BiGGAR Economics

Economic Impact of Health Holland

A report to

Health Holland

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BiGGAR Economics

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1. Executive Summary

Health Holland has successfully leveraged a huge Research and Development (R&D) investment in the Dutch Life Sciences and Health (LSH) sector. It operates as the Active Steward of the LSH innovation ecosystem, aligning all players across government, academia, industry, and citizens to translate scientific excellence into tangible economic and societal impact.

A key to this success lies in Health Holland's operational strategy, which differentiates it from many governmental organisations. By possessing a deep understanding of the LSH sector's scientific needs and the legal and bureaucratic constraints of government, Health Holland consistently finds creative, compliant solutions that allow for the flexibility required to drive scientific innovation.

1.1 An Engine for Economic and Societal Impact

Since 2013, Health Holland has allocated almost **€742 million in Public-Private Partnership (PPP) subsidies** to more than 1,777 collaborative projects. It has managed this vast portfolio of R&D projects with **highly efficient, modest administrative costs**, while championing **valorisation, entrepreneurship, networking and internationalisation**.

For every €1 of income, Health Holland generated an economic contribution of €6 in the Netherlands, and this is expected to increase to €23 in the longer term as returns on R&D investment are realised.

- **Substantial Returns on Investment:** To date, these core operations, valorisation programmes, and leveraged R&D spending have delivered **€4.7 billion in Gross Value Added (GVA)** to the Dutch economy. This translates to a highly effective return on public investment: **for every €1 of income, Health Holland has delivered €6 in direct economic impact.**
- **Future Returns:** Because the LSH sector operates on long development timelines, the value of these investments will continue to compound. When factoring in the expected long-term Return on Investment (ROI) on R&D, an additional future GVA impact of €13 billion is expected, bringing the **total economic contribution to €17 billion**. Ultimately, this **increases the expected return ratio to €23 for every €1 invested**.
- **Indirect Societal Contributions:** The collaborative R&D fostered by Health Holland supports the development and adoption of innovations that may contribute to societal benefits. While many impacts are indirect and take place over the longer term, supported innovations have the potential to contribute to health gains, improved quality of life for patients and the elderly, and the

development of solutions designed to reduce healthcare costs and alleviate workforce shortages.

While it is not possible to observe a counterfactual scenario in which Health Holland does not exist, it is reasonable to expect that, in its absence, both R&D investment and the returns generated would be lower. This can be stated with a high degree of confidence since Health Holland plays an important role in helping the LSH system function effectively, strengthening the conditions necessary for innovation and value creation. The returns presented in this report should not be interpreted as the direct return on investment of Health Holland alone, but as the return generated by an innovation system in which Health Holland operates as a key enabling actor.

1.2 LSH Innovation Ecosystem Active Steward

The LSH sector thrives not on a simple linear model of research and commercialisation, but as a **complex, interconnected innovation ecosystem** that requires all parts and relationships to be strong. To succeed, such a dynamic system requires a **trusted organisation to act as an Active Steward**, identifying weak links and ensuring continuous improvement. Health Holland has successfully fulfilled this role, helping the Dutch LSH sector become one of the leading global locations, currently supporting a €32 billion direct GDP contribution and 53,000 jobs.

Health Holland achieves this stewardship by operating as a neutral and independent broker, bridging the gap between academia and industry, acting as a financial catalyst, and proactively mobilising stakeholders to build consortia. It unifies the sector under a single national brand ('Orange Lanyard'), aligns policy objectives with practical implementation, and supports small and medium-sized enterprises (SMEs) through targeted valorisation, ensuring the entire system remains robust, dynamic, and internationally competitive.

Health Holland has a catalytic role within the LSH innovation ecosystem; it does not operate in isolation. The **ecosystem's success is built on the substantial contributions of external partners** and the **collaboration of all players** in the sector.

1.3 Strategic Alignment with Government Policy

As the Ministry of Economic Affairs and Climate Policy (EZK) transitions towards an industry policy focused on business and labour productivity, Health Holland's value proposition remains highly aligned. For the complex and highly regulated LSH sector, it is pivotal for an Active Steward (like Health Holland) to ensure PPPs drive innovation effectively and EZK implements the evolving economic agenda.

However, a critical strategic risk remains: decoupling the PPP subsidy allocation function from the active stewardship of the LSH ecosystem **risks undermining a decade of progress**. As government policies evolve, it is vital to preserve Health Holland as a strong, integrated institution capable of addressing national challenges and delivering on the state's productivity and healthcare resilience goals.

2. Introduction

BiGGAR Economics was commissioned by Health Holland to assess the economic contribution of its activities in the Netherlands and its wider role in the LSH sector.

2.1 Background

Health Holland is the coordinating and executing body of the Dutch LSH Top Sector, one of the key sectors identified as priority areas for the economy. It was founded under the Top Sector Innovation Policy (known now as the Mission-Driven Innovation Policy) in 2011 by the Dutch government. This policy was focused on public-private collaboration for R&D and innovation across key economic sectors.

Health Holland was established to connect scientists, entrepreneurs, policymakers such as EZK, and citizens to generate societal and economic impact. With other partners from the LSH network, it has focused on strengthening the LSH ecosystem and accelerating commercialisation of research. To achieve this, it supported various activities in addition to financing PPPs, including valorisation programmes, networking events, international missions, strategy execution and development.

2.2 Study Scope

Health Holland has commissioned BiGGAR Economics to assess the economic contribution of its activities in the Netherlands and its wider role in the LSH sector.

The scope of the study is to:

- quantify the economic impact of Health Holland;
- provide a multiplier comparing government funding with economic impact in the Netherlands; and
- describe societal impacts and particularly health benefits associated with Health Holland's activities and outputs.

This report presents an **independent and objective assessment** conducted by BiGGAR Economics. The findings, economic quantifications, and strategic recommendations are based on rigorous economic modelling and extensive stakeholder consultations, reflecting our commitment to **impartial analysis**.

2.3 Work Programme

The findings of this report are based on:

- BiGGAR Economics' experience in LSH and innovation ecosystems;
- Extensive data gathering by Health Holland on activity and evidence of impact since 2013 across its core operations, PPP funding and total costs, valorisation programmes, networking events, international outgoing and incoming missions, policy support and relevant case study reports;
- Publicly available data including sources such as the Organisation for Economic Co-operation and Development (OECD), Eurostat, Statistics Netherlands, Health Holland's website and other posts and reports available online. These sources are referenced throughout the report where relevant; and
- An extensive consultation programme to identify and understand the sources of impact and the role of Health Holland in the LSH innovation ecosystem. This included:

    - **11 internal consultees** including directors of Health Holland and members of different teams such as subsidy, valorisation, international, strategy, communication and networking activities teams, as well as Board and Advisory Board members; and
    - **22 external consultees** from the Dutch LSH sector including the government, academic hospitals and researchers, Health Foundations, Strategic PPPs, regional investors, science parks, large enterprises, SMEs and other relevant stakeholders.

A list of all the consultees is included in Appendix C.

2.4 Economic Contribution Methodology

The economic value generated by Health Holland is expressed using two widely accepted measures of economic contribution:

- **Gross Value Added (GVA)**[1] – a measure of the monetary contribution that an organisation or activity adds to the economy, expressed in Euros; and
- **Employment** – measured in terms of jobs supported.

GVA impacts are reported to the nearest whole €million, or €billion, depending on the appropriate scale for each source of impact, and jobs have been rounded to the nearest 100.

The analysis is based on data provided by Health Holland and estimates Health Holland's economic contribution for the Netherlands as a whole. GVA impacts were estimated for each year from 2013-2025 and then summed to get a total cumulative GVA impact over the period 2013-2025. Employment impacts were also estimated for each year from 2013-2025 and are presented as the average number of jobs supported over the period 2013-2025. Where data was not available, the analysis started from the earliest year available.

[1] The production approach to measuring GVA has been used, where GVA is equal to the value of the service produced less the value of the inputs used. Typically, this is estimated by subtracting the non-labour (goods and services) costs of the organisation from the organisation's total income.

For each contribution, direct effects were estimated using sector appropriate economic ratios between turnover, GVA and employment. Indirect effects arise as a result of spending in the supply chain while induced effects arise from staff spending. For each contribution, indirect and induced effects were estimated using economic multipliers. The economic impacts presented throughout the report are the sum of these direct, indirect and induced effects.

Economic ratios and multipliers for the Netherlands were derived from Input-Output Tables[2] published by the Organisation for Economic Cooperation and Development (OECD) and Statistics Netherlands' employment dataset[3]. The analysis uses data from 2022, the latest year for which OECD data is available. Further detail of the methodology used to estimate economic impacts is provided in Appendix A.

2.5 Report Structure

The remainder of the report is structured as follows:

- Chapter 3 describes the role of Health Holland and its activities;
- Chapter 4 quantifies the operational impacts of Health Holland;
- Chapter 5 provides estimates of the economic impacts of PPPs supported;
- Chapter 6 quantifies the economic impacts of valorisation activities;
- Chapter 7 addresses Health Holland's activities supporting internationalisation, networking and policy development;
- Chapter 8 includes some case studies that demonstrate the societal contribution of Health Holland;
- Chapter 9 describes the role that Health Holland plays as the Active Steward of the Dutch LSH innovation ecosystem;
- Chapter 10 sets the role and future of Health Holland in the economic policy context;
- Chapter 11 presents a summary of the economic impact and the conclusions of the report;
- Appendix A: provides detail on methodology;
- Appendix B: compares the role of Health Holland in the innovation ecosystem to VIB in Flanders; and
- Appendix C: includes the list of internal and external consultees.

[2] OECD (2025), Input-Output Tables. Available at: https://www.oecd.org/en/data/datasets/input-output-tables.html

[3] Statistics Netherlands (2025), Employment. Available at: https://opendata.cbs.nl/#/CBS/en/dataset/85918ENG/table?ts=1771967956362

3. Health Holland Role and Activities

This Chapter provides an overview of Health Holland's role and main activities.

3.1 Role of Health Holland

Health Holland is the national platform for LSH innovation in the Netherlands. It represents the international brand and central coordinating body for the Dutch LSH Sector. Its main role is to bring together companies, researchers, healthcare providers, policymakers and citizens to support R&D projects and stimulate collaboration, entrepreneurship and innovation in prevention, diagnosis, treatment and care.

Figure 3.1 Health Holland Activities

Health Holland achieves this by:

- implementing the PPP scheme and guiding ongoing PPP grants and programmes;
- supporting entrepreneurs, start-ups and scale-ups through valorisation programmes;
- connecting organisations in the LSH sector through activities such as networking events;
- identifying and addressing challenges supporting strategy development and translation; and
- positioning the Netherlands internationally and using networks to expand opportunities.

3.2 Health Holland Activities

The following activities and roles were enhanced over time through collaborations with organisations like Invest NL and regional development agencies (ROMs). These became vital for the success of Health Holland.

3.2.1 PPP

The PPP subsidy is a national funding instrument designed to stimulate and structurally embed public-private collaborations in R&D within the Dutch LSH sector. Health Holland was appointed as the coordinating and executing body for the LSH sector, allocating the funds to different partnerships and projects. It has been responsible for call management, evaluation of proposals, financial allocation, contracting, monitoring of on-going projects and reporting.

Over time there were changes in the subsidy assignment and associated distribution routes. The initial Top Consortium Knowledge and Innovation (TKI) Subsidy (2013-2014) was amended to PPP Subsidy (2015-2023) and later to PPP Innovation Subsidy (2024-Present). Accordingly, the distribution of the funds has been taking place through the following routes:

- **Temporary Reservation**: a portion of funding was set aside for organisations (research organisations, companies and Health Foundations) with private R&D contributions accessed via PPP applications in a Match Call;
- **Institutional PPP Allocation**: annual funding based on the private R&D contributions allocated to strong, established research institutions and Health Foundations with proven success in previous evaluations to finance PPPs via internal calls;
- **Cash Contributions**: a PPP Allowance of up to 30% of a substantial cash contribution from a private party to a research organisation was applied in the Match Call;
- **Strategic PPPs**: large-scale, multi-year partnerships which can apply for significant kickstart funding and are evaluated by the Strategic and Evaluation Committee and external reviewers. Two (Oncode Institute and RegMed XB) later became National Growth Fund (NGF) proposals;
- **Thematic Calls**: targeted funding calls focused on specific challenges or groups (e.g. Covid-19, sector-focused calls, SME calls);
- **Pilot Call**: 2024 invitation-only call to test the new PPP Innovation Subsidy Scheme (PPS-I) via allocation to established institutions and selected health funds;
- **Programme Call**: enables the new programme-based selection of projects by public-private consortia in 2025 under Health Holland's conditions.

The initial operation of the PPP Allowance required Health Holland to gather data from LSH sector partners every year to determine the total private R&D investment which was then used to calculate and generate the total available PPP budget. Health Holland also determined the research direction by choosing the call design, timing, allocation mechanism and evaluation criteria while also providing guidance to applicants to help them build consortia.

Health Holland made the decision to position Health Foundations and SGF as structural partners due to their significant private funding capacity, strong societal recognition, patient-focused objectives and the long-term commitments beyond specific budget cycles to increase the budget. This was initiated through a combination of evidence from the 2014 IMPULS Call[4] which showed the viability of collaboration between Health Foundations, industry and academia, and longstanding discussions with EZK on recognising Health Foundations as a private source of investment in the LSH sector. These led to policy change by EZK that allowed charity funding to count as private capital for government matching.

To address fragmentation and increase impact in the LSH sector, Health Holland collaborated with other subsidy institutions such as the Netherlands Organisation for Health Research and Development (ZonMw) and the Dutch Research Council (NWO) for funding thematic calls in line with identified areas of high priority.

Health Holland also collaborated with other top sectors, including Agri and Food, Water and Maritime, and Information and Communication Technology (ICT), through cross-over calls on cross-sectoral themes. This was primarily due to the fact that many societal challenges require cross-sector collaboration to be tackled.

3.2.2 Valorisation

Health Holland aims to support the effective translation of research into economic and societal benefits, boost innovation capacity of SMEs and start-ups and support the long-term competitiveness of the Dutch LSH sector. Core activities to achieve this are the following:

Start-up Programmes

Start-ups are essential in the valorisation process as they are highly innovative and develop faster. While start-up founders often have deep technological expertise, they are not always equally experienced on the business side. For this reason, Health Holland runs two programmes:

- **LifeSciences@Work (LS@W)**: focuses on drug development, MedTech, diagnostics and enabling technologies. One of the main activities is the Venture Challenge, a 10-week programme where entrepreneurs learn how to translate science into business cases. LS@W also has Expert Classes (workshops on legal, regulatory and funding topics) and Mentor Matching to prepare start-ups for growth; and
- **Zorginnovatie.nl[5] (ZI.nl):** a Dutch platform and community focusing on digital health, assistive tools and non-invasive MedTech. Health Holland manages the community platform and executes activities such as the start-up programmes National Healthcare Innovation Award (Nationale Zorginnovatieprijs) and the Health Impact Accelerator, as well as organising innovation cafes and regional matching events.

[4] Health Holland (2015), Voortgangsrapportage St. TKI – LSH 2014.
[5] This translates into Healthcare Innovation Netherlands.

Financial Instruments for SMEs

Health Holland also manages funding instruments that directly benefit innovative SMEs. For instance, Health Holland lowers the threshold for SMEs to collaborate with experienced sector experts and advisors (**Innovation Brokers**), covering 50% of their costs (up to €5,000 per business). The support includes building value propositions, securing venture capital, navigating regulatory certification and product development.

Health Holland supports valorisation, market creation and SMEs through its collaboration with various partners in the sector including University Technology Transfer Offices, healthcare experts and commercial partners.

3.2.3 Internationalisation

Internationalisation is positioned as an extension to the Dutch LSH ecosystem and contributes to the development, scaling and implementation of innovations internationally. Health Holland's core function related to internationalisation is to ensure that international opportunities are accessible, coherent, and strategically aligned with policy and LSH objectives.

It achieves this by organising and engaging in over 50 international activities annually including:

- **Delegation Visits (Missions)**: consist of a number of stakeholders (companies, universities, researchers, policymakers, science parks and investors) in groups of 20-30, which are accompanied by a government official. These are coordinated by Health Holland which organises collaboration, content and connections; and
- **International Conferences**: to position the Dutch LSH sector internationally by connecting stakeholders and aligning with strategic goals, with Health Holland identifying relevant partners and ensuring targeted engagements and follow-up relationships;
- **(Inter)national Networking Events:** information on the networking events is provided in Section 3.2.4.

A key function of Health Holland is to keep track of individuals, companies, destinations, timings, programmes, follow-up relationships of the international activities organised. This helps it to better connect internal and external stakeholders before and after the international activities take place. In addition, it sets up strategic dialogues and roundtables, as well as formal research programmes with countries like Switzerland, including the programme around Organ-on-Chip technology. It also selects awardees for specific international innovation awards such as the annual Transatlantic Connections Award (Henri Termeer Award) alongside the Termeer Institute[6].

[6] Termeer Institute (2026), *Programs*. Available at: https://termeerinstitute.org/programs/

Furthermore, Health Holland implements formal Memorandums of Understanding Agreements (MOUs) established between the Dutch government and foreign regions.

It also identifies opportunities for the LSH sector and takes actions to secure them. For example, in 2019, the European Medicines Agency (EMA) moved its headquarters in the Netherlands. Health Holland took advantage of this opportunity to expand the LSH sector's position as a recognised European medicine center, and utilised the National Action Programme 'New opportunities for Top Sector LSH' to strengthen the LSH sector's international position and brand and attract foreign investment. It also published various National Bidbooks such as the 'Welcome to the Netherlands' in 2023 to attract foreign companies to the ecosystem.

Health Holland now **operates on the basis of a muti-year International Strategy**[7]. This strategy is prepared and revised based on collaborations and agreements with external stakeholders including government, industry, regional and national agencies such as the Netherlands Enterprise Agency (RVO), and innovation hubs. It defines how, why, and where international capacity is in the sector as well as priority countries and themes.

3.2.4 Networking & Communication

Health Holland's networking and communication activities are key enabling components of the valorisation and internationalisation activities mentioned in previous sections. Since 2024, the networking activities also help support some of the PPP programme consortia to organise events and match with relevant partners and SMEs. This allows them to operate with the support of Health Holland but on their own themes.

Networking and communication activities are fundamental to connecting stakeholders across the Dutch LSH sector, facilitating collaboration, strengthening ecosystem visibility and ensuring knowledge, opportunities and strategic priorities effectively reach relevant national and international partners.

There is a network activities scheme which is open to third parties every year. Health Holland picks the activities that are the most impactful for SMEs and applications for these activities are evaluated by an internal committee based on relevance, alignment with sectoral needs and Health Holland's strategy and the Knowledge Innovation Agenda (KIAs) for Health & Care Missions, and whether the costs and contributions are proportionate to the size of the event. After this evaluation, the Board of Health Holland makes a decision on the financing of the activities. Each year Health Holland (co-)finances on average 60 networking activities, reaching over 4,000 SMEs in total[8].

[7]Health Holland (2024), *International Strategy 2024-2027 Looking Forward: Top Sector LSH*. Available at: https://www.health-holland.com/sites/default/files/downloads/Internationale_strategie%202024%20-2027_3_0.pdf

[8] Health Holland (2026), *Financial Support Network Activities.* Available at: https://www.health-holland.com/events/financial-support-network-activities

Networking activities involve:

- **Organisation of Matchmaking Events**: targeted networking and knowledge exchange events to connect SMEs and entrepreneurs with the right investors, regulatory advisors and other relevant stakeholders;
- **Arrangement of Speaking Slots**: time for SMEs and PPPs to speak and present their innovations at events to gain visibility;
- **Financing of Valorisation and Internationalisation Events**: including the BIO International convention, Expert Classes offered via the LS@W platform, large national SME-related conferences such as the Dutch Life Sciences Conference and small-scale masterclasses or regional networking events.

In addition to financing, Health Holland's communication team contributes to the content and marketing of the activities to ensure that all businesses in the LSH sector are aware of these networking opportunities. It also contributes to the promotion of events and stakeholder engagement, dissemination of results, and visibility of PPPs and their societal impact. One of the ways that this is achieved is through the publication of **Newsletters & Case Studies** containing success stories that show the timelines, successes and challenges of different players of the LSH sector.

3.2.5 Strategy

Health Holland expanded its focus and operations, strengthening the strategic governance of innovation policy in Health and Care and ensuring the execution of the Mission-Driven Innovation Policy of EZK. A dedicated strategy team has focused on aligning Health Holland's internal activities with external government policies and sectoral needs, balancing strategic priorities with practical implementation. Its objective was to overcome fragmentation in the LSH sector.

The main activities included:

- **continuous strategic support to Knowledge Innovation Covenant (KIC) partners (2019-present)** by actively bringing together all relevant organisations in the ecosystem to implement the Health and Care mission objectives in the Knowledge and Innovation Agenda (KIA) and generate real-world outcomes;
- **coordination and authorship of the first two KIAs for Health and Care (2020-2023[9] and 2024-2027[10])** which became the frameworks that linked public and private stakeholders under common missions for the creation of economic and societal impacts;
- **coordination and monitoring of mission-driven implementation (2020-2022)** across KIC partners based on the priorities identified in the KIA and contribution to strategic reports, analyses and policy input and cross-KIA working groups. The monitoring process was done in collaboration with EZK and the Ministry of

[9] Health Holland (2026), Knowledge and Innovation Covenant 2020-2023. Available at: https://www.health-holland.com/publications/useful-documents/kic

[10] Health Holland (2024), Health& Care Knowledge and Innovation Agenda 2024-2027. Available at: https://www.health-holland.com/sites/default/files/inline-files/KIA%20English_0.pdf

Health, Welfare and Sport (VWS). The evaluation focused on Health and Care and the outcomes formed the basis of the 2024-2027 KIA revision;
- **alignment of KIA governance and objectives with VWS policy (2023-2024)** to reflect the needs of the second KIA and revised innovation missions, connecting them to healthcare policy frameworks in collaboration with VWS.

To achieve the above, one of Health Holland's main functions was the organisation of consultations and meetings. Health Holland was also regularly consulted as expert on various policy documents.

