

LEARNING OF THE DANISH LIGHTHOUSE LIFE SCIENCE

Practical Insights from a Multi Stakeholder Collaboration



FOUNDATION OF OF THE DANISH LIGHTHOUSE LIFE SCIENCE

Building Blocks of the Danish Lighthouse Model: Structures, Roles and Processes



A NEW KPI MODEL FOR COLLABORATION AND CHANGE

DANISH LIGHTHOUSE LIFE SCIENCE

ERHVERVSFYRTÅRN LIFE SCIENCE

Co-funded by the European Union

Virksomhedsudvikling Danmark

THE DANISH LIGHTHOUSE LIFE SCIENCE
A Strategic Partnership on Health

Copyright: Danish Life Science Cluster
First edition 2026
© 2026 Danish Life Science Cluster

Published by: Danish Life Science Cluster
Lersø Parkallé 101
2100 Copenhagen Ø, Denmark
Page count:130
ISBN: 978-87-998260-4-9
Printed by: Danish Life Science Cluster

This publication brings together three reports developed as part of The Danish Lighthouse Life Science:

Learnings of The Danish Lighthouse Life Science

Foundation of The Danish Lighthouse Life Science

A New KPI Model for Collaboration and Change

Developed under the auspices of Danish Life Science Cluster in collaboration with consortium partners, including Novo Nordisk A/S, Lundbeck A/S, Nordic Healthcare Group, and Nordic Wellbeing Academy.

Coordinated by Kirsten M. Danielsen and Krestian Borring from Danish Life Science Cluster, together with Lars Münter and Trine Søby Christensen.

Additional information and the reports are available at *www.erhvervsfyrtaarnlifescience.dk*

Nordic Wellbeing Academy

Nordic Healthcare Group

Danish Life Science Cluster

Lundbeck

novo nordisk®

DANISH LIGHTHOUSE LIFE SCIENCE



THE DANISH LIGHTHOUSE LIFE SCIENCE

A Strategic Partnership on Health

ERHVERVSFYRTÅRN LIFE SCIENCE

Co-funded by the European Union

Virksomhedsudvikling Danmark



LEARNING OF THE DANISH LIGHTHOUSE LIFE SCIENCE

Practical Insights from a Multi Stakeholder Collaboration



FOUNDATION OF OF THE DANISH LIGHTHOUSE LIFE SCIENCE

Building Blocks of the Danish Lighthouse Model: Structures, Roles and Processes



A NEW KPI MODEL FOR COLLABORATION AND CHANGE

DANISH LIGHTHOUSE LIFE SCIENCE

ERHVERVSFYRTÅRN
LIFE SCIENCE

Co-funded by
the European Union

Virksomhedsudvikling
Danmark



LEARNINGS OF THE DANISH LIGHTHOUSE LIFE SCIENCE

- PRACTICAL INSIGHTS FROM A MULTI STAKEHOLDER COLLABORATION

Nordic Wellbeing Academy

Nordic Healthcare Group

Danish Life Science Cluster

Lundbeck

novo nordisk

ERHVERVSFYRTÅRN LIFE SCIENCE

Co-funded by the European Union

Virksomhedsudvikling Danmark

LEARNINGS OF THE DANISH LIGHTHOUSE LIFE SCIENCE
- Practical Insights from a Multi stakeholder Collaboration

Copyright © 2025

Danish Life Science Cluster
Life Science Huset
Lersø Parkallé 101
2100 København Ø

ACKNOWLEDGEMENTS

This report has been created by a consortium under the auspices of the Danish Life Science Cluster.

The consortium enabled experts from Novo Nordisk A/S, Lundbeck A/S, Nordic Healthcare Group, Nordic Wellbeing Academy and Danish Life Science Cluster to set out a framework of multi collaboration through practical insights.

ADDITIONAL INPUT

In the development of the report, we would also like to acknowledge:

Center for Clinical Research and Prevention
Department of Public Health
University of Copenhagen
Business Hub Copenhagen
- For sharing creative ideas and their critical thinking and providing key analyses that formed the basis of the report.

The report development process was co-funded by Novo Nordisk, Lundbeck, Nordic Healthcare Group and Danish Life Science Cluster.

The main content of this report has been produced in the Danish Life Science Cluster. It was coordinated by Lars Münter from the Nordic Wellbeing Academy, Trine Søby Christensen and Krestian Borring from the Danish Life Science Cluster.

Additional information and the report is available at
www.erhvervsfyrtaarnlifescience.dk



CONTENT

Executive Summary 4
Brief description of the three Evaluation Sections 7
Evaluation of the Collaboration Platform 8
Introduction 9
Approach to Transformative Innovation and Partnerships 9
Governance 10
The Phases and Themes of the Lighthouse 10
Focus on Healthy Weight 12
The second focus in Lighthouse Life Science – Mental Health 12
Healthy Weight Experiences 13
The Pilot Projects, 2022-2023 13
Growth platform as an accelerator for development and growth 15
Lighthouse Life Science – International Outreach 17
Healthy Weight Learnings 19
Multi-Stakeholder Collaboration Model – A Catalyst for Innovation 19
The Dilemma Between Quick Wins and Long-Term Change 20
Communities as a Catalyst for Behavioral Change 20
A Lasting Transformation: Reducing Stigma and Promoting Health Equity 21
Conclusion: Partnerships as a Catalyst for Health and Growth 22
Perspective: Future of Partnerships From Learning to Action 23
Evaluation of the Pilot Projects 24
Introduction 25
An Evaluation of the Pilot Projects 26
A Model for Health Promotion and Support of Economic Growth 26
Difference From Traditional Project Forms 26
Achieved Goals for the Pilot Projects 29
Short-Term Goals Provide Long-Term Commitment and Transformation 29
Implementation of the Pilot Projects and Short-Term Goals 31
Ability of Pilot Projects to Continue 32
Involvement of Users in the Pilot Projects 32
Collaboration and Multi-Stakeholder Experiences – a Model for Future Projects 34
Communities and Structural Approaches as Drivers of Health 35
Theme 1: School and After-School Care as Health-Promoting Structures 36
Themes 2 and 3: Everyday Life and Workplaces as Arenas for Health Promotion 36
Conclusion: Technology, Community and Multi-Stakeholder Collaboration 40
Perspectives: future Health Strategies 41
An analysis of growth potential 42
Introduction 43
Financing of Lighthouse Life Science 43
Financing Models and Venture Capital 45
Indications of Growth Potential 45
Accelerating Development Processes for SMEs 45
Maturity of the Projects 47
The Growth Model in Lighthouse Life Science 49
Public-Private Partnerships as Catalyst for Innovation 51
Strategic Partnerships and the Role of SMEs in Health 52
Internationalization and Export Potential 52
Conclusion – Importance for Future Growth 53
Perspectives: Catalyst for Global Health Innovation 54
References 56



EXECUTIVE SUMMARY

The Danish Lighthouse Life Science (LLS) is a pioneering multi-stakeholder, multi-sector collaboration model that unites health and economic growth within a single strategic framework. Established in 2022, LLS set out to tackle Noncommunicable diseases (NCDs)[1] –particularly obesity and mental disorders– while mitigating health inequitable[2] and fostering economic growth, especially for small and medium-sized enterprises (SMEs). During the period 2022–2023, LLS delivered concrete short-term results in the prevention and early detection of overweight and obesity, while also establishing a robust framework to tackle the deeper structural challenges that contribute to health inequity. By merging technological innovation, community[3] engagement, and interdisciplinary collaboration, LLS has demonstrated that health improvements and economic growth can progress hand in hand, ultimately benefiting both individual citizens and society at large.

Technology and Communities as Catalysts for Health Equity

A key insight from LLS is the powerful effect of blending technological solutions with strong community support to promote health equity. Technology enables the scaling of interventions and individualized approaches, but it turned out to be the active involvement of communities — such as workplaces, schools, and local organizations — that ensured a wide reach, particularly among marginalized groups.

- **Gamification**: Interactive digital games co-developed with technology firms fostered healthy eating habits and physical activities among children and adolescents, engaging them in playful competitions that helped embed healthy behaviors in their daily routines.
- **Self-Monitoring:** Health promotion apps and digital tools offered in workplaces and schools provided employees, students, and teachers with user-friendly platforms to track progress, set goals, and receive feedback—ultimately supporting long-term behavior change.
- **Digital Health Platforms:** Online and mobile platforms served as virtual community spaces, where participants could access health information, share experiences, and motivate each other. These forums helped build a sense of shared responsibility and support, ensuring technology did not widen inequities.

This combined approach empowered individuals to make lifestyle changes in their day-to-day environments, reinforcing healthy habits through shared resources, collective motivation, and real-world applications.

Prevention and Early Detection as Structural Challenges

LLS has recognized that tackling NCDs require more than just individual interventions. It demanded a coherent, structural strategy spanning educational institutions, workplaces, and healthcare systems. By collaborating with a variety of actors, LLS worked to integrate health solutions into people's routines, making early interventions more likely and potentially mitigating future healthcare costs.

- **Inspiration for a Healthier Life at the Workplace:** A program introduced nutritional coaching, regular weigh-ins, and daily exercise routines. Participants reported weight reductions of between 5-10%, suggesting that targeted workplace initiatives could effectively drive lifestyle changes.
- **Movement, Healthy Weight and Wellbeing,** an Offer for Pregnant Women: This project focused on early-stage prevention by supporting pregnant women with personalized activity plans, healthy meal guidance, and peer group conversations to maintain both mental and physical well-being.

These initiatives showed that collectively addressing structural factors — such as time constraints, economic barriers, and cultural perceptions — was critical to securing sustainable health benefits.

Reducing Stigma and Increasing Inclusion

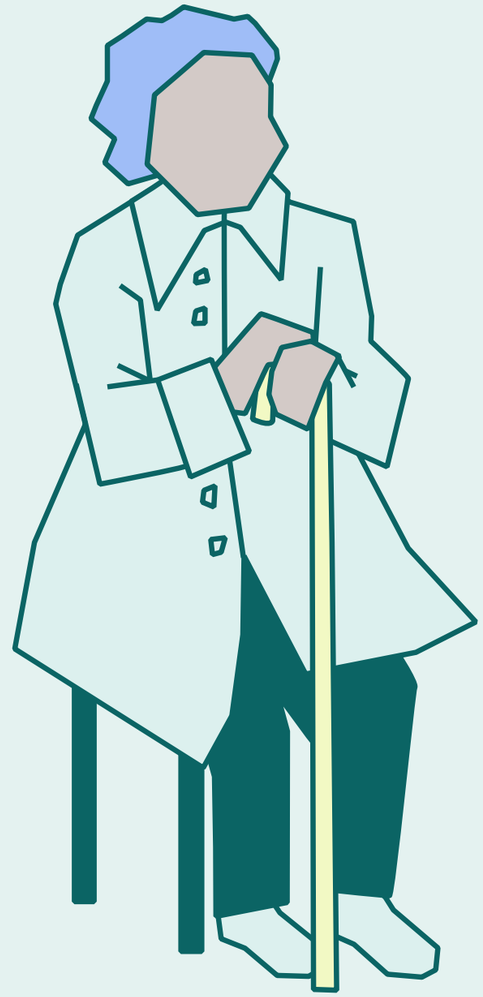
Reducing stigma, particularly around obesity, was a central theme in LLS. Projects used appreciative conversational models and value-based language to lower participation barriers and encourage open dialogue on sensitive health topics. This inclusive approach placed emphasis on individual strengths and aspirations, rather than medical diagnoses. Additionally, cultural inclusion efforts were employed to ensure that diverse socio-economic groups could fully benefit from LLS offerings.

- **The Health and Well-being at Work (STAR):** By focusing on mental health and resilience, STAR reduced stigma around discussing psychological challenges in the workplace. Early evaluations indicated a 30% increase in reported well-being among participants.

Multi-Stakeholder and Multi-Sector Collaboration for Economic Growth and Innovation

LLS initiative brings together a broad network of public institutions, private companies, knowledge institutions, and civil organizations, enabling a unique environment where collaboration accelerates both economic growth and health innovation. A central feature of this environment is the Growth Platform — a guidance and support structure for SMEs. Here, SMEs can qualify their ideas in close collaboration with end users, share resources, and

"WE REACH FURTHER TOGETHER"



[1]Noncommunicable diseases (NCDs), also known as chronic diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behavioural factors. The main types of NCDs are cardiovascular diseases (such as heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma) and diabetes. WHO, 16.11.2024.

