BUSINESS SWEDEN
THE SWEDISH TRADE & INVEST COUNCIL

PROGRESS BY TRADE

EXECUTIVE GLOBAL INSIGHT

PIONEERING CLIMATE ADAPTATION IN HEALTHCARE

How Swedish healthcare and life sciences companies can lead the race for climate-resilient health systems

EXECUTIVE SUMMARY

THE RACE IS ON TO PROTECT HEALTH FROM CLIMATE IMPACTS

In the global fight against climate change, the healthcare and life sciences industry faces a new dual challenge: mitigating emissions while, at the same time, adapting to present and future impacts. Healthcare and life sciences companies worldwide are coming under increasing pressure from climate-induced health impacts, which are disrupting healthcare systems and supply chains. While businesses understand they need to address traditionally existential challenges such as rising competition, climate adaptation has been overlooked. More active leadership is needed to provide climate-related risk and opportunity assessments, including financial implications and action plans, and to capture value-adding opportunities.

This report explores how Swedish healthcare and life sciences companies can bridge the opportunity gap between mitigation and adaptation – to position themselves as climate action leaders. The insights are based on observations of current climate action work, as well as interviews with global experts and healthcare suppliers and service providers.

Mitigation efforts have benefited from established metrics, standards, regulation, and significant investments. Now, attention is increasingly turning to the less explored and more uncertain realm of adaptation and resilience in the face of climate change. But this requires a mindset shift among leadership teams – and it's time to mobilise. Adopting comprehensive strategies that tackle climate mitigation and adaptation is the only way to protect public health and ensure high-quality care in the future.

KEY TAKEAWAYS

- **Mounting recognition:** Growing awareness around the impacts of climate change on human health is driving commitments and funding for building climate-resilient health systems and enhancing adaptation efforts.
- **Race for compliance:** Growing stakeholder and regulatory pressure for compliance and transparency in climate-related disclosures is making advanced and comprehensive corporate sustainability reporting a hygiene factor.
- **Push for innovation:** Innovation is needed at scale to address the health impacts of climate change and demographic trends, presenting opportunities to strengthen healthcare systems and meet new and growing demands.
- **Synergies with precision medicine:** The shift towards prevention and precision medicine opens up opportunities to leverage data and digitalisation to improve care and address climate-induced health challenges.
- **Power of partnerships:** Partnering up with relevant stakeholders across public and private sectors, industries and geographies is crucial for building healthcare resilience.

RECOMMENDED ACTIONS FOR SWEDISH HEALTHCARE AND LIFE SCIENCES COMPANIES

BUILD OPERATIONAL RESILIENCE

- *Rethink strategy and decision-making:*
  Develop a comprehensive climate action strategy that includes both mitigation and adaptation, ensuring it permeates all business functions and aligns with overall operations and risk management for sustained long-term resilience.

- *Identify climate risks and opportunities:*
  Build a deep understanding of climate-related risks and vulnerabilities in operations and supply chains. Quantify potential impacts and prepare for future scenarios within the organisation's risk tolerance, taking long-term investments and potential changes to location or asset strategies into account.

- *Follow established compliance frameworks:*
  Integrate physical and transition climate risks into disclosures and materiality assessments, leveraging compliance requirements and best practices to drive holistic climate action and improve transparency.

CAPTURE VALUE-ADDING OPPORTUNITIES

- *Make climate action a competitive advantage:*
  Go beyond compliance and reposition your company as a frontrunner in climate mitigation and adaptation. Collaborate with private, public and academic stakeholders and engage in forums for increased awareness and knowledge exchange.

- *Proactively meet new demand:*
  Anticipate new healthcare demand caused by climate change and climate migration, focusing on prevention, early screening, and well-being. Incorporate innovation to meet new needs and leverage Sweden's strong tradition of collaboration.

INTRODUCTION

A NEW ERA OF CLIMATE ACTION

Climate change has been declared "the single biggest health threat facing humanity" by the World Health Organization (WHO). This chapter checks the pulse on current industry-level climate action efforts and how the healthcare ecosystem is responding to the escalating crisis.

Climate change poses significant challenges to global health as it exacerbates the range of ailments, increases the vulnerability of population groups, disrupts supply chains and inhibits access to care. The World Health Organization has rung the alarm bells loud and clear – and companies play a pivotal role in strengthening the readiness and resilience of health systems worldwide.

While climate change has become an ever more integral part of decision-making across governments, businesses, and households, the healthcare and life sciences industry is only just starting to expand its focus from compliance with mitigation targets to climate adaption. But the clock is ticking fast – disruptive impacts on health have already been locked in as the world gets warmer.

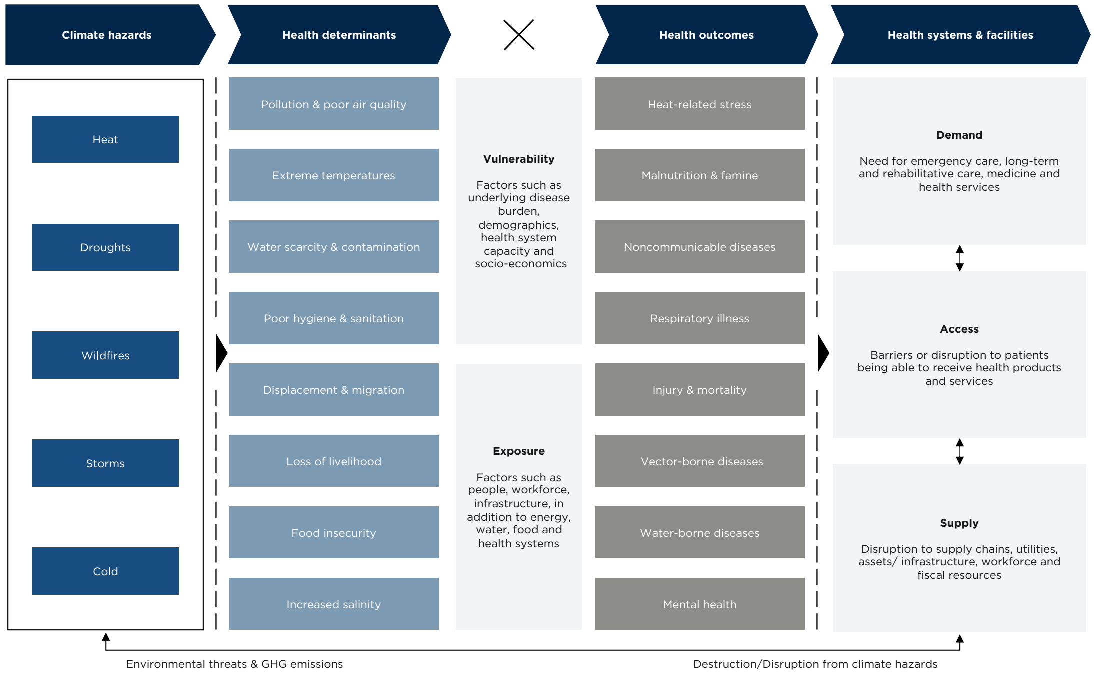
Healthcare is increasingly burdened by the consequences of a harsher and more unpredictable climate. Just halfway into the 2020s, temperatures surpassed the Paris Agreement's critical 1.5°C pre-industrial level threshold. As a result, humanity is confronting the escalating perils of breaching planetary boundaries, manifested in more frequent and severe temperature changes, droughts, wildfires, storms, and other extreme weather events across the globe.[1]