3.3 The Role of the Top Team and Advisory Board

The **Top Team** was appointed by EZK in 2011 and consisted of leading representatives from industry, knowledge institutions and public sector. It provided strategic leadership for the Dutch LSH sector and by engaging in continuous stakeholder consultation and monitoring sector performance, it projected emerging societal and technological challenges, developing a forward-looking vision.

Throughout its mandate, the Top Team's activities aimed at reflecting the shifts in national policies. It **translated Top Sector policies into sector-specific priorities** that drove the strategic direction of Health Holland beyond its initial role as the flagship body for the LSH sector and built connections between all players of the ecosystem leading to the foundation of the ZI.nl platform. The Top Team prepared the sector for a mission-driven approach, ensuring that sector priorities aligned with broader societal challenges, and drove innovation diplomacy by establishing a long-standing collaboration with Massachusetts Institute of Technology (MIT) and developing the International LSH Strategy. In addition, it acted as a strategic sounding board, supporting innovative SMEs and the realignment of the KIA Health and Care missions.

As of 2026, the Top Team was phased out as an organisational component. Despite this, Health Holland continued making use of the networks and efforts of the former Top Team members through the **Advisory Board** (for example recently during the biotech fact-finding mission to China), which inherited the strategic and ecosystem-representative role.

The Advisory Board consists of senior LSH experts from different disciplines. Its primary function was initially to advise the Top Team regarding which initiatives or projects they should decide on. The members now actively contribute to **generating ideas and finding synergies within the LSH sector** and aim to **build trust** between different stakeholders, bridging the gap between the private and public sectors. The Board recognises the potential of entrepreneurship and businesses to drive innovation within the publicly funded Dutch system and works to support it.

3.4 Evolution of Policy and Health Holland

The evolution of Health Holland mirrors broader shifts in Dutch innovation policy, health and healthcare challenges and public-private collaboration. Since the launch of the Top Sector Policy in 2011, successive governments and ministries have shaped the strategic framework for Dutch innovation policy and, consequently, the LSH sector. Guided by the EZK-appointed Top Team's strategic vision, Health Holland translated these strategic priorities into operational activities.

Between 2011 and 2018, the focus of the Dutch government was on the Top Sectors which had a strong position in the global market and were empowered economically and scientifically through the public and private R&D. When Health Holland was established, it focused on **unifying the fragmented LSH sector** through 'triple helix' public-private partnerships between industry, academia and government. By mid-2018, the focus shifted to solving real-life societal challenges via a demand-driven '**quadruple helix model**'[11] that included citizens.

Health Holland evolved from the Top Sector LSH implementation body into a nationally recognised ecosystem coordinator for the sector between 2011 and 2025 (Table 3.1). In doing so, it effectively mobilised stakeholders and investment and drove the transition from sector-based innovation policy towards mission-driven health impact and long-term economic resilience. Health Holland successfully balanced government regulations with the sector's need for flexibility, an approach characterised as '**thinking within the box**'.

To illustrate this journey in detail, Table 3.1 provides a chronological overview of some key milestones, mapping out how successive shifts in the Dutch policy directly shaped the strategic and operational evolution of Health Holland over time.

Table 3.1 Evolution Timeline

Period	Policy Change	Health Holland (Bureau)
2007-2011: Financial Crisis & Foundation of LSH Top Sector	▪ Following the global financial crisis and declining private investments, EZK introduced the national **Top Sector Policy** to boost private R&D, valorisation, international competitiveness and economic growth.	▪ To support the newly established Top Sector, **a specialised TKI bureau was formed**, guided by the Top Team.

[11]Health Holland (2019), Health & Care Knowledge and Innovation Agenda 2020-2023: Vital functioning citizens in a healthy economy. Available at: https://www.health-holland.com/sites/default/files/downloads/Knowledge%20and%20Innovation%20Agenda%20Health%20and%20Care%202020-2023.pdf

Period	Policy Change	Health Holland (Bureau)
	▪ In 2011, **LSH was officially designated a Top Sector**, with VWS being involved as a key policy partner.	
2012-2017: Structuring R&D & Professionalising Health Holland	▪ The Top Sector approach became a structural element of Dutch innovation policy, with the TKI Toeslag subsidy arrangements launching in 2012. ▪ In 2015, the terms for this subsidy changed to place heavier **emphasis on reporting private cash investments**, which determined the total budget for each sector. The National Research Agenda that was launched strengthened the collaboration opportunities across the public and private sectors. ▪ By 2016 and 2017, national policy began increasingly emphasising knowledge valorisation and societal impact and **preparing for a shift toward mission-driven innovation**.	▪ The bureau initially outsourced public-private project selection to ZonMw in 2012. ▪ However, by 2014, the **bureau rebranded to 'Health Holland'**, brought project selection in-house, hired its first employees and allocated its first R&D subsidies while also continuing the **Venture Challenge** programme. ▪ In response to the 2015 policy shift, a **leveraging structure was created that rewarded private R&D investments** with a 25% public bonus, successfully mobilising private capital and incentivising foreign R&D. During this time, the Top Team and Health Holland established strong collaboration with regional partners, leading to the **creation of the ZI.nl platform** in 2017.
2018-2021: Mission-Driven Policy & Coordinated Action	▪ Societal challenges became the organising principle for national innovation agendas, **shifting focus to a demand-driven approach** aimed at solving real-life problems.	▪ Health Holland moved into its own office. It actively contributed to **developing the first KIA Health and Care** and directly implemented these missions into its PPP subsidy calls.

Period	Policy Change	Health Holland (Bureau)
	▪ This led to the introduction of the Mission-Driven Top Sector and Innovation Policy in 2019, where ambitions were translated into concrete missions through the KIA Health and Care and the KIC. ▪ In 2020, the Covid-19 pandemic demanded rapid policy responses and highlighted the importance of health resilience. ▪ The **National Growth Fund** was established to support large-scale knowledge development and infrastructure with its first round of investments awarded in 2021 to boost opportunities for large-scale innovation.	▪ To strengthen its valorisation expertise and adapt to the demand-driven shift, Health Holland **officially adopted the ZI.nl** which was previously run by regional networks. ▪ Health Holland initiated a **Covid-19 Call** and project recovery to accelerate collaborative R&D. ▪ Health Holland also **expanded its international scope** by signing a MOU with Flanders. ▪ Following an international LSH strategy developed by the Top Team in 2020, Health Holland **hired its first dedicated international team member** to implement and coordinate global collaboration in partnership with RVO.
2022-2024: Strategic Autonomy and Strengthening Role in LSH Ecosystem	▪ Innovation policy increasingly **prioritised strategic autonomy, key technologies, health resilience and innovation SMEs**. The government published the 'Innovation SME' action plan in 2022 and the National Technology Strategy in 2024 to support this. ▪ The **funding scheme was revised to a programme-based PPS Innovation model** in 2024, and the	▪ Health Holland actively **contributed to developing the second KIA on Health and Care**. ▪ Health Holland collaborated with hollandbio to launch the **highly successful SME Call**, shifting focus closer to the market by funding industrial research. ▪ The previously free **Innovation Broker** scheme was also changed to co-financed

Period	Policy Change	Health Holland (Bureau)
	KIA Health and Care missions were revisited to include pandemic preparedness.	model to secure higher SME commitment. ▪ Internationally, Health Holland signed a Programme of Cooperation with Massachusetts[12] (2022) and a MOU with Switzerland (2024). ▪ Over these three years, Health Holland **evolved from a programme execution organisation into a system coordinator**, actively connecting stakeholders and aligning strategic agendas.
2025: Governance Reforms	▪ KIA Health and Care Missions were updated focusing on labour-saving technology. National governance reforms within the Top Sector system resulted in the **phase-out of the traditional Top Team structure**.	▪ To safeguard strategic continuity and ecosystem knowledge following the phase-out of the Top Team, Health Holland created a **new governance model that included the Advisory Board**.

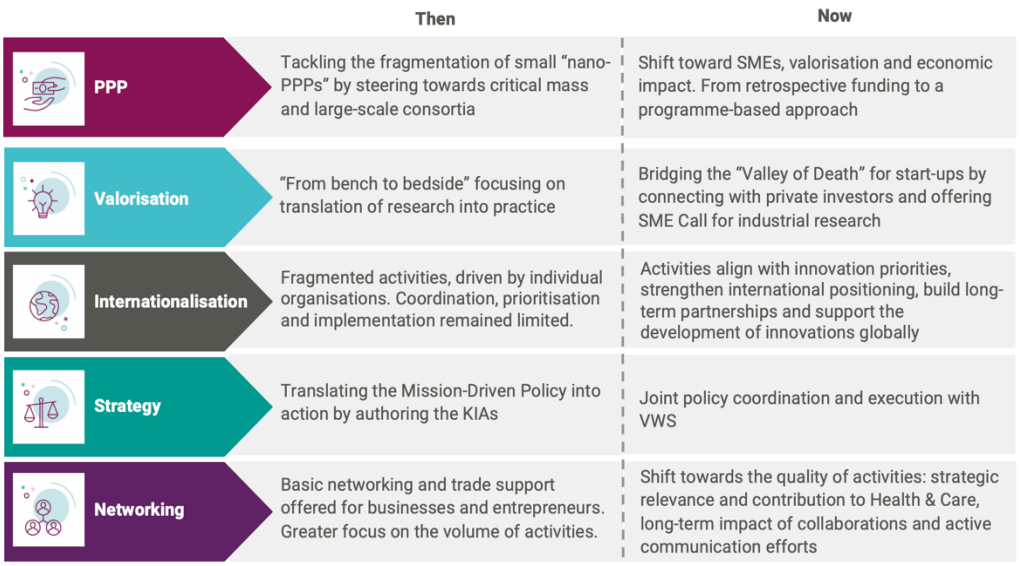
Source: BiGGAR Economics' Review of Health Holland Annual Reports 2014-2024 and data from Health Holland.

The timeline shows that Health Holland both execute programmes and preserves strategic continuity, connects fragmented instruments and ecosystems and mobilises public and private stakeholders around a shared agenda for health impact, productivity growth and future earning capacity.

Figure 3.2 provides a summary of some of the key developments in specific activities as Health Holland transformed from a small team to administer PPP funds to a critical part of the LSH innovation ecosystem.

[12] Kingdom of the Netherlands (2026), *The Netherlands and United States*. Available at: https://www.netherlandsandyou.nl/web/united-states/about-us/bilateral-cooperation

Figure 3.2 Health Holland's Activities – Over a Decade of Transformation



Source: BiGGAR Economics' Review of Health Holland Annual Reports 2014-2024 and data from Health Holland.

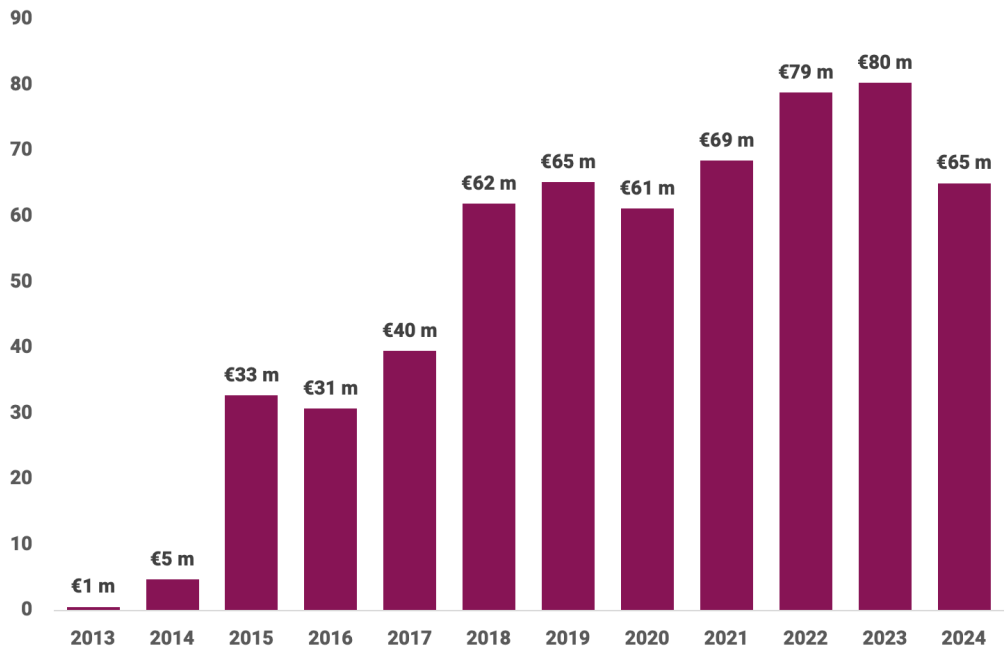
4. Operational Impacts

Health Holland directly supports economic activity and employment through its core operations.

4.1 Health Holland Funding and Expenditure

Over the period 2013 to 2024, Health Holland had a total income of €589 million. 95% of this income was for PPP funding, 2% for Health Holland's core operational activities and the remaining 3% for other programme supporting activities and the LS@W and ZI valorisation programmes. Figure 4.1 shows Health Holland's annual income over the period 2013 to 2024.

Figure 4.1 Health Holland Total Income, 2013-2024



Source: Health Holland.

4.2 Operational Economic Impacts

Health Holland's operations support economic activity through:

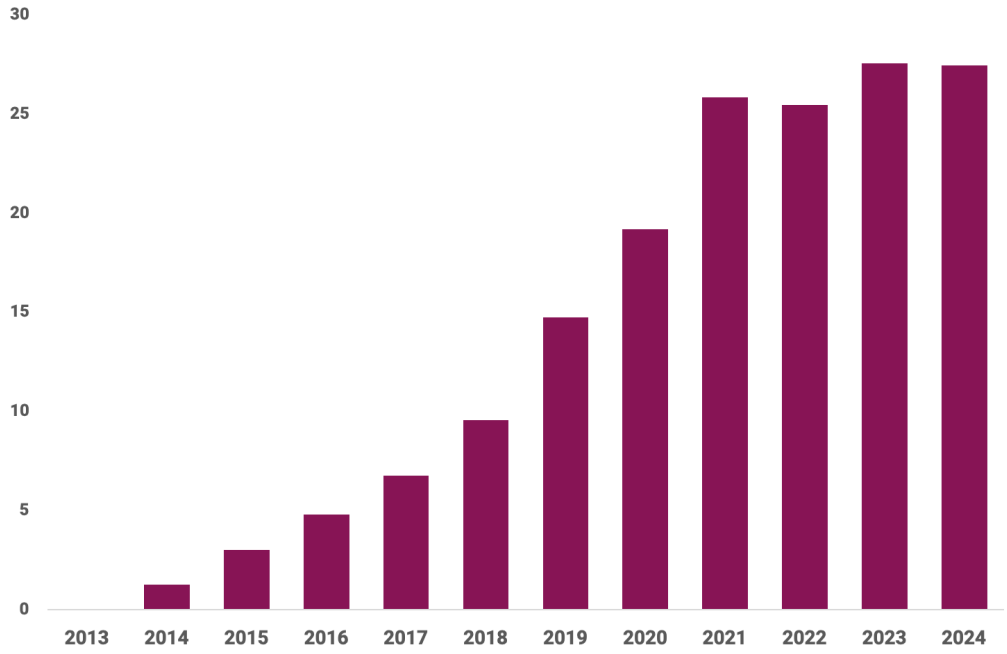
- **direct activity:** the income Health Holland receives and the staff it employs;
- **supply chain:** the goods and services purchased by Health Holland; and
- **staff spending:** the spending stimulated by Health Holland staff.

4.2.1 Direct Activity

The direct GVA of an organisation is usually estimated by subtracting non-labour (goods and services) costs from income. Given the majority of income received by

Health Holland is distributed for PPP or innovation programmes, Health Holland's direct GVA is equivalent to its staff costs. Over 2013-2024, Health Holland's staff costs, and therefore direct GVA, amounted to €15 million. Average direct employment over this period was 14 jobs.

Figure 4.2 Health Holland Direct Employment, 2013-2024



Source: Health Holland.

Table 4.1 Direct Impacts, 2013-2024

	Netherlands
Direct GVA (€m)	15
Average Direct Employment (Jobs)	14

Source: BiGGAR Economics Analysis.

4.2.2 Supply Chain Impact

Health Holland supports economic activity through the goods and services it purchases. This includes expenditure on office and administrative costs, consultancy, communications, insurance and training costs. Over the period 2013-2024, Health Holland's total supply chain expenditure amounted to €9 million.

The GVA and employment impacts arising from this expenditure were estimated by applying sector appropriate economic ratios and multipliers. In this way it was estimated Health Holland's supply chain expenditure supported €8 million GVA and an average of 9 jobs in the Netherlands from 2013-2024.

Table 4.2 Supply Chain Impacts, 2013-2024

	Netherlands
Supply Chain GVA (€m)	8
Average Supply Chain Employment (Jobs)	9

Source: BiGGAR Economics Analysis.

4.2.3 Staff Spending Impact

Health Holland's staff contribute to economic activity in the wider economy by spending their salaries in the areas where they live. Over the period 2013-2024, Health Holland's total staff costs amounted to €15 million. The GVA and employment impacts arising from this expenditure were estimated by applying sector appropriate economic ratios and multipliers. In this way it was estimated Health Holland supported €11 million GVA and an average of 7 jobs in the Netherlands from 2013-2024.

Table 4.3 Staff Spending Impacts, 2013-2024

	Netherlands
Staff Spending GVA (€m)	11
Average Staff Spending Employment (Jobs)	7

Source: BiGGAR Economics Analysis.

4.2.4 Summary Operational Impacts

Summing the impacts described in this section, it is estimated Health Holland's operations supported a total of €35 million in GVA and an average of 29 jobs in the Netherlands over the period 2013-2024.

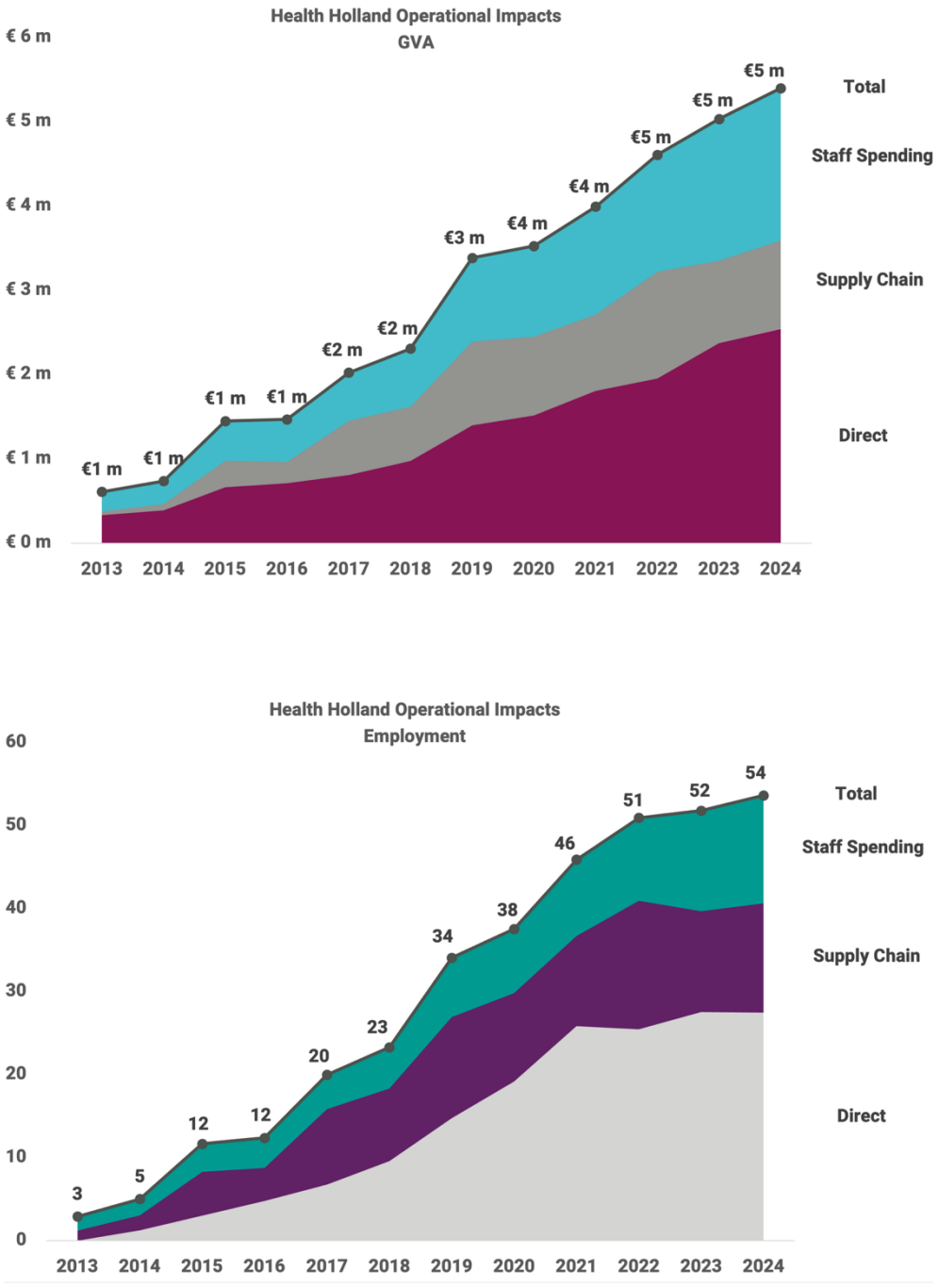
Table 4.4 Health Holland Total Operational Impacts, 2013-2024

	Netherlands
Direct	15
Supply Chain	8
Staff Spending	11
Total GVA (€m)	**35**
Direct	14
Supply Chain	9
Staff Spending	7
Total Employment (Jobs)	**29**

Source: BiGGAR Economics Analysis. Note: Totals may not sum due to rounding.

Figure 4.3 provides a breakdown of this GVA and employment impact by year and impact type.

Figure 4.3 Health Holland Operational Impacts, 2013-2024



Source: BiGGAR Economics Analysis.

4.3 Operational Efficiency

During the consultation programme, several consultees commented that Health Holland was an operationally lean organisation with low operating costs relative to the funding it distributes.