[2]Health inequities are systematic differences in the health status of different population groups. These inequities have significant social and economic costs both to individuals and societies. WHO, 16.11.24.

[3]Communities are defined as both a feeling of belonging and a set of relationships among people. They are formed to meet shared needs and are characterized by trust, shared experiences, and a sense of identity. For more, see: Stanford Social Innovation Review, "What Is Community Anyway?", 16.11.2024.

test solutions in real-world healthcare contexts from the earliest stages of development. By pooling diverse competencies and fostering demand-driven courses, the Growth Platform eliminates many typical hurdles SMEs face when attempting to navigate research, design, and validation processes on their own. Instead of competing for limited resources, participating SMEs can work side by side to refine their concepts, strengthen market readiness, and ultimately contribute to a thriving Danish life science ecosystem.

Financing Models and the Road to Internationalization

An important component of LLS involves facilitating access to risk capital for SMEs, bridging the funding gaps that often hamper novel health technologies. Through LLS-supported financing models, many SMEs have secured proof-of-concept validation in clinical settings, which then has attracted further investment and spurred market introductions beyond Denmark. For example, the digital health platform Emento have established a subsidiary in Germany and have signed a contract with a leading university hospital — an expansion largely driven by evidence gathered through local pilot projects. Similarly, SENS Innovation has leveraged LLS support to accelerate product development and boost sales, crediting the initiative for creating trust and smoothing the path to market readiness.

Overall, 42 projects under Healthy Weight from 2022 to 2023 have benefited from LLS's structural and financial support, advancing an average of two steps on the initiative's growth model from proof of need to proof of scale. Notably, 25% of the participating SMEs have already scaled their solutions, indicating a strong path to broader market impact. Furthermore, 79% of these companies have rated LLS's influence on their development and growth as either "excellent" or "very positive." By spotlighting the global relevance of digital health innovations — especially those targeting obesity and mental health — LLS has enhanced both the national and international competitiveness of Danish life science ventures.

Future Perspectives and Scaling

While LLS has achieved notable results in both health outcomes and innovation, the evaluation indicates the need for longer implementation timelines to fully realize economic benefits such as job creation. Systematic data collection also emerges as a priority for accurately assessing the partnership's sustained impact.

Moving forward, the following recommendations arise:

Long-Term Follow-Up: Maintain support systems for participants to ensure lasting health gains and identify areas needing additional resources.

Targeted Recruitment: Develop strategic outreach to marginalized groups to further reduce health inequities.

Technological Innovation: Continue to invest in and evolve digital platforms, using iterative feedback loops to refine user experience and efficacy.

Enhanced Collaboration: Strengthen public-private partnerships to push innovations from pilot projects to everyday practice, both nationally and internationally.

By 2024, LLS has established a strong foundation for a future where health and economic growth work together. The experiences and lessons learned underscore the core principle that "we reach further together," illustrating how purposeful collaboration can simultaneously address complex health challenges and spur sustainable economic growth in the life science sector.

ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

BRIEF DESCRIPTION OF THE THREE EVALUATION SECTIONS

Evaluation of the Collaboration Platform
This section analyses the multi stakeholder collaboration platform at the heart of Lighthouse Life Science. It focuses on the strategic partnership's role in promoting innovation and economic growth by uniting public institutions, private companies and research environments. The document details how technological solutions, combined with social communities, have supported the development of sustainable health initiatives that reduce health inequalities and create growth opportunities.

Evaluation of the Pilot Projects
This section presents the results of various pilot projects conducted under the Lighthouse Life Science Project. It describes concrete health improvements, including weight loss, enhanced mental well-being and increased physical activity. It also examines how different technological interventions such as self-monitoring and gamification engaged participants in their health journey. The success of these projects has been significantly driven by multi-stakeholder cooperation between public and private actors.

Evaluation of the Growth Potential of the SME Segment
This section examines how participation in Lighthouse Life Science has impacted growth and innovation in Danish SMEs. It analyses how public-private partnerships and venture capital have strengthened SMEs position in both national and international markets. The document also highlights the need for longer implementation cycles to fully realize the growth potential.



EVALUATION OF THE COLLABORATION PLATFORM

Image from the project 'Healthy Movement, Healthy Weight'. The partners are Steno Diabetes Center, Center for Clinical Research and Prevention, SENS Innovation, Etal.Aps, Brevetti AI, and The Metabolism Center, University of Copenhagen

INTRODUCTION

Globally, and in Denmark, health systems face several pressing challenges that require new, innovative solutions. With an ever-increasing number of people struggling with chronic conditions such as obesity and mental disorders, the need for cross-sector collaboration is greater than ever. In this context, the Danish Lighthouse Life Science was initiated as a strategic vision to address chronic diseases, promote health equity and support economic growth. Moreover, the ambition of the Lighthouse Life Sciences is to strengthen Denmark's position as an international driver in life science.

The challenges of healthy weight and mental disorders are large and complex - over 50% of Danes struggle with overweight or obesity - obesity has a major impact on several chronic diseases. Danes are also challenged by mental illness – 25% of sick days are due to mental challenges. Likewise, there is also a great inequality within these health challenges. (Kessing et al., 2023; The Danish Health Authority, 2023)

Lighthouse Life Science is initiated with the clear mission to foster transformative innovations through multi stakeholder partnerships spanning both the public and private sector. This multi-sector and multi-stakeholder effort combines technologies, communities and evidence-based approaches. The goal is to ensure that health solutions are not only accessible to resourceful citizens but also reach marginalized groups in society.

APPROACH TO TRANSFORMATIVE INNOVATION AND PARTNERSHIPS

In the establishment and building of the Lighthouse partnership, different approaches have been used. In particular, the following approaches have provided inspiration in promoting collaboration across different sectors:

- **Network management approach:** By building and managing relationships, this approach ensures that diverse perspectives and resources are integrated, enhancing the collective ability to innovate and solve complex public problems. (Klijn & Koppenjan, 2016)
- **Social capital and infrastructure:** Building social capital through weak ties is essential to expand the reach and effectiveness of Public Private Partnerships (PPPs). These connections bring in new ideas and resources outside the immediate network, fostering creativity and innovation that can be harnessed within the partnership. (Lin, 2001)
- **Political stakeholder management and compromise:** Effective stakeholder management is essential to maintain the balance of PPPs. By managing political interests and ensuring trade-offs, this approach aligns different objectives and fosters a collaborative environment where joint innovation efforts can thrive. (Sørensen & Torfing, 2007)
- **Loosely coupled organizations:** Loosely coupled organizations provide the flexibility needed for PPPs to innovate. By allowing independent entities to experiment, this approach supports the integration of different innovations, strengthening the overall partnership and its ability to respond to challenges. (Weick, 1976, 1995)
- **Iterative approach to innovation:** The iterative approach supports the adaptability and resilience of PPPs. By emphasizing continuous learning and experimentation, it allows partnerships to evolve over time, ensuring that innovation is responsive to changing needs and contexts. This ongoing commitment strengthens the trust and flexibility of the partnership so that it can better withstand and adapt to challenges. (Ansell & Gash, 2008)
- **Managing complexity through relationships:** Managing complexity through relationships is key to the success of PPPs. By focusing on the dynamic and emergent nature of relationships, this approach enables partnerships to navigate uncertainty and drive innovation in non-linear, adaptive ways. (Stacey, 2001)

The experience from establishing the governance of the Danish Lighthouse Life Science shows that using these theoretical approaches continuously, and as needed, is essential for success. Continuous

learning has highlighted the need for a mindset where partnerships aim for a common goal while accommodating individual interests. Maintaining a focus on learning, adapting, and managing different interests is essential for fostering a trusting and safe collaborative environment. Specifically, bilateral and group dialogues are necessary for aligning common overall goals and creating value for both individuals and the community in the governance. Balancing these aspects requires governance managers to adopt an approach that includes continuous adjustments and relational competencies at strategic, tactical, and operational levels.

The onboarding process is important for stakeholders to understand their contributions and benefits, ensuring a clear alignment of expectations in joining the network of partners. Transparency, honest communication, and open processes are vital, as noted in recommendation no. five from the University of Copenhagen's evaluation:

> *Create time and space for continuous adaptation, alignment of expectations and transparency in decision-making processes, as these are important prerequisites for participation* (recommendation no. five in The Danish Lighthouse Life Science Whitepaper (2023). p.18).

GOVERNANCE

Governance of the Lighthouse Life Science includes a consortium with the highest political and Strategic level in Denmark, being mayors, regional chairmen, rectors of universities, pension companies and CEOs of leading companies.

To facilitate effective coordination among the diverse stakeholders, a Steering Committee was established. This committee holds the central responsibility for orchestrating a broad spectrum of activities. These activities range from overseeing specific pilot projects to managing services offered through a platform called the Growth Platform in close collaboration with Business House Copenhagen (which will be detailed later in this report). The Steering Committee ensures that efforts are aligned, and strategic objectives are met effectively. The governance structure of the Lighthouse Life Science initiative is depicted in Figure 1.

THE PHASES AND THEMES OF THE LIGHTHOUSE

Lighthouse Life Science has a long-term vision towards 2030. Receiving support from the Danish Ministry of Industry, Business and Financial Affairs and the EU, supplemented by additional co-financing primarily in the form of in kind hours from private and public actors. Two grants have been received as funding.

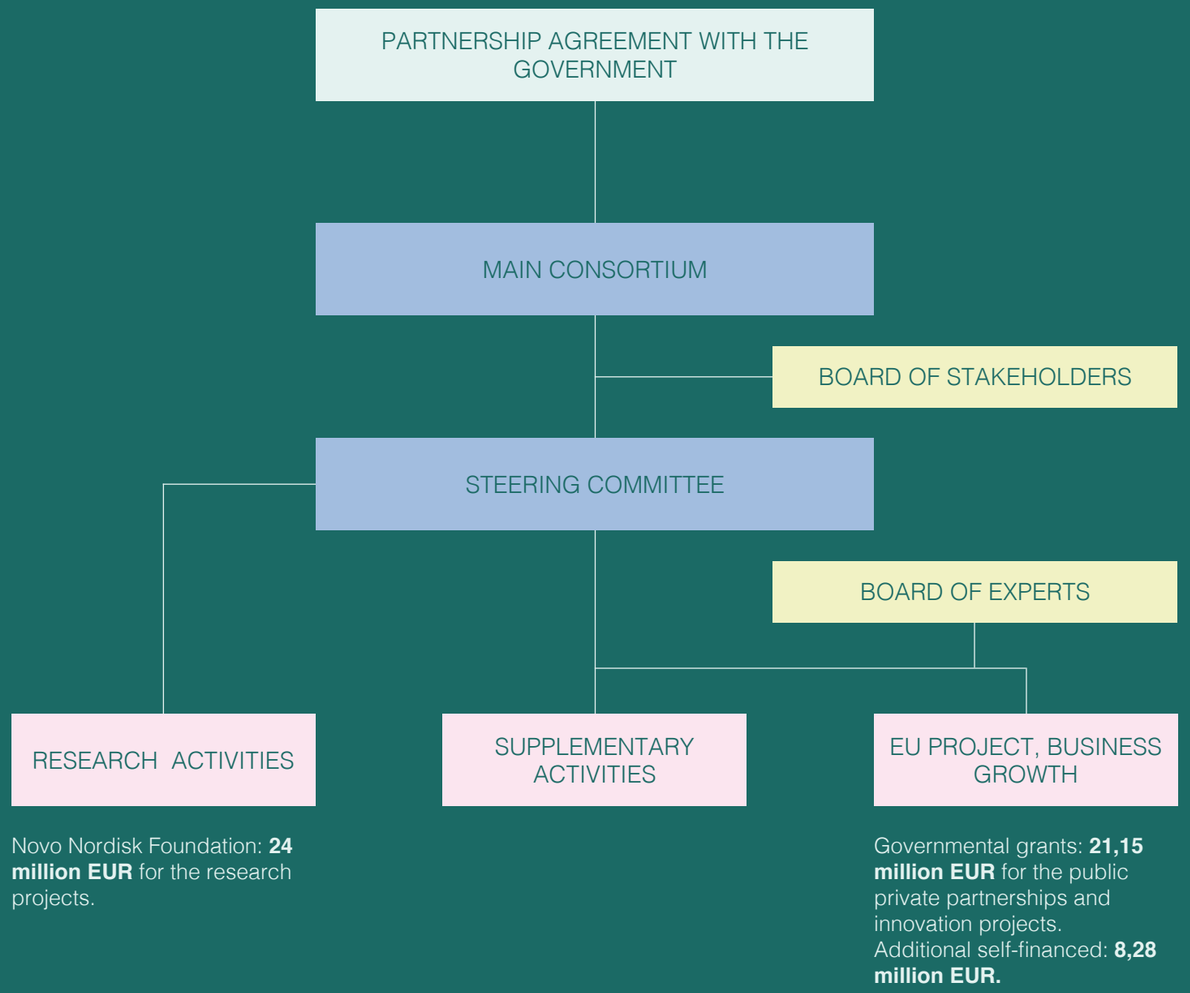
The first grant was awarded in the period 2022 – 2023 with a focus on pilot projects within healthy weight and for the establishment of the knowledge and guidance function, the Growth Platform. The second grant was awarded in 2023 and is running until 2026 with a focus on mental health. This will be further elaborated in the section "The second focus in Lighthouse Life Science – Mental Health. Figure 2 illustrates the phases of Lighthouse Life Science, related to the two grants and the long-term vision.