The consequences for human health are dire and healthcare systems are already struggling to cope, from record-long heatwaves in India causing substantial heatstroke cases to torrential rains in Brazil's Rio Grande do Sul triggering the region's worst flooding in over 80 years, killing hundreds, and displacing 600,000 people.

[1] United Nations Intergovernmental Panel on Climate Change (IPCC) and PHC report PBScience

CHANGING CLIMATE HAS MAJOR IMPACTS ON GLOBAL HEALTH

Overview of climate hazard impacts on health systems and facilities



Sources: IPCCC Sixth Assessment AR6), WHO, and WEF

MAPPING THE HEALTH IMPACTS

More frequent, unpredictable and severe climate hazards caused by climate change impact health outcomes either directly or indirectly through different critical health determinants. Health outcomes are directly affected by severe physical events, resulting in immediate emergencies and chronic health risks to affected populations.

Indirect impacts of climate change on health outcomes extend to shifts in both natural ecosystems and socio-economic structures, affecting everything from air quality, temperatures, water scarcity, contamination and food insecurity to loss of livelihood resulting in mass displacement and migration.

These effects are intensified by a community's degree of vulnerability and exposure – putting women, children, the elderly, low-income earners, migrant groups, and communities in lower-income countries at harm which further exacerbates health inequity.

As a result, climate hazards are reshaping healthcare demand, driving both the increase of required care and emergence of new health challenges. Rising temperatures and shifting precipitation patterns are altering the spread of vector-borne diseases like dengue fever, malaria, Lyme disease, and the Zika virus. Brazil's more than threefold surge in dengue cases, from 3 million in 2023 to over 9.8 million reported by November 2024, and a considerable increase of DENV-3 and -4 serotypes, is directly linked to higher temperatures and prolonged transmission seasons with El Niño. By 2050, an additional 500 million people could be at risk of contracting vector-borne diseases like dengue, adding to the 3.9 billion already at risk worldwide.

Climate hazards impact access to healthcare by creating physical and economic barriers. For example, flooding can disrupt transportation routes to hospitals, while climate-induced income losses may make healthcare services unaffordable for vulnerable populations.

Moreover, these hazards threaten the resilience and reliability of healthcare supply. Critical risks include disruptions to supply chains and production, damage to infrastructure, interruptions in energy and water supplies, increased costs of commodities, reduced workforce productivity, and long-term financial pressures from reduced or halted productivity.

DISRUPTING SUPPLY CHAINS

From a trade perspective, climate change is expected to increase international trade costs by disrupting supply chains and production, systems originally designed on the assumption of a stable climate. Countries in the EU, more dependent on international supply chains than nations like China and the US, are more exposed. Collectively, these challenges weaken healthcare systems' ability to respond effectively to a changing climate.

At the same time, healthcare systems and facilities – including hospitals, companies, and organisations – are significant contributors to the environmental threats and greenhouse gas (GHG) emissions that exacerbate climate hazards. Globally, the healthcare sector is responsible for an estimated 4 to 5 per cent of total GHG emissions, with industrialised countries' healthcare emissions nearing 10 per cent of their national totals. In contrast, aviation, which is strongly associated with heavy emissions, accounts for approximately 2.5 per cent of global emissions.[2]

"Healthcare is in an awkward position. If the sector does not reduce its greenhouse emissions, then it is contributing to the health risks it is trying to prevent."

Professor Kristie Ebi, Epidemiologist and Professor at University of Washington Center for Health and the Global Environment

Healthcare and life sciences companies will face increasing challenges from climate hazards on health determinants and outcomes, affecting their ability to meet evolving healthcare demands, their delivery of offerings, and their operations and supply chains. As custodians of life-saving medicines, diagnostics, devices, and services, the healthcare and life sciences industry has both a vital interest and a unique opportunity to adopt a proactive approach to climate action by:

1. Reducing the industry's negative impacts on climate change
2. Managing the risks posed by current and future climate hazards while maximising opportunities to create positive impact in an evolving health landscape

To explore how Swedish healthcare and life sciences companies can position themselves as leaders in a new era of climate action, this report examines, through interviews and analysis of publicly shared company information, the current state of climate action and identifies an opportunity gap among large industry players. Our study looks at three overarching sub-groups to get the most comprehensive picture of the industry's companies and their climate actions; consumables, medtech, and pharmaceuticals.

LEADERSHIP VACANCY

A review of 18 large corporations across consumables, medtech, and pharmaceuticals, including three Swedish and three non-Swedish companies per segment, highlights a disparity between the relative maturity of ambition and performance disclosures for mitigation versus adaptation. The leadership role for comprehensive climate action, including developing a strong narrative and purpose around both climate mitigation and adaptation, remains open.

PROGRESS IN CLIMATE MITIGATION

For climate mitigation, companies are assessed based on the ambition of their emissions reduction targets and the degree of transparency and robustness of their performance disclosures. While interest in Science-Based Targets (SBTs) certified by the Science Based Targets initiative (SBTi) has grown in recent years, the reviewed companies show varying levels of ambition.[3] A few Swedish companies are leading the way by setting top-tier, SBTi-certified mitigation targets and providing robust disclosures. Meanwhile, others lag in certifying clearly defined near- and long-term targets aligned with the Paris Agreement.