To contextualise the operational efficiency of Health Holland, a comparative analysis was conducted against five prominent European innovation agencies. Whilst there are differences in the remit and operation, these organisations share a similar mandate to stimulate regional or national economic growth by funding collaborative R&D and bridging the gap between academia and industry:

- **Innosuisse (Switzerland)**: The Swiss Innovation Agency, which financially supports science-based innovation projects that require joint participation from both academic researchers and industrial partners;
- **Flanders Innovation & Entrepreneurship (VLAIO) (Flanders, Belgium)**: The primary government agency for financing innovation in the Flanders region, providing grants for interdisciplinary cooperative research and knowledge transfer from higher education institutes to Flemish enterprises;
- **Vinnova (Sweden)**: The Swedish government agency that administers state funding for R&D, playing an active stewardship role in the Swedish innovation ecosystem, funding needs-driven innovation and supporting start-ups and SMEs to collaborate internationally;
- **Innovate UK part of UK Research and Innovation (UKRI) (UK)**: The UK's innovation agency (operating under the umbrella of UKRI), funds large-scale, business-led collaborative research consortiums; and
- **Business Finland (Finland)**: The Finnish government agency for innovation funding and trade, travel, and investment promotion, it funds collaborative R&D that require corporate and academic consortiums.

The comparator analysis (see Table 4.5) highlights several key insights regarding Health Holland's operational model, demonstrating that it functions with exceptional efficiency compared to its European peers. None of the comparators distribute more collaborative R&D funding per FTE staff member than Health Holland whilst staff costs and other operational costs at Health Holland account for a much smaller proportion of funding distributed than for the comparators.

As well as operational efficiency, this comparator analysis also reveals the financial advantages of the Health Holland model, where it orchestrates external networks rather than building heavy internal capacity.

Table 4.5 Health Holland's Operational Efficiency Comparison

Agency	Funding Distributed	Staff (FTEs)	Staff Costs (% Funding)	Opex (% Funding)	Funding per FTE
Health Holland*	**€68m**	**21.4**	**2.8%**	**1.5%**	**€3.2m**
Innosuisse[13]	€286m	88	5.0%	3.9%	€3.2m
VLAIO[14]	€428m	312	7.4%	6.1%	€1.4m
Vinnova[15]	€280m	241	7.1%	4.4%	€1.2m
UKRI[16]	€7.4bn	8,663	9.6%	12.0%	€0.9m
Business Finland[17]	€611m	760	n/a**	n/a**	€0.8m

Sources: BiGGAR Economics analysis of annual reports of each organisation. *Based on average 2018-2024 **Business Finland's internal administrative overheads are not publicly disaggregated from broader ministerial budgets in a comparable format.

[13] Innosuisse (2024), Annual report and financial statement 2023
[14] Flanders Innovation & Entrepreneurship (VLAIO) (2023), VLAIO Jaarverslag 2022
[15] Vinnova (2024), Vinnova Årsredovisning 2023
[16] UK Research and Innovation (2023), UKRI annual report and accounts 2022-23
[17] Business Finland (2024), Performance Management and Financial Statements 2023

5. PPPs Economic Impacts

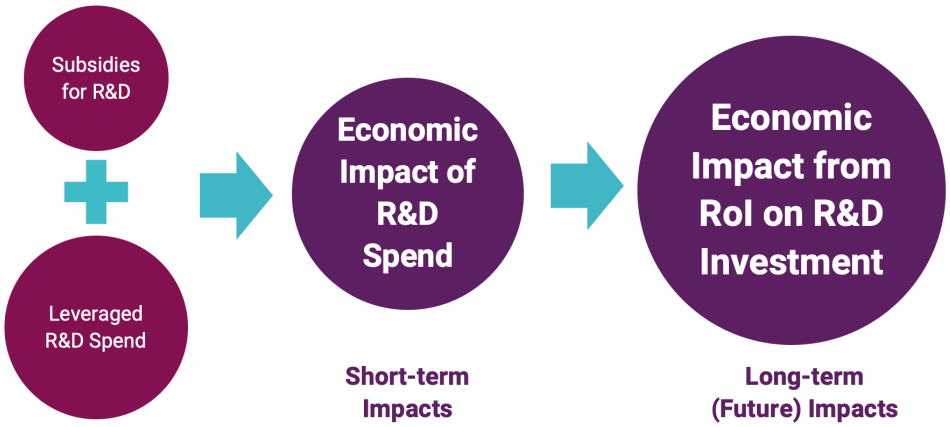
Health Holland's subsidies for PPPs leverage additional funds. Together, this R&D spending supports economic activity each year and will support further economic impact in the future.

The PPP subsidies provided through Health Holland support a range of short and long-term impacts. As illustrated in Figure 5.1, Health Holland's subsidies leverage additional spending for R&D. The leveraged R&D spending comes from SMEs, large companies, research organisations as well as public benefit organisations such as health foundations.

The PPP subsidies along with this leveraged R&D spend support economic activity each year, by covering staff costs and other research expenses for each PPP project. This creates annual short-term impacts, similar to Health Holland's operational impacts described in Section 4.2.

There are also long-term impacts from this R&D spending. This is the productivity benefits to businesses from the research supported by this R&D spending, as well as the wider economic and social returns to R&D.

Figure 5.1 PPPs Pathway to Economic Impact

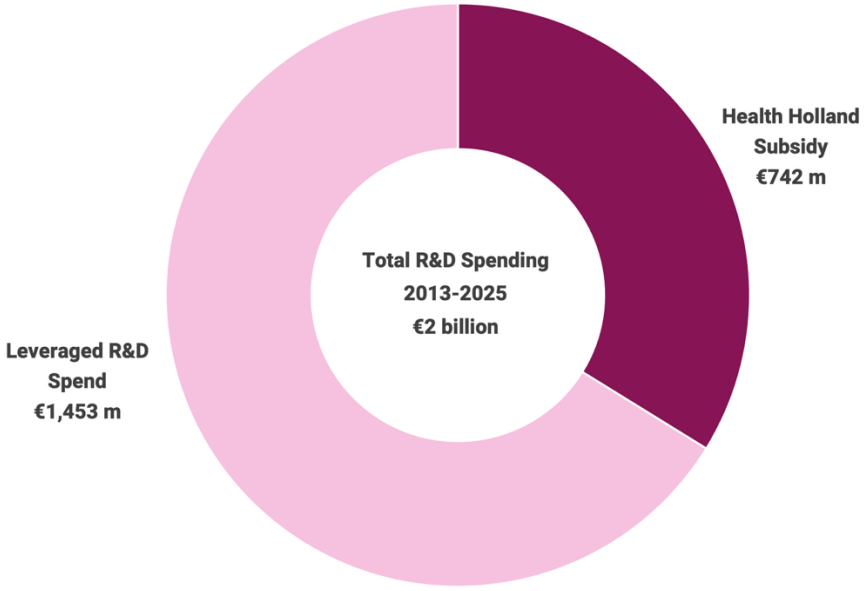


Source: BiGGAR Economics

5.1 R&D Spending

Since 2013, 1,777 PPP projects have been funded by Health Holland. Health Holland has managed €742 million in PPP subsidies and leveraged an additional €1.5 billion in R&D spending since 2013. Combined total R&D spending over the period 2013-2025 therefore amounts to €2 billion.

Figure 5.2 Total R&D Spending, 2013-2025



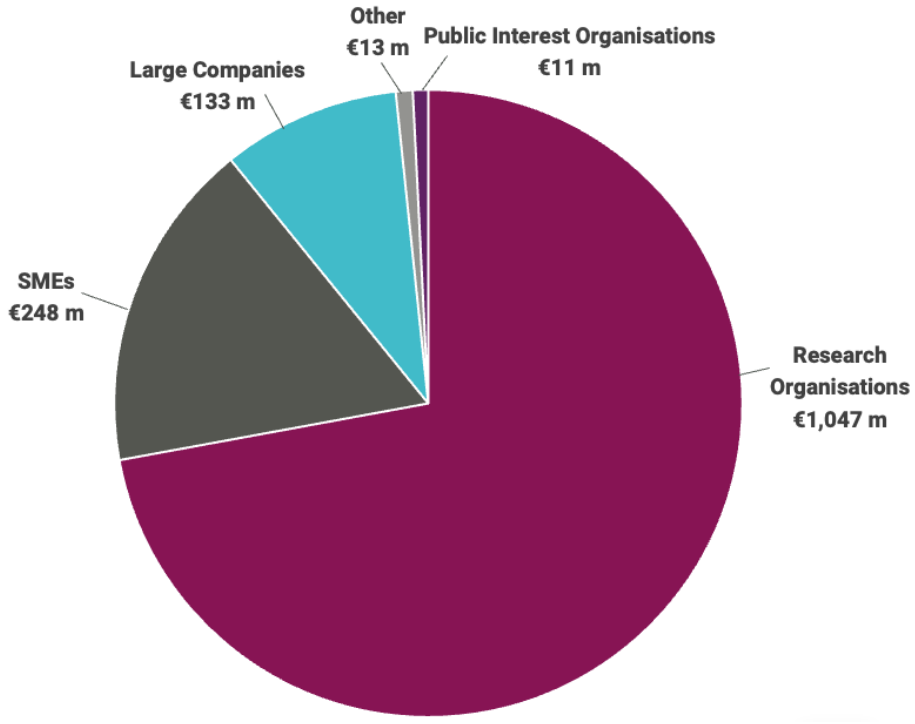
Source: Health Holland and BiGGAR Economics Analysis. Note: This is total R&D spending within and outside the Netherlands.

As illustrated in Figure 5.2, around a third (34%) of this total R&D spending is PPP subsidies, with two thirds (66%) additional leveraged R&D spending. The average PPP subsidy per project was €0.4 million, with each project leveraging €0.8 million on average. This means that:

Each €1 in Health Holland PPP subsidy leverages an *additional* €2 in R&D investment.

The €1.5 billion in leveraged R&D spending comes primarily from research organisations, SMEs and large companies (Figure 5.3).

Figure 5.3 Total Leveraged R&D Spend by Source, 2013-2025



Source: Health Holland and BiGGAR Economics Analysis.

5.2 PPPs Economic Impact of R&D Spend

Similar to Health Holland's operational impacts, there are also operational impacts from PPP R&D spending. This includes:

- **direct activity:** the income each PPP project receives and the researchers subsequently employed for each project;
- **supply chain:** the research materials or services purchased for each project; and
- **staff spending:** the spending stimulated by researchers employed for each PPP project.

These operational impacts were estimated for each PPP project based on the total funding it received.

As with Health Holland's operational impacts, it was assumed direct GVA would be equivalent to staff costs. Direct employment was estimated based on the ratio of GVA to employment for the LSH sector in the Netherlands.

As the PPP data provided by Health Holland was for total R&D spending, it was necessary to consider how much of this would be allocated for supply chain expenditure and how much would be for staff costs. Based on an internal analysis conducted by Health Holland, on average, staff costs account for 75% of the funding and the remaining 25% is attributed to supply chain expenditure. The GVA and employment impacts arising from this expenditure were estimated by applying economic ratios and multipliers for the LSH sector.

To estimate the total operational impact of PPP projects each year, the impacts for each project were distributed over the duration of the project.

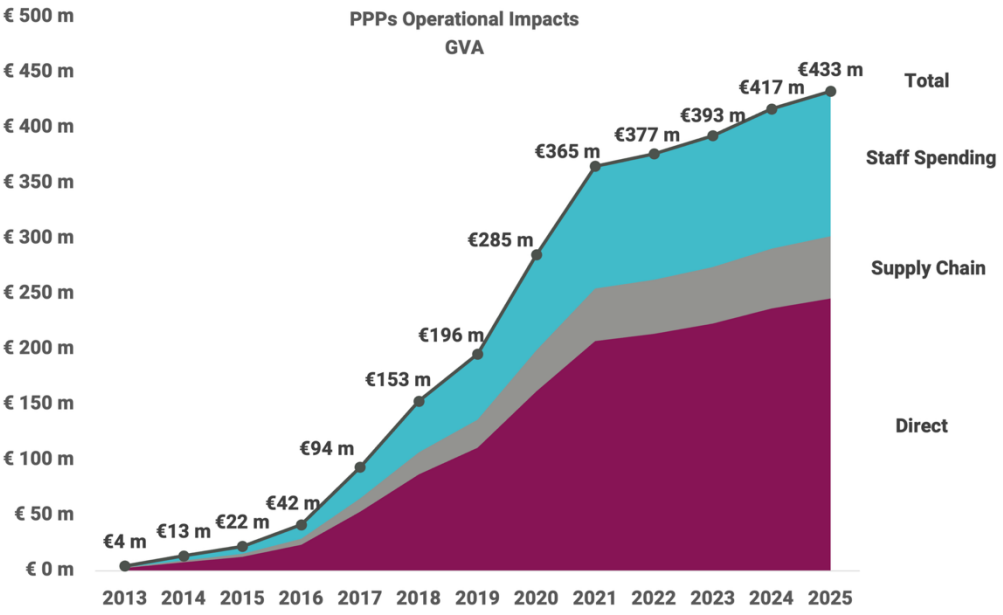
In this way it was estimated, PPP projects supported almost €3 billion GVA and an average of 2,870 jobs in the Netherlands over the period 2013-2025 through their operational activities.

Table 5.1 PPPs Total Operational Impacts, 2013-2025

	Netherlands
Direct	1,587
Supply Chain	363
Staff Spending	845
Total GVA (€m)	**2,794**
Direct	1,990
Supply Chain	370
Staff Spending	510
Total Employment (Jobs)	**2,870**

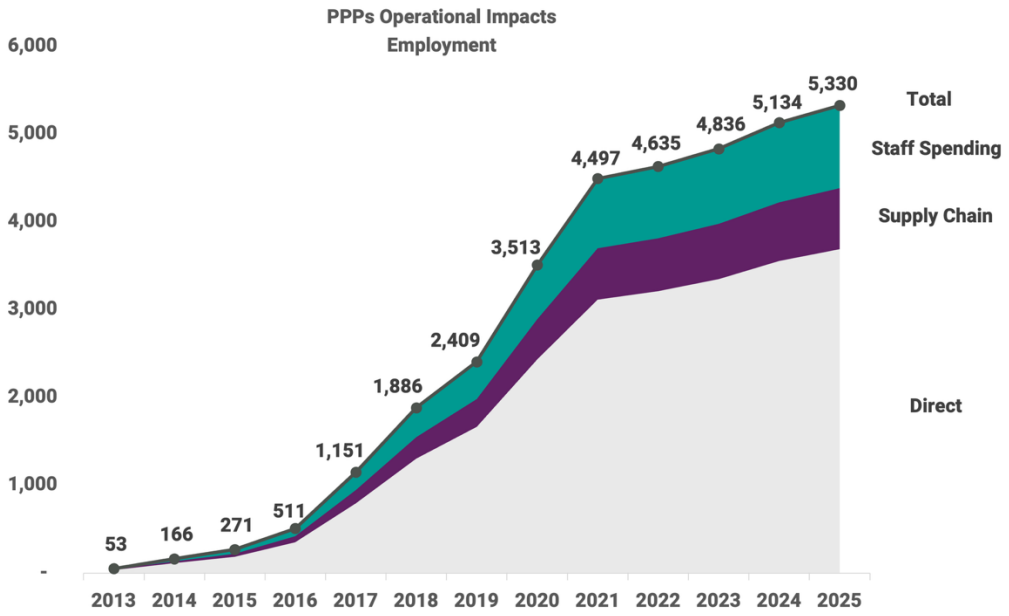
Source: BiGGAR Economics Analysis. Note: Totals may not sum due to rounding.

Figure 5.4 PPPs Operational Impacts, 2013-2025 (GVA)



Source: BiGGAR Economics Analysis

Figure 5.5 PPPs Operational Impacts, 2013-2025 (Employment)

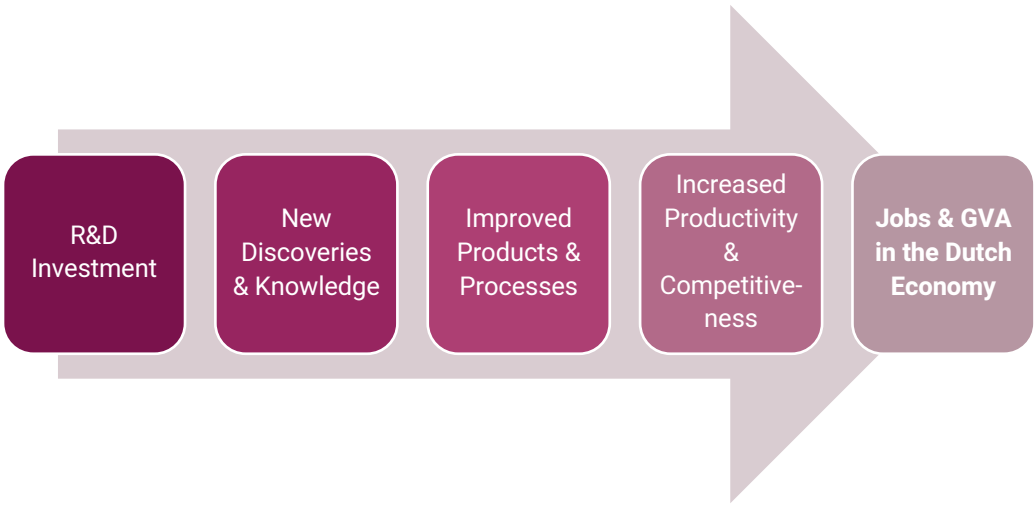


Source: BiGGAR Economics Analysis

5.3 PPPs Return on Investment in R&D

R&D investment leads to new discoveries and knowledge which result in new and improved products and processes. These have an economic impact due to the increase in productivity and competitiveness. Productivity gains can happen in companies and healthcare delivery, whereas competitiveness is explicitly related to companies. If businesses are more productive and have new and improved products, they are more competitive in both domestic and international markets. This process is summarised in Figure 5.6.

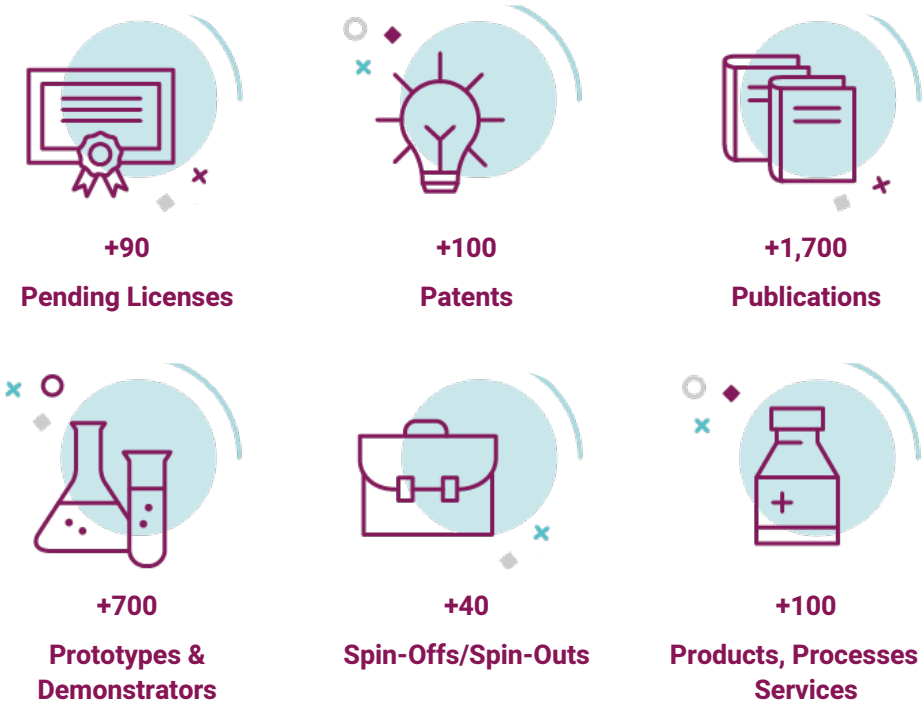
Figure 5.6 Economic Impact Generation from the R&D Investment



Source: BiGGAR Economics

The timelines involved are long, particularly in the LSH sector. A new product or medical device will require regulatory approval and testing. Medicines require clinical trials until they are ready to be on the market. The period between a new discovery being made in research and a product reaching the market can take at least 15 years. The R&D funded by Health Holland therefore would not be expected to deliver new products yet. However, there is evidence of other outputs and outcomes which are indicators of future impacts. These include new patent applications, licenses and creation of spin-out companies (Figure 5.7). PPP projects between 2013 and 2025 also led to the **creation of at least 350 follow-on projects and collaborations** with public and private partners. All of these outputs would generate economic impact in the long run.

Figure 5.7 PPP Outputs, 2013-2025



Source: Health Holland.

To estimate the direct GVA generated from R&D investment, the total R&D investment (Health Holland subsidy and leveraged R&D spending) each year was multiplied by 340%. This benchmark is grounded in an extensive evaluation conducted by PricewaterhouseCoopers for the UK Government[18] based on economic impact evidence from evaluations of innovation programmes undertaken by regional development agencies. The analysis found that investments in science, R&D, and innovation infrastructure achieved a cumulative GVA return (Net Present Value) equivalent to 3.4 times (or 340%) the cost of the projects. The study also noted that because these interventions are long-term in nature, this return on investment is expected to increase to 8.3 times (or 830%) when factoring in the anticipated

[18] PriceWaterhouseCoopers (2009) Impact of RDA Spending: Main Report (March 2009). UK Department for Business, Enterprise and Regulatory Reform.

persistence of benefits and future potential outputs. The 340% is therefore at the lower end of the range of the returns that could be reasonably expected.

This projected rate of return is firmly supported by a broad consensus within the literature regarding the value of public R&D. Recent international evaluations and meta-analyses demonstrate that collaborative public R&D acts as a powerful economic catalyst through two primary mechanisms:

- **The Spillover Effect (Social and Private Returns):** When a company or consortium develops a new medical technology, they may capture a private return through increased sales or cost efficiencies. In addition, the new knowledge, trained staff, and technological advancements 'spill over' into the rest of the economy, allowing other businesses to innovate and grow[19]. Extensive meta-analyses (such as a 2023 review conducted for the UK Government[20]) consistently demonstrate that these 'social returns' to the wider economy are highly positive and significantly exceed the private commercial returns enjoyed by the innovating companies themselves.
- **The Catalyst (Leverage) Effect:** Public funding does not replace private investment; it encourages it by effectively 'de-risking' early-stage, highly innovative research[21]. By absorbing the initial risk and providing a technological roadmap, public investment gives private businesses the confidence to step in and commercialise the science. Evaluations of public grant programmes and macroeconomic studies across OECD countries show that public R&D 'shocks' (increases in funding) successfully leverage additional private sector capital and stimulate wider business performance that would not have occurred without state intervention[22] [23].