The funding in the individual grants for the EU partnerships is shown below, they follow the current guidelines for partnerships under the Danish Regional and Social Fund and Decentralized Business Development Funds.

- Lighthouse Life Science – Healthy Weight
  - Total public Funding: EUR 11.036.370
  - Total co-financing in terms of hours: EUR 2.412.166
- Lighthouse Life Science – Mental Health - Budget
  - Total public Funding: EUR 9.753.040
  - Total co-financing primarily in terms of hours: EUR 5.594.185

The private funding indicates a high level of engagement, as the partners who participated have not received 100% funding in relation to their time spent on partnerships and activities.

Figure 1: The governance structure of the strategic partnership for health equity, Lighthouse Life Science.



FOCUS ON HEALTHY WEIGHT

The issue of noncommunicable diseases is rising in the world and in Denmark. An example is the proportion of people with obesity in Denmark (BMI ≥ 30 kg/m2) has increased from 13.6% in 2010 to 18.7% in 2023. And it is expected that the proportion of adults in Denmark with obesity will increase to approximately 33% in 2040. This is illustrated graphically in Figure 3.

Source: The health of the Danes - The National Health Profile: Mid-term survey, Danish Health Authority, 2023; The proportion of Danes with overweight, projected to 2040, National Institute of Public Health, 2024.

There is also a great inequity within overweight and obesity. The partners therefore wanted the target group to be broad - they wanted to look at new ways to solve the challenge on a more structural level both at an earlier stage, but also at a community level - such as pregnancy, school, after-school care, leisure activities, families, workplace and the health service.

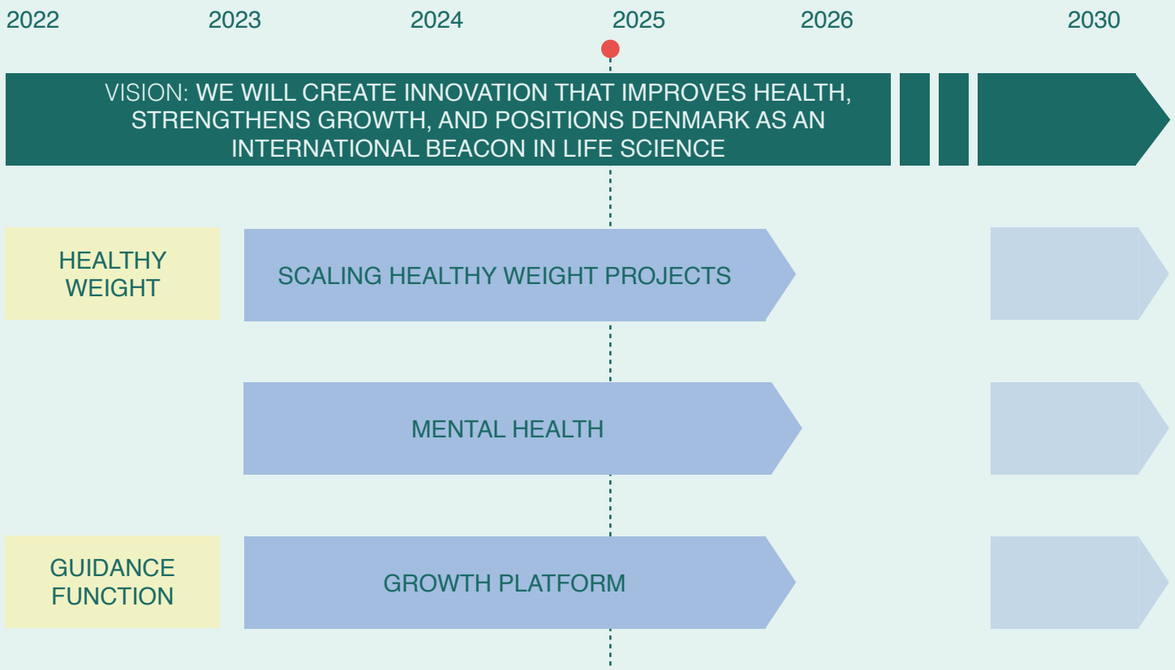
The strategic partnership chose obesity as the first focus, because of its scope, its complexity and the need for multi stakeholder, multi sectoral approach to turn the tide.

THE SECOND FOCUS IN LIGHTHOUSE LIFE SCIENCE – MENTAL HEALTH

While healthy weight in 2022-2023 was in process, the Main Consortium (Figure 1) decided that the second focus in the Lighthouse should be Mental Health (Figure 2).

To further strengthen the potential for realizing the vision of the second focus, new activities were initiated based on a new political agreement in psychiatry established in 2022. The Psychiatry Plan is a national health strategy for the next 10 years (SST, 2022). The plan is ambitious, and the partnerships are committed to assist in finding innovative solutions to help with this huge societal challenge within three specific key areas of mental health, see figure 4.

Figure 2: Overview of the two phases of the Lighthouse Life Science grants



ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

The purpose of linking pilot projects and activities to a national health policy and agenda was the greater potential for implementation and scaling as well as a greater opportunity for more long-term financing of the initiatives that show potential for value – both in health outputs and supporting economic growth.

It is essential for success that there is a political alignment combined with addressing concrete issues and practical needs through close interaction with employees and citizens in both the public and private sector.

The initial focus on healthy weight within the Lighthouse has laid the groundwork for extending this approach to the second focus in mental health. After addressing mental health, there will be a new health focus for the upcoming third phase, signifying political readiness to incorporate the Lighthouse into a national strategy.

In the next section, learning and experiences that have been gained in connection with Lighthouse Life Science – Healthy Weight in the period 2022 – 2023 are described.

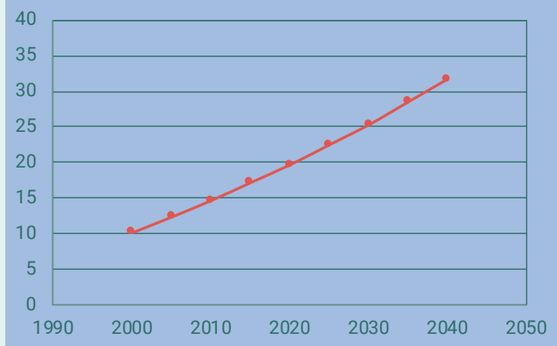
HEALTHY WEIGHT EXPERIENCES

THE PILOT PROJECTS, 2022-2023

The strategic partnership in the Lighthouse has succeeded in implementing coordinated efforts on prevention, early detection and health management of obesity (figure 4) that do not only focus on the goals of the individual projects but also have a common vision of reducing inequality in health. By pooling knowledge, competencies and resources, and by leveraging a unified platform, the partnerships facilitate that the projects worked towards the same overall goals, increasing the likelihood of achieving long-term structural improvements combined with economic growth potentials.

In contrast to traditional project collaborations, the strategic partnership shown in figure 1 has been able to create a coordinated effort that works across sectors and brings together resources from different actors. This has laid the foundation

Figure 3: The projection shows that the proportion of adults in Denmark with obesity is expected to increase.



Source: Data on the prevalence of severe obesity in Denmark is drawn from Tolstrup et al. (2024), which provides projections based on national health surveys.



Figure 4: The concept, which consists of prevention, early detection and health management of healthy weight and mental health

	PREVENTION	IDENTIFICATION	MANAGEMENT
HEALTHY WEIGHT	A healthy start to life and inspiration for a healthier life	Identification of high-risk groups and targeted identification of high risk groups	Research project on multidisciplinary management
MENTAL HEALTH	Building an easily accessible offer in the municipalities for children and young people	Information and destigmatization efforts	Strengthened effort for people with severe mental disorders








ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

for longer-term missions to increase health equity through prevention, early detection, and health management of obesity in a holistic perspective, where technology, community, and social capital work together to reduce health inequality and promote a more inclusive health culture focusing on health equity.

What distinguishes the Lighthouse Life Science projects from traditional health programs is the ability of the strategic partnership to bring together a wide range of actors under a common framework, which has created a coordinated effort on promoting health and economic growth. This has enabled structural innovation that extends beyond individual projects and creates synergies between public institutions, private actors and research environments.

One of the main differences found between a strategic partnership and a project collaboration is the opportunity to integrate and share knowledge across the projects. The strategic partnership, shown in figure 1, serves as a collaboration platform where learning from the individual projects is collected and used to inform future initiatives. This approach requires a different way of working, which is based more on network management by building and strengthening relationships with different perspectives and resources, that are integrated to jointly innovate and solve the complex challenges (Erik Hans Klijn and Joop Koppenjan). The collaboration platform has shown unique value by being an agile solution to complex challenges within health equity and obesity.

GROWTH PLATFORM AS AN ACCELERATOR FOR DEVELOPMENT AND GROWTH

The growth platform plays a significant role in supporting the needs of SMEs from idea to scale.

In the period 2022 – 2023, 347 participating companies were registered in the activities on the growth platform, including open knowledge sharing and branding activities. More than 154 unique companies participated in knowledge and guidance activities, and of these, 26 companies participated in courses with introductions on how to export solutions to other markets.