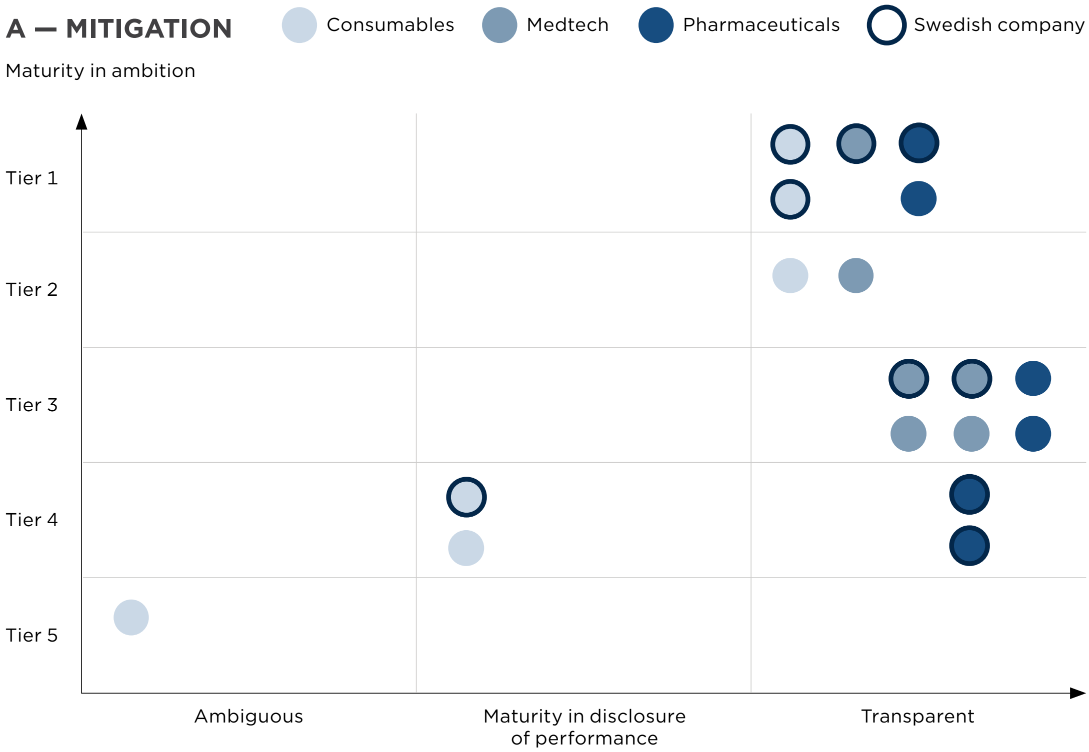
Variations in ambition are also apparent within industry sub-groups. However, the level of performance disclosures is generally good, reflecting increasingly established reporting standards and growing regulatory pressure for greater transparency on GHG emissions. Emissions reduction is becoming a fundamental component of companies' sustainability profile, but more progress must be made in validating science-based targets.

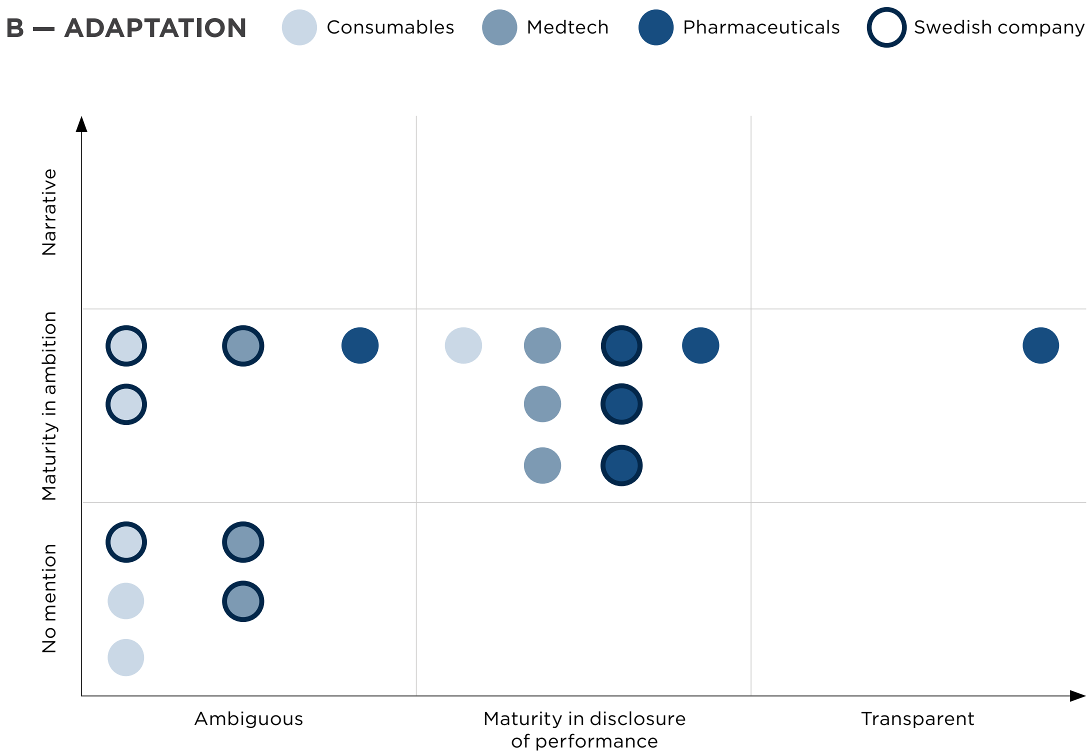
[2] UNEP Emissions Gap Report 2024

[3] The Science Based Targets initiative (SBTi) is a corporate climate action organisation that enables companies and financial institutions worldwide to combat the climate crisis. By the end of 2023, over 4,000 companies and financial institutions were leading the transition to a net-zero economy by setting and validating emissions reduction targets through the SBTi.

VARIED CLIMATE ACTION MATURITY ACROSS THE INDUSTRY

Mapping of healthcare and life sciences companies' (Swedish and non-Swedish) maturity in climate ambition and disclosure for mitigation versus adaptation





Notes: Maturity in disclosure of performance for mitigation is ranked from ambiguous (limited or absent disclosure of data on scope 1–3 emissions), average (minimal data disclosed across all scopes), to transparent (comprehensive data on all emissions scopes, year-on-year comparisons against targets, and commentary on key areas of mitigation strategy). Maturity in ambition for mitigation is ranked on a 5-tier scale; tier 1 is certified near-term and net-zero (long-term) SBTs, tier 2 is certified near-term SBT and committed to a net-zero (long-term) SBT, tier 3: is certified near-term SBT, tier 4 is committed to setting a near-term SBT, tier 5 is no SBT or emissions reduction goal. Maturity in disclosure of performance for adaptation is scored from ambiguous (no disclosed risk assessments including risks from climate-related hazards), to average (risk assessment disclosed accompanied by general commentary on risks and plans to reduce these risks or adapt commercial offering) to transparent (comprehensive disclosed risk assessment including quantified monetary impacts, detailed plans to address risks and adjust commercial offerings). Maturity in ambition for adaptation is scored from low (no mention of climate adaptation or resilience), to average (general acknowledgement with mentions of climate adaptation and resilience, or discussions of associated risks and business implications), to high (integration of climate adaption into climate action strategy and specified areas of action to address all key areas of risk). Sources: Sustainability Reports, Integrated Annual Reports, Quarterly Reports, Websites, Press Releases, and Business Sweden analysis conducted in end of December 2024.