The evidence is also clear that the realisation of these high returns is not automatic; it is highly dependent on the specific national context and the strength of the surrounding innovation system[24]. A fragmented system can dilute the impact of public R&D funding. The 340% to 830% return profile is therefore not just a reflection of the financial subsidy, but a direct result of Health Holland's active stewardship role (discussed further in Chapter 9), ensuring that the necessary networks, trust and valorisation pathways are in place for the Dutch LSH innovation ecosystem to capture these spillover benefits.

After applying the 340% multiplier, GVA and employment multipliers for the LSH sector were applied. It was therefore estimated that the **€2 billion investment in R&D**

[19] Ugur et al. / Research Policy (2016), R&D and productivity in OECD firms and industries: A hierarchical meta-regression analysis
[20] Frontier Economics (2023), Rate of Return to Investment in R&D
[21] Athreye & Wunsch-Vincent / WIPO (2011), The Evolving Role of Public R&D and Public Research Organizations in Innovation
[22] Innovation Caucus / Innovate UK (2023), Innovate UK Grants and R&D Returns: Impact on Business and Economy
[23] Ziesemer, T. H. W. / Economic Change and Restructuring (2024), Internal rates of return for public R&D from VECM estimates for 17 OECD Countries
[24] van Elk et al. / De Economist (2019), Estimating the Returns to Public R&D Investments: Evidence from Production Function Models

could generate almost €13 billion GVA and support an average of 430 jobs in the Netherlands. Most of this impact is likely to occur in the future, although some of it may have started to happen already.

Table 5.2 PPPs Return on Investment in R&D, 2013-2025

	Netherlands
Direct	7,193
Supply Chain	3,348
Staff Spending	2,129
Total GVA (€m)	**12,671**
Direct	250
Supply Chain	120
Staff Spending	60
Total Employment (Jobs)	**430**

Source: BiGGAR Economics Analysis. Note: Totals may not sum due to rounding.

6. Valorisation Economic Impacts

This Chapter highlights Health Holland's contribution in promoting valorisation and entrepreneurship and presents the economic impacts quantified for three of the programmes it supports: LS@W, ZI.nl and Innovation Brokers.

6.1 Valorisation Contribution

Health Holland's valorisation activities contribution became evident during the consultation programme undertaken with various stakeholders in the LSH sector.

6.1.1 Promoting Valorisation and Market Creation

According to the consultation programme, Health Holland **created awareness of challenges** in the LSH sector (including the 'valley of death' when companies transition from public to private funding or the role of medical technology companies in healthcare transformation) and ensured that the government, policymakers and funding organisations are actively working on finding solutions. These challenges are identified and communicated due to the connections created between relevant stakeholders by Health Holland.

Health Holland **linked policy and real-world implementation** through working visits held annually in science parks to create PPP collaboration opportunities and opportunities for SMEs and regional partners to present their experiences and results. Policymakers from EZK and VWS are also invited to join. These visits offer a comprehensive perspective on how regions, businesses and knowledge institutions put policy priorities into action. They highlighted opportunities, challenges and regional capabilities, while encouraging accessible and direct interaction between stakeholders from both policy and practice, helping to enable continued collaboration afterward.

In addition, Health Holland **effectively embedded valorisation considerations in funding calls**. This led to projects with a clearer pathway to implementation and market uptake. An example referenced was the SME (MKB) call, where valorisation potential was strengthened by placing the SME in the lead. Similarly, the new Programme Calls emphasise the assessment of valorisation potential.

During the consultation programme, university medical centres also noted that the funding provided by Health Holland **created specific opportunities for university spin-off companies to launch**, requiring the universities to create new regulations for

conflict of interest to manage the commercial activity. Furthermore, the seed funding provided by Health Holland was considered a de-risking mechanism for early-stage research for companies which has helped accelerate their development.

6.1.2 Supporting SMEs, with a focus on Start-ups

Health Holland recognised that start-ups are essential in the valorisation process as they are highly innovative and develop faster. While start-up founders often have deep technological expertise, they do not always have industry experience. Health Holland has supported companies by helping them:

- develop the right **skills**;
- access relevant **networks**; and
- gain **visibility** for their innovations.

The consultation programme revealed that Health Holland acted as a **'wayfinder'**, directing start-ups to the right path.

Health Holland acted as the 'voice' of SMEs, highlighting the difference between their practical needs and the 'big science' focus of universities. Activities like the Venture Challenge helped the creation of sustainable businesses with a **very high success rate of 70%** over the programme's history. Consultees cited the evaluation[25] conducted for this programme finding that **52% of the teams participating successfully secured external investment**. In addition, a winner of the National Healthcare Innovation Award public prize reported a 'jump start' in their business which **rapidly increased demand** of their product due to the national exposure.

6.2 LS@W Economic Impact

LS@W is an ongoing support programme for early-stage entrepreneurs in LSH, covering drug development, MedTech, diagnostics and enabling technologies. It started in 2008 (and so pre-dated Health Holland), and its aim was to commercialise research through coaching, education, financing, and networking.

LS@W provides the following activities for support:

- **Venture Challenge**: A competitive programme to accelerate business development;
- **Expert Classes**: Tailored workshops to refine business and investment strategies; and
- **Mentor Matching**: Access to an extensive network of industry experts and investors.

While the analysis is based on data from the Venture Challenge programme, this activity forms part of the broader LS@W programme likely involving the same cohort of participating companies. Given the integrated nature of the programme, it is reasonable to assume that the impacts observed are not confined to the single

[25] Birch (2024), *Evaluatie Venture Challenge*. [online] Available at: https://www.tweedekamer.nl/kamerstukken/brieven_regering/detail?id=2024Z03996&did=2024D09377

component analysed but are indicative of the wider LS@W programme impacts. Associated networking activities including Expert Classes and Mentor Matching are also considered in Section 7.2.

The economic contribution of the LS@W programme was quantified taking into account evidence from a 15-year evaluation of the Venture Challenge programme that was conducted by Birch Consultants in 2024[26]. This was used to form part of the assumptions in this report. The evaluation of the programme by Birch found that over the past 15 years, 145 companies have emerged from 201 projects, raising more than €600 million and generating over 1,000 new jobs in the LSH sector.

Data in this report focuses on the participation years between 2014 and 2025, after Health Holland was established, to isolate its contribution associated with the LS@W programme. During this period, there were about **112 start-ups which are currently active**. The total number of employees in these companies was about 606 in 2025.

Health Holland's economic contribution associated with the LS@W programme was quantified by analysing the impact of all companies participating in the programme since 2014 and applying sector appropriate economic ratios and multipliers according to the LSH sub-sectors they are in. It was assumed that 60% of this impact is attributable to the LS@W programme (see details in Section 12.3.3).

In this way, it was estimated that the LS@W programme resulted in €147 million GVA and 1,110 jobs in 2025 from companies participating between 2014 and 2025.

Table 6.1 LS@W Economic Impact, 2025

	Netherlands
GVA (€m)	
Direct	83
Supply Chain	50
Staff Spending	15
Total GVA	**147**
Employment (jobs)	
Direct	360
Supply Chain	570
Staff Spending	170
Total Jobs	**1,110**

Source: BiGGAR Economics Analysis. Note: Sums may not add up due to rounding.

Birch estimated that the Venture Challenge programme cost about €3 million over 15 years, which is equivalent to approximately €200,000 per year. Across the 11 years

[26] Birch (2024), *Evaluatie Venture Challenge*. [online] Available at: https://www.tweedekamer.nl/kamerstukken/brieven_regering/detail?id=2024Z03996&did=2024D09377

that this report focuses on, this is equivalent a total of about €2 million. This amount is very small relative to the private and public funding that was raised. Between 2014 and 2025, the total private investment reached €323 million and public funding €109 million due to companies' participation in the programme. There were also approximately 27 winners of the Venture Challenge programmes which received €25,000 each, reaching a €675,000 total contribution over the same period.

The Birch report indicated that all companies that raised capital initially relied on public funding before raising private capital. In addition, 80% of the participants noted that the Venture Challenge programme was one of the most important steps in starting their business, helping them develop to win those grants and investments. Venture Challenge was the catalyst for enabling them to acquire the additional private and public investments. As a result, the LS@W programme as a whole has a similar catalytic impact, considering the additional benefits offered by other networking activities.

6.3 ZI.nl Economic Impact

ZI.nl is a platform and national network for innovations in LSH with a vision to support entrepreneurs in the development of innovations at difference phases. Together with partners, Health Holland created a community in which entrepreneurs, healthcare organisations and other stakeholders can connect and strengthen each other. This programme gives the opportunity to:

- share innovations with a community of more than 4,000 stakeholders in health and healthcare;
- strengthen existing business cases;
- connect with regional and national partners; and
- expand network during the events organised.

These are achieved through activities such as the:

- **National Healthcare Innovation Award**: a competition for scale-up companies whose product or service is already developed, tested and launched. This activity helps them meet stakeholders and win awards that could increase their visibility. There are a €10,000 jury award and a €5,000 public award offered, winners are announced at Zorg & ICT and the grand finals take place at the Health Valley Event; and
- **Health Impact Accelerator**: a 10-week programme for start-up or early-stage companies to help them develop their business cases. Starting from 2025, the programme also offers a prize of €10,000 to a start-up company and the winner is announced at the ICT&health World Conference.

Between 2016 and 2025, National Healthcare Innovation Award competition had about **84 participants**. The National Healthcare Innovation Award differs from the Venture Challenge programme. It is an annual competition organised for scale-up companies that have already tested and launched their products. Therefore, it was assumed that a lower share of the companies' economic impact (30%) is attributed

to the National Healthcare Innovation Award and Health Holland compared to the Venture Challenge. For larger companies (i.e. number of employees larger than 50), 20% of the impact was assumed to be associated with the National Healthcare Innovation Award and Health Holland (see details in Section 12.3.3).

Between 2020 and 2025, the Health Impact Accelerator had about **39 participants**. The Health Impact Accelerator programme is of similar nature to the Venture Challenge as it is a 10-week programme created to help start-ups develop their business case receiving support from experts. For companies that were founded in the same year as their participation in the Health Impact Accelerator programme, 60% of their economic impact was assumed to be attributable to the programme, consistent with the approach used for the Venture Challenge. For all other participating companies, it was assumed that a lower share of their economic impact (30%) was attributable to the Health Impact Accelerator and Health Holland, in line with the methodology applied in the National Healthcare Innovation Award.

Overall, it was estimated that the ZI.nl programme generated €68 million GVA and 680 jobs in the Netherlands. This originates from all participation cohorts from 2016 to 2025.

Table 6.2 ZI.nl Economic Impact, 2025

	Netherlands		
GVA (€m)	**National Healthcare Innovation Award**	**Health Impact Accelerator**	**Total GVA**
Direct	29	7	36
Supply Chain	19	5	23
Staff Spending	7	2	9
Total GVA	**55**	**14**	**68**
Employment (Jobs)	**National Healthcare Innovation Award**	**Health Impact Accelerator**	**Total Jobs**
Direct	220	70	290
Supply Chain	230	60	290
Staff Spending	80	20	100
Total Jobs	**530**	**150**	**680**

Source: BiGGAR Economics Analysis. Note: Sums may not add up due to rounding.

The National Healthcare Innovation Award and, as of the year 2025, the Health Impact Accelerator both offer prizes to winning participants. Between 2016 and 2025, there were 24 winners in total with around €145,000 awarded in prizes. Based on publicly available information, the follow-on public funding reached at least €13 million and the follow-on private investment at least €46 million. These are lower bound estimates that show how a relatively small winning prize or the participation in such programmes led to high follow-on investments for these companies.

6.4 Innovation Brokers Economic Impact

Health Holland collaborates with national and regional organisations that have wide entrepreneurial networks or constituencies and focus on advising SMEs. These organisations are selected by Health Holland to become **Innovation Brokers**[27]. Through them, Health Holland aims to accelerate innovation processes and product developments within SMEs, enabling high-quality innovations to reach the market faster.

Access to finance and identifying the most suitable funding opportunities tends to be a major challenge for companies in the LSH sector. Innovation brokers become wayfinders and support these companies by providing guidance on relevant funding streams, product or service development, pitching platforms, value proposition and business case creation. They also make connections in the network to link the most suitable partners. Health Holland covers 50% of the innovation brokers costs, allocating a maximum of €5,000 per SME receiving guidance.

Between 2017 and 2025, Health Holland provided almost €2 million subsidy to cover such costs for **497 SMEs**.

Innovation brokers' support leads to increased collaboration and knowledge transfer which results in innovation and commercialisation. These increase the productivity and output of the SMEs leading to higher GVA and jobs. Due to the limited data for the innovation brokers, a benchmarking approach was used to estimate economic impact which was scaled based on the cost-to-GVA ratio calculated for the LS@W programme (see details in Section 12.3.3).

Therefore, it was estimated that innovation brokers generated €117 million GVA and 880 jobs in the Netherlands in 2025.

Table 6.3 Innovation Brokers Economic Impact, 2025

	Netherlands
Total GVA (€m)	117
Total Employment (jobs)	880

Source: BiGGAR Economics Analysis.

6.5 Summary of Valorisation Impacts

The analysis of the data available for the valorisation programmes shows that about 5-10% of the companies appeared in more than one of the programmes. To avoid double counting of results, 90% of the impact was assumed to be retained after accounting for overlaps between any of the valorisation programmes.

[27] LS@W (2026), *Value Centre*. Available at: https://www.lifesciencesatwork.nl/lsw-value-centre

It was estimated that Health Holland's valorisation programmes resulted in €298 million GVA and generated 2,400 jobs in the Netherlands in 2025.

Table 6.4 Valorisation Impact, 2025

	Netherlands	
	GVA (€m)	**Employment (Jobs)**
Venture Challenge	**147**	**1,110**
Health Impact Accelerator	*14*	*150*
National Healthcare Innovation Award	*55*	*530*
ZI.nl Sub-total	**68**	**680**
Innovation Brokers	**117**	**880**
Total	**332**	**2,670**
Total (adjusted for double counting)	**298**	**2,400**

Source: BiGGAR Economics Analysis. Note: Sums may not add up due to rounding.

7. Internationalisation, Networking and Policy Translation

This Chapter outlines Health Holland's contribution from the internationalisation, networking and strategy execution and translation.

The activities described in this Chapter are supportive of the PPP and valorisation activities discussed in the previous Chapters. Therefore, it is not possible to separate out the economic impacts. However, these activities provide additional benefits which are outlined in the following sections.

7.1 Internationalisation Contribution

Health Holland's internationalisation contribution became evident during the consultation programme undertaken with various stakeholders in the LSH sector.

According to the consultations, Health Holland's internationalisation value lies in its ability to **bring structure, strategy and continuity to international engagement,** strengthening the Dutch LSH sector as a whole and its international position. It helps organise and support global engagement activities, enabling growth, scaling and broader societal impact across the LSH sector. Health Holland ensures that international opportunities are accessible, well-aligned and strategically connect to policy objectives and sectoral needs.

Health Holland's international activities position and strengthen the Dutch priority areas, including biotech, regenerative medicine, organ-on-chip, digital health, healthy ageing and MedTech, globally. This is achieved by:

- prioritising these areas in the international agenda;
- connecting relevant international ecosystems that contribute to the attraction of investments such as the $3 billion manufacturing facility investment in Katwijk by Eli Lilly[28]; and
- enabling collaboration, innovation, market access and scaling opportunities.

Health Holland's approach has been to continuously **'connect the dots'** by tracking these international activities, participants and associated outcomes and be the **main**

[28] Invest in Holland (2025), *Eli Lilly Announces $3 Billion Facility in the Netherlands to Produce Innovative Medicines for Patients Worldwide*. Available at: https://investor.lilly.com/news-releases/news-release-details/lilly-plans-build-new-3-billion-facility-boost-oral-medicine

point of contact linking parties, innovation, funding and policy. According to the consultation programme, many companies stated that participating in trade missions directly led to securing new clients they would not have otherwise met.

In addition, due to its **neutrality and independence**, Health Holland was able to sign important MOU agreements which may not have been achieved by the government or trade associations alone. An example is the MOU with the Texas Medical Center (TMC) which created access for Dutch companies to the world's largest medical city. This has resulted in the creation of the TMC Netherlands BioBridge programme which gives to up to 12 companies direct access to TMC in Houston, its hospitals and a network of clinicians, researchers and decision-makers[29].

Since 2014, an important role of Health Holland in developing and improving the LSH sector has been related to the creation of a unified voice, nationally and internationally, through the **'Orange Lanyard' branding**, achieving higher visibility and minimisation of internal competition. This role contributes to maintaining the Netherland's position as Europe's connected LSH Metropolis. Multiple stakeholders stated that this has been particularly important for global investors which came across this 'unifying umbrella' rather than a fragmented sector (different regions, sub-sectors, industry, academia). A major example is a trade mission to Boston where Dutch companies participated under the national brand which was highly respected by the US hospitals and unlocked collaboration opportunities.

Some SMEs highlighted that Health Holland's co-funding of booths at major international conferences, including MEDICA, lowered the barrier to entry, allowing them to **find export markets they could potentially not afford to access** independently.

Health Holland became a strategic **'background architect'** focusing on long-term collaborations with priority global LSH systems like Boston and Switzerland.

[29] Health Holland (2026), *Accelerate your expansion into the US Healthcare market with the TMC Netherlands BioBridge program*. Available at: https://www.health-holland.com/news/2026/04/accelerate-your-expansion-us-healthcare-market-tmc-netherlands-biobridge-program

International Success Stories

Health Holland has supported various international activities which significantly impacted the LSH sector.

Health Holland as a catalyst for future collaborations – The Switzerland Case

Collaboration was supported by the MOU related to Innovation and Research however, Health Holland focused on relationship-building and alignment of common goals between the Swiss and Dutch. This resulted in on-going participation at the Swiss Biotech Days, two funding calls between Switzerland and the Netherlands, conversations on advanced therapies, and the start of a programme around Organ-on-Chip technology which had been identified by Health Holland as a top innovation topic.

Health Holland as an implementation and coordination partner – The Boston Case

Collaboration with Massachusetts was already established but was further enabled after signing a MOU in 2019 between the governments. Health Holland became the implementation partners to ensure continuation of activities and connection of suitable parties between countries. This involved attendance at the BIO International Convention or the Dutch Innovation Days in Boston and collaboration with institutions such as the Termeer Institute which led to an annual Transatlantic Connections Award that supports early-stage biotech entrepreneurs and connects the Dutch and Boston ecosystems.

Health Holland as a pathfinder through the provision of international programmes

Health Holland's Visitors Programme 2023-2026 became the catalyst for international partnerships supporting SMEs. It contributed to the establishment of Coronet Ventures and the Cedars Sinai Technology Ventures fund which will invest $50.0 million into Dutch health tech and biomedical start-ups over the next decade.

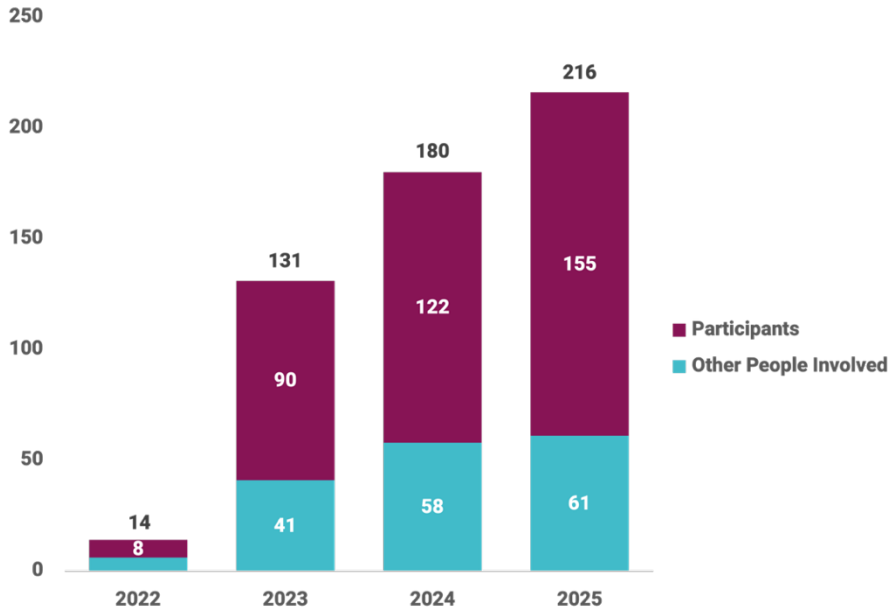
MEDICA 2025 pavilion had a broad reach with 83 participants (16 SMEs) and 197 visitors (101 SMEs) which came via buses organised by ROM Utrecht Region. A survey showed that 82% of the visitors were confident that their participation would lead to business deals. Valuable contracts were signed including the one between R-Solution Medical B.V. and Duomed (see picture on the right).

7.1.1 International Missions

One of Health Holland's instruments contributing to the broader strategic ecosystem goals and international positioning is the participation and organisation of incoming and outgoing missions (as considered in Section 3.2.3). Before 2020, the Top Team played a major role in these activities and from 2020 onwards, a dedicated international team was founded by Health Holland.

Since 2022, Health Holland has been involved as a participant, business delegation leader or organising member in about **28 international missions** of which 20 were outgoing. These had in **total 375 participants and about 166 additional people involved** (see Figure 7.1) including the organising teams, mission and delegation leaders and other partners. During the same period there were eight incoming missions. The countries engaged included Singapore, China, USA, Spain, Switzerland, Germany, Japan, UK and Sweden.

