stryker-opens-new-additive-manufacturing-facility-in-cork-ireland/>

8 <https://www.rftgroup.ie/blog/2022/04/boston-scientific-galway-investment-to-create-300-jobs?source=google.com>



The door-to-door supply chain associated with patient specific products is a challenge, we are starting to explore strategic partners who can help us in this space.

Leading biopharma manufacturer, Dublin

A Sector Under Pressure



Ireland's successful transformation into a global HLS hub has yielded huge rewards; the pharmaceutical sector now accounts for around 42% of Ireland's total goods exports and employs approximately 80,000 people directly or indirectly.^{9,10,11} Maintaining this position will demand farsighted supply chain management in the face of an increasing array of challenges.

Global regulations

Global regulations from bodies such as the US Food and Drug Administration (FDA) and the European Medicines Agency (EMA) impose exacting compliance requirements, which demand continuous adaptation and investment in quality assurance and expertise. Standards are growing increasingly complex, driving a sector-wide scramble for traceability, diversity, community integration, emissions and waste reduction. All of which are now seen as foundational to business sustainability.

The demands of the Corporate Sustainability Reporting Directive (CSRD) to report scope 1, 2 and 3 emissions (direct, indirect, and value chain) mean that supply chains need to be transparent, emissions-quantified, and as green as possible.

Supply chain fragmentation

Supply chain fragmentation, painfully exposed by the pandemic and exacerbated by the current geopolitical outlook, has resulted in production disruptions and shortages. This has drawn additional focus from national and European agencies who are seeking to ensure European self-sufficiency in critical medicines.

Relentless sectoral innovation

Relentless sectoral innovation in the Industry 4.0 era drives a growing need for production agility, which in turn demands investment in smart manufacturing technologies and modular production facilities. Advanced technologies such as AI and machine learning have also accelerated drug discovery and R&D timelines, shortening the path from laboratory research to commercial production.

Digital Manufacturing Ireland is helping to drive innovative technology adoption through the manufacturing value chain, for instance in its partnership with Edwards Lifesciences at its sites in Limerick and Clare,¹² whilst Irish Manufacturing Research has worked with a range of companies to explore and implement digital transformation initiatives, e.g. helping Atlantic Prosthetic Orthotic Service (APOS) adopt additive manufacturing.¹³

Growing complexity

The growing complexity of emerging biologics and advanced medicines (including vaccines) often demands shorter times to market due to expiry risk, which is driving supply chain adaptations such as increased cold chain logistics capabilities, real-time data monitoring and analytics, and closer collaboration with regulatory bodies.

Companies including BASF, Brenntag, Camida, Chemco, Dachser, DHL supply chain, Dixons, Kuehne + Nagel, KWE, McArdle Skeath, Rhenus and Uniphar are particularly active in providing bespoke supply chain and logistic solutions to support manufacturers.

9 <https://www.nathanstrust.com/insights/big-pharma-fdi-in-ireland-8-billion-in-10-years>

10 <https://www.ibec.ie/connect-and-learn/industries/life-sciences-and-healthcare/biopharmachem-ireland/bpci-strategy-2022>

11 [Goods Exports and Imports December 2023 - Central Statistics Office](https://www.cso.ie/en/press-releases/goods-exports-and-imports-december-2023/)

12 <https://www.siliconrepublic.com/innovation/digital-manufacturing-ireland-limerick-ida-centre>

13 <https://imr.ie/pages/aposam/>

Prescription: build the supply chain of the future



Ireland's HLS sector is well-positioned to retain its relative dominance in the face of these challenges. NIBRT forecasts likely compound growth of approximately 12% in global biopharma by 2030, driven by both biologic manufacturing and enhanced R&D operations.¹⁴ Suggested growth will depend on the successful execution of evermore complex supply chain strategies. These strategies may focus on:

- **Compliance:** As global and national regulatory demands intensify, maintaining a cutting-edge approach to compliance infrastructure and an uncompromising stance on environmental, social and governance (ESG) and transparency standards can ensure Irish companies maintain their status as trusted suppliers to global markets in a time of rising corporate and consumer vigilance.
- **Supply Chain Resilience:** The sector in Ireland has sought to diversify its raw material sources to reduce dependence on global supply chains, but can go further with initiatives like dual sourcing, strategic stockpiling, and investing in local manufacturing capabilities for key inputs. Several major pharma players have expanded local manufacturing operations in recent years, including MSD at Swords,¹⁵ Pfizer at Ringaskiddy and Grange Castle,¹⁶ and Alexion at Athlone.¹⁷
- **Workforce Development:** Ireland can augment its rich supply of qualified talent by expanding existing training programs and deepening partnerships with the university sector.
- **Advanced Technology:** There remains considerable scope to enhance efficiency and flexibility across the supply chain by embracing digital transformation technologies such as internet of things (IoT), automation, artificial intelligence (AI), and advanced analytics. As new biologics raise the premium on traceability and speed to market, fully digitised supply chains powered by AI will be the gold standard for operational excellence and key to Ireland's value add.
- **Regulatory Leadership:** The sector can exploit Ireland's strong regulatory framework to strengthen its position as a key gateway into EU markets and compound trade advances made in the wake of Brexit.
- **Cold Chain Logistics:** By strengthening its capabilities in cold chain logistics, the sector can position itself to service and profit from forecast growth in the minus 70°C supply chain stimulated by advanced medicines such as mRNA vaccines, biologics, cell therapies, and others.