NEXT BIG CHALLENGE: CLIMATE ADAPTATION

While healthcare and life sciences companies have made solid strides in targeting and reporting on mitigation, efforts to address climate adaptation are behind in comparison. For this study, companies have been evaluated on the maturity of both their ambition and performance disclosures regarding climate adaptation. While advancements in both criteria are needed across the board, pharmaceutical companies lead in ambition and disclosure of climate-related risks and opportunities. This sub-group is also notably close to the immediate effects of climate change in terms of the urgency to adapt operations to both disease change and sensitive supply chains.

Among the companies disclosing climate-related risks, all reference the globally recognised Task Force on Climate-related Financial Disclosures (TCFD) framework, which helps stakeholders assess transition risks (e.g., policy, legal, and market changes) and physical risks (e.g., direct climate impacts). While the framework integrates both mitigation and adaptation, companies and financial institutions have been criticised for prioritising transition risks or downplaying acute and chronic physical risks. This results in limited assessment and transparency on the significant financial consequences of climate change, which is key for adaptation planning. Many companies in this sample also note these risks as immaterial.

In addition to TCFD recommendations, many (mostly American) companies disclose through the Carbon Disclosure Project (CDP), which encourages reporting on climate adaptation strategies alongside risks and opportunities related to climate change. Moreover, most companies doing active reporting assess specific warming scenarios, including those above 2°C, though only one company disclosed estimated financial impacts over near- and long-term timeframes.

Moreover, the leadership role for comprehensive climate action is vacant. In addition to validating science-based emissions reductions targets and disclosing progress, Swedish healthcare and life sciences companies have an opportunity to fill this marked gap in assessment and disclosure of climate risks and opportunities.

The discrepancy between the maturity of climate mitigation and adaptation efforts can be traced to several factors, including lack of precedence, data and investment.

LACK OF PRECEDENCE

Mitigation has long been prioritised as the primary tool in the fight against climate change, focusing on raising awareness of human impacts and transitioning to low-carbon economies. Policies and regulations have largely centred on mitigation, with mechanisms like carbon pricing (e.g., EU's CBAM), emissions reporting (e.g., GHG Protocol), and decarbonisation support (e.g., EU Just Transition Fund).

Adaptation, in contrast, has often been secondary, particularly in regions less exposed to severe risks. Companies also note challenges in aligning suppliers with both mitigation and adaptation requirements due to differing compliance standards across jurisdictions. Despite decades of research on the health impacts of climate change, climate adaptation remains in its early stages and requires stronger global coordination to advance.

LACK OF DATA

Climate mitigation efforts, though challenging, are often relatively easier to quantify and compare than those for adaptation. Mikael Allan Mikaelsson, Policy Fellow at the Stockholm Environment Institute, highlights that emissions reductions can be tracked with clear metrics, like carbon dioxide equivalent, enabling easier measurement and accountability, even if data collection of Scope 3 emissions is difficult.

In contrast, adaptation is harder to assess due to limited data availability and access on climate risks and supply chain vulnerabilities, coupled with the numerous variables to consider across climate-related scenarios. The uncertainty of anthropogenic climate change, both in whether humanity can achieve net-zero and in modelling the scale of climate risks, further complicates reporting, financial quantification, and action. With no consensus on benchmarked successes, much-needed private sector investment and implementation is hampered.

LACK OF INVESTMENT

Investment in climate adaptation and resilience has also been critically low. Approximately 4.8 per cent of global climate finance, USD 63.5 billion out of USD 1.3 trillion, is invested in adaptation, of which only 0.12 per cent, roughly USD 1.5 billion, comes from the private sector. The World Health Organization (WHO) reports that less than 0.5 per cent of multilateral climate adaptation funding is directed towards the healthcare sector. Meanwhile, the annual shortfall of investment in adaptation is USD 215 to 387 billion, and an estimated gap of USD 26 to 56 billion is needed for global health systems.

To meet these financing needs, incentives will be needed to expand the flow of private capital into adaptation activities and support public funding, which is already strained. Despite this adaptation finance gap, funding is on the rise. The Green Climate Fund directed USD 423 million towards health-related adaptation efforts in 2023, a 137 per cent increase since 2021.[4]

"As a creeping crisis, climate hazards develop gradually but can escalate into acute emergencies, often only partially addressed by authorities."

Professor Magnus Ekengren, Professor at the Swedish Defence University

"There has been almost no funding for research or implementation in climate and health for decades. It is important not to blame the sector for the significant knowledge gaps when there haven't been the needed investments."

Professor Kristie Ebi, Epidemiologist and Professor at the University of Washington's Center for Health and the Global Environment

[4] The Green Climate Fund (GCF) is the world's largest climate fund, supporting transformative action in developing countries through flexible financing and expertise to address climate change impacts.

BUSINESS OPPORTUNITIES

ALL EYES ON ADAPTATION: FIVE KEY TRENDS

Health systems can only become fit for the future by adapting to climate change. Companies across healthcare and life sciences should anticipate greater pressure and expectations on becoming climate-resilient and meeting new demand. Here's a look at the key trends.

1. MOUNTING RECOGNITION

Although historically overlooked, the wide-ranging impacts of climate change on human health are gaining global recognition. While research on this topic spans decades, collaboration between local, national, and global stakeholders is ramping up to build climate-resilient health systems. This creates opportunities for companies to engage with communities and direct investments to adaptation activities, much like the global movement to transition to a net-zero economy has mobilised the private sector for mitigation purposes.