Figure 7.1 Number of People Involved in the International Missions, 2022-2025

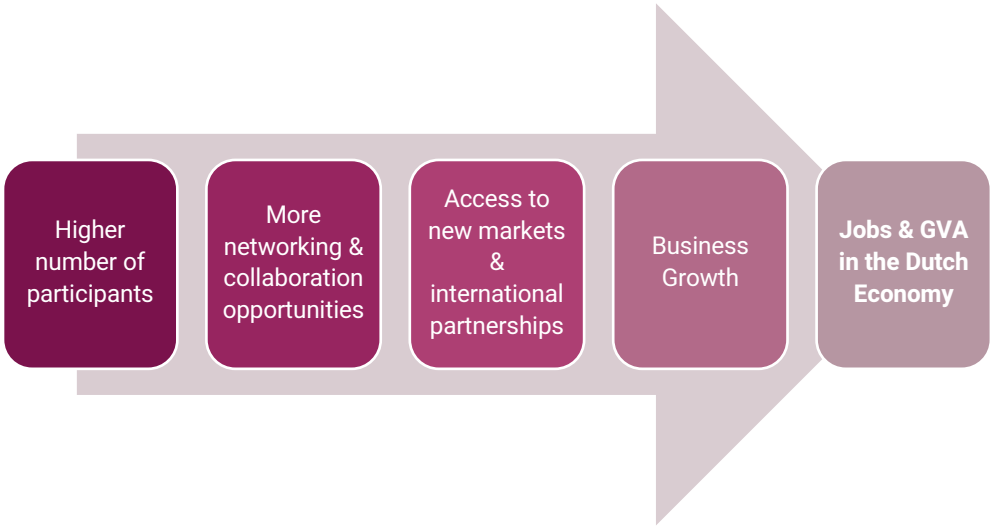


Source: Health Holland.

The number of the people involved in these activities shows the scale of engagement. The figure above indicates that the number of people in these missions increased from 14 in 2022 to 216 in 2025. The relatively low number recorded in 2022 also reflects the lingering effects of the Covid-19 pandemic on international activities, alongside the fact that Health Holland's involvement in international missions became substantially more structured only after the implementation of the internal international relations agenda in 2021.

Taking into consideration that these activities connect Dutch companies with other countries unlocking international scaling opportunities, it is important to note that they also generate economic impact in the Netherlands. The process of generating economic impact is illustrated in Figure 7.2.

Figure 7.2 Economic Impact Generation from the Internationalisation Activities



Source: BiGGAR Economics.

The majority of the businesses/people involved in the international missions are involved in other activities supported by Health Holland, such as the valorisation programmes and PPPs, for which the economic impacts have been captured in Sections 5 and 6.

The internationalisation activities are part of a wider package of support and so make a substantial contribution to the economic impact of Health Holland. There has been an emphasis on moving from volume to value, with greater attention being paid to the quality of connections created, the strategic relevance of participating organisations and the long-term impact of the resulting relationships and collaborations that emerge from these.

Therefore, the figures presented above are indicators of engagement, recognising that the impact of these activities will be highly dependent on the relationships, collaborations and innovation outcomes they build.

7.2 Networking Events

During the consultation programme, Health Holland's networking support was highlighted as one of the most valuable contributions. The networking activities organised are key components of the valorisation programmes and internationalisation activities. Health Holland was characterised as an important **matchmaker** and **broker** that connects partners. Its networking activities **created a platform for SMEs and PPP consortia** to expand their collaboration opportunities, showcase their innovations and access knowledge and funding.

Although Health Holland's contribution is broader than what can be captured through quantitative indicators, activity data provide a useful illustration of the scale and nature of activities through which broader economic impacts are generated. Between 2015 and 2019, the number of events increased steadily from one to 32,

with smaller-scale events accounting for approximately 45-50% of the total events organised. Between 2020 and 2024/25, the number of events organised by Health Holland increased by about 9% from 55 to 60, with fluctuations over time (Table 7.1).

The main difference is evident in the event mix over time. In total, there were about 224 small-size events organised, 43 medium and 52 large. However, large events increased from 7 in 2020 to about 10 between 2023 and 2025 and medium events rose from 3 in 2020 to 10 in 2025, whereas small events remained stable with small fluctuations across time. This indicates that the growth was not necessarily in volume but in size of the events.

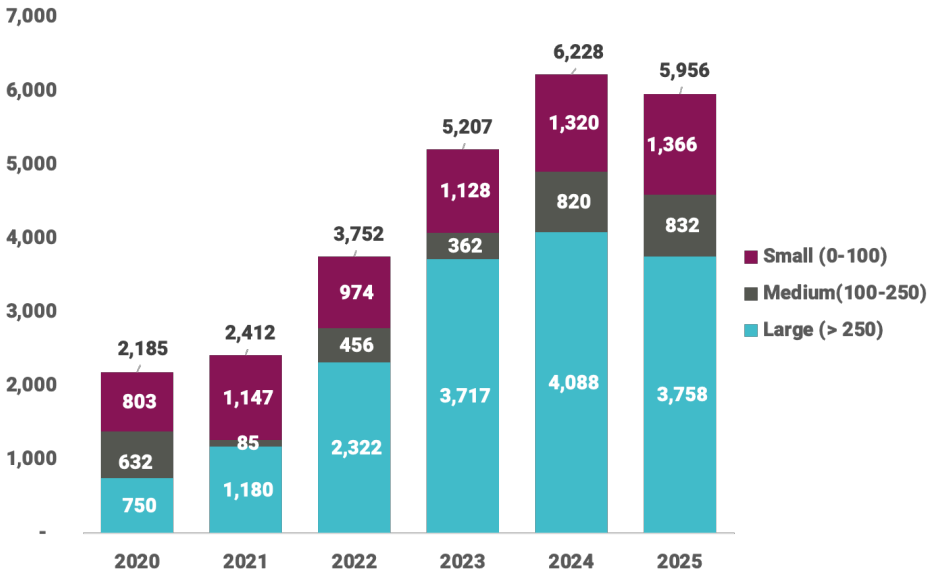
Table 7.1 Number of Health Holland's Events, 2020-2025

	2020	2021	2022	2023	2024	2025	Total
Small (0-100 participants)	40	33	38	32	41	40	224
Medium (100-250)	8	3	7	6	9	10	43
Large (>250)	7	8	7	10	10	10	52
Total Number of Events	**55**	**44**	**52**	**48**	**60**	**60**	**319**

Source: Health Holland.

A similar trend is shown in the analysis of the number of participants throughout the years. Total number of SMEs participating in the events increased from 2,185 to about 6,228 in 2024 (peak figure), equivalent to a 185% growth in participation from 2020 to 2024, with events attendance in 2025 being more than double that in 2020. The main driver of this was the attendance in large events which grew more than five times during the same period, reaching two-thirds of total participants.

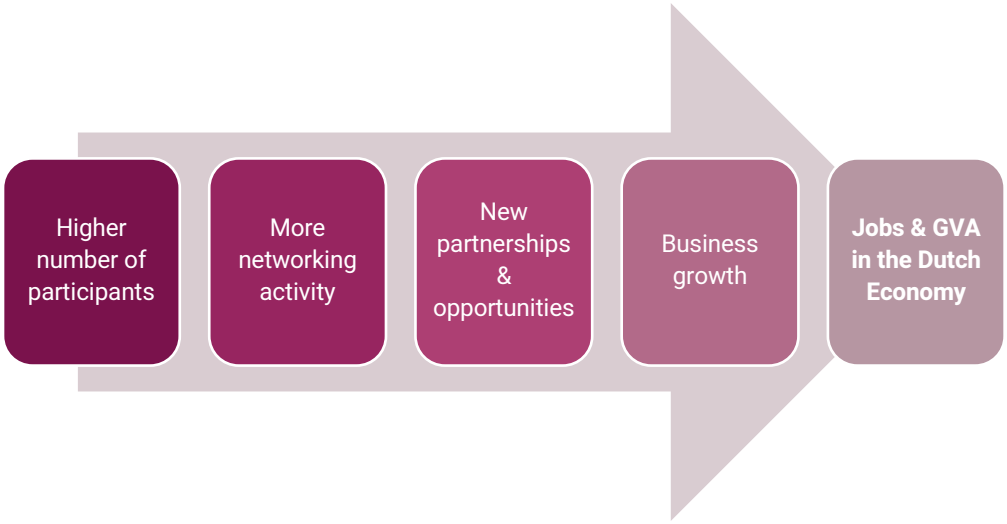
Figure 7.3 Number of SME Participants by Event Size, 2020-2025



Source: Health Holland.

This shows that Health Holland did not just organise more events but brought together a significant number of people. It is an indicator of the growing recognition of Health Holland's activities and value, higher visibility of events and potentially higher impact (see Figure 7.4).

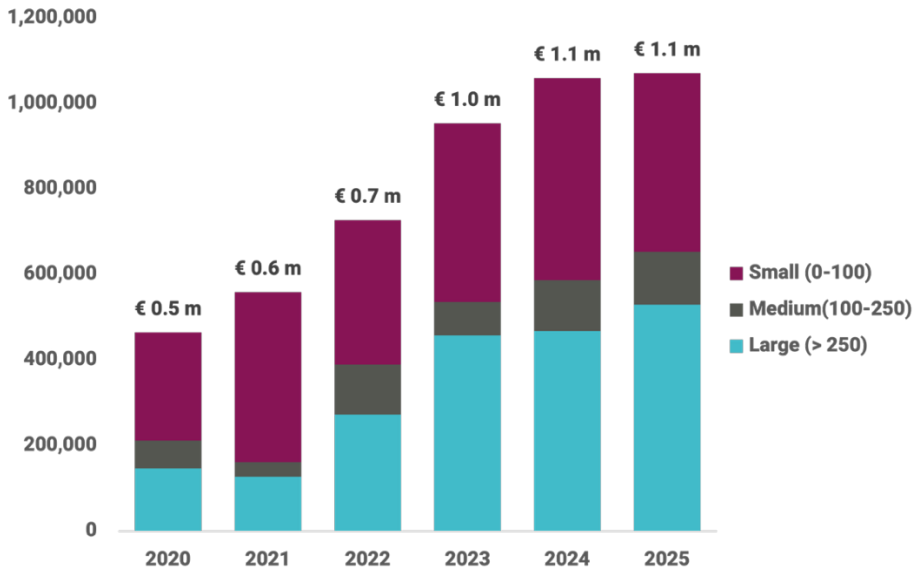
Figure 7.4 Economic Impact Generation from the Networking Activities



Source: BiGGAR Economics.

Taking into consideration the subsidy granted over time to cover the costs and run the events, funding more than doubled from about €465,000 in 2020 to €1 million in 2025, equivalent to a 130% increase. This is an indicator of the development of the LSH sector across time as more money was invested in this activity to respond to the demand of an increasingly expanding network.

Figure 7.5 Subsidy Granted by Event Size, 2020-2025



Source: Health Holland.

It is important to highlight that over time, the cost per participant in the events decreased from approximately €213 to about €204 (in 2025). At the peak attendance in 2024, this figure drops to €170 per participant. This shows the cost-effectiveness per participant of larger events (economies of scale).

7.3 Policy Translation and Development

According to the consultation programme, Health Holland **operated as a system-level coordination and steering function**, guiding strategy, aligning actors and monitoring progress toward policy objectives. Specifically, from 2019, Health Holland fulfilled four distinct roles for the societal theme Health and Care: **Strategic Ally, System Coordinator, KIC-partner and Knowledge-Sharer**.

7.3.1 Health Holland as a Strategic Ally

In its role as a strategic ally, Health Holland functioned as a leading organisation for the societal theme Health and Care and its missions. It directly **coordinated the design and formation process of the two KIAs Health and Care, facilitating joint decision-making for governance and taking responsibility for the writing and publication of these documents**. By holding chairmanships in the Thematean (Theme-Team)[30] and Kernteam (Core-Team)[31], Health Holland maintained a strategic position to guide the movement and align stakeholders without carrying a political mandate. It shaped the KIA Health and Care within the Mission-Driven Innovation Policy by effectively linking societal challenges (e.g. Alzheimer's, healthy ageing) with economic opportunities. Furthermore, to support the long-term vision of guiding innovation from insight to implementation, Health Holland mobilised 11 partners beyond the original KIC (including STZ, NLZVE, Pharos and Vilans, among others).

Based on the knowledge and experience acquired since Health Holland's establishment, it became clear that the mission goals formulated in the KIA Health and Care could only be achieved if the Mission-Driven Innovation Policy was closely aligned with broader VWS policy priorities. Therefore, the KIC partners emphasised the need to better connect social and technological innovation, and to ensure stronger alignment between the Mission-Driven Innovation Policy and VWS policy. In response, Health Holland **worked closely with VWS[32] to align the Mission-Driven Innovation Policy with relevant VWS policy frameworks**. This strengthened alignment was reflected in the KIA Health and Care 2024-2027.

[30] Health Holland (2026), *Thematean*. Available at: https://www.health-holland.com/nl/Theme-Team
[31] Health Holland (2026), Kernteam. Available at: https://www.health-holland.com/nl/Core-Team
[32] Tweede Kamer Der Staten-Generaal (2025), *Innovation in healthcare practice*. Available at: https://www.tweedekamer.nl/kamerstukken/brieven_regering/detail?id=2025Z21512&did=2025D50928

Health & Care Missions

Health Holland focused on aligning the Mission-Driven Innovation Policy and VWS Policy.

In 2019, VWS formulated the Health and Care missions for the Mission-Driven Innovation Policy, including the ambition to add five extra healthy years of life. While the substance of VWS policy was closely aligned with these Health and Care mission objectives, the Health and Care missions were not always explicitly referenced in VWS policy, and the connection between the two was not always clearly communicated. This created the perception among some KIC partners and other stakeholders that VWS did not explicitly support the KIA and/or the Health and Care mission objectives, despite the strong alignment.

In the process of executing these Health and Care missions, Health Holland continuously kept the missions on VWS' agenda by referring to them as the "**Health & Care Missions set by VWS**". This was intended to strengthen the connection between VWS policy and the Mission-Driven Innovation Policy in line with the ambition of the KIC partners to align technological and societal innovations. Through this approach, Health Holland aimed to ensure that Mission-Driven Innovation efforts were more explicitly linked to the societal challenges addressed by the VWS policy.

EZK called on all sectoral ministries to take ownership within the Mission-Driven Innovation Policy, which in turn encouraged VWS to take greater responsibility and co-coordinate the KIA with Health Holland.

Health Holland's experience over time highlighted that the Mission-Driven Innovation Policy cannot be effective if other policy priorities operate in isolation. It should function as an umbrella framework that aligns and coordinates related policy areas.

Another example was Health Holland's contribution to the EZK's revision of the industry policy through the **National Technology Strategy**[33]. This was related to ten enabling technologies that can enhance the Dutch economy. Health Holland was asked to support the development of the Action Agenda Biomolecular and Cell Technologies[34] and was consulted, amongst other partners, to help link the capabilities of the LSH sector to the remaining technologies including imaging, data and AI, cybersecurity, and mechatronics and optomechatronics[35]. The aim was to accelerate the provision of these technologies in the market.

[33]National Government (2024), *The National Technology Strategy*. Available at: https://www.rijksoverheid.nl/documenten/beleidsnotas/2024/01/19/de-nationale-technologiestrategie
[34]KIA ST (2026), *Biomolecular & Cell Technologies Action Agenda*. Available at: https://www.kia-st.nl/kia-sleuteltechnologieen/actieagendas-nts/actieagenda-biomolecular-cell-technologies
[35]KIA ST (2026), *Action Agendas (NTS)*. Available at: https://www.kia-st.nl/kia-sleuteltechnologieen/actieagendas-nts

7.3.2 Health Holland as a System Coordinator

As a system coordinator, Health Holland was responsible for delivering the KIA Health and Care from 2020 until 2025. This involved **organising the relevant governance meetings and driving stakeholder alignment across the Thematеam, Kernteam and the six mission teams**36. Health Holland also actively aligned stakeholders to determine the annual themes for the NWO KIC call and maintained a dedication to organising cross-over calls with other sectors on common ground themes. This led to **better system coherence** as its coordinating role in the execution of the Mission-Driven Innovation Policy contributed to the alignment of different stakeholders and the connection of policy and practice.

7.3.3 Health Holland as a KIC-Partner

As a KIC-partner, Health Holland **actively implemented the missions within its own financial instruments and innovation programmes**. To ensure alignment, a Health Holland member participated in each of the mission teams. Through these efforts, the organisation met the required standards for KIC-partners and actively promoted the Health and Care missions, manifesting in the involvement of new stakeholders essential for the success of the Mission-Driven Innovation Policy.

7.3.4 Health Holland as a Knowledge-Sharer

Health Holland publishes and contributes to authoring influential strategic reports, analyses and case studies to explain how it translates societal challenges into actions. Examples of these include:

- **Book Chapter 6.9: The Value of Public-Private Partnerships in the Netherlands**[37]: authored by internal strategic advisors to highlight the shift in the European and Dutch R&D toward a Mission-Driven approach to solve societal challenges and how Health Holland strategically used the PPPs and the quadruple helix model to bring innovation closer to needs;
- **Mission-Oriented Innovation Policy: A Case Report on the Dutch Health & Care Mission-Driven Transformation Strategy**[38]: a working paper co-authored by members of Health Holland and published through University College London Institute for Innovation and Public Purpose (IIPP), showing how the Dutch Mission-Driven Innovation Policy was created and executed considering lessons learned. This example shows Health Holland's monitoring and evaluating role in policy implementation and impact on national and international policymakers;
- **Mission Oriented Innovation Bootcamp: A collaboration between IIPP and OECD Observatory of Public Sector Innovation (OPSI)**[39]**:** a half-day bootcamp held in

[36] Since the realignment of the societal theme Health and Care at the end of 2025, VWS took on the role of co-coordinator and thereby shared responsibility with Health Holland. VWS now carries the responsibility for the Thematеam and Health Holland for the mission teams.

[37] Health Holland (2024) *The Value of Public-Private Partnerships in the Netherlands*. Available at: https://www.health-holland.com/news/2024/05/value-public-private-partnerships-netherlands

[38] UCL Institute for Innovation and Public Purpose (2024), *Mission-Oriented Innovation Policy: A Case Report on the Dutch Health & Care Mission-Driven Transformation Strategy*. Available at: https://www.ucl.ac.uk/bartlett/publications/2024/dec/moip-case-report-dutch-health-care-mission-driven-transformation-strategy

[39] OPSI (2020), *Dispatches from the 2020 Missions Oriented Innovation Bootcamp.* Available at: https://oecd-opsi.org/blog/dispatches-from-the-2020-mission-oriented-innovation-bootcamp/

2020 to review mission-oriented frameworks in public agencies and share insights, exploring how governments can use missions to solve societal challenges. Health Holland acted as a knowledge-sharer providing insights on how a participatory model can lead to the successful co-design and implementation of national health missions, solving major health challenges;

- **Mission-Oriented Innovation in Action 2021 Casebook**[40]: a document created to serve as a learning tool for a global learning community on mission-driven public policy. This highlights that the transition to a mission-oriented approach is difficult and requires governments to change how they operate. Health Holland contributed its story to help build a 'library' of real-world practices. Its role was to describe the model of 'sectoral consensus building' as a way to transform top-down industry networks by bringing everyone together under a shared goal; and
- **Prevention: The Other Story**[41]: an article with co-authors from Health Holland which highlighted that disease prevention is the most significant health success story of the past 150 years, driven by broad societal and environmental improvements, rather than by individual lifestyle choices. It proves why a quadruple helix model and mission-driven approach are important, showing that to address health challenges a collaborative approach is essential and a shared tracking system that connects all players of the Dutch society so that decisions and changes can be made when needed.

[40] UCL (2022), *MOIN Casebook 2021*. Available at: https://www.ucl.ac.uk/bartlett/publications/2022/jan/moin-casebook-2021

[41] Health Holland (2026), *Prevention: The Other Story*. Available at: https://www.health-holland.com/about-us/publications/preventie-het-andere-verhaal

8. Societal Contribution

Through its activities, Health Holland enables impacts that benefit all of society.

Health Holland's activities associated with the entities it supports help to solve societal problems, and these are discussed in this Chapter through some key success stories. This is in addition to some of the impacts that have been discussed elsewhere in the report. The following sections present case studies highlighting how Health Holland's support has contributed **indirectly** to societal outcomes.

While societal impacts are indirect, Health Holland's activities support the development of innovations with potential to improve health outcomes and healthcare delivery. A broader body of evidence, including OECD research on the relationship between health, innovation and economic growth shows that innovation-driven economic growth can strengthen the capacity of public sectors such as healthcare by expanding the resources available for investment[42].

8.1 Large Strategic PPPs

8.1.1 Oncode Institute

Oncode Institute is an independent research organisation that unites over 900 top cancer researchers from 13 different institutes in the Netherlands. It is ranked in the world's Top 3 for scientific performance, with over 28% of publications in the top 10% of their field[43].

Health Holland's contribution was vital for its development. It acted as a **public funder and strategic partner**. A strategic PPP was created to accelerate innovations and their translation into new diagnostics and treatments for cancer patients. Its funding was used by Oncode to support fundamental scientific research in collaboration with a wide range of private parties and to validate new insights, laying the foundation for spin-outs that subsequently raised significant private capital that would otherwise have been impossible to secure. Furthermore, Oncode had connections with academia, but Health Holland **bridged the gap with industry**.

In addition to the economic impacts, a 2025 Impact Analysis Report by Roland Berger highlights potential societal impacts including:

- **Direct Health Gains**: annual impact of 5,700 to 20,000 QALYs gained by 2045 through implementation of new oncology solutions, creation of curative treatment options for metastases and aggressive tumours, reduction of long-term symptoms experienced by 90% of patients 10 years after diagnosis;

[42] Atilgan, E., Ertugrul, H.M., Baycan, O. and Ulucan, H. (2024). Health-led growth hypothesis and health financing systems: An econometric synthesis for OECD countries. *Frontiers in Public Health, 12*.
[43] Oncode Institute (2025) Annual Progress Report, Annex I, Key Performance Areas Report.

- **Affordable and Sustainable Healthcare**: save between €15m and €35m in annual healthcare costs by 2045, save 45,000 to 110,000 hours of healthcare contact time annually, almost 60% of Clinical Proof of Concept projects focus on activities related to affordability and sustainable care.

8.1.2 RegMed XB

RegMed XB is a Dutch-Flemish PPP aiming to develop regenerative medicine solutions. It collaborates on projects with five Health Foundations, researchers, industry and regional governments to improve patients' lives and generate impact.