“ We are seeing more and more clients approach us with specific challenges related to specialised active pharmaceutical ingredients (API) and biologic logistics. It is a big growth market. ”

Irish supply chain solutions provider

¹⁴ <https://www.nibrt.ie/>

¹⁵ <https://www.irishtimes.com/business/2022/11/01/pharma-giant-msd-opens-new-manufacturing-facility-in-dublin/>

¹⁶ <https://www.europeanpharmaceuticalreview.com/news/177048/pfizer-1-2-billion-manufacturing-site-expansion/>

¹⁷ <https://www.fiercepharma.com/manufacturing/astrazeneca-chips-another-687-million-beef-alexions-manufacturing-capability-ireland>

Conclusion



Ireland's strategic location, robust infrastructure, and ability to maintain high production standards even during global disruptions make it a vital link in global biopharma supply chains and a critical response hub for global health emergencies.

In the face of extraordinary dynamism in the sector, the Irish pharma sector can defend and strengthen its position by leveraging its strengths in talent, supply chain resilience, operational excellence, and regulatory leadership.

Specific focus is required by many stakeholders to ensure Ireland's HLS supply chain remains resilient, specific action points include:

HLS manufacturers

- HLS manufacturers looking to secure top AI talent will need to compete with strong demand from other Irish success stories including financial services, information and communications technology, and agri. A proactive talent strategy involving tertiary education collaboration, inclusive hiring, mentorship, and branding around pharma's social impact will be required.
- Maintaining cutting-edge compliance infrastructure and adhering to rising ESG standards are essential to remain trusted suppliers in global markets.
- Manufacturers need to assure themselves now that their logistics providers are equipped to meet rising product quality, traceability, and risk management standards.
- Factory 5.0 will rapidly become the gold standard for operational excellence. For successful deployment, manufacturers must ensure they have a realistic understanding of the extensive costs and challenges involved with deploying relevant technologies, as well as the lead times required, to deploy these successfully.
- With supply chain risks growing more important, manufacturers need to develop appropriate mitigation strategies, including diversifying raw material sources, strategic stockpiling, and investing in local manufacturing capabilities.

Investors

- Ireland's pharma sector continues to offer excellent growth prospects, benefiting from its unique status as Europe's only English-language location within the EU and robust infrastructure offering strategic advantages for accessing global markets. We anticipate growth of 8-10%¹⁸ over the next five years, driven by increased global demand for pharmaceuticals and advanced therapies.

“Reverse logistics has always been a challenge for companies in our sectors. With the cost, safety environmental impacts of our products considered, this area becomes a critical focus.”

Pharma and medical device manufacturer, Midlands



- Ireland's favourable corporate tax environment and R&D tax credits (granting a 25% tax credit on qualifying R&D expenditures)¹⁹ make it a particularly attractive destination for pharma company investment, particularly in areas like biologics, gene therapies, and personalised medicine, which offer high-return opportunities.
- Ireland's strategic investment in education and training programmes and strong partnerships between industry and academic institutions provide a plentiful pipeline of talent to service the growing needs of its HLS sector.

¹⁸ <https://www.statista.com/outlook/hmo/pharmaceuticals/ireland>

¹⁹ <https://kpmg.com/ie/en/home/services/tax/rd-tax-credits.html>

Supply chain solution providers

- With good manufacturing practices (GMP) – such as ISO 9001 certification and chain of custody documentation – more important than ever, HLS logistics providers will need to extend beyond GDP, to display a relentless commitment to gold-standard quality control and traceability throughout the supply chain to maintain and grow customer relationships.
- Rising demand for chilled and minus 40°C logistics solutions potentially creates opportunities for entrants to the Irish market with specific biopharma experience. Established Irish biopharma supply chain and logistics providers can make a determined play for new markets in advanced medicines like mRNA vaccines and personalised cell therapies. Radiopharmaceuticals present another growing market requiring specialist supply chain expertise.
- As sustainability trends strengthen, driven by the European Corporate Sustainability Reporting Directive among other legislation, logistics providers that can align with manufacturer goals on waste reduction, net zero, and other green initiatives will have a growing edge over those that cannot.
- Efficiency will become more important as quality requirements continue to rise – suppliers will need to exercise strict vigilance over costs to remain competitive. Novel warehousing solutions including internal onsite storage, 3PL warehousing, and centralised European facilities can enhance efficiency, stock control, inventory management, and distribution.
- Consider new opportunities to partner with biopharma firms to innovate in supply chain logistics, focusing on agility and regulatory compliance to support rapid growth and product development.
- Resiliency of service provision is a key factor for pharmaceutical companies evaluating logistics providers. Following a period of geopolitical instability and the disruption of COVID-19, when airlines and airport closures resulted in smaller players being unable to operate, the ability of a logistics provider to provide multiple routes, airlines and storage facilities is paramount.

Policymakers

- Ireland's enviable place in the global HLS value chain has been hard won and must be hard maintained. There remains scope for active support at governmental level, particularly in terms of tax incentives and investment support for advanced manufacturing technologies and cold chain logistics to support the growing complexity of biologics and advanced medicines.
- Government has a key role to fast-track and develop policies that foster technology adoption, investment, innovation, and regulatory leadership, especially in AI, and can use its unique platform to convene key value chain stakeholders to this end. With the debate around AI regulation still in its early stages, Ireland should seek a leading role to strengthen its regulatory framework, encourage innovation, and maintain its position as a key gateway into EU markets.
- Vigilance over the administrative burden faced by Irish HLS companies, as well as adequate funding of skills and apprenticeship schemes, will be crucial to relieve constraints on growth as quality standards and complexities multiply.

“ Sustainability really is a must now. I am seeing a new and increased focus on the Scope 3 emissions. The CSRD is only really beginning and very few organisations have the knowledge or best practices on assessing and implementing supply chain sustainability. ”

Pharmaceutical manufacturer, Leinster



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Produced by: KPMG's Creative Services. **Publication Date:** November 2024. (10710)