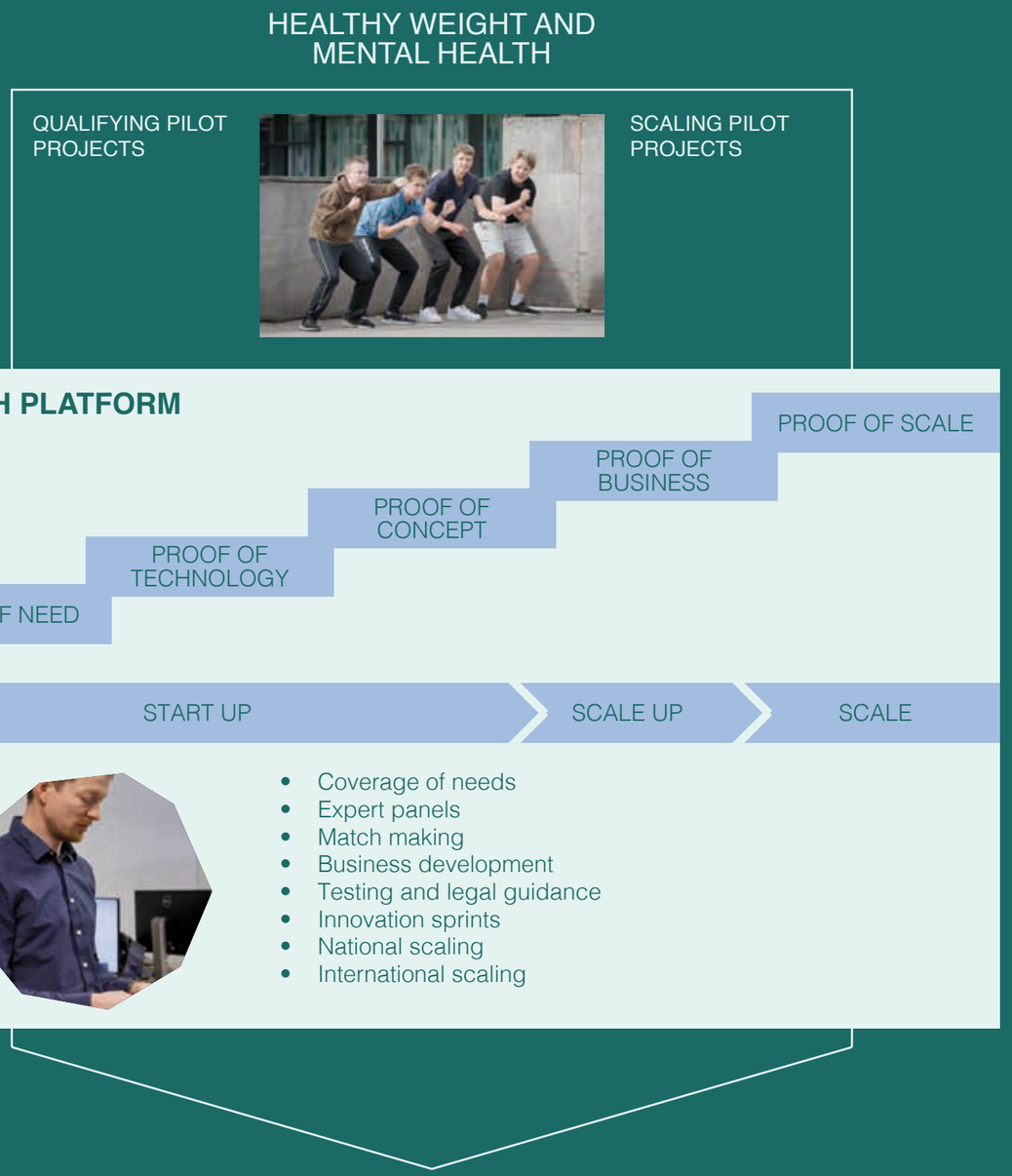
The growth platform offers guidance for SMEs in connection with qualifying their ideas and concepts in close collaboration with the users right from the start. The concept for the growth platform is shown in Figure 5. The purpose of the growth platform is to provide offers for SMEs in one place. Instead of competing, SMEs collaborate to create demand-driven courses in a strengthened format, leveraging multi-competence collaboration.

Likewise, SMEs are supported and guided in public-private collaborations in the innovation process through design, development and testing of solutions in clinical practice up to market maturation and introduction to export markets. This has accelerated the process of maturing solutions for certification, implementation, sales, and scaling. This approach enables SMEs to develop without having to follow each step of the process (Proof of Need, Proof of Technology, Proof of Concept, Proof and Business/Value, Proof of Scale), tailoring the journey to meet their specific needs and accelerating their development. The growth model is illustrated in Figure 5.

For more information on learning and experiences in realizing the growth potential, please read section “Evaluating the growth potential”.



Figure 5: The concept, the Growth Platform, which guides the SME segment throughout the development process with a view to achieving faster and more qualified results from idea to scale



ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

LIGHTHOUSE LIFE SCIENCE – INTERNATIONAL OUTREACH

From 2022 to 2024, Lighthouse Life Science has established a significant international outreach program. The initiative has engaged with delegations and decision-makers from 22 different countries, showcasing Denmark's expertise in developing health solutions and fostering collaboration between public and private entities, graphically illustrated in Figure 6.

Key aspects of Lighthouse Life Science's international outreach include:

- **Global Engagement**
  The Lighthouse has hosted 34 distinct events or visits, including 14 international delegations to Denmark from diverse nations such as Brazil, Canada, China, Finland, France, Germany, Israel, Italy, Norway, Portugal, Serbia, Singapore, Spain and the United States of America. These engagements have allowed for knowledge exchange and the promotion of Denmark's life science ecosystem.
- **Multilateral Collaborations**
  The Lighthouse has participated in six international conferences and events, including the Health Tech Summit Conference, Nordic Life Science Days Conference, Tour de Health and the Sustainability Summit in New York City. These platforms have provided opportunities to showcase Danish innovations on a global stage.
- **Strategic Partnerships**
  The Lighthouse has engaged with key international stakeholders, including the EU Commission, foreign embassies, and government representatives from various countries. Of the 34 engagements, five were Danish outreach events to other countries, helping foster potential collaborations and promote Denmark's life science sector internationally.
- **Knowledge Dissemination and Export Promotion**
  Through four roundtable discussions, six conferences, and multiple delegations, the Lighthouse has shared insights on topics such as tackling chronic diseases, building health resilience, and driving innovation in the life science sector. Additionally, the Lighthouse has been involved in life science export promotion events, such as the 'Pioneering Public-Private Partnerships within Life Science initiative in Italy. The largest single outreach event, Tour de Health '24, involved 13 countries with Danish health representation.

By actively engaging with international partners and showcasing Denmark's unique approach to life science innovation, Lighthouse Life Science is positioning Denmark as a global player in PPPs and health solutions. The activities in the Lighthouse have steadily increased, with nine events/visits/activities in 2022, 14 in 2023, and 11 planned for 2024, demonstrating growing international interest in Denmark's life science expertise.



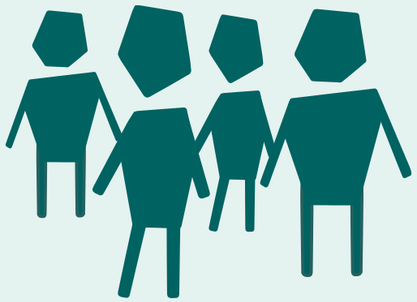
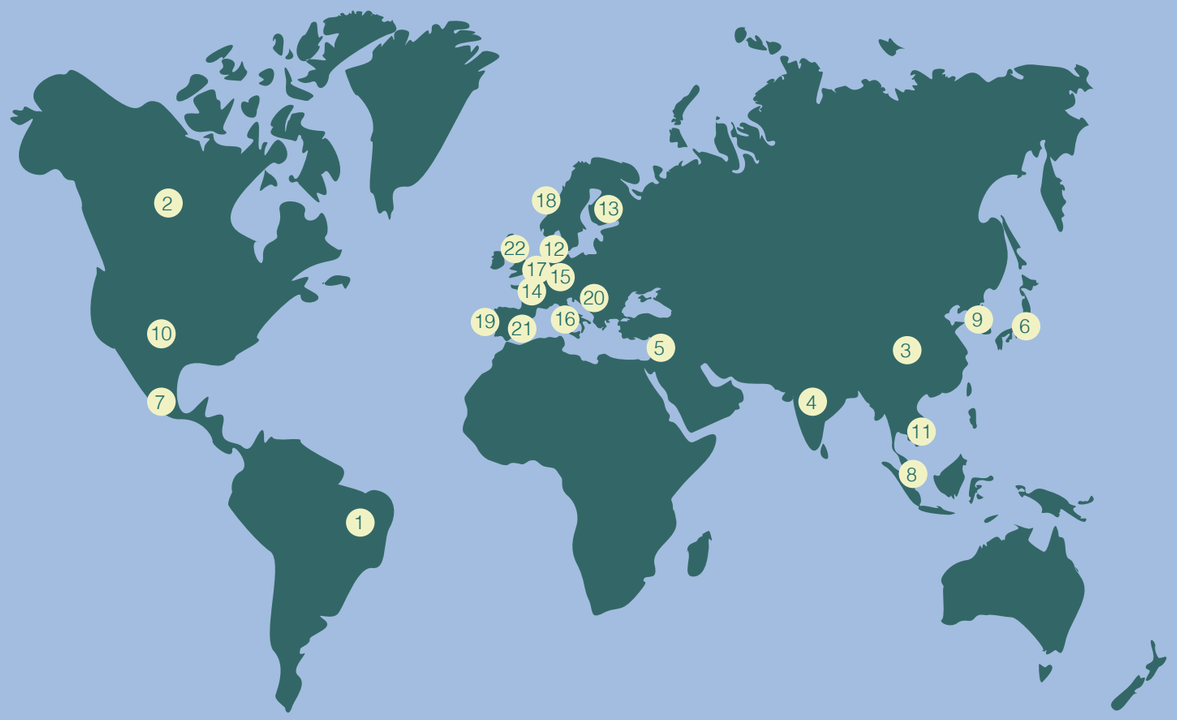


Figure 6: Illustrates the Lighthouse international reach so far, and the dedication to sharing knowledge about the Lighthouse work in public private life science partnerships



1. Brazil
2. Canada
3. China
4. India
5. Israel
6. Japan
7. Mexico
8. Singapore
9. South Korea
10. USA
11. Vietnam
12. Denmark
13. Finland
14. France
15. Germany
16. Italy
17. Luxembourg
18. Norway
19. Portugal
20. Serbia
21. Spain
22. United Kingdom

ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

HEALTHY WEIGHT LEARNINGS

MULTI-STAKEHOLDER COLLABORATION MODEL – A CATALYST FOR INNOVATION

The increasing challenges of chronic diseases in society necessitates an agile and holistic effort that can handle the complex health and economic consequences that chronic diseases and health inequality create. Traditional efforts have not produced the necessary results, complex challenges must be worked on in strategic, long-term partnerships. Therefore, the strategic partnership under the Lighthouse Life Science initiative has created a framework where work is done across sectors to ensure faster learning, innovation and implementation. By combining public and private resources with research-based knowledge, it has been possible to develop and test innovative health solutions quickly and efficiently. The partnership has created a dynamic model that both delivers rapid indications of potential for health and economic growth while providing the basis for long-term structural change.

One of the most significant differences between the Lighthouse Life Science projects and previous health projects is the multi-stakeholder collaboration model, which has created a unique framework for faster innovation and implementation of health solutions. Unlike many traditional health projects, which are often isolated within either the private or public sector, these pilot projects have been rooted in collaboration between public institutions, private companies and research institutions. This has made it possible to test and adapt health intervention in a more agile and flexible way. Figure 7 shows the transition from driving innovation and transformation within siloed organizations to be engaging in cross-sectoral collaborations using iterative project models and network structures to achieve more impact and change.

It has been critical to get a long-term commitment from the partnership to drive the complex and nonlinear innovations needed for transformation.

Traditional linear thinking is not applicable to solving complex, long-term missions. The network structure allows the partners to use their resources in a collective way and thereby create a greater dynamic where the different interests, perspectives and competencies come into play for a common goal and direction. It contains a mindset of “we reach further together”, which is also supported by Henry Ford:

> ***“Coming together is the beginning. Keeping together is progress. Working together is success.” - Henry Ford***

Another aspect that distinguishes these projects is the focus on short-term interventions, which were used as a first step in longer-term strategies. In many other projects, there are typically longer and more extensive interventions that do not necessarily test concepts in smaller, modular formats. These short-term pilot projects have shown that it is possible to achieve meaningful health improvements in a relatively short period of time and that these improvements can be scaled up.

The partnership’s multi-stakeholder cooperation model shows a path for faster innovation in the field of health. By combining knowledge and resources from public institutions, private companies and research environments, it has been possible to create an agile model that can quickly test and

Figure 7: The approach to working in a different way from linear and traditional models to more iterative and networked models



FROM:
Driving innovation and transformation within **siloed organizations**, utilizing **linear project models** and waterfall planning with l**imited success**.



TO:
Engaging in **cross-sectional collaboration**, utilizing **iterative project models** and network structures reaching **more impact and change.**

adapt health strategies in practice. This model has shown examples of possibilities to develop health-improving measures that can be quickly implemented and adapted as needed.

THE DILEMMA BETWEEN QUICK WINS AND LONG-TERM CHANGE

One of the biggest challenges the partnership has had to navigate is the balance between quick results and the need for deep, long-term change. Short-term interventions, such as health promotion activities in schools, have been shown to have early indications of effects, but these initiatives are only the beginning. To ensure lasting improvements in health, it is necessary to create structural changes that address the underlying causes of overweight and inequality in health.

This dilemma is further compounded by the political desire for quick results, which often contrasts with longer-term strategic objectives. The partnership model has therefore required a careful balance, where short-term interventions serve as the foundation for the long-term goals of reducing obesity in a sustainable way. The pilot projects were not only aimed at early detection and intervention but were also intended to support longer-term structural changes. This created a professional dilemma and how the need for short-term results could be balanced with the ambitions of a long-term societal change.

Long-term commitment and transformative innovations are essential for the realization of the vision. The pilot projects have been a test environment for new health-promoting technologies and social models that have the potential to create lasting changes in health behavior and economic growth. It emphasizes the importance of these non-linear innovation processes being necessary to address complex health problems that cannot be solved with traditional linear models.