Health Holland provided the framework to **unite the different stakeholders and involved Health Foundations as private investors** which led academia to prioritise product development and patient solutions. According to the consultation programme, Health Holland's funding unlocked new investments having an average multiplier effect of about **6 times larger** the amount provided. During the consultation programme, it became apparent that Health Holland triggered a 'domino effect' where provinces, Health Foundations and private companies felt secure enough to co-invest and collaborate.

In addition to the economic impacts, there are various future societal impacts anticipated including[44]:

- **Improving Quality of Life**: repairing, replacing or regenerating damaged tissues and organs that can cure chronic conditions;
- **Maintaining Healthcare Sustainability**: lowering the demand for care which could contribute to the problem of increasingly aging population and shortage of healthcare workers;
- **Affordable and Accessible Therapies**: building a national industry which reduces the financial burden for accessing imported international therapies;
- **Better Labour Productivity**: patients returning to work boosting labour productivity and benefiting the social security system.

8.2 Other PPP Projects

8.2.1 CAD4TB+ - Thirona

The aim of this PPP project was to develop an automated diagnostic system (CAD4TB+) to detect and reduce transmission of tuberculosis from chest X-rays, specifically for resource-poor settings. Radboud University Medical Center created a spin-off called Thirona which was founded in 2014 to provide the product to the market in collaboration with Delft Imaging Systems B.V.

The societal impact associated with the project is related to the **access to diagnosis and faster treatment initiation**. Tuberculosis affects over 10 million people per year,

[44] RegMed XB (2026), Research Excellence. Available at: https://regmedxb.com/what/research-excellence-moonshots

with over a third lacking access to diagnosis[45]. This product provided a fast, cost-efficient solution even in remote areas where medical experts are not available. It was installed in more than 75 countries and, by 2020, there were over 150 publications referring to the CAD4TB+ and related tools, making it one of the most well-researched automated diagnostic software in the world[46]. Thirona received additional funding and won awards including the Best of the world 2021 and 2022. The product was also certified and recognised by World Health Organisation as a standard instrument for tuberculosis triage. The software can now analyse images in under five seconds[47], it **has analysed more than 32 million chest X-rays[48]**.

In this development journey, Health Holland **provided the initial PPP subsidy** in 2013 and **continued support for follow-up projects** which likely enhanced the societal impact mentioned above. Some of these projects are the:

- retinal screening for Alzheimer's with Erasmus Medical Center[49];
- HIT CF 2.0 9 (2017) – Computer Assisted Diagnosis (CAD) for monitoring 'CF airway disease (CAD)' The CAD-CAD project[50]; and
- Two projects from the Strategic PPP P4O2 related to the detection and personalised treatment of lung diseases[51].

The subsidies provided through Health Holland were considered vital for ensuring continuity and financing of the research team from the early stages and bridging the 'valley of death' between research and market. These contributed significantly to the development of Thirona and the success of the CAD4TB+ product.

8.2.2 mtFIT-test – CRC Bioscreen 2.0

CRCbioscreen

This PPP project aimed at developing a sensitive molecular stool test (multi target faecal immunochemical test, mtFIT) for the early detection of colorectal cancer (CRC) and its precursors, offering improvements to the existing standard FIT test. In 2015, the CRC Bioscreen 2.0 project received PPP subsidy from the Netherlands Cancer Institute, Exact Sciences Corporation and the MDL Fund Foundation.

The societal impact of this project lies in its potential to deliver substantial **direct health gains**. CRC remains one of the leading causes of cancer-related mortality worldwide, largely because early-stage tumours often develop without symptoms. Population-based screening programmes, such as the Dutch national CRC screening

[45] Delft Imaging (2026), *CAD4TB+*. Available at: https://delftimaging.com/solutions/ai-powered-medical-imaging-software/cad4tb/
[46] International Hospital & Equipment (2020), Thirona: taking AI from spin-off to 40 countries in 6 years. Available at: https://interhospi.com/thirona-taking-ai-from-spin-off-to-40-countries-in-6-years/#:~:text=EVR%3A%20As%20a%20spin,quality%20we%20aim%20to%20offer
[47] Delft Imaging (2026), *CAD4TB+*. Available at: https://delftimaging.com/solutions/ai-powered-medical-imaging-software/cad4tb/
[48] Thirona (2026), Company News. Available at: https://thirona.eu/news/
[49] Health Holland (2026), *Detecting dementia through the eye*. Available at: https://www.health-holland.com/project/2020/2020/detecting-dementia-through-eye
[50] Health Holland (2026), *Computer assisted diagnosis for diagnosis and monitoring of airway disease*. Available at: https://www.health-holland.com/project/2024/2019/computer-assisted-diagnosis-diagnosis-and-monitoring-airway-disease
[51] P4O2 (2026), Collaboration. Available at: https://p4o2.org/collaboration/

programme, save thousands of lives through early detection and are more cost-effective than treating advanced disease.

The test developed in this project detects specific tumour-associated protein biomarkers and is more sensitive than standard faecal immunochemical tests (FIT) for identifying precancerous lesions. Within the CRCBioscreen 2.0 project, retrospective validation using biobanked samples suggested that implementation of the test could potentially **reduce CRC incidence by 12% and CRC mortality by 8%[52].**

To further develop and commercialise this technology, the Netherlands Cancer Institute established the spin-off company **CRCbioscreen** in 2021[53]. The company co-financed a large screening study involving more than 13,000 participants in the Dutch national CRC screening programme.

Subsequent prospective evaluation in the CRC Bioscreen 3.0 and mtFIT[54,55] studies demonstrated even greater potential impact. The results indicated that use of the test in population screening could **reduce CRC incidence by 21% and CRC mortality by 18%** compared with the current FIT-based screening approach. These findings highlight the potential of this innovative screening strategy to substantially improve public health outcomes and reduce the burden of CRC.

Health Holland played an important role in **providing the initial subsidy** at the proof-of-concept stage. It also supported:

- the CRC Bioscreen 3.0 project in 2019 providing funding to develop a verification version of the initial product and test its performance[56];
- subsequent studies including providing subsidy in 2021 to clinically validate the test within the Dutch national screening programme[57]; and

[52] Health Holland (2026), Development of an improved stool test for colorectal cancer screening. Available at: https://www.health-holland.com/project/2024/2024/development-improved-stool-test-colorectal-cancer-screening
[53] CRCbioscreen (2026), Our Research. Available at: https://www.crcbioscreen.com/Our-research/

[54] The multitarget faecal immunochemical test for improving stool-based colorectal cancer screening programmes: a Dutch population-based, paired-design, intervention study, Wisse P, de Klaver W, van Wifferen F…de Wit M, Meijer GA. The Lancet Oncology, 2024; 25, 326-337
[55] Health Holland (2026), *Prospective clinical validation of a novel multitarget FIT in the Dutch CRC screening programme (mtFIT study)*. Available at: https://www.health-holland.com/project/2021/2021/prospective-clinical-validation-novel-multitarget-fit-dutch-crc-screening-program
[56] Health Holland (2026), CRC Bioscreen 3.0. Available at: https://www.health-holland.com/project/2018/crc-bioscreen-30
[57] Health Holland (2026), *Prospective clinical validation of a novel multitarget FIT in the Dutch CRC screening programme (mtFIT study)*. Available at: https://www.health-holland.com/project/2021/2021/prospective-clinical-validation-novel-multitarget-fit-dutch-crc-screening-program

- the creation of a PPP between the Netherlands Cancer Institute and SMEs Surfix Diagnostics and CRCbioscreen to develop improved screening test for colorectal cancer[58].

In addition, Health Holland's consistent efforts accumulated over time actively supporting the development of the CRCbioscreen and the success of the product. These efforts also **made the product more attractive to foreign partners**, doubling investments. The additional support provided and the subsequent projects and studies are likely to enhance further the abovementioned societal contributions.

8.3 SME Development

8.3.1 Momo Medical B.V.

Momo Medical B.V. is a health technology company founded in 2017. Their main product is Momo Bedsense, which is a sensor placed under mattresses that provides real-time data through an app to help nurses prevent bedsores and falls and reduce workload.

Momo Medical's growth was a result of its continuous engagement with various public and private sector stakeholders. This included its participation in the Yes!Delft Accelerator, collaboration with TU Delft and the financial support received from the Municipality of Delft. The competence of the team was also vital as they continuously worked on understanding nursing care through regular visits to the Reinier de Graaf Hospital.

Nowadays the company collaborates with Fortys Hogeschool, TU Eindhoven and Tilburg University and receive support from Techleap, Intrakoop, Innovatiefonds Ouderenzorg (IFOZ) and numerous nursing homes across the country.

Health Holland had a long-standing relationship with the company throughout its innovation journey. This was mainly related to the provision of financial and network support. It included[59]:

- **Participation in the Venture Challenge programme in 2017**: provided valuable guidance for the entrepreneurs to help them develop their business and bring their product into the market;
- **Winning the National Healthcare Innovation Award Public Award in 2023**: the innovation was recognised by jury and public which was vital in increasing the visibility and trust for their technology and building collaborations; and
- **Participation in the international missions to California and Toronto in 2021 and 2023**: which allowed founders to connect to relevant parties and expand their

[58] Health Holland (2026), Development of an improved stool test for colorectal cancer screening. Available at: https://www.health-holland.com/project/2024/2024/development-improved-stool-test-colorectal-cancer-screening

[59] Health Holland (2025), *De innovatiereis van Momo Medical: van idee naar impact*. Available at: https://www.health-holland.com/news/2025/03/de-innovatiereis-van-momo-medical-van-idee-naar-impact

network and build the relationships needed to gain a foothold in the Canadian market.

This groundwork led Momo Medical to establish its own branch in Canada, where it now has a local team dedicated to exporting Momo BedSense across the country. This marks a concrete step from international outreach toward a lasting international presence, illustrating how Health Holland's mission support can translate into sustained international growth.

These were vital steps in accelerating the development of the business and enabled the creation of economic and societal benefits.

An implementation and impact Review published in 2023[60] evaluates the use of the Momo BedSense across many Dutch elderly care organisations. In addition to the economic impacts, the report highlights societal impacts including:

- **Improvements in Quality of Life for the Elderly**: better rest at night, privacy, care provision tailored to needs, reduced medication (for example, an organisation reported the use of sedative medication decreased by 5% following implementation);
- **Positive Impact on Healthcare Workforce**: reduction of caregivers' walk from 8,000-10,000 steps to 4,000-6,000 steps per night, time savings due to the redirection of time toward individual care and administrative tasks (64% of surveyed caregivers), and reduction of workload pressure;
- Tackling Healthcare Labour Shortages: more effective use of staff;
- **Improving Health and Prevention**: prevention supported by analytics provided by the app for each person and better use of data which has previously allowed caregivers to adjust the medical treatments according to characteristics such as individual's sleep and wake rhythm.

8.4 Summary of Societal Impacts

Health Holland's societal contribution is not direct. It is an enabling effect originating from the support it provides across all stages of the development of the players of the LSH ecosystem.

The case studies show examples of societal benefits including:

- direct health gains and better quality of life;
- access to affordable and faster treatment and care;
- reduction of pressure caused by the gap between healthcare demand and supply due to the shortage of workers;
- positive impacts on healthcare labour; and

[60] IFOZ Innovatiefonds Ouderenzorg (2023), Implementatie & Impact Review Momo BedSense. Available at: https://ifoz.nl/wp-content/uploads/2024/04/ii-review-Momo-Bedsense_anoniem.pdf

- growth of Dutch health-tech export and international market success, supporting the competitiveness of the Dutch LSH sector.

Health Holland may generate broader societal value through its contribution to innovation and economic growth. A stronger innovation ecosystem can increase the resources available for public investment, including healthcare, and therefore indirectly support societal wellbeing.

9. The Active Steward of the Dutch LSH Ecosystem

Health Holland has played a central role as the Active Steward of the LSH ecosystem in the Netherlands

The LSH sector is an example of a sector which needs to be built around an innovation ecosystem where universities, healthcare providers, large global companies, start-up companies, growing indigenous companies, investors, government and the public are connected into a system that creates opportunities for health innovations to become marketable products driving societal and economic impacts.

9.1 A Systems Approach

In many countries it is common for public policy generally and economic development policy intended to support innovation in particular to be designed based on linear models. In such models, the development and growth of a sector will be typically described as a series of causes and effects, for example:

- investment in fundamental research leads to breakthroughs in knowledge;
- business investment in R&D, based on this new knowledge leads to new technologies, products and processes;
- the commercialisation of new technologies, products and processes leads to growth of businesses;
- the use of new technologies, products and process deliver increases in productivity; and
- growth of businesses and increases in productivity drive economic growth.

While a linear process like this can be useful as a model for understanding historical innovations, they are too simplistic to be useful in designing effective public policy interventions in complex and changing environments. Such environments require systems thinking which recognises that:

- all systems are composed of interconnected parts;
- the connections cause the behaviour of one part to affect another;
- all parts are connected; and
- all the parts and relationships are dynamic and changing over time.

9.2 Innovation Ecosystems

There are many definitions of innovation systems and ecosystems, with the terms often used interchangeably. Some focus on businesses in a particular sector competing and collaborating whilst others are broader, also recognising the interdependence of innovation and skills development. One of the most useful definitions, influenced by successful innovation systems in the Nordic countries, is the Systems of Innovation approach developed in Sweden by Professor Charles Edquist[61].

Definition of Innovation System

"All important economic, social, political, organisational, institutional, and other factors that influence the development, diffusion and use of innovation."

Professor Charles Edquist

An innovation ecosystem contains all the components needed to facilitate the creation, development and growth of innovative businesses and start-ups and, like natural systems, is both complex and adaptive. The relationships between the components and the flow of technology and information among people, enterprises, and institutions is key to success. By bringing together diverse talents, ideas, and resources, these ecosystems enable the cross-pollination of ideas, leading to the generation of novel solutions to complex problems.

[61] Charles Edquist (2006), Systems of Innovation: Perspectives and Challenges (in The Oxford Handbook of Innovation)

Table 9.1 Determinants of Innovation Processes

I. Provision of knowledge inputs to the innovation process
1. Provision of R&D and, thus, creation of new knowledge.
2. Competence building, through individual learning (education and training for innovation and R&D activities) and organisational learning.
II. Demand-side activities
3. Formation of **new product markets**.
4. Articulation of **quality requirements** emanating from the demand side with regard to new products.
III. Provision of constituents for Systems of Innovation (SIs)
5. Creating and changing organisations needed for developing new fields of innovation. Examples include enhancing entrepreneurship to create new firms and intrapreneurship to diversify existing firms; and creating new research organisations, policy agencies, etc.
6. Networking through markets and other mechanisms, including interactive learning among different organisations involved in the innovation processes.
7. Creating and changing institutions – including intellectual property laws, tax laws, environment and safety regulations, R&D investment routines, cultural norms, etc. – that influence innovating organisations and innovation processes by providing incentives for and removing obstacles to innovation.
IV. Support services for innovating firms
8. Incubation activities such as providing access to facilities and administrative support for innovating efforts.
9. Financing of innovation processes and other activities that may facilitate commercialisation of knowledge and its adoption.
10. Provision of advisory services relevant for innovation processes, e.g., technology transfer, commercial information, and legal advice.

Source: Adapted from Edquist (2011), Design of innovation policy through diagnostic analysis

A successful system requires that all parts of the system are present and that the relationships between the parts are strong. The system will be as robust and resilient as its weakest part or relationship.

An innovation ecosystem is dynamic and so requires continuous improvement. This means that there is a role for an organisation that is trusted by all organisations that are part of the ecosystem, to identify what parts and relationships need to be strengthened and to ensure that action is taken to address issues identified.

During the consultation programme, multiple external consultees identified Health Holland as the organisation that has this trust and plays a role as the Active Steward of the LSH innovation ecosystem in the Netherlands, at the national level.

9.3 The Dutch LSH Ecosystem & Economic Development

Since the late 20th century, the LSH sector has become a key driver of innovation and economic growth. Advances in biotechnology, medical technology and digital health have led to the rise of regional clusters, and national strategies focused on connecting science, industry and healthcare. In the US, early hubs such as Boston, San Diego and the Research Triangle inspired similar developments across Europe. Governments began to see the sector not only as a source of economic strength but also to address major health challenges.

The Netherlands is amongst the leading LSH locations. According to KPMG's report in 2025[62], the Dutch LSH sector is ranked **6th out of 32 countries** (following the US, Switzerland, Sweden, Denmark and Germany) across economic, labour market, governance, talent and education, infrastructure and market access and potential indicators. It currently has a **€32 billion direct GDP contribution** (about 3% of the total GDP) and **supports about 53,000 jobs** in the Netherlands.

The foundation of Health Holland was a central part of the Dutch success story, and it is important to understand what was done differently in this sector that potentially contributed to making it one of the leading ecosystems globally. These lessons are important for the Netherlands to ensure that what works is maintained.

The KPMG report highlighted that to reach its full potential the Dutch LSH sector needs to focus on attracting more funding (public and private in R&D), develop a national LSH data infrastructure, speed-up market access to patents, strengthen public-private partnerships, entrepreneurship pathways and incubators and tackle fragmentation across regions.

The main lesson is that Health Holland managed to collect the knowledge and expertise that the fragmented and complex Dutch LSH sector needed to create, maintain and enhance an innovation ecosystem that tackles societal challenges and delivers economic benefits. Health Holland understood that if all parts of the system are present and working well, the system as a whole will survive and flourish.

9.4 The Active Steward of the Dutch LSH Ecosystem

This section introduces how the Health Holland model has been instrumental in shaping a dynamic innovation ecosystem that drives the development of the LSH sector in the Netherlands. It is primarily based on the consultation programme

[62] KPMG (2025), *The future of the sector life sciences in the Netherlands: Results of the global LSH business climate in 2025 benchmark.* Available at: https://hid.amsterdam/new-kpmg-report-highlights-dutch-strength-in-life-sciences-health/

undertaken as part of this study and is based on a consensus that emerged from a wide range of external stakeholders that are part of the LSH innovation ecosystem.

9.4.1 Bridging the Industry-Academia Gap & Reducing Fragmentation

Health Holland functioned as a **matchmaker** and **active broker** bridging the gap between different players of the ecosystem. It incentivised a cultural shift from isolated, academic research to collaborative partnerships. It also brought Health Foundations into collaborative PPPs working on R&D closer to market, moving them away from solely funding fundamental research.

According to the consultation programme, the efficiency of Health Holland's management of funds is partly related to the shift from academic research to greater interaction between academic and private sector and through the creation of Strategic PPPs so that individual projects can become part of a wider programme over time. This helped in **tackling fragmentation in research**.

9.4.2 Becoming a Mobilising Force that Brings Parties Together and Builds Consortia

Health Holland is considered to have a **balanced view** and is trusted by academia, industry and government. This gave it the opportunity to foster collaborations between all organisations in the ecosystem.

Health Holland became an ecosystem builder and connector driving collaboration through networking, matchmaking, and international trade missions. It has also created a sense of a single national community which has reduced competition between regions. It promoted a process of 'guided serendipity' that created real connections between researchers and companies rather than just hosting passive meetings.

9.4.3 Acting as a Funder and Financial Catalyst

Whilst Health Holland was given responsibility for the management of PPP funding, its role as a financial catalyst has been broader, crowding in R&D investment into the LSH innovation ecosystem in the Netherlands.

This was done in two ways, by:

- **subsidising the private sector**, leveraging investment in LSH R&D; and
- **leveraging the Health Foundation R&D spending**, in particular into collaborative projects.

During the consultation programme, there were various examples showing private sector multiplier effects. For instance, Oncode Institute used Health Holland's funding as **'pre-seed' capital for spin-outs** which resulted in private follow-on investments of approximately 14 times higher than the initial funding received.

In addition, health foundations such as Alzheimer Netherlands managed to double their research budget through Health Holland's PPPs matchmaking. Some consultees associated with key strategic PPPs considered the policy change for including charity funds as part of the private capitals a **'gamechanger'** which had a

multiplier effect of around 6 to 22 times the initial subsidy provided. By successfully lobbying to classify charity money as private capital, Health Holland unlocked millions in government matching funds that otherwise would not have entered the economic system.

In addition, this funding mechanism created a shift from hesitation to a willingness to work with private partners, reducing the fear of engaging with large industry players. It was also highlighted that Health Holland provided matching funds that supported both R&D and real-world scientific evaluation, creating the data needed for healthcare reimbursement.

From 2018 onward, the LSH sector consistently managed the largest PPP allowance budget of all Dutch Top Sectors. The multiplier effects created were related to the increasing understanding of the value of PPPs in the sector which was stimulated by Health Holland's proactive engagement.

During the consultation programme, it became evident that Health Holland has managed the Top Sector's PPP investment money efficiently because it became the **central coordinator of the ecosystem**. Health Holland acted as a catalyst for large consortia like Oncode Institute and RegMed XB and efficiently channelled funding into PPPs and programmes.

9.4.4 Promoting Valorisation and Supporting SMEs

The role of Health Holland in promoting valorisation and supporting SMEs is described in Section 6.1.

University hospitals also noted that the funding provided created specific **opportunities for university spin-off companies to launch**, requiring the university to create new regulations for conflict of interest to manage the commercial activity.

Furthermore, the seed funding provided by Health Holland was considered a de-risking mechanism for early-stage research for companies which has helped accelerating their development.

9.4.5 Creating International Engagements & Unlocking Opportunities

The role of Health Holland in supporting internationalisation is described in Section 7.1. Its role lies in building long-term strategic relationships, aligning stakeholders around national priorities, creating continuity between activities, strengthening the international positioning of the Dutch LSH sector and enabling collaboration.

9.4.6 Aligning Policy Objectives with Implementation Pathways

The role of Health Holland in translating and developing policy is described in Section 7.3.

9.4.7 Acting as a Partner Ensuring Long-term Continuity

Based on the consultees' insights, the Dutch government may have changed over time, but Health Holland has remained a **continuous factor** that provided the stability and consistency needed to keep the LSH sector connected and supported.

They stated that Health Holland also provided vital assistance during crises, including helping navigate bankruptcies or takeovers of partner companies to ensure projects continued in the long-run unaffected by temporary shocks.

9.5 Areas for Improvement in the LSH Ecosystem

Although the consultation programme found that overall perception was positive, there were areas where Health Holland's processes or the broader ecosystem it operates in still face significant challenges.