International forums such as the COP (Conference of the Parties) hosted by the UNFCCC (the United Nations Framework Convention on Climate Change) play a key role in advancing climate and health action. At COP26 in 2021, the COP26 Health Programme secured commitments to build climate-resilient health systems.[5]

In 2023, COP28 in the UAE saw over 120 countries, including Sweden, endorse the COP28 Declaration on Climate and Health, backed by a USD 1 billion commitment to tackle the climate-health crisis. The launch of the Baku Continuity Coalition at COP29 in 2024 ensures health remains central to the climate agenda and therefore continues to receive emphasis from future COP presidencies. The Alliance for Transformative Action on Climate and Health (ATACH), launched by WHO in 2021, is also an important catalyst for coordinating greater global efforts to build resilience in health systems and enhance adaptation.

[5] This includes committing to climate change and health Vulnerability and Adaptation (V&A) assessments to inform Health National Adaptation Plans (HNAPs) and secure climate change funding for health. The WHO-led Alliance for Transformative Action on Climate and Health (ATACH) helps members meet their commitments and priorities for climate change and health. Visit the ATACH Community of Practice website and progress tracker for more information.

Regional alliances and initiatives are also emerging. In 2021, the Latin American Climate and Health Network was launched by the Global Climate and Health Alliance (GCHA), uniting medical organisations, research centres, and NGOs to protect public health and maximise climate action co-benefits. That same year, the European Climate and Health Observatory was established with the EU's new climate adaptation strategy, providing tools and resources to build resilience against climate-related health impacts.[6]

In 2023, the Africa Centres for Disease Control and Prevention (Africa CDC) and WHO introduced the Joint Emergency Preparedness and Response Action Plan (JEAP), a five-year partnership to enhance Africa's capacity to detect, monitor and respond to health emergencies, including those worsened by climate change.

"It took 28 years to get health formally and firmly on the agenda at COP. This Continuity Coalition will ensure that it stays there, and that the world responds with clear, consistent, and urgent action to protect health in the context of climate change."

Martin Edlund,
CEO of Forecasting Healthy Futures

There is also growing commitment at the national level. The United Nations Framework Convention on Climate Change (UNFCCC) has developed standards and requirements for national adaptation plans for developing countries, while the EU has required national plans from each of its members. In the public sector, 171 countries now have some form of policy, strategy, or adaptation plan in place.

Furthermore, the number of countries adopting climate change and health Vulnerability and Adaptation assessments increased from 11 in 2022 to 50 in 2023, while those with completed Health National Adaptation Plans (HNAPs) rose from 4 to 43.[7] HNAPs provide a diagnostic of vulnerability and opportunities for action in health systems and actions to address the health impacts of climate change, as part of the National Adaptation Plan (NAP) process.

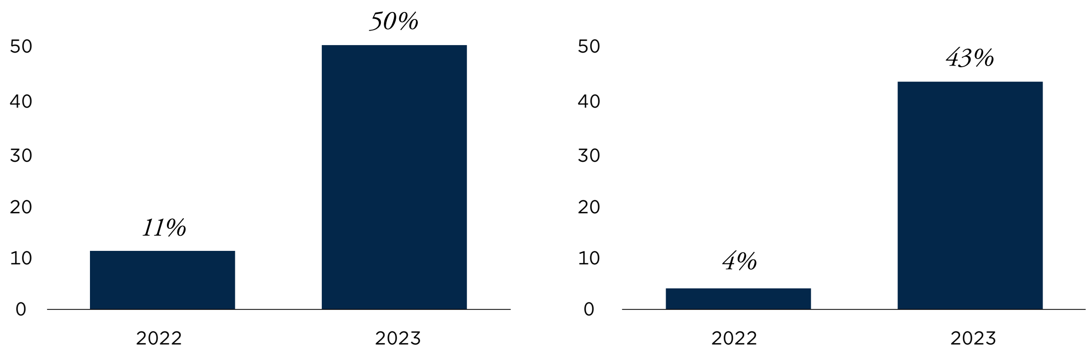
While NAPs and HNAPs are vital starting points, gaps remain, including the need to:

- Clarify impact metrics and tracking
- Define acceptable risk levels
- Link physical risks to adaptation solutions
- Outline required investments
- Drive and sustain implementation

Progress and reporting vary by country, but most plans include actionable recommendations, offering valuable, country-specific guidance for the private sector to strengthen implementation efforts.[8]

NATIONAL ADAPTATION COMMITMENTS FOR HEALTHCARE ON THE RISE

Status of completed Vulnerability & Adaptation Assessments and Health National Adaptation Plans



a) Completed Vulnerability & Adaptation Assessments

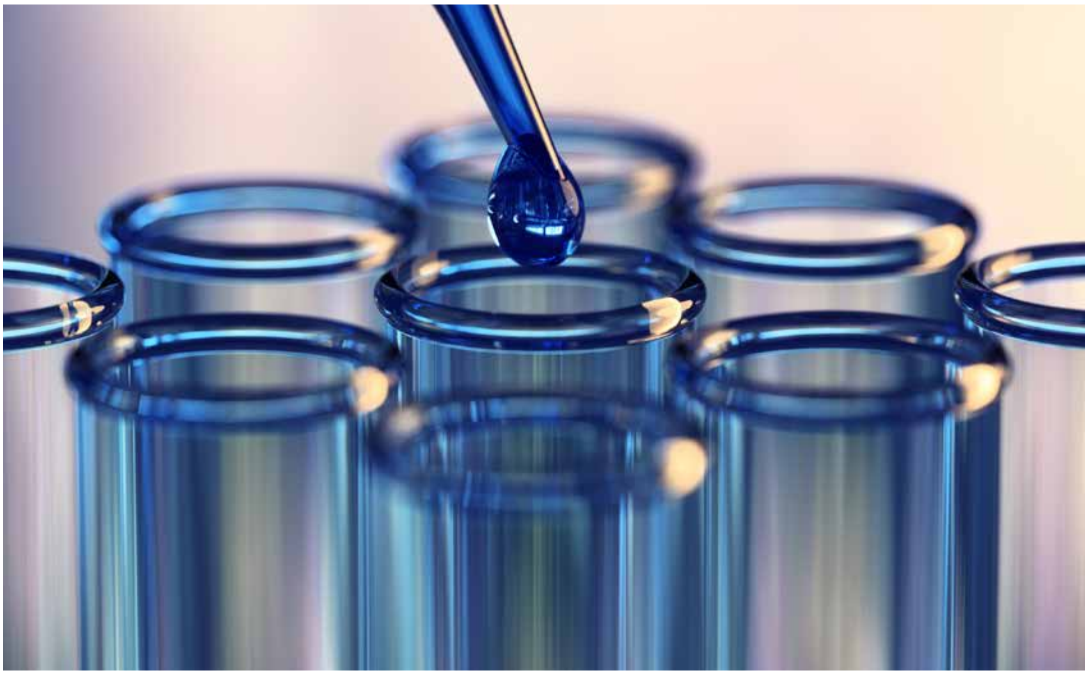
b) Completed Health National Adaptation Plans

Sources: Lancet Countdown Report 2024

[6] The European Climate and Health Observatory, a partnership between the European Commission, the European Environment Agency (EEA), and other organisations, supports efforts to address climate-related health challenges. The EU strategy on adaptation to climate change outlines a pathway for adapting to unavoidable climate impacts and achieving climate resilience by 2050.