COMMUNITIES AS A CATALYST FOR BEHAVIORAL CHANGE

Focusing on communities as a central health strategy has proven effective. Where many previous health projects have focused on individual solutions, the pilot projects have shown indications of communities as a catalyst for behavioral change. The projects have shown that integrating participants into community-oriented activities has had a profound impact on health behavior. This element is particularly important as research has shown how social capital can play a central role in health (Putnam 2000). By focusing on communities, as part of the solution, these projects have created new opportunities to integrate social support into health strategies, which differs from many traditional health projects that focus primarily on individual solutions. By integrating social capital into health solutions, it has been possible to create a positive dynamic where mental well-being and physical health are improved through community support. This has also paved the way for broader participation in health initiatives. Achieving a long-term transformation at a societal level requires that several political administrations jointly decide who should take responsibility for working with this agenda and to better support prevention by involving other social structures, such as the workplaces and schools, in future health strategies.



ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

A LASTING TRANSFORMATION: REDUCING STIGMA AND PROMOTING HEALTH EQUITY

The dilemma between the need to address obesity while avoiding further stigma is a key element in this process. On the one hand, obesity is recognized as a societal challenge that requires increased attention and effort; on the other hand, the subject is associated with considerable taboo, which often leads to resistance to articulating it directly, especially in public and political spaces (Puhl & Heuer, 2010).

This dilemma has characterized the work of the partnership from the beginning, as the participants had to find a way to deal with the topic without exacerbating the existing social stigma. In many health-promoting projects, there is a risk that the individuals who are to be helped will also be identified as deviant, which can result in increased marginalization.

The partnership's approach has therefore been to focus on structural changes aimed at reducing stigma by introducing solutions that include the entire target group rather than isolating the particularly vulnerable. As an example, in the pilot project of PULSE it was decided to offer health-promoting activities to all students in a school rather than only to those who suffered from obesity. This decision was driven by the desire to avoid singling out vulnerable individuals and instead promote a sense of community about health (Puhl & Heuer, 2010).



Image from the project eHood. The project targets vulnerable youth (ages 13-18), aiming to enhance well-being, healthy weight, and life skills through a 20-week program centered around gaming and social activities. The partners of the project were Høje Taastrup, Tårnby, and Hvidovre Municipalities, Sincera, Impactly, and the Center of Clinical Research and Prevention

CONCLUSION: PARTNERSHIPS AS A CATALYST FOR HEALTH AND GROWTH

The conclusion is clear: partnerships are crucial in creating solutions to address health challenges and promote economic growth. The most successful partnerships create shared value, navigate uncertainties together, and adapt strategies to evolving circumstances. Challenges do exist, necessitating persistent efforts, ongoing evaluation, and a commitment to learning from both successes and setbacks.

The partnership model has been, and continues to be, fundamental to the success of the Lighthouse, bringing together diverse stakeholders who might not have collaborated otherwise. It is characterized by robust decision-making power at both political and tactical levels and provides a neutral platform for collaboration. The partnership fosters motivation and commitment among participants, while encouraging ongoing knowledge sharing and mutual learning across the projects involved.

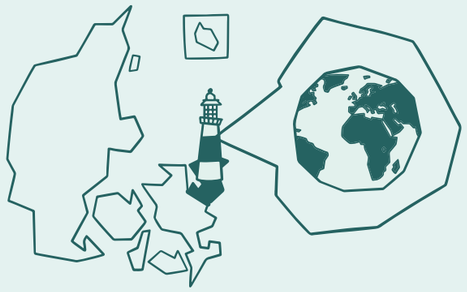
Establishing deep mutual trust within partnerships is essential, as cooperation hinges on relationships rather than transactions. Long-lasting and successful partnerships prioritize long-term relationships over short-term benefits, effectively managing organizational behaviors, power dynamics, and cultural differences between partners to build resilience and flexibility in collaboration.

The evaluation of Lighthouse Life Science and its multi-stakeholder collaboration model reveals that strategic partnerships play a pivotal role in tackling complex health challenges such as obesity and mental disorders. The partnership supports a multidisciplinary approach to health promotion and promotes economic growth, particularly for SME's by integrating innovation and practices across sectors. Modular and flexible short-term interventions have yielded rapid results while laying the groundwork for long-term structural changes. Lighthouse Life Science demonstrates that combining public and private actors can create effective solutions that enhance both health and economic growth, ensuring a more equitable healthcare approach.

The experience from 2022-2023 shows that health disparities can be reduced by applying a holistic approach centered on technological innovation, communities, and evidence-based health strategies. Coordinated efforts between public, private, and civil society actors have created a collaborative platform where all parties work toward common goals. This integration of competencies and resources has increased the potential for sustainable health improvements that transcend the objectives of individual projects.

A critical success factor of Lighthouse Life Science is its ability to mobilize resources across sectors, create shared value, and adapt to changes over time. It is evident that partnerships require sustained commitment and a willingness to learn from mistakes and continuously adjust the course. This process is iterative and demands constant reflection and adaptation.

In summary, the strategic partnership under Lighthouse Life Science has illustrated that complex health challenges like obesity can be addressed through agile, inclusive, and multi-sectoral efforts. By integrating health and economic growth, the partnership has created an innovative model that achieves short-term gains while pursuing long-term goals of structural health improvements and social equity. This collaborative model should be integral to future health policies to ensure lasting improvements in both health and economic growth.



ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

PERSPECTIVE: FUTURE OF PARTNERSHIPS FROM LEARNING TO ACTION

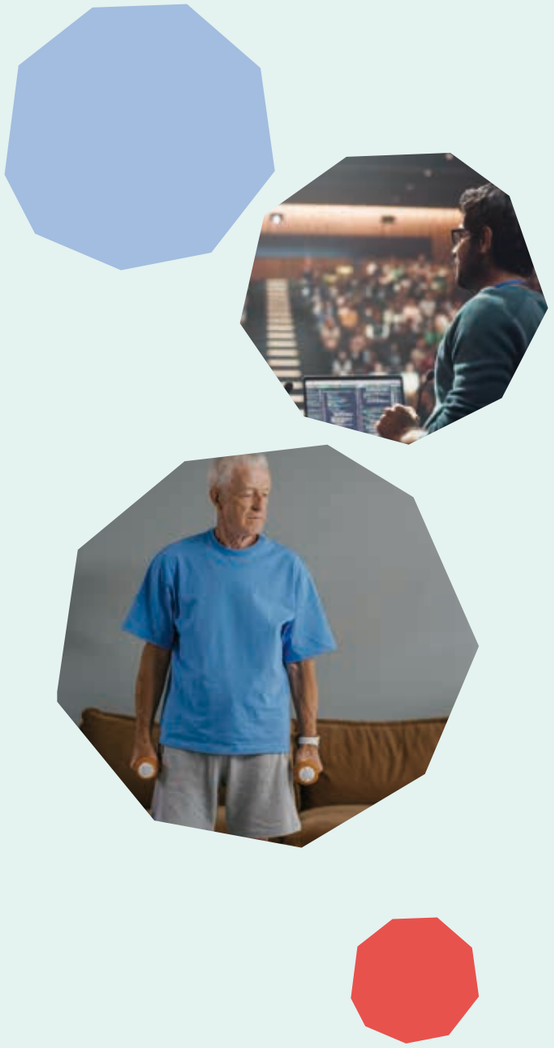
There remains significant untapped potential in enhancing the methodologies and models that govern partnership efficacy. Future research should focus on elucidating the social, economic, and environmental benefits of partnerships, alongside exploring how technological advancements can bolster more integrated cooperation frameworks. Moreover, investigating how diversity within partnerships can serve as a pivotal strength to foster inclusive and innovative solutions is paramount. This paves the way for a comprehensive dialogue regarding the evolving role of partnerships in an increasingly globalized and complex landscape. Essentially, there is a pressing need to delve deeper into developing partnerships that are sustainable and transformative on a global stage.

To fortify the future of initiatives like Lighthouse Life Science, a more robust system for data collection and evaluation is imperative. This will ensure that progress and outcomes are meticulously tracked. Furthermore, establishing sustainable and long-term financing models is critical to maintaining ongoing development and innovation.

Maintaining trust among partners and a steadfast commitment to transformational goals are vital to sustaining the momentum generated. Continuous competency development among participants is essential to achieve the overarching objectives of enhanced public health and economic growth.

Future-oriented partnerships must continue to advocate for community-centric health strategies that diminish stigma and foster inclusion. The positive impact of communities as catalysts for behavioral change and health promotion, as demonstrated by the partnership, underscores the need to integrate more social structures such as schools, workplaces, and local networks into future efforts.

In summary, the integration of health promotion and economic growth through strategic partnerships offers a viable solution to contemporary challenges and presents a vision for addressing complex global health challenges in the future.



EVALUATION OF THE PILOT PROJECTS

Image from the project ‘Pulse’ that integrates daily high-intensity physical training for grades 6-9 to enhance health, well-being, and learning readiness. Partners are University College Copenhagen, Hvidovre Municipality, Just Human, and Iqniter

INTRODUCTION

The global healthcare sector is grappling with significant challenges that call for sustainable, innovative solutions. With a growing number of individuals facing chronic conditions like obesity and mental health issues, there is an urgent need for a collaborative effort blending health promotion, technological advancements, and supports economic growth. This is the premise behind the Danish Lighthouse Life Science, a strategic initiative aimed at promoting health equity, stimulating economic growth, and reinforcing Denmark’s position as a global driver in life sciences.

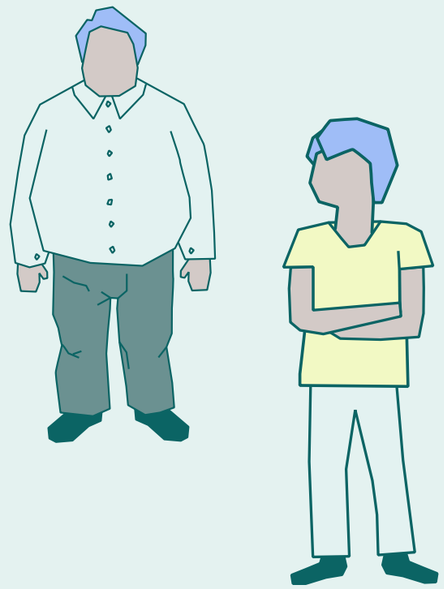
Lighthouse Life Science was launched with a clear mission: to drive transformative innovations through partnerships that span both public and private sectors. The aim is to ensure health-promoting solutions reaching not only those with sufficient resources but also marginalized segments of society. This multi-sector collaboration leverages technology, communities, and evidence-based approaches to tackle pervasive health issues such as obesity and mental health, while also supporting the economic growth potential of SMEs.

This section presents an evaluation of the pilot projects under Lighthouse Life Science in its first phase (2022-2023). It examines how these projects have contributed to both health improvement and economic growth, focusing on how technological innovation and multi-stakeholder collaboration have established a platform for scalable health solutions. The pilot projects are designed to address complex health challenges by utilizing digital tools and community-based interventions. This aligns with the Lighthouse’s mission to create long-lasting solutions through prevention, early detection, and health management, evident in efforts to reduce obesity and improve mental well-being through workplace initiatives.

The document is structured as follows:

- Multi-stakeholder Collaboration: Analyzes how public and private entities have partnered to develop and implement health strategies.
- Technological Innovation and Communities: Evaluates the use of technology and communities in promoting health.
- Future Perspectives and Scaling: Discusses how insights from the pilot projects can be scaled and integrated into future health strategies.

Through this analysis, it will be clear how the pilot projects have paved the way to achieve the Lighthouse’s vision by creating sustainable health solutions grounded in both technology and communities.



AN EVALUATION OF THE PILOT PROJECTS

A MODEL FOR HEALTH PROMOTION AND SUPPORT OF ECONOMIC GROWTH

The pilot projects under the Danish Lighthouse Life Science (2022 – 2023) were carried out within a short-term period to test new health strategies, with the three focus areas of prevention, early detection and health management. The overall purpose of the pilot projects was to improve the health and well-being of different population groups by combining digital solutions, communities and collaborations across sectors. The expectation was that innovative approaches could offer a solution to some of the increasing health challenges in society and increase health equity combined with creating economic growth in SME's. This included a focus on issues such as obesity, mental challenges and lack of physical activity in a way that was both measurable, and in the long term scalable.