During the consultation programme, it was noted by some that Health Holland **lacks a mature, structured approach to selecting projects.** In addition, matchmaking events were viewed by some business consultees as too generic, lacking the strategic focus to ensure only highly relevant parties are involved. Companies desire more realistic marketing analysis and specific partner identification rather than generic networking support.

Consultees identified that while there is good support for start-ups, a major weakness in LSH in the Netherlands is the **lack of support for scale-up companies**. Another important limitation is the persistent **valorisation gap** as the Netherlands possesses top-tier science but struggles to translate it into products that are launched successfully in the global market. Even if these do not directly fall within Health Holland's remit, they are ecosystem gaps that need to be acknowledged. These are also broader cross-sectoral challenges that are identified in the Draghi report and in the Wennink report (see Chapter 10).

9.6 Summary of Health Holland's Role in the LSH Ecosystem

Whilst a culture of collaboration is often seen as intrinsic to national identity in the Netherlands, an effective innovation ecosystem requires more than a willingness to collaborate. It requires the institutional structures to be in place.

Based on the consultations conducted, Health Holland was established to administer the PPP funds as a Top Sector organisation, but it evolved into something much more than that. It became the **Active Steward of the LSH Ecosystem.** It achieved this by:

- Acting as a **neutral and independent** organisation offering balanced views that created trust.
- Becoming the **central point of contact** in the LSH ecosystem.
- Acting as sponsor, broker and partner with its **own knowledge and expertise**.
- Becoming a mobilising force that **proactively brings parties together** into a certain direction and builds consortium through the creation of collaborations.
- Creating a **unified branding** for international engagements and unlocking opportunities for global structural partnerships and access to international markets.

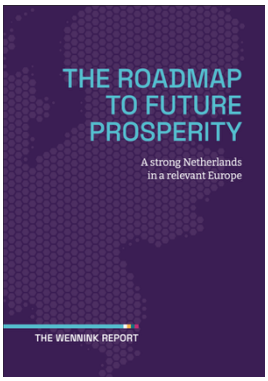
- Promoting **the Dutch LSH ecosystem**, building on smaller scale regional systems.
- Promoting **valorisation** and supporting SMEs.
- Contributing to **bridging the industry-academia gap** and bringing academic research closer to market.
- Acting as a funder and **financial catalyst** stimulating the leverage of investment into R&D.
- **Aligning policy objectives with implementation** pathways and maintaining awareness of Missions across the LSH ecosystem.
- **Proactively engaging with all players** in the LSH innovation ecosystem, taking advantage of opportunities and identifying challenges and gaps.

It is vital to highlight that Health Holland's contribution should be viewed through the systems approach outlined in Section 9.1. While it is an important player within this LSH ecosystem, the impacts achieved are the result of the combined efforts of a wider range of external partners and stakeholders and the sector's willingness to participate. The ecosystem's success depends on Health Holland but also on the contributions of the organisations with which it collaborates. This is where its success lies.

10. Policy Context and the Future of Health Holland

This Chapter sets the role and future of Health Holland in the economic policy context.

10.1 Policy Context



Both the **Draghi report** on European competitiveness and the **Wennink report** on the future prosperity of the Netherlands underscore a critical juncture for the regional and national economy: without significant interventions to boost productivity and innovation, economic growth will stagnate. Europe and the Netherlands are increasingly falling behind global competitors, such as the United States and China, in the development and commercialisation of critical technologies.

In addition, the **Dutch Court of Audit** (Algemene Rekenkamer) published a report in May 2026[63] concluding that many short-term policy goals have not been achieved and many long-term ones are out of reach, threatening the Netherlands' competitiveness. It highlighted that there is a need for stronger strategic coordination, more realistic long-term policy execution and more effective mobilisation of private and public investments.

To reverse this trend and secure long-term prosperity, all the reports emphasise the necessity of targeted industrial policies, increased investments in R&D, and the cultivation of strong innovation ecosystems to translate knowledge into societal and economic value. The current Dutch government is focusing on reinforcing these.

10.2 The Strategic Importance of Key Sectors and Innovation Systems

A central theme across the Draghi and Wennink analyses is the European '**innovation paradox**'. While foundational research and scientific output remain highly competitive, the translation of this knowledge into commercial applications and scalable businesses lags what might be expected given the research outputs. In Europe, innovative companies often encounter barriers to scaling up, leading to a static industrial structure where mature technologies dominate and breakthrough innovations struggle to find sufficient venture capital.

To build strategic relevance and economic resilience, the Wennink report explicitly identifies four critical domains where the Netherlands must focus its efforts and

[63] Netherlands Court of Audit (2026), *Few results in 2025; long-term goals out of sight.* Available at: https://english.rekenkamer.nl/latest/news/2026/05/20/few-results-in-2025-long-term-goals-out-of-sight

build technological niche positions: Digitalisation and AI, Security and Resilience, Energy and Climate Technology, and Life Sciences and Biotechnology.

For the LSH sector specifically, the policy context is urgent:

- The Draghi report notes that while Europe remains a leader in pharmaceutical trade by value, it is losing ground in the most dynamic market segments, such as biological medicines, due to lower R&I spending and regulatory fragmentation.
- To remain competitive, the EU must refocus its funding on developing a limited number of world-class innovation hubs in the life sciences.
- The Wennink report highlights that the Netherlands possesses a strong starting position with world-class university medical centers and bioscience parks.
- However, to capitalise on this, the Netherlands must actively bridge the gap between academic research and valorisation by fostering public-private partnerships, stimulating spin-offs, and attracting private venture capital.

Both landmark reports conclude that success in these key sectors cannot be achieved through isolated investments. It requires a 'systems approach' where interconnected innovation ecosystems, comprising universities, healthcare providers, start-ups, large corporations and government, are actively nurtured and coordinated.

10.3 Health Holland: A Blueprint for Executing the Competitiveness Strategy

When viewed through the lens of the Draghi and Wennink recommendations, Health Holland serves as a highly effective case study for how to successfully manage and stimulate a critical sector by connecting stakeholders, aligning strategic priorities, supporting collective innovation capacity and helping the sector navigate the transition from the Top Sector framework towards new mission-driven and industrial policy arrangements. Over the past decade, Health Holland has proactively addressed the exact structural weaknesses currently identified by national and European policymakers for the LSH sector.

10.3.1 Bridging the Innovation Gap

The Wennink report calls for a much more effective translation of scientific knowledge into scalable businesses. Health Holland directly targets this 'valley of death' through its comprehensive valorisation programmes. Initiatives like the Venture Challenge and LS@W programmes have actively trained entrepreneurs to translate scientific breakthroughs into viable business cases, supporting hundreds of start-ups and effectively countering the valorisation deficit.

10.3.2 Mobilising Capital through Public-Private Partnerships

Draghi and Wennink both stress that the public sector alone cannot bear the massive investment needs required for future competitiveness; public funds must be used strategically to leverage private capital. Through its mandate to administer the PPP innovation subsidies, Health Holland has excelled as a financial catalyst. For every €1 of public subsidy provided, Health Holland has successfully leveraged an

additional €2 in R&D spending from private companies, research organisations, and health foundations.

10.3.3 Active Stewardship of the Innovation Ecosystem

Perhaps most importantly, both reports call for strong institutions and decisive governance to break down silos, reduce fragmentation, and align stakeholders behind common missions. Health Holland has evolved beyond a simple funding agency to become the Active Steward of the Dutch LSH innovation ecosystem (as discussed in Chapter 9). By acting as a neutral, independent broker, it has successfully unified a previously fragmented sector, fostered structural collaborations between academia and industry, and created a cohesive national brand (Orange Lanyard) to unlock global trade and investment opportunities.

In an era where policy changes and geopolitical shifts risk destabilising long-term industrial strategies, Health Holland provides the institutional continuity and strategic coordination that the Draghi and Wennink reports argue are essential for the future prosperity of Europe and the Netherlands.

10.4 The Role of Institutions in Bridging Policy and Innovation Timescales

Policy changes are an inevitable reality in democratic systems, creating an inherent tension between the relatively short timescales of politics (typically driven by election cycles of four to five years) and the much longer horizons required for true technological and medical advancement. In the LSH sector, bringing new discoveries from the laboratory to the market involves extended periods of research, development, and translation that stretch far beyond political terms.

To navigate this discrepancy, institutions capable of reducing this tension are absolutely essential. Health Holland serves as a crucial institutional anchor in this regard, ensuring that inevitable policy shifts can be absorbed and implemented with minimal disruption to the sector's long-term R&D objectives. Over the years, Health Holland has consistently demonstrated its ability to adapt to a changing political landscape while continuing to meet the evolving needs of the LSH innovation ecosystem.

10.4.1 A Two-Way Mechanism for Policy and Practice

Health Holland operates through a dynamic, two-way process. It does not merely execute government directives; it actively informs them. By providing policymakers with deep, sector-specific expertise, Health Holland helps shape proposed policies to ensure they are grounded in the practical realities of the LSH landscape. Conversely, once policies are enacted, Health Holland provides the necessary mechanism and infrastructure to implement these changes effectively across the ecosystem.

10.4.2 Mission-Driven Innovation Policy

The transition to the government's Mission-Driven Innovation Policy serves as a prime example of this institutional value. Leveraging its comprehensive

understanding of the LSH sector, Health Holland directly contributed to the development and refinement of the policy itself. Following its adoption, Health Holland then acted as the central institution providing the framework and mechanisms required to successfully implement this new approach.

This dual role ensures that both the political ambitions of the state and the practical needs of the innovation ecosystem are met simultaneously, safeguarding the long-term prosperity and competitiveness of the Netherlands.

10.5 The Risk of Decoupling Funding from Stewardship

Given Health Holland's proven success in bridging the gap between investment and ecosystem building, impending policy changes regarding PPPs pose a significant strategic risk. This was an issue that all participants in the consultation programme were concerned about.

Shifting the management of PPP funding away from specialised top sector organisations such as Health Holland threatens to decouple the state's financial support for R&D from the active stewardship of the LSH ecosystem. Treating R&D subsidies as administrative transactions, without the guiding hand of an ecosystem steward, risks dismantling the very collaborative networks and critical mass that both the Draghi and Wennink reports deem essential for future prosperity.

To protect the link between leveraging R&D assessment and an effective LSH innovation ecosystem, it will be necessary to find a way to involve the active stewards of the innovation ecosystem in the strategic and operational management of PPP funds in some way. The alternative would be to replicate the knowledge, expertise and trust that Health Holland has established, over more than a decade.

11. Summary and Conclusion

This Chapter summarises the findings on the economic impact of Health Holland's activities and presents some conclusions.

11.1 Economic Contribution

This report quantifies Health Holland's economic contribution over the period 2013-2025 through three main sources: operational activities, PPP and valorisation.

It was estimated that during this period Health Holland supported almost €5 billion GVA and almost 4,000 jobs in the Netherlands through its activities.

Table 11.1 Health Holland's Economic Contribution (2013-2025)

	Netherlands	
	GVA (€m)	Employment (Jobs)
Health Holland Operational	40	31
PPP	2,794	2,646
Valorisation	1,940	1,200
Total	**4,775**	**3,877**

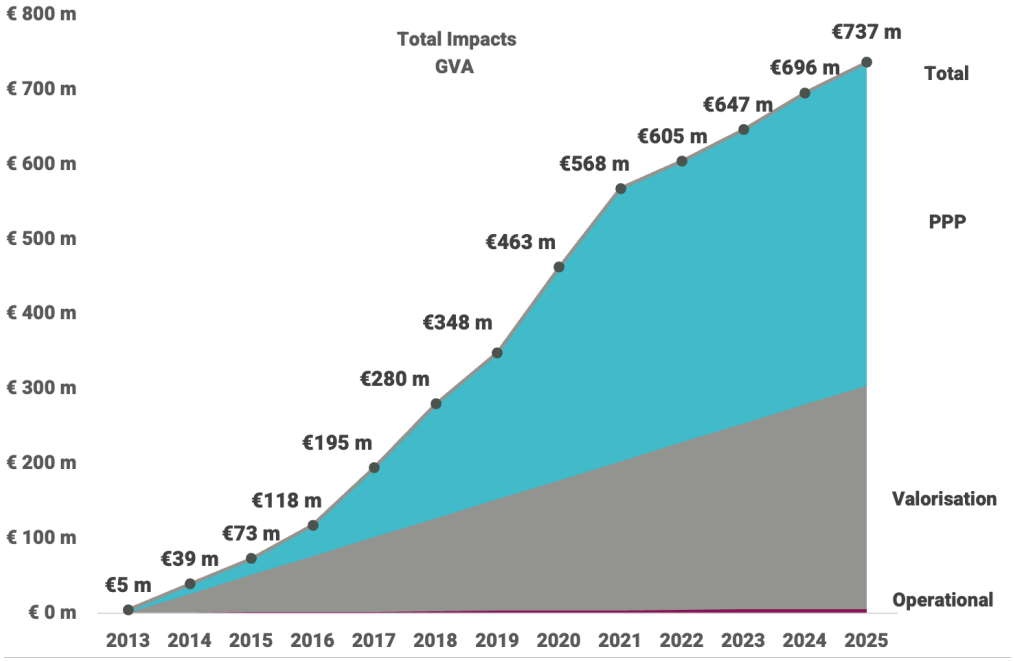
Source: BiGGAR Economics Analysis. Note: Sums may not add up due to rounding.

Considering that Health Holland's total income, including PPP subsidies between 2013 and 2025 was just over €700 million, it was estimated that:

For every €1 of income, Health Holland generated an economic contribution of €6 in the Netherlands.

Health Holland generated the majority of its economic contribution indirectly, by leveraging partnerships and innovation. Figure 11.1 illustrates the evolution of Health Holland's operational, PPP and valorisation impacts over time. Its operational impact remains modest relative to PPP and valorisation impacts, showing strong operational efficiency, compared to its European peers. None of the comparators distribute more collaborative R&D funding per FTE staff member than Health Holland whilst staff costs and other operational costs at Health Holland account for a much smaller proportion of funding distributed than for the comparators. The analysis reveals the financial advantages of the Health Holland model, where it **orchestrates external networks rather than building heavy internal capacity**.

Figure 11.1 Total Impacts (GVA), 2013-2025



Source: BiGGAR Economics Analysis.

In addition to these impacts, Health Holland is expected to generate GVA and jobs from other activities including international missions and networking events which enable participants to unlock new opportunities and enter new markets while also making connections across the LSH ecosystem and abroad.

The **future ROI from the PPP projects is expected to reach €13 billion**. When adding this figure to the economic impact between 2013 and 2025, it was estimated that the total economic contribution including future returns could reach over €17 billion. This implies that:

For every €1 of income, Health Holland is expected to generate an economic contribution of €23 in the Netherlands.

11.2 Conclusions

This report presents an independent and objective assessment conducted by BiGGAR Economics. The findings, economic quantifications, and strategic recommendations are based on rigorous economic modelling and extensive stakeholder consultations, reflecting our commitment to impartial analysis.

11.2.1 A Proven Engine for Economic and Societal Impact

Since 2013, Health Holland has distributed almost €700 million in PPP subsidies with highly efficient administrative overhead. This investment has fundamentally strengthened the Dutch LSH innovation ecosystem by scaling-up R&D investment, valorisation, internationalisation, and network-building.

- **Substantial ROI:** To date, these activities have generated almost €5 billion in GVA, translating to €6 of economic impact for every €1 of income.
- **Future Returns:** Factoring in the long-term return on R&D investments, this impact is projected to reach €17 billion, increasing the return ratio to €23 for every €1 invested.
- **The Cost of Inaction:** While some returns from R&D already underway would still materialise if Health Holland ceased operations tomorrow, achieving the projected €13 billion would be severely compromised. Without the active stewardship of a central coordinating body, the innovation ecosystem would fragment, drastically reducing the efficiency, scale, and ultimate economic return of R&D investment in LSH.

Health Holland's contribution is in strengthening the Dutch LSH sector. Although a counterfactual scenario cannot be directly observed, it is expected that without Health Holland, levels of R&D investment and the resulting economic and societal returns would be lower. The returns presented in this report reflect the performance of a system that includes Health Holland as a central coordinating body, rather than the direct return attributable to Health Holland itself.

11.2.2 Health Holland as the Active Steward

The LSH sector operates on development timelines that span decades, whereas political and policy cycles typically operate on a four-to-five-year horizon. Institutions like Health Holland are essential because they bridge this gap, acting as a stable anchor that absorbs policy shocks and prevents disruption to long-term R&D.

- **Public-Private Co-Innovation:** There is often inherent scepticism regarding private sector profit within the healthcare system. However, the current healthcare system cannot remain sustainable without disruptive innovation. Health Holland has proven for 15 years that it can successfully act as the trusted bridge between public health objectives and private sector agility.
- **Unlocking VWS Potential:** VWS currently spends €1.2 to €1.6 billion on health system innovation through various institutes, yet lacks a structured PPP mechanism. By leveraging Health Holland's proven PPP framework, the Ministry could multiply its impact—where even a €100,000 investment guided by Health Holland's 1:23 ROI ratio could generate immense societal and economic value.
- **Cross-Sector Synergies:** A dynamic ecosystem does not exist in a vacuum. Health Holland's role as a steward allows it to facilitate vital cross-over projects with other top sectors, such as Agri-Food, recognising that the most groundbreaking innovations often occur at the intersection of different industries.

It is essential to note that these outcomes achieved do not reflect Health Holland's contribution in isolation but the collective efforts of its partners and the wider ecosystem.

11.2.3 Strategic Alignment with Evolving Government Policy

As EZK transitions from a traditional Top Sector Policy toward a broader industry policy focused on business and labour productivity, Health Holland's value proposition remains perfectly aligned:

- **Delivering Government Objectives:** Health Holland is not merely a beneficiary of government policy; it is the ideal vehicle for executing it. By driving innovation-led productivity growth, Health Holland directly supports the Ministry's evolving economic agenda.
- **Preserving the Institution:** A key lesson from international methodologies is that ecosystem success is highly contextual and fragile. Decoupling the PPP subsidy allocation function from the active stewardship of the LSH ecosystem risks undermining a decade of progress. Therefore, as government policies naturally evolve, it is vital to preserve Health Holland as a strong institution capable of delivering the state's productivity and healthcare resilience goals.
- **Addressing the Scale-Up Gap:** During consultations, a broader macroeconomic challenge emerged regarding the difficulty companies face when scaling up in the Netherlands compared to ecosystems in the US or the UK. While Health Holland effectively supports the LSH pipeline from early-stage valorisation to commercialisation, solving the national scale-up funding gap requires broader, systemic interventions. This is a critical area for EZK to consider within its wider industrial and financial policy, ensuring that the fertile base of start-ups nurtured by ecosystem stewards like Health Holland has the domestic capital necessary to grow into global leaders.

EZK is placing emphasis on National Investment Institutions (NIIs) and Regional Development Agencies (ROMs). For a complex sector such as LSH, it is important to consider that an Active Steward like Health Holland is also crucial. In addition to collaborating with NIIs and ROMs, Health Holland could also retain funding capabilities in order to operate effectively across the full innovation chain. This can be highly synergistic, as the primary focus of ROMs and NIIs is on revolving investment models, which differs from the more mission- and ecosystem-driven role that Health Holland has traditionally fulfilled.

Given Health Holland's proven success in bridging the gap between investment and ecosystem building, impending policy changes regarding PPPs pose **a significant strategic risk**. To protect the link between leveraging R&D assessment and an effective LSH innovation ecosystem, it will be necessary to find a way to involve the active stewards of the innovation ecosystem in the strategic and operational management of PPP funds in some way.

If Health Holland does not secure its future in the new policy environment and was no longer in a position to play its role as Active Steward of the LSH innovation ecosystem, **some of the economic impacts set out in this report could be at risk**.

Without an Active Steward the LSH innovation ecosystem would likely become less effective over time, since it only takes a small number of weak parts or relationships to undermine a whole system.

The €13 billion in economic impact arising from the return on investment from R&D, is associated with the PPP subsidies that have already been provided and the leveraged investment that has already taken place. However, if the innovation ecosystem were to decline in its effectiveness, it is possible that some of these returns would not be realised.

These economic impacts (and returns that might be sought from future programmes to support R&D in the LSH sector) depend on more than the public sector funds that are provided. To **maximise the return on R&D investments** it is also necessary to have an **effective innovation ecosystem**, like the LSH innovation ecosystem that Health Holland has been the Active Steward of.

12. Appendix A: Methodology

This appendix sets out the methodology followed in estimating the economic impacts of Health Holland, including any key sources for the underlying economic assumptions.

12.1 Economic Ratios and Multipliers

For each impact, direct effects were estimated using sector appropriate economic ratios between turnover, GVA and employment. Indirect and induced effects were then estimated individually using economic multipliers. The sum of these direct, indirect and induced effects gives the total economic impact.

12.1.1 Economic Ratios

The analysis considers the ratios between turnover, GVA and employment by economic sector in the Netherlands. Turnover per job, GVA per job and turnover per GVA ratios were derived from the Organisation for Economic Cooperation and Development's (OECD)'s Input-Output Tables[64] Statistics Netherlands' employment dataset[65]. The analysis uses data from 2022, the latest year for which OECD data is available.

12.1.2 Economic Multipliers

Economic multipliers were also estimated using the OECD's Input-Output Tables. The multipliers that were estimated were Leontief Type 1 GVA and employment multipliers and Leontief Type 2 GVA and employment multipliers. Type 2 multipliers consider the contribution of supply chain and staff expenditure, whereas Type 1 multipliers only consider supply chain expenditure.

The multipliers are expressed as the total figure for GVA and employment. For example, if there is a Type 2 GVA multiplier (M_2) of 1.75, then €1.00 of direct GVA (D_{GVA}) would result in €1.75 of total GVA. Therefore, to extract the pure multiplier effect, it is necessary to subtract 1 from the initial figure given as the multiplier.

$$T_{GVA} = \underbrace{D_{GVA}}_{\text{Direct}} + \underbrace{(M_1 - 1) * D_{GVA}}_{\text{Indirect}} + \underbrace{(M_2 - M_1) * D_{GVA}}_{\text{Induced}}$$

[64] OECD (2025), Input-Output Tables. Available at: https://www.oecd.org/en/data/datasets/input-output-tables.html

[65] Statistics Netherlands (2025), Employment. Available at: https://opendata.cbs.nl/#/CBS/en/dataset/85918ENG/table?ts=1771967956362

In the analysis indirect and induced effects were estimated separately to ensure the value of each individual component is known. A simpler and equivalent way of estimating indirect and induced effects is by applying Type 2 multipliers. For ease, the formulas in the sections below refer to this approach (applying Type 2 multipliers and estimating indirect and induced effects together).