[7] To address the impacts of climate change on health and health systems, it is crucial to assess vulnerable populations, geographic areas, and health system capacities. Vulnerability and Adaptation (V&A) assessments identify weaknesses, highlight adaptation measures, and serve as baselines for monitoring disease risks and protective actions. They also build capacity, strengthen resilience, and support investment in health protection and climate adaptation.

[8] Adaptation Gap Report 2024



2. RACE FOR COMPLIANCE

In recent years, sustainability reporting has shifted from being largely voluntary to becoming more regulated and standardised. Companies will increasingly face pressure for compliance and transparency as expectations continue to rise among regulators, investors, customers, and other stakeholders – all pushing for disclosure of climate-related information.

A 2022 Task Force on Climate-Related Financial Disclosures (TCFD) survey revealed that asset managers and owners identified insufficient information from investee companies as the top challenge for effective climate-related reporting. Regulators and governments play a pivotal role in addressing this challenge by defining collective ambitions and enforcing aligned action through policies, public procurement standards, and best practices in policymaking and regulation.

Policy-driven incentives, such as grants for clinical testing of orphan disease treatments, can accelerate pharmaceutical development and approval for overlooked conditions. For example, the US Orphan Drug Act of 1983 helped address the pharmaceutical industry's challenge of achieving commercial scale for treatments with limited sales potential.

Companies in the EU and International Sustainability Standards Board (ISSB) jurisdictions should expect greater pressure to keep up with new policies and reporting regulations, as transparency becomes a hygiene factor. The UK has mandated TCFD reporting since 2021 to calculate risks related to climate change and the associated estimated costs. In the EU, the Corporate Sustainability Reporting Directive (CSRD) mandates Double Materiality Assessments, where climate change – comprising adaptation, mitigation, and equity – is a central area.

While TCFD-aligned climate-related financial risk reporting is not yet compulsory under the CSRD, it is strongly encouraged. Additional risk-oriented regulation, such as the CSDDD, will also require environmental due diligence alongside human rights impact assessments. Countries adopting ISSB standards will implement IFRS S1 and S2, with IFRS S2 specifically addressing climate-related financial risk assessments based on the TCFD framework.

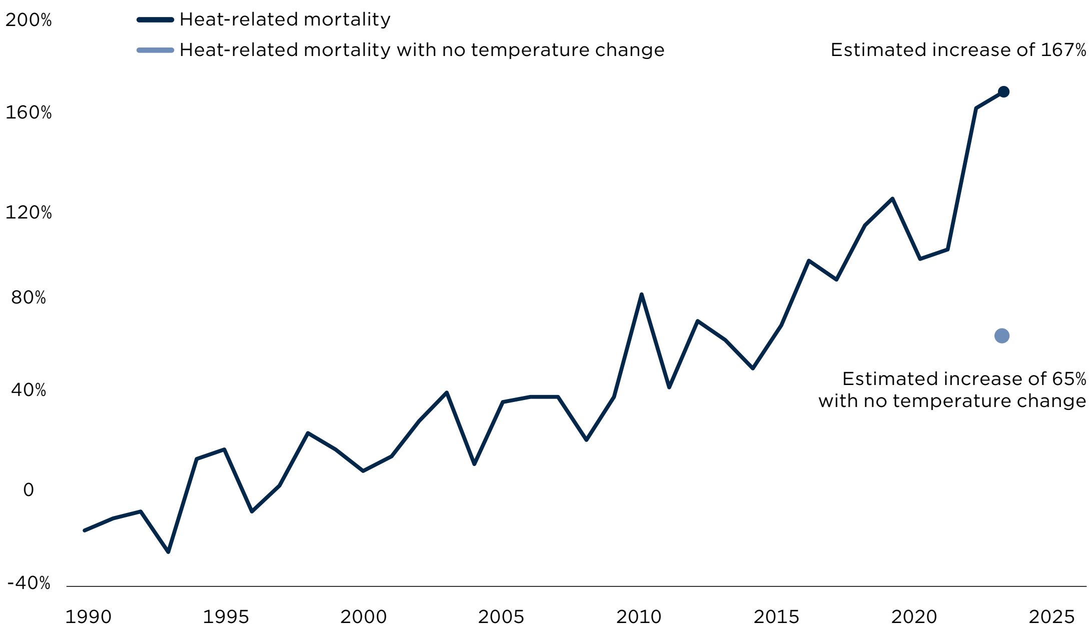
Although these frameworks are still evolving and can be challenging – often involving both administrative and financial burden – they will be impactful in facilitating adaptation action, helping companies align with evolving global standards and enhance their resilience to climate risks.

Sustainable public procurement demands and requirements are also advancing, influenced by increasingly ambitious climate policies. Regional and national emission reduction targets are trickling down into public procurement practices, leading to stricter environmental sustainability criteria. This includes a growing emphasis on both carbon footprint and supply chain resilience, with baseline environmental requirements and weighting becoming more prevalent.

As these public procurement practices gain ground, the public sector is actively engaging with private sector stakeholders to ensure that environmental sustainability requirements – covering both emissions reduction and climate risk adaptation – enhance rather than hinder competition in tenders. This collaboration also aims to drive innovation in sustainable solutions tailored to the specific needs of the healthcare provision in practice.

TEMPERATURE RISE PUSHES UP MORTALITY

Percentage change in heat-related mortality of adults over 65 since 1990s



Sources: Lancet Countdown Report 2024

3. PUSH FOR INNOVATION

Climate change is driving an urgent need for innovation in medical products, technologies and business models to address the health impacts of environmental hazards. This shift presents a significant opportunity to meet emerging demand while strengthening healthcare systems to better respond to climate-related challenges.

Rising temperatures and extreme heat are increasingly affecting medical products and supply chains, particularly in regions without reliable temperature-controlled cold chains. Innovations, such as vaccine microarray patches (vMAPs), offer improved thermostability for vaccine delivery, with the Gates Foundation-backed Phase I/II study on measles and rubella vaccines led by Vaxxas as notable examples.