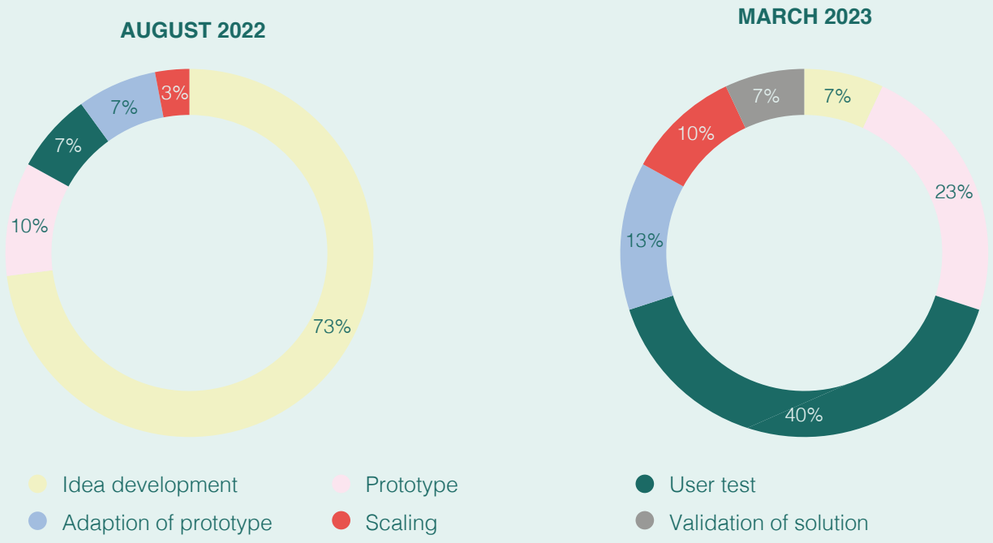
The pilot projects' experimental framework provided an opportunity to test new health-promoting technologies in a real context, with a view to a potential scaling to larger population groups. Lighthouse Life Science was and still is based on the hypothesis that the combination of technology and communities will strengthen individuals' motivation for their own health, and at the same time reduce social barriers such as stigma. This is supported by the strategic partnership, including the main consortium and in the steering committee, which has ensured strategic direction and effective implementation.

Information about the overall collaboration model for the strategic partnership for equity in health, Lighthouse Life Science, can be found in the section: Evaluation of the collaboration platform.

DIFFERENCE FROM TRADITIONAL PROJECT FORMS

The pilot projects differ from traditional project forms by their modular structure, agile implementation and their strong multi-stakeholder collaboration as well as a greater focus on user involvement. These pilots have been able to experiment faster and adapt the interventions in real-time based on the early results.

Figure 8: Illustrates the SME's acceleration in their development processes



ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

An evaluation of the pilot projects is illustrated in Figure 8. The figure shows that 73% of the companies at the start of the project were in the idea development phase, while only 7% were at the end of the project. Conversely, 7% were in the process of user testing at the beginning of the process, while it was 40% at the end of the project.

The figures document a clear acceleration of the development process. One reason for this was the limited short period of time to implement the pilot projects, which increased the project partners' focus. Another was the risk-willing financing that made it possible to establish cooperation across relevant partners.

The advantage of phased projects is that assessment can be made along the way and lead to evaluation of whether the project has potential for further development, or the project should be adapted to increase the possibility of adaptations, or it should be stopped.

Risk-willing funding for the pilot projects was an advantage and supported both early innovation projects and more implementation-ready projects in development, testing and evaluation in collaborations between SMEs, employers in the form of municipalities, regions and large companies, as well as researchers from universities and university colleges.

Nine pilot projects with funding of over four million EUR have been carried out on the development of widely different concepts or solutions for the prevention and early detection of overweight and obesity, including courses with young gamers, offers for overweight pregnant women and projects in large workplaces with a focus on weight loss and better well-being. This analysis contains learning and knowledge from eight pilot projects. One pilot project is still ongoing and therefore not included in this analysis. Two pilot projects have research publications on the way, of which one is available (Co-designing a weight-neutral health intervention in Denmark: a protocol paper) and the other is estimated released mid 2025. Further information on the individual pilot projects can be found on www.erhvervsfyrtårnlifescience.dk/pilot-projects.

At the same time, two research projects in the interdisciplinary health management of obesity, LightCOM, have been carried out with funding of EUR 24 million from the Novo Nordisk Foundation. LightCOM is still ongoing and is about developing and testing new health management programs that target people with obesity. The goal is to improve health and quality of life through solutions that contribute to lasting change. The pilot projects are illustrated at the website as exemplified in Figure 9.



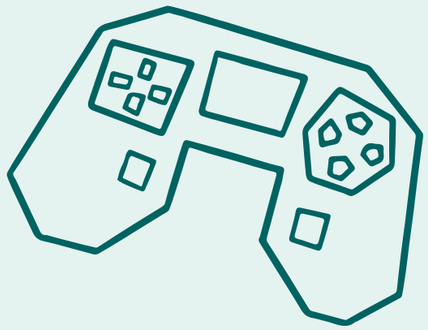


Figure 9: Overview of pilot projects included in this analysis. More information about the individual pilot projects can be found at www.erhvervsfyrtårnlifescience.dk/pilot-projects.



PREVENTION

Prevention in children and adolescents using gamification and digital solutions that support movement as well as digital guidance for mothers with obesity during pregnancy:

- Healthy pregnancy and digital course guide
- EHOOD – a project on physical activity and gaming for vulnerable young people
- Healthy children – technology-based intervention with VR/AR in education
- PULS in schools

Prevention of obesity with a holistic approach through digital guidance, healthier behaviour through shopping and monitoring of movement in everyday life:

- Inspiration for healthier life



IDENTIFICATION

Prevention and detection in connection with using the workplace as a health arena to create greater potential for communities combined with individualized guidance and reduce stigma around being obese:

- Health and well-being in large workplaces
- Healthy weight – conversation interventions for weight loss in the workplace

Detection of adults at risk of obesity using registry data, accelerometer measurement of physical activity and development of an algorithm for a better response to the individual citizen in relation to diabetes:

- Healthy movement for healthy weight – development of algorithm with data sensor to motivate increased exercise

ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

ACHIEVED GOALS FOR THE PILOT PROJECTS

The pilots have managed to achieve several of their short-term goals, but there are significant barriers to achieving the full impact, especially in terms of scalability, stigma and long-term health improvements.

One of the projects, Inspiration for a Healthier Life, has had more than 400 participants completing the intervention and a methodological approach that indicates health effects have been achieved in the form of weight loss, fewer sick days and an increased number of steps daily. However, with the proviso that it has been a relatively short intervention period of nine months.

Another example is that during the short project period, positive, qualitative effects were experienced from the participants on having greater acceptance and understanding of their own body and more insight into their own health. This is supported by the following quotes:

> *"Life isn't perfect, and I don't have to be perfect. I must accept that my body looks the way it does and all the good it has done. My supervisor has taught me that"*
> - Nanna, 39 years old

> *"I have learned to know my hunger, and that I should not always feel overfull, and that I can easily "manage" with 80% satiety, this is a factor I will at least take with me after the end of the project"*
> - Kasper, 46 years old

According to a report from the Danish Health Authority, the results are supported by the fact that there is evidence that the best results are achieved by combining diet, physical activity and behavioral therapy, which was the case in Inspiration for a Healthier Life (SST, 2018).

The pilot projects have achieved the following short-term objectives:

- Indications of measurable health improvements through technological innovation and community-based models, including weight loss as well as increased physical movement and increased well-being
- It is shown how behavioral change can be achieved by reaching out to both broad populations and socially marginalized individuals
- Technological innovation, such as self-monitoring, have given citizens better control over their health and Community models have provided the necessary social support to sustain health improvements
- Learning about gamification for e.g. increased movement in children and young people through play and new communities have been obtained

SHORT-TERM GOALS PROVIDE LONG-TERM COMMITMENT AND TRANSFORMATION

In terms of health, the projects have created short-term improvements, especially in the form of weight loss and improved mental well-being. Technological innovation and community-based models have been instrumental in these outcomes.

Although the short project periods enabled rapid learning and adaptation, the results indicate that longer-term interventions are necessary to achieve sustainable health effects. Previous studies (Franz et al., 2020; Faulkner et al., 2014) support that even short-term interventions can generate significant health improvements, but sustainable outcomes require longer time horizons and sustained motivation. Such an approach can be strengthened using community-oriented conversation models, where language that promotes inclusion and community is used as a strategic method to improve participant engagement and long-term retention.

Figure 10 shows indications in health-related and economic potential values from six pilot projects that have available evaluations. It is emphasized that these are indications, as the pilot projects have been carried out at an early stage and with a focus on assessing whether the concept has potential for further studies with a view to creating health and economic potentials in the long term.

Challenges such as stigma and difficulties in recruiting marginalized groups may have limited some projects' outreach to the most vulnerable citizens. Nevertheless, overall observations indicate that multiple target groups were engaged across the pilot projects. One benefit of coordinating these pilots under a single steering committee is that, despite recruitment hurdles in individual projects, shared insights confirmed the importance of tailoring recruitment approaches for individuals with obesity according to the specific target group and context.

In particular, the projects indicate that short-term interventions can be used as the first step in a long-term strategy to better acquire learning and knowledge about what works and what needs to be focused on. The knowledge gained shows that indications of rapid health gains in areas such as obesity and mental well-being can create momentum for long-term health promotion. By combining these rapid interventions with a social agenda targeted at socially vulnerable citizens, the projects have created a framework for reducing health inequalities. This is supported by Marmot, who points out that social determinants play a significant role in creating health equity, and the pilot projects have demonstrated how these factors can be addressed through community-based approaches (Marmot, 2005). Prochaska et al. support this approach, where early successes can create the necessary motivation and confidence to sustain health behavior change. This means that interventions in short project periods not only create indications of health benefits, but act as a catalyst for longer-term outcomes if followed up with structural support, sustained follow-up and prioritization (Prochaska et al., 2008).

For citizens, these early indications can have a psychological significance, as they reinforce the belief that changes in lifestyle and health behaviors can lead to measurable improvements. However, it is crucial to underline that while the pilot projects have shown initial successes, sustained improvements require long-term support, which has not yet been validated in these projects. Therefore, some of the pilot projects in the established collaborations continue with additional funding to investigate the potentials more closely and obtain data to illustrate the sustainable effect of the interventions.

Figure 10: Overview of indications in the field of health and economics in the pilot projects. *Based on a methodological evaluation of more than 400 participants who completed the intervention

VISION: WE WANT TO CREATE INNOVATION THAT IMPROVES HEALTH, STRENGTHENS ECONOMIC GROWTH AND POSITIONS DENMARK AS AN INTERNATIONAL LIGHTHOUSE WITHIN LIFE SCIENCE.

PARTICIPATION ENGAGEMENT AND SATISFACTION

- increased satisfaction and motivation for participating in interventions
- increased motivation for lifestyle changes*

PHYSICAL ACTIVITY AND HEALTH

- improving physical activity*
- reduction in BMI and weight*
- increase in self-rated health
- improved sleep quality

MENTAL WELL-BEING AND MOTIVATION

- reduction of stress and loneliness
- improved quality of life*

HEALTH AND FINANCIAL SAVINGS

- financial savings and cost-effectiveness*
- reduction in sickness absence*

ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

IMPLEMENTATION OF THE PILOT PROJECTS AND SHORT-TERM GOALS

The Danish Lighthouse Life Science pilot projects are successful in core areas, in terms of health improvements and multi-stakeholder cooperation. This is consistent with existing theories of social support and behavioral change, which emphasize that social networks and communities play a key role in sustaining long-lasting health change (Putnam, 2000; Bandura, 2004). In particular, the eHOOD project shows that the use of gaming elements creates strong feelings of community among young people, resulting in both physical and mental health benefits. An analysis from the Danish Health Authority also indicates that group-based interventions result in sustainable weight loss (SST 2018). This underlines the value of the insights gained and the need for further research in the area. Marmot and Wilkinson also emphasize that strong communities can reduce barriers such as social isolation and stigma (Marmot and Wilkinson, 2005).