12.1.3 The LSH Sector

The LSH sector consists of various sub-sectors including Pharma, MedTech, Digital Health. As aggregate economic data does not isolate this sector as a whole, a combination of data from different, overlapping industry classifications was required. In order to do this, employment data from Statistics Netherlands[66] was used to determine the distribution of workers across the following sectors which were considered as the most relevant to the LSH sector:

- Pharmaceuticals, medicinal chemical and botanical products;
- Human health and social work activities;
- Professional, scientific and technical activities;
- Computer, electronic and optical equipment;
- Chemical and chemical products; and
- IT and other information services.

This was done to understand where economic activity takes place in the Netherlands across the relevant sectors. The employment shares were then used to find the weighted sum of these sub-sectors for each economic ratio and multiplier. This weighted sum was used to represent the LSH sector.

12.2 Health Holland Operational Impacts

12.2.1 Direct Impact

The direct contribution of an organisation captures its own exclusive contribution to economic activity. This is expressed in terms of its direct GVA and the number of staff directly employed. The direct GVA of an organisation is estimated as the difference between its income and its non-staff operational expenditure. As the majority of income received by Health Holland is distributed for PPP or innovation programmes, Health Holland's direct GVA would be equivalent to its staff costs. Direct employment is simply the number of people directly employed by Health Holland.

12.2.2 Supply Chain Impact

Health Holland's supply chain expenditure was sourced from its Annual Accounts from 2019 to 2024. The Annual Accounts provide data for 2018-2024. As Annual Accounts for 2013 to 2017 were not available, supply chain expenditure was estimated based on average operating costs as a proportion of PPP costs (1.8%)

[66] Statistics Netherlands (2025), Employment. Available at: https://opendata.cbs.nl/#/CBS/en/dataset/85918ENG/table?ts=1771967956362

over the period 2018 to 2024. PPP costs were provided separately by Health Holland for each year from 2013 to 2024.

A breakdown of supply chain expenditure by category was provided in the Annual Accounts for each year from 2018 to 2024. For 2013 to 2017, it was assumed the breakdown for 2018 would be most similar and therefore this was applied. Personal insurance and training were included as categories of supply chain expenditure rather than staff costs because the staff spending impact estimates the economic activity arising from staff spending their wages. Depreciation was excluded from supply chain expenditure as is standard in economic impact assessments.

Each category of spending was allocated an economic sector, allowing for the use of sector specific economic ratios and multipliers. The direct GVA and direct employment generated by supply chain spending were estimated by diving sectoral turnover by its respective turnover per GVA and turnover per job ratios. Indirect and induced effects were estimated by applying Type 1 and Type 2 multipliers for the relevant sectors.

Figure 12.1 Formula and Inputs for Health Holland Supply Chain Impact

Formulas

$$\text{GVA} = \sum_a Exp_{(a)} \,/\, \frac{T_{i(a)}}{G_{i(a)}} * M(G)_i^2$$

$$\text{Employment} = \sum_a Exp_{(a)} \,/\, \frac{T_{i(a)}}{E_{i(a)}} * M(E)_i^2$$

Inputs

$$Exp_{(a)} = \ Expenditure\ on\ commodity\ (a)$$

$$\frac{T_{i(a)}}{G_{i(a)}} = \frac{Turnover}{GVA}\ ratio\ in\ industry\ associated\ with\ commodity\ (a)$$

$$\frac{T_{i(a)}}{E_{i(a)}} = \frac{Turnover}{Employment}\ ratio\ in\ industry\ associated\ with\ commodity\ (a)$$

$$M(E)_i^2 = \ Type\ 2\ Employment\ Multiplier\ in\ industry\ (i)$$

$$M(G)_i^2 = \ Type\ 2\ Employment\ Multiplier\ in\ industry\ (i)$$

12.2.3 Staff Spending Impact

Health Holland's staff costs were also sourced from its Annual Accounts for 2019-2024. Total staff costs for 2013-2018 were provided separately by Health Holland.

A breakdown by category was sourced from the Annual Accounts. For 2013-2017, it was assumed the split between the different categories of staff costs would be the same as 2018. Salaries, social charges, pensions and external staff costs were all included here in this impact. Although personal insurance and training are

considered staff costs in the Annual Accounts, they were excluded here and included as part of supply chain expenditure (see above for details).

To estimate the economic impact that is generated by this expenditure it was first necessary to consider where staff live. Data provided by Health Holland indicates all staff live in the Netherlands. It was then necessary to consider how much of their spending would take place within the Netherlands, as some expenditure is likely to occur outside the Netherlands. OECD data[67] indicates 96% of household final consumption expenditure takes place within the Netherlands. Having estimated the amount of spending taking place in the Netherlands, it was then possible to allocate this to the sectors benefitting from it. This was based on an analysis of household expenditure (i.e. the sectors in which households spend their incomes) from the OECD's Input-Output Tables for the Netherlands.

Prior to estimating the economic contribution generated by this expenditure, it was necessary to discount it by the share of household expenditure devoted to Value Added Tax (VAT), based on Eurostat[68] data. The average VAT rate applied to goods and services on which households spend money in the Netherlands is 7.6%.

Having excluded spending on VAT, it was then possible to estimate the direct GVA and employment supported by staff expenditure by applying the relevant turnover per GVA and turnover per job ratios. Indirect and induced contributions were then estimated based on the relevant Type 1 and Type 2 GVA and employment multipliers.

Figure 12.2 Formula and Inputs for Health Holland Staff Spending Impact

Formulas

$$\text{GVA} = SE / \frac{T_S}{G_S} * M(G)_S^2$$

$$\text{Employment} = SE / \frac{T_S}{E_S} * M(E)_i^2$$

Inputs

$\frac{T_S}{G_S} = \frac{Turnover}{GVA}\ ratio\ for\ staff\ spending$

$\frac{T_S}{E_S} = \frac{Turnover}{Employment}\ ratio\ for\ staff\ spending$

$M(E)_S^2 = Type\ 2\ Employment\ Multiplier\ for\ staff\ spending$

$M(G)_S^2 = Type\ 2\ GVA\ Multiplier\ for\ staff\ spending$

$SE = Value\ of\ staff\ expenditure\ (less\ VAT)\ spent\ in\ the\ Netherlands$

[67] OECD (2025), Annual Household Final Consumption Expenditure on the Territory and Abroad.
[68] Eurostat (2025), Joint Distribution of household income, consumption and wealth - statistics on taxation. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Joint_distribution_of_household_income,_consumption_and_wealth_-_statistics_on_taxation&oldid=628069

12.3 Health Holland PPP Impacts

The key source for this impact is data provided by Health Holland for each PPP project from 2013 to 2025. This data included Health Holland subsidy costs and leveraged R&D spend for each project, by participant and location of participant. It was then possible to exclude any funds from participants outside the Netherlands as the study only considers activity inside the Netherlands. Funds were then distributed equally across the duration of each project, based on project start and end dates (data provided by Health Holland). To ensure there is no double counting of projects across the years, projects with identical project codes and identical funds were only considered once. Any projects with identical project codes and different funds were included as this is additional funds provided.

For some PPP impacts, it is likely that economic activity will relate to LSH. As the Input-Output Tables do not have a direct equivalent sector, a combination of a number of related sectors was used to create a LSH economic sector and derive ratios and multipliers:

- pharmaceuticals, medicinal chemical and botanical products;
- human health and social work activities;
- professional, scientific and technical activities;
- computer, electronic and optical equipment;
- chemical and chemical products; and
- IT and other information services.

12.3.1 PPPs Economic Impact of R&D Spend

Similar to Health Holland's operational impacts, there are also operational impacts from the PPP R&D spending. This includes direct, supply chain (indirect) and staff spending (induced) impacts.

As the PPP data provided by Health Holland was for total spending, it was necessary to consider how much of this would be allocated for supply chain expenditure and how much would be for staff costs. Based on an internal analysis conducted by Health Holland on a sample of 100 projects, it was estimated that 75% of the funding would be attributed to staff costs and the remaining 25% to supply chain expenditure.

As with Health Holland's operational impacts, direct GVA for the PPPs is equivalent to staff costs. Supply chain and staff spending expenditure were estimated following the same approach as Health Holland's operational impacts, as outlined earlier. For supply chain spending, it was assumed all expenditure would take place in the LSH sector.

12.3.2 PPPs Return on Investment in R&D

The total R&D spending on PPP projects, from participants within the Netherlands, and distributed across time based on the duration of each project is the basis for estimating this impact. This was multiplied by 340% to estimate the direct GVA generated. GVA per job ratios for the LSH sector were then applied to estimate the

direct employment supported. It was assumed that around 25% of impacts were linked to increases in productivity, whereas the remainder was associated with increases in the level of employment.

It should be noted this is a future potential impact based on actual R&D spend to date.

Figure 12.3 Formula and Inputs for PPP Return on Investment in R&D Impact

Formulas

$$\text{GVA} = M(G)^2_{LSH} * \sum_i 340\% * R\&D\ Spend(PPPs)$$

$$\text{Employment } = (M(E)^2_{LSH} - G(p)) * \sum_i \frac{GVA}{\frac{G_{LSH}}{E_{LSH}}}$$

Inputs

$$M(G)^2_i = Type\ 2\ GVA\ Multiplier\ in\ Life\ Sciences\ \&\ Health\ sector$$

$$M(E)^2_{LSH} = Type\ 2\ Employment\ Multiplier\ in\ Life\ Sciences\ \&\ Health\ sector$$

$$\left(\frac{G_i}{E_i}\right) = The\ \frac{GVA}{Employment}\ ratio\ in\ Life\ Sciences\ \&\ Health\ sector$$

$$R\&D\ Spend(PPPs) = Total\ R\&D\ spend\ on\ PPPs$$

$$G(p) = Share\ of\ growth\ from\ increased\ worker\ productivity$$

12.3.3 Valorisation

Health Holland's economic contribution associated with the LS@W programme was quantified by analysing the impact of all companies participating in the programme since 2014 and particularly using number of employees figures and applying GVA per job ratios and Type 1 and Type 2 impact multipliers according to the LSH sub-sectors they are in. Inactive companies were excluded from the analysis. However, not all this impact is attributable to the LS@W programme. Therefore, an additionality factor was estimated. This is the percentage of the economic impact of the start-ups that is attributed to the programme. The factor was then applied to the abovementioned figures to isolate the programme's impact.

The majority of the assumptions applied to calculate valorisation impact are based on evidence from a 15-year evaluation of the Venture Challenge programme that was conducted by Birch Consultants in 2024[69]. The Birch report provides strong evidence of a high additionality factor for the Venture Challenge. 6 out of 10 people interviewed stated that they would not have successfully started a company without the Venture Challenge programme, whereas many participants reported that they

[69] Birch (2024), *Evaluatie Venture Challenge*. Available at: https://www.tweedekamer.nl/kamerstukken/brieven_regering/detail?id=2024Z03996&did=2024D09377

would not have participated in the programme without the government financial support as it would have costed about €15,017 to €19,151 per team. Therefore, it was assumed that the additionality factor is 60%. This impact is attributed to the LS@W programme, which Health Holland coordinates in partnership with EZK and NWO.

For the National Healthcare Innovation Award, it was assumed that a lower share of the companies' economic impact (30%) is attributed to the programme compared to the Venture Challenge. This is because most of the companies were founded before they participated in the award and were in the scale-up phase, implying lower share of their impact is related to their participation. For larger companies (i.e. number of employees larger than 50), 20% of the impact was assumed to be associated with the National Healthcare Innovation Award.

For companies that were founded in the same year as their participation in the Health Impact Accelerator programme, 60% of their economic impact was assumed to be attributable to the programme, consistent with the approach used for the Venture Challenge. For all other companies, the approach was in line with the methodology applied in the National Healthcare Innovation Award.

Figure 12.4 Formula and Inputs for Valorisation Contribution

Formulas

$$GVA = \ a * \sum_i \frac{G_i}{E_i} * \ E_i * \ M(G)_i^2$$

$$Employment = a * \sum_i E_i * \ M(E)_i^2$$

Inputs

$$\frac{G_i}{E_i} = \frac{GVA}{Employment} \ ratio\ in\ industries\ of\ participating\ companies$$

$$M(G)_i^2 = \ Type\ 2\ GVA\ Multiplier\ in\ industry\ (i)$$

$$M(E)_i^2 = \ Type\ 2\ Employment\ Multiplier\ in\ industry\ (i)$$

$$E_i = direct\ employment\ in\ participating\ companies$$

$$\alpha = additionality\ factor$$

Due to the limited data for the Innovation Brokers, a benchmarking approach was used to estimate economic impact. A cost-to-GVA ratio derived from the LS@W programme, and particularly the Venture Challenge, was applied to the total Innovation Brokers costs covered by Health Holland between 2020 and 2025. This

approach was followed considering the comparable nature of the valorisation activities.

The report by Birch Consultants showed that the public subsidy available to cover the costs of organising the Venture Challenge was about €200,000 annually. Between 2014 and 2025 this is equivalent to about €2 million. In addition, the total GVA of the LS@W programme using Venture Challenge participants' data was estimated to be €147. This is equivalent to a cost-to-GVA ratio equivalent to 67. Over 8 years, Health Holland provided about €2 million to cover Innovation Brokers costs. Applying the ratio, it was estimated that about €104 million GVA were generated in Netherlands between 2017 and 2025 due to the Innovation Brokers support. The GVA figure was then multiplied by the total employment impact of the LS@W programme (1,110) and divided by the total GVA of the LS@W programme to calculate total jobs associated with the Innovation Brokers.

13. Appendix B: VIB and Health Holland

This appendix describes the success story of the Vlaams Instituut voor Biotechnologie (VIB) in Flanders and compares the role of VIB and Health Holland in the innovation ecosystem.

To fully appreciate the impact of active ecosystem stewardship, it is instructive to look at successful international comparators. VIB in Flanders, Belgium, is an example of an institution that has delivered transformative economic and societal benefits by embedding itself at the heart of an innovation ecosystem.

Whilst VIB and Health Holland are fundamentally different types of organisations (VIB is a dedicated scientific research institution, whereas Health Holland functions as a national networking organisation and funding agency) they share striking similarities in how they orchestrate, stimulate, and sustain their respective innovation ecosystems.

13.1 The VIB Model: Success Factors

The VIB model is about much more than VIB as a scientific research institution. The VIB model is a comprehensive collaborative model that addresses all parts of the innovation system. VIB works in partnership with a range of different collaborative partners, depending on the part of the innovation system that is being facilitated or improved. A holistic approach has been taken, recognising that if all parts of the system are not present and working well, the system as a whole will not deliver economic benefits.

The model was developed when it was recognised that how things had been done in the past was not delivering benefits for the Flemish economy (including when it became apparent that the breakthroughs made in agricultural biotechnology were not being commercialised in Flanders and that almost none of what would be required for this to happen existed).

VIB has a strong focus on translating scientific results into pharmaceutical, agricultural and industrial applications. VIB acts as a catalyst institution in the Flemish LSH ecosystem, and its success can be attributed to several, inter-related factors:

- dual focus of global excellence in science and commercialisation of research and equal weighting of both matters.

- close collaborative links between VIB, government and universities to ensure continued and long-term investment into the research institute.
- **supporting start-ups through technology and expertise developed at VIB**, recruiting scientists with commercial expertise to the team, creating an international reputation which attracts venture capital investment into VIB start-ups and partnering with all sizes of organisations at a local and global level to commercialise VIB valorisation.
- **an international approach to R&D** including attracting foreign direct investment in terms of research and staff and providing favourable conditions for staff and their families to relocate to Flanders.
- harnessing the development of softer work skills in addition to scientific development and providing career development opportunities.
- **recognition of industry partners** that VIB research will have positive economic impacts on their business.
- **creating a life sciences development cluster** which creates a network of partners between the public and private sector and enables knowledge transfer, shared infrastructure and social interaction.
- communications teams to deliver research findings to a wide and diverse audience.

The above success factors have been instrumental to VIB becoming a globally recognised life sciences institution and Flanders being recognised as a life sciences cluster of increasing prominence. From only a handful of small companies in the mid-1995, Flanders (Gent and Leuven in particular) has become one of Europe's leading life sciences clusters in 25 years.

13.2 Health Holland: Mirroring Success in the Dutch LSH Ecosystem

Although Health Holland does not conduct scientific research itself, its role as the Active Steward of the Dutch LSH ecosystem mirrors VIB's success factors through its funding, coordination, and policy alignment strategies:

- **Dual Focus**: Health Holland bridges the gap between the Netherlands' excellent academic base and market commercialisation. By actively functioning as a matchmaker, it incentivises a cultural shift from isolated academic research toward collaborative, market-ready partnerships.
- **Collaborative Links**: Health Holland operates as the central guiding and linking body between EZK, VMS, KIC partners, and other ecosystem stakeholders. This ensures policy objectives are aligned with implementation pathways, fostering long-term stability.
- **Start-up and VC Support**: Through programmes like LS@W and ZI.nl, Health Holland actively supports early-stage entrepreneurs in translating science into business cases. Its funding also acts as a catalyst that allows spin-outs to raise private capital that would otherwise be difficult to secure.
- **International Approach**: Health Holland operates on the basis of a multi-year international strategy designed to attract foreign investment and partnerships.

The Orange Lanyard branding approach reduces regional fragmentation and presents a highly visible, cohesive national ecosystem to global investors and partners.

- **Softer Work Skills**: Recognising that start-up founders possess deep technological expertise but often lack business experience, Health Holland invests in skills development. Programmes like LS@W Expert Classes and Mentor Matching provide targeted training in legal, regulatory, funding, and leadership skills.
- **Industry Recognition:** The PPP model explicitly demands industry buy-in. For every €1 in public subsidy provided, Health Holland leverages an additional €2 in R&D spending from private and institutional partners. This private investment demonstrates clear industry recognition of the economic value generated by the ecosystem's research.
- **Cluster Creation**: Health Holland tackles fragmentation by functioning as an ecosystem builder. By organising hundreds of networking events (drawing over 25,000 participants in recent years), it creates a unified national community that enables knowledge transfer and reduces internal competition between regional hubs.
- **Communications**: To amplify the sector's innovations and opportunities, Health Holland runs robust communication efforts, including active social media engagement, monthly stories, and National Bidbooks designed to attract foreign companies.

13.3 Comparison: VIB and Health Holland

The table below illustrates how both institutions, despite their different operational models, successfully deploy these eight critical factors to drive their respective innovation ecosystems.

Table 13.1 VIB and Health Holland Roles in Effective Innovation Ecosystems

Success Factor	VIB Approach	Health Holland Approach
Dual Focus	Conducts globally excellent fundamental science alongside aggressive commercialisation efforts.	Funds translational R&D, bridging the gap between academic research and commercial R&D.
Collaborative Links	Secures long-term investments through close, structural ties with the Flemish government and universities.	Acts as the central node linking ministries (EZK, VWS), KIC partners, academia, and industry to ensure policy and funding alignment.
Start-up & VC Support	Supports spin-offs directly with technology, recruits commercial talent, and leverages its reputation to attract VC.	Runs various valorisation programmes like LS@W and ZI.nl; uses PPP subsidies as pre-seed funding to de-risk

Success Factor	VIB Approach	Health Holland Approach
		start-ups and crowd-in private VC.
International Approach	Actively attracts foreign direct investment, top-tier international researchers, and facilitates staff relocation.	Executes a structured International Strategy; Orange Lanyard branding and trade missions used to secure global partnerships and FDI.
Softer Work Skills	Prioritises career development and the acquisition of non-scientific, professional skills for its researchers.	Provides comprehensive business coaching, Expert Classes, and Mentor Matching to turn scientists into capable entrepreneurs.
Industry Recognition	Partners with industry to ensure internal research directly contributes to positive economic impacts for businesses.	Requires significant private R&D co-financing, generating a high leverage ratio.
Cluster Creation	Anchors a physical and networked life sciences cluster, facilitating shared infrastructure and knowledge transfer.	Builds a cohesive national network through large-scale events, reducing regional fragmentation and fostering 'guided serendipity.'
Communications	Deploys dedicated communications teams to share research findings with diverse public and private audiences.	Utilises national publications, monthly stories, and National Bidbooks to raise the visibility of the Dutch LSH sector globally.

Source: BiGGAR Economics Analysis

14. Appendix C: List of Consultees

This appendix includes the list of the stakeholders who were interviewed during the consultation programme.

Table 14.1 List of Consultees

Name	Organisation/Team
External Consultees	
Bas Bloem	Radboud University Medical Center
Bernard Mulder	RegMed XB
Bertholt Leeftink	Oncode Institute
Carlo Paggi	Chiron
Carmen van Vilsteren	Former Chair of the Top Sector LSH
Hans Hofstraat	Utrecht Science Park & Advisory Board
Heleen van der Valk	Erasmus University Medical Center
Jos Joore	Mimetas
Kim Karsenberg	University Medical Centers Netherlands (UMCNL)
Lennart Viveen	EZK
Lise de Jong	NWO-TTW
Lonneke Baas	Innovation Quarter
Marcel Joachimstal	Board Member of the ROM Utrecht Region
Minke Kooistra	Alzheimer Netherlands
Niels van Leeuwen	RVO
Sander Hougee	EZK
Sandra de Wild - Chardonnens	Invest in Holland
Tom Oostrom	Dutch Kidney Foundation
Wiesje van der Flier	Alzheimer Netherlands
Willem Mees van der Bijl	Spatium Medical
Willemijn Vader	VitroScan
Wiro Niessen	University of Groningen/University Medical Center Groningen

Name	Organisation/Team
Health Holland Bureau Consultees	
Anneli Kemper	PPP
Chrétien Herben	Valorisation
Ernst Nagel	Operations Director
Jannica Swieringa	Networking, Innovation Brokers, Communication
Jochem Christiaansen	Networking, Innovation Brokers, Communication
Jolande Zijlstra	PPP
Laura Duran	Internationalisation
Lies Quataert	Impact Officer
Lynn van der Zwan	Valorisation
Maggy Sallons	Strategy
Nico van Meeteren	General Director

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