The rise in heat-related deaths, especially among people over 65, increased by 167 per cent in 2023 compared to the period 1990–1999, according to the Lancet Countdown. Medical devices like heat-stroke detection systems, such as Kenzon's arm sensor device, and passive-cooling wearables, such as Eztia's heat-absorbing wearable, aim to address these health risks.

The escalating severity of extreme weather also requires enhanced surveillance, early-warning, and response systems using climate, health, and community data. Global initiatives like those led by WHO, Wellcome Trust, and PATH, alongside regional- and country-level projects such as the climate and health observatories in Europe and Brazil, are complemented by tech companies like Microsoft, Google and Amazon using AI and cloud systems to link climate events with health outcomes.

Furthermore, health systems need to fortify infrastructure, supply chains, and workforce capacity to manage climate-induced shocks. Some interventions can also be synergistic with mitigation. For example, the digital health services scaled up during the Covid pandemic can now be leveraged as a long-term solution to reduce patient and staff travel, as well as improve access to care in extreme weather emergencies.

Innovation in climate-resilient medical products and diagnostic tools must be scaled to address diseases worsened by climate change and emerging health threats. Solutions should align with clinical guidelines, regulations, and the evolving healthcare landscape. As climate change drives risks such as respiratory and vector-borne diseases, affordable and accessible technologies for early detection, prevention, and management will be essential. AI-powered diagnostics and mobile health apps will play a critical role in adapting to shifting disease patterns.

4. SYNERGIES WITH PRECISION MEDICINE

Healthcare systems are under increasing pressure not only from climate change, but also ageing populations, chronic illnesses, and staff shortages. To address these challenges and improve care, the sector is shifting towards prevention and precision medicine, with data and digitalisation playing a key role.[9] Technologies like telemedicine improve access to healthcare, reduce the reliance on physical facilities, and lower the sector's environmental footprint.

Climate-driven health vulnerability screening supports precision medicine by assessing the interplay of genetic and environmental factors. For example, the Climate Resilience for Frontline Clinics project, a collaboration between Harvard Chan C-CHANGE and Americares, with Biogen as a founding donor, developed a toolkit to help healthcare providers prepare for climate-induced harm based on community-level assessments. A personalised medicine approach could be instrumental in identifying and protecting individuals most at risk for heat-related deaths, according to researchers at the College of Health Solutions, Arizona State University.

By analysing large-scale data for disease and illness relationships, including genetic and clinical records, medical treatments can be tailored to individual needs. Countries with advanced electronic health record systems and health data platforms are better positioned to adopt personalised healthcare and climate surveillance solutions, improving responses to climate-induced disease and illness. Improved data collection and analytical capabilities can enhance the understanding and response to climate-induced illnesses and diseases.

"We see many private sector initiatives are driven by the pharmaceutical industry, but we need all parts of the private sector to contribute. As part of WHO's work supporting countries, including through the ATACH initiative, we understand the necessity of harnessing the collective power of all health stakeholders to advance climate-resilient and low-carbon sustainable health systems."

Dr. Maria Neira, Director of the Department of Environment, Climate Change and Health at the World Health Organization

5. POWER OF PARTNERSHIPS

Successful climate adaptation requires coordinated leadership across sectors and geographies, with both public and private entities aligning investments to deploy the necessary funding and technologies.

Public-private partnerships are also key to overcoming challenges in climate-related disease treatment and health system resilience. In such agreements, the private partner designs, funds, and manages healthcare services, while the public partner defines objectives and monitors compliance. COVAX, co-led by Gavi, the WHO, and the Coalition for Epidemic Preparedness Innovations (CEPI), is an example of a global initiative ensuring equitable access to COVID-19 vaccines. Another example is CEPI, which unites the public and private sectors, civil society, and philanthropic organisations to expedite vaccine development in response to epidemics and pandemics.

Sweden is itself a leader in fostering 'Triple Helix' collaborations, with initiatives like Medicon Village in Lund, which brings together academia, industry, and government to address healthcare challenges and advance life science innovation. With support from institutions like Lund University and government agencies such as Vinnova, these partnerships drive progress in areas like climate adaptation and sustainable healthcare. In addition, public stakeholders such as Karolinska University Hospital are also engaging with the industry and academia in pilot projects to test innovative products.

Although cooperation between industry and government can be challenging, there are successful precedents, such as the UK's Sustainable Healthcare Coalition (SHC), which fosters public-private collaboration for better sustainability practices. This coalition, involving organisations like AstraZeneca, Novo Nordisk, and the NHS, drives action on net-zero healthcare.

There is also significant potential for cross-disciplinary learnings and collaboration to implement climate adaptation across healthcare and the life science industry. Sharing expertise and resources can help bridge knowledge gaps and create mutual benefits.

For example, the defense and security industry has started to incorporate climate risk across operations, including resilience-enhancing infrastructure, flexible supply chains, and integrating climate risks into exercises, wargames, analyses and studies. This comprehensive, risk-focused approach is applicable to companies in other industries as well. Agriculture has long emphasised community-level adaptation, such as the FAO's work in Lesotho, testing drought-resistant practices and providing training for farmers. Locally tailored solutions can help healthcare systems adapt to climate-related challenges, as both industries face similar localised risks.

"We conduct pilots to test implementation of new solutions. Based on this, we evaluate the outcomes and decide whether to scale up or not. We have a lot of partnerships with the industry, academia, and other public stakeholders. There are so many opportunities."

Anna Sahlström, Head of National and International Affairs and Head of Innovation at Karolinska University Hospital

"It boils down to relationships and trust. You have to have open and honest dialogues and be clear that you have a common purpose, which is decarbonising healthcare or whatever it may be on a sustainability front, and that everybody has value to bring to the equation."

Dr. Fiona Adshead, Chair of the Sustainable Healthcare Coalition

[9] See more in Business Sweden's EGI: "The Road to Personalised Medicine" (2023)

CONCLUSION

TIME TO SHAPE TOMORROW'S RESILIENT HEALTH SYSTEMS

Swedish healthcare and life sciences companies have an unprecedented opportunity to take the lead in shaping the climate-resilient health systems of the future, while also advancing climate mitigation efforts. Here are five ways to seize the first-mover advantage.

Global healthcare systems are under growing pressure to tackle the consequences of a harsher and more unpredictable climate. Comprehensive action is needed, and Swedish healthcare and life sciences companies can provide the vision and leadership that is required to speed up change.