Most of the pilot projects were carried out as planned within the relatively short timeframe made available. However, challenges such as stigma, recruitment and the short project period have limited the overall effect, especially in relation to long-term behavioral changes and weight loss. The assessment of the nine pilot projects is divided into the following subjective parameters, which contribute to the degree of success achieved compared to the expected success based on the individual pilot projects:

- **Multi-stakeholder collaboration – 90%** completion: One of the most prominent successes in the projects was the establishment of a strong multi-stakeholder and multi-sector collaborations between public organizations, private companies and knowledge institutions. The projects managed to coordinate and utilize resources across organizations effectively, which has been an essential component in achieving the short-term goals. One example is the Healthy Weight pilot project, in which Falck, University College Copenhagen and Liquid Minds collaborated to develop and implement innovative health conversations in workplaces. This collaboration has enabled the implementation and adjustment of initiatives along the way, so that the project's results were optimized.
- **Health improvements – 85%** completion: Several projects have obtained indications of health improvements among participants, e.g. PULS in School showed an increase in pupils' physical activity to an average of 52 minutes of daily movement, which is an improvement compared to the current school reform's legal requirement of an average of 45 minutes of daily movement. In 2022, it was estimated that only 50% of Danish schools meet the legal requirement of 45 minutes. It is therefore relevant to support the implementation, as it has shown significant improvements in the daily movement. Likewise, Inspiration for a Healthier Life reported weight loss and improved mental well-being among participants. In the pilot project Movement, healthy weight and well-being, a digital learning course for overweight pregnant women, more than 100 pregnant women received help from the application for a healthier pregnancy. Participants experienced healthy weight gain during pregnancy and increased mental well-being. However, systematic follow-up in the long term whether these improvements can be sustained over time was not retained in the project's time frame.
- **Technological implementation – 70%** completion: With technological interventions such as Virtual Reality (VR) and Augmented reality (AR), several projects experienced technological challenges, especially in educational contexts. The Healthy Children pilot project aimed to promote movement among school students through VR and AR technologies, but technical issues and a lack of training of teachers hampered full integration. This illustrates the importance of technical support and user education, which is a prerequisite for the full realization of the technology's potential. Several of the pilot projects used technology to monitor movement and behavior. This contributes to objective measurements that can support the subjective experience of the participants. In the pilot project Health and well-being at work (STAR), the employees were monitored, among other things, to distribute the level of activity more, so that all employees had both hard

physical work and breaks. The case confirms the Danish National Research Centre for the Working Environment's research on the working environment, showing that the combination of objective and subjective measurement can be used to plan working hours more optimally.

- **Recruitment and stigma – 65%** completion: Recruiting participants proved to be a challenge in several projects. For example, the Healthy Weight project was designed to reduce stigma around obesity through open workplace health interviews, but even with this approach, recruitment levels were lower than expected. Research by Puhl and Heuer shows that stigma surrounding obesity is a well-known barrier to participation in health interventions, making it clear that further efforts are needed to overcome social barriers (Puhl and Heuer, 2010). Similarly, several of the pilot projects showed that it was difficult to retain participants, for example, only 54% of participants completed the Inspiration for a Healthier Life pilot project.

ABILITY OF PILOT PROJECTS TO CONTINUE

In addition to assessing the pilot projects in terms of implementation, they were also assessed in terms of their ability to continue and further develop their solutions. The assessment of success includes criteria such as: pilot projects having received additional funding to continue the project, solutions implemented after the project period and/or publication of results as scientific articles that can further support indications of the health improvements that have emerged. It is estimated that the pilot projects had a success rate of 89% in 2023. This is illustrated in Figure 11.

Future publications that support the need for further research to create evidence in the long term are relevant, as there is still a need to generate new and more knowledge in the field of prevention and early detection of obesity and mental health problems in children, adolescents and adults.

INVOLVEMENT OF USERS IN THE PILOT PROJECTS

Over 3300 users were involved in the nine pilot projects. This illustrates a significant activity and broad interest, despite the short project period. Data are presented in Figure 11.

However, involvement of partners in the pilot projects proved to be more challenging than expected due to both time constraints and the complex and taboo nature of the subject, namely obesity. To address these challenges, a demand-driven approach was chosen, where interventions were adapted to different contexts with a focus on testing them in new, non-traditional arenas such as workplaces. This flexible approach allowed for a broader framework to promote health and health equity across different sectors.

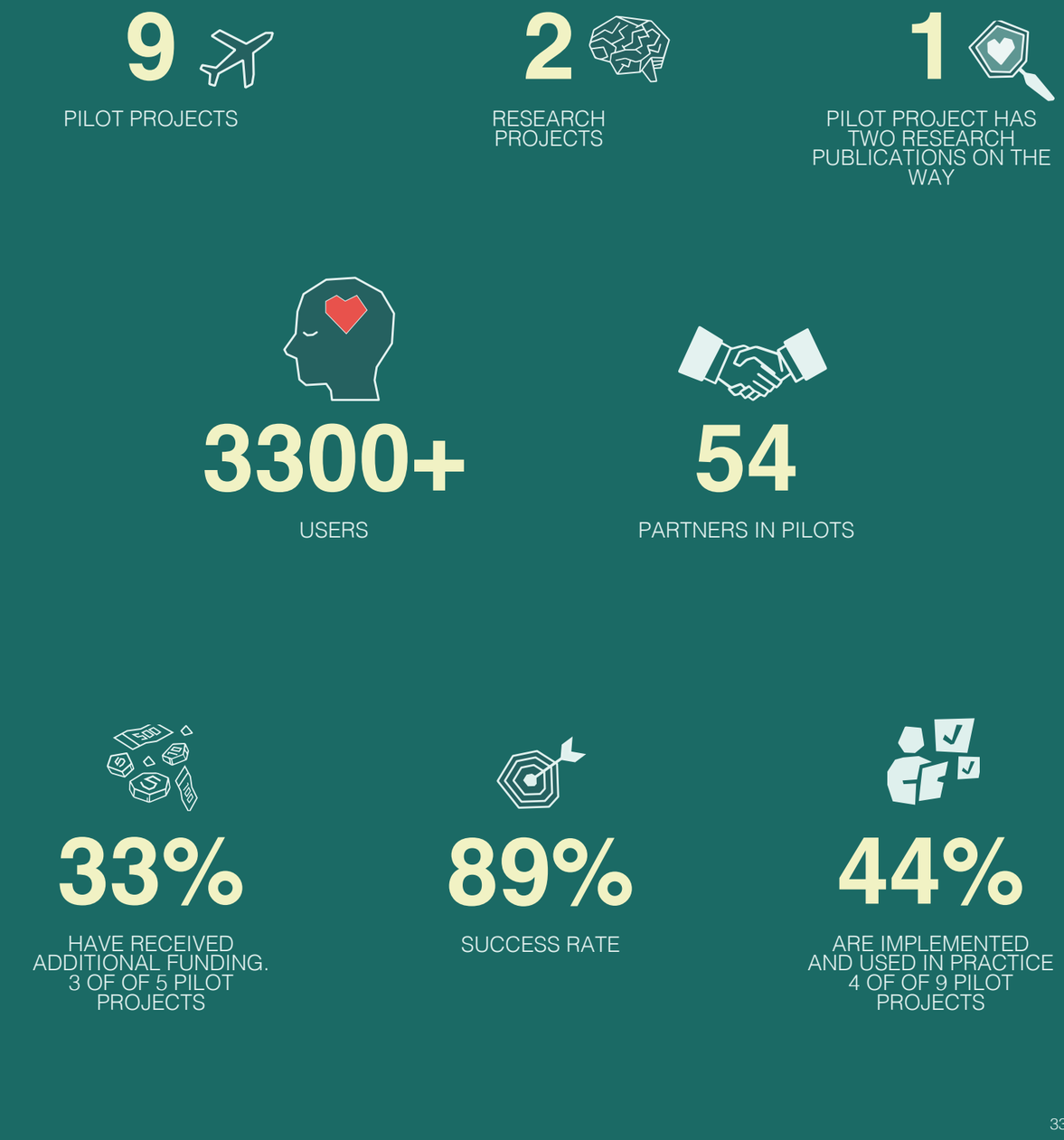
The users who have been involved in the pilot projects represent a broad target group of participants. Therefore, knowledge gathered across the projects has contributed with unique insights in relation to recruitment:

- the need to focus more on how interventions can be adapted to target groups that experience stigma,
- how technological and community-based solutions can be further developed to engage a wider part of the population
- to recognize the complexity of the challenge and the importance of using a participatory, exploratory and user-driven process before identifying and describing solutions. This is supported by the following quote:

"When we talk about obesity, we know that there are three times as many people with obesity among the low-educated compared to the highly educated. The social gradient is extremely important here. We need to go much deeper into the substance to understand what causes social inequality in health. It requires a better understanding of what factors cause some people to overeat."
- Private

ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

Figure 11: Overview of the indications of the success rate of the pilot projects in 2023



COLLABORATION AND MULTI-STAKEHOLDER EXPERIENCES – A MODEL FOR FUTURE PROJECTS

The collaboration encompassed a diverse spectrum of public, private and academic actors. A total of 54 partners from municipalities, regions and companies participated in the projects. Overall, this demonstrates the successful implementation of a holistic and demand-driven approach, which presents new opportunities for multi-stakeholder interventions.

The evaluations of the pilot projects highlights the strong collaboration as one of the key success factors creating a framework for efficient knowledge sharing and resource utilization. This cross-sectoral approach allowed for rapid learning and adjustment, allowing the pilots to adapt to unforeseen challenges along the way. These non-linear innovation processes are necessary to address complex health problems that cannot be solved by traditional linear models, which requires a long-term commitment that goes beyond concrete pilot projects. On the other hand, the pilot projects appear as short-term test beds for new health-promoting technologies and social models that have the potential to create lasting changes in health behavior and economic growth in the long term.

One of the most significant experiences from the pilot projects is how cross-sector collaborations have been a catalyst for innovation and learning. The projects have demonstrated that when solutions are developed and tested in a flexible collaborative environment, indications of health effects and growth potential can be obtained in a short time. This is supported by the following quote:

" Our participation (Just Human and University College Copenhagen) in the Lighthouse Life Science has been very important. We gathered a lot of valuable experience when we followed Langhøjskolen (specific public school). Based on this, we have received funding from the Danish Health Authority to spread PULS and support schools throughout Denmark in implementing more movement in the school day."

Some of the pilot projects are cross-sectorial in cooperation between SMEs and large private companies. These private-private collaborations show that small companies are strengthened through collaboration with the large companies, and conversely, smaller companies contribute with innovation to large companies. It has thus been demonstrated that the collaboration models used foster innovation and adaptability, support the growth potential of the SME segment.

The multi-stakeholder collaboration is a key component of Lighthouse Life Science's success and shows the potential for future health initiatives that strive to combine technology, research and health strategies in a coordinated effort. Klijn and Koppenjan describe how complex health challenges are best solved through network-based collaboration across sectors (Klijn & Koppenjan, 2016).

The collaboration is implemented from the top governance of the Lighthouse to the individual project. This underpins that different competencies contribute to a dynamic, mutual understanding of each other at every level, which makes probable that there is greater potential to achieve further with better results within the same time.

Relationships and trust are crucial for a good collaboration. It will therefore be relevant to create more knowledge about how these elements can be strengthened more consciously from the start of a collaboration to create greater potential for transformations and effects in the long term.

ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

COMMUNITIES AND STRUCTURAL APPROACHES AS DRIVERS OF HEALTH

One of the most significant insights from the Lighthouse Life Science pilot projects is the importance of shifting the focus from individual-oriented to community-based approaches. This structural innovation, which sees the community as a key engine for health promotion, represents a crucial development in health strategies. Rather than viewing health as an individual responsibility, the projects demonstrate how social networks, collective efforts, and institutional frameworks can create lasting and measurable improvements in both physical and mental health.

Traditionally, health interventions have often focused on changing behavior at the individual level. However, this approach has limited effect, as individual interventions rarely manage to overcome the social, cultural and structural barriers that affect health behavior. Instead, the pilot projects have shown that health promotion can be far more effective when it is organized around communities that support and motivate their members to change their habits.