This opportunity is two-fold: Swedish companies can not only reduce their own operational risks but also to offer value-adding solutions. Swedish companies are in a strong position to seize the first-mover advantage when it comes to comprehensive climate action. This means incorporating adaptation, alongside decarbonisation and other sustainability strategies, to make health systems more resilient and future-proof.

INNOVATION IS KEY

The relationship between climate and health is rapidly becoming more acute. Despite limitations and uncertainty in data, tools and models, companies need to adapt to this new reality. And while global commitment is growing, much more needs to be done – with no shortage of adaptation interventions that companies can undertake here and now.

Innovation in developing climate-resilient medical products and diagnostic tools to manage both existing diseases exacerbated by climate change and emerging conditions needs to be scaled. The escalating severity of extreme weather requires enhanced surveillance, early warning, and response systems using climate, health, and community data. Meanwhile, health systems must fortify infrastructure, supply chains, and workforce capacity to manage climate-induced shocks.

CALLS FOR TRANSPARENCY

Swedish healthcare and life sciences companies will increasingly face pressure to comply with growing expectations from regulators, investors, customers, and other stakeholders to disclose climate-related information. As sustainability and climate reporting evolves, expectations corresponding to the level of detail regarding climate-related financial impacts is expected to increase.

Frameworks such as the TCFD have significantly shaped reporting standards across the EU, ISSB jurisdictions, and other voluntary disclosure systems like CDP. These frameworks encourage organisations to provide detailed financial information to enhance transparency and support informed decision-making. In the on-going race for compliance, the long-term winners are expected to be those who proactively go the extra mile – beyond compliance.

ROLE OF PARTNERSHIPS

Successful climate adaptation requires joint leadership across industries and geographies, with both public and private entities aligning investments to deploy the necessary funding and technologies.

Policymaking and public-private partnerships will be key to overcoming challenges in climate-related disease treatment and building resilient health systems. Sweden is a leader when it comes to fostering 'Triple Helix' collaborations, and there are ample opportunities for Swedish healthcare and life sciences companies to take advantage of this position to drive progress in improving operational resilience and exploring new commercial opportunities.

FIVE STRATEGIC RECOMMENDATIONS

Swedish healthcare and life sciences companies should capture the momentum and develop comprehensive climate action strategies that integrate both climate mitigation and adaptation. These efforts need to be aligned with the overall business strategy for effective implementation, buy-in, and lasting change.

By reshaping your approach to risk management, positioning climate adaptation as a business imperative, you can build capabilities across all necessary core functions. This ensures climate action permeates the entire organisation. Like the transition to a net-zero economy, climate adaptation requires a systematic approach.

BUILD OPERATIONAL RESILIENCE

- *Rethink strategy and decision-making:*
  Climate adaptation is not just a priority for your sustainability team – it requires involvement from all levels of management, various business functions, and teams that may not have previously worked together. Focus on the C-suite level and transformative opportunities to build operational resilience and lay the groundwork for comprehensive climate action.
  Embed resilience into your business strategy, governance, and operations. Align climate adaptation planning with financial decision-making as a CFO task, while R&D explores innovation prospects. Systematically assess and address near- and long-term climate risks within broader risk management.

- *Identify climate risks and opportunities:*
  Build a deep understanding of climate-related risks and vulnerabilities in operations and supply chains. Evaluate your company's exposure to unforeseen events and agree on actions to address associated risks effectively. Quantify potential impacts and prepare for future climate scenarios as new data and insights reveal how and where climate hazards are intensifying. Consider the impact on mitigation and growth targets, as adaptation decisions may involve long-term investments, including infrastructure assets. Limiting risks may require fundamental changes, such as revising location or asset strategies.

- *Follow established compliance frameworks*
  Integrate physical and transition climate risks and opportunities into climate-related disclosures and materiality assessments. Leverage upcoming compliance requirements and recommended frameworks to raise awareness and establish accountability mechanisms. This allows you to drive holistic climate action through existing reporting processes.

CAPTURE VALUE-ADDING OPPORTUNITIES

- *Build a strong narrative for climate action.*
  Compliance with reporting regulations is one thing; going beyond compliance to reimagining your climate action narrative and positioning in the market landscape is another. Aim to become a climate frontrunner and trusted partner for the healthcare and life sciences industry. Package and communicate your learnings to gain recognition and foster collaboration with private, public, and academic stakeholders.

- *Proactively meet new demand:*
  Anticipate new healthcare demand in the face of climate change and innovate new products and solutions – taking local climate impact scenarios and healthcare needs into account. Explore synergies as the industry's focus shifts to prevention, early screening and well-being, and leverage Sweden's strong tradition of cross-discipline collaboration on the global stage.

BUSINESS SWEDEN CAN SUPPORT YOU

Business Sweden supports Sweden's healthcare and life sciences ecosystem across a wide range of specialty areas. We help Sweden's innovators and international investors identify partners and opportunities, navigate local market conditions and forge relationships with government stakeholders.

Whatever your needs may be – M&A, supply chain development, public affairs or tender support – we stand ready to promote and evaluate the impact and potential of green policies and assist you at every step of your international expansion.

In selected markets, the overarching Team Sweden framework – where Business Sweden collaborates with local Embassies, agencies and industry associations – offers valuable support and a platform for Swedish companies to exchange learnings, engage with local stakeholders and jointly reimagine future solutions to advance green transition initiatives.

With a unique mandate from the Swedish government and the business sector, our global team offers strategic advice and practical support in more than 40 markets worldwide.

BUSINESS SWEDEN
THE SWEDISH TRADE & INVEST COUNCIL

PER JANSSON
Interim Head Of Global Industry Network Life Science
per.jansson@business-sweden.se

Find all our Executive global insights here.

Subscribe to our Executive Global Insights.

THIS ANALYSIS WAS DEVELOPED BY:

Lead Authors:
Grazyna Sotta, Senior Project Manager
Robert Löf, Project Manager
Emma Hamre, Consultant

Contributors:
Britta Stenson, former Head of Global Industry Network Life Science
André Hedberg, Senior Project Manager

BUSINESS SWEDEN
THE SWEDISH TRADE & INVEST COUNCIL

We help Swedish companies grow global sales and international companies invest and expand in Sweden.

BUSINESS-SWEDEN.COM

BUSINESS SWEDEN Box 240, SE-101 24 Stockholm, Sweden
World Trade Center, Klarabergsviadukten 70
T +46 8 588 660 00 info@business-sweden.se
www.business-sweden.com