Marmot and Wilkinson highlight that health inequalities can be reduced by focusing on the social settings in which people live, and the pilots confirmed this theory by showing how collective action can overcome some of the barriers that usually hinder health improvements. Instead of placing the responsibility for health solely on the individual, the projects supported the idea that health promotion should be rooted in communities that can motivate and support their members. This focus on communities as a driver of health promotion suggests that social determinants – such as working conditions, housing conditions, and social support – have a significant impact on individuals' health (Marmot and Wilkinson 2005). The pilot projects confirm that a collective effort where communities support the individual can be more effective than individual initiatives when it comes to creating lasting health improvements.

The pilot projects under the Lighthouse Life Science have been pioneers in promoting a structural approach to health, where health is seen as a shared responsibility that is promoted through both technological innovation and collective efforts. Across the evaluations, there are three themes for structural innovation that show a potential for value creation. The three themes are illustrated in Figure 6.

Figure 13 show the themes where adults in everyday life and people at work are put together into a theme: Everyday life and the workplace as an arena for health promotion.

Figure 13: Overview of three themes for structural innovation

1 **CHILDREN AND YOUNG PEOPLE IN SCHOOL AND AFTER-SCHOOL CARE**
Community and use of gaming/ technology can prevent overweight and poor well-being in children and young people

2 **ADULTS IN EVERYDAY LIFE**
Guidance via digital solutions support needs, competencies and resources to create healthy habits in adult citizens struggling with overweight

3 **PEOPLE AT WORK**
Focus on using the workspace as an arena for efforts to combat obesity and increased well-being





THEME 1: SCHOOL AND AFTER-SCHOOL CARE AS HEALTH-PROMOTING STRUCTURES

The pilot projects under the Lighthouse Life Science initiative illustrate the efficacy of structural approaches to health promotion, particularly within schools and after-school programs. These institutions play a pivotal role in children's lives, offering a unique opportunity to instill healthy habits through community-based strategies.

Gamification and Digital Learning

One notable project, "Healthy Children and Learning for Life via Gamification – VR and AR" integrated gamification into after-school care. By utilizing digital platforms, children engaged in physical activities through games, which increased their motivation and participation in health-promoting behaviors. This technological innovation created a playful learning environment, enhancing children's receptivity to health education.

Social Community and Collective Motivation

The social dynamic within schools further reinforced healthy behaviors. Children were not only motivated by digital games but also by their peers' support. This collective approach fostered a sense of belonging, making health a shared value among students. Competitions between classes, where students participated in various physical activities, exemplified how communal goals and peer support can drive health outcomes.

Healthy Weights

Integrating physical activity and health education into daily routines at schools and after-school programs has proven effective in obesity prevention. The social relationships formed around these activities encouraged children to maintain healthy habits. Structural factors, such as the supportive environment provided by schools, play a critical role in promoting long-term health improvements.

In summary, schools and after-school programs are ideal settings for health promotion. By embedding health initiatives into the daily lives of children through play, learning, and social support, these pilot projects have demonstrated the potential for lasting behavioral changes. This approach aligns with existing literature, which underscores the importance of social and structural determinants in health promotion and the reduction of health inequalities (Marmot, 2005; Putnam, 2000).

THEMES 2 AND 3: EVERYDAY LIFE AND WORKPLACES AS ARENAS FOR HEALTH PROMOTION

The workplace occupies a central role in the daily lives of many individuals, making it an ideal setting for health-promoting interventions.

Workplace Health Initiatives

The pilot projects have demonstrated that workplaces implementing targeted health initiatives could enhance employees' physical health, mental well-being, and overall working environment. By integrating collegial support, organizational commitment, and structural health measures, workplaces can create inclusive and supportive environments that foster both physical and mental health. This supports the notion that health is not merely an individual responsibility but a collective goal, where the workplace plays a pivotal role in promoting sustainable well-being and health.

Collective Health Goals

It is shown that shifting the focus from individual to collective health goals engages the entire workplace in a unified health agenda. This collective commitment creates a supportive atmosphere where employees encourage each other through shared responsibility and collegial support.

Social Ties and Networks

According to Putnam's theory of social capital, social ties and networks are crucial for individuals aiming to maintain healthy habits (Putnam, 2000).. In the projects employees reported increased motivation due to collegial support. For example, in the "Healthy Weight in the Workplace" initiative, participants highlighted how the social community and colleague support helped them sustain behavioral changes. This social dynamic reduced the stigma associated with health challenges and fostered an environment where employees felt more confident and motivated.

ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

Language Use and Stigma

The pilot projects demonstrate that changing the language used in discussions about health can significantly reduce stigma. Obesity, often surrounded by negative stereotypes, can defer individuals from engaging in health initiatives. By adopting a new communication model that focused on quality of life and personal values rather than weight loss as a success criterion, the approach becomes more inclusive. This aligns with Puhl and Heuer's research, which highlights that stigma can hinder participation in weight loss programs, but an inclusive, value-based approach can enhance engagement and outcomes (Puhl & Heuer, 2010).

By shifting the conversation focus to personal values, the new model promoted openness and involvement, thereby increasing the likelihood of active participation in health programs. This model is crucial for future health strategies aimed at reducing stigma and fostering inclusive health promotion environments. According to Marmot and Wilkinson, addressing social determinants such as peer support and working conditions is vital for sustainable health improvements (Marmot & Wilkinson, 2005). The new communication model supported a values-based approach that facilitated behavioral change through an inclusive and supportive atmosphere.

The Role of Organizational Support in Health Promotion

The pilot projects underscore the significant role of management and organizational structures in promoting workplace health. Organizations that actively integrated health programs and allocated time and resources for employee participation saw better outcomes. Initiatives such as flexible working hours for physical activity and "walk-and-talk" meetings, which combined fresh air with exercise, were effective. Organizational commitment was essential for embedding health promotion within daily routines. Management support provided a framework that enabled employees to prioritize their health. These examples illustrate how organizational engagement can drive the creation of a health-centric workplace culture.

For sustained results, long-term health strategies that integrate health into the corporate culture are necessary. The pilot projects show that enduring commitment from both employees and management is key to lasting behavioral change. Organizations that embed health into their core values achieve not only short-term health improvements but also a deep-seated cultural transformation.

The projects also highlighted the importance of mental well-being alongside physical health. Collective health initiatives and the resulting social connections reduced isolation and enhanced overall well-being. Employees felt more motivated, less stigmatized, and more integrated into a supportive community. This emphasizes the broader understanding of health as a social issue, where relational aspects within the workplace are crucial. By focusing on collective health goals, workplaces can play a pivotal role in reducing stigma and fostering sustainable health improvements.

Recruitment and target groups

Despite the successes, technological barriers and low recruitment have limited the full potential of several projects. Nevertheless, the overall insight across the projects has shown that different target groups were still represented. This indicates the need for a deeper understanding of the specific needs and contexts of the target audience. For example, children can be motivated through play and learning, while employees in workplaces respond better to a communicative approach, where obesity is not just referred to as an individual problem, but rather as a common challenge that can be handled together. This can be supported using conversation models such as the appreciative conversation that creates safe and open relationships, both in professional and private contexts (Conversations in organizations, Hansen-Skovmoes and Rosenkvist, 2017). The conversation model emphasizes the importance of meaningful and value-creating conversations that not only acknowledge successes, but also problems and challenges in a constructive framework.

The low participation were especially among those with weight-related or mental challenges, who often experience stigma associated with health interventions (Puhl & Heuer, 2010). This shows a broader problem in health interventions, where stigma and social barriers prevent participation and retention. For example, the projects Healthy Weight at the Workplace and Inspiration for a Healthier Life showed positive health effects among

the participants who chose to participate, but the number of participants was lower than expected and several did not complete the interventions. This points to the need for a deeper understanding of the different target groups' contexts and special needs, which can help to increase motivation and readiness for behavioral change.

It is therefore crucial that recruitment strategies are adapted to the participants' life stage and specific motivations to improve both recruitment and retention in the interventions. For example, adult participants in the workplace can be motivated by focusing on the social dimension of health, where language use and communication are centered on inclusion and community, as opposed to a more individually oriented approach, which can be isolating or stigmatizing.

To ensure long-term effects, future interventions should focus on the integration of health strategies into participants' daily lives as well as the maintenance of motivation over time. This can be supported by conversation techniques such as the solution-focused conversation. The correlation between health strategies, language use, and social capital, as highlighted by Putnam, emphasizes that relationships and social ties increase the chances of success of health-related initiatives (Putnam, 2000).

Technological innovation as a catalyst for community and behavioral change

An important dimension of structural innovation in the pilot projects is the use of technology to facilitate and strengthen communities. Technological innovation was an integral part of the pilot projects and was used to support communities and motivate participants to maintain healthy behavioral patterns. Technological solutions such as gamification through play and learning, self-monitoring via applications or digital health platforms were used to create new forms of communities where participants could share their progress, receive feedback and feel supported across geographical distances.

The pilots showes that technology also has the potential to break geographical and social barriers and reach populations that would otherwise struggle to engage in health promotion initiatives. This integration of technology and community illustrates a hybrid approach in which technology acts as a catalyst for human interaction, rather than as a replacement for it. Mazzucato argues that technological innovation can be a catalyst for systemic change, especially when it is used to improve access to resources and strengthen communities (Mazzucato 2013). This was confirmed in the pilot projects, where the technology helped to create behavioral changes and improvements in health that would otherwise have been difficult to achieve through traditional, individual interventions alone. The technology gave participants control over their health and at the same time access to a supportive community, which amplified the effect of the interventions.

A concrete example of the role of technology in the projects was the use of applications where participants could follow their daily steps, diet and other health-related data combined with the possibility of guidance. These applications strengthened the sense of community and support by combining several elements.

ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark



Image from the project 'Healthy Children and Learning for Life Through Gamification - VR and AR'. Partners involved are Gladsaxe Municipality, Khora, and University of Copenhagen.



Image from the project 'Movement, Healthy Weight, and Wellbeing – A Digital Learning Course for Overweight Pregnant Women'. Partners are Center of Clinical Research and Prevention, Raketfilm (FELT), Emento, and North Zealand Hospital

CONCLUSION: TECHNOLOGY, COMMUNITY AND MULTI-STAKEHOLDER COLLABORATION

The pilot projects in Lighthouse Life Science present indications of a great potential for future health strategies based on an integrated approach to health promotion. The pilots have shown that the combination of technological solutions, community-based models and multi-stakeholder collaboration can generate significant improvements in both physical and mental health in a short period of time. Weight loss increased physical activity, and improved mental well-being have been achieved by leveraging innovative technologies and creating collective health communities. This approach has not only resulted in measurable health improvements, but has also reduced stigma, which is one of the main barriers to effective participation in health interventions.

The pilot projects have managed to demonstrate that health should not be considered as an individual responsibility, but as a collective goal. By shifting the focus from individual-oriented to community-based approaches, the projects have emphasized the importance of social networks and support in sustaining long-lasting behavioral change. In both schools and workplaces, community-oriented initiatives have helped to create a culture where health becomes part of everyday life. The social aspect, combined with technological innovation such as gamification and digital platforms, has proven particularly effective in engaging participants of different age groups and socio-economic backgrounds, promoting inclusion.

A key aspect is the necessity of reducing stigma. The pilot projects have shown that when inclusive language is used that focuses on quality of life rather than weight loss as a success criterion, participants are more likely to feel motivated and engaged. This creates an open and safe framework where health can be articulated without fear of social exclusion or marginalization. The results therefore support the importance of creating supportive environments where the participants' health goals are supported by both technological solutions and communities.

For future health strategies, the evaluation points to the need of integrating health promotion into the structures that form part of people's daily lives, such as schools, workplaces and communities. The short-term interventions have been shown to be catalysts for health improvements, but to ensure lasting results, it is necessary to establish longer-term interventions that are supported by continuous follow-up, systematic data collection and management support. Technological innovation should continue to play a key role in these processes, but it must be accompanied by strategies aimed at reducing stigma and creating inclusive health initiatives that manage to engage marginalized groups.

The pilot projects have thus created a strong framework for how future health strategies can be structured. They have demonstrated that technological and community-based approaches have the potential to be scaled up and integrated into national health strategies.

The pilot projects have shown that health promotion must be an integral part of everyday life, supported by communities and technology. This is the way forward to create lasting improvements in both physical, mental and social health.

The multi-stakeholder collaboration is a key component of Lighthouse Life Science's success and shows the potential for future health initiatives that strive to combine technology, research and health strategies in a coordinated effort. Relationships and trust are crucial for a good collaboration. It will therefore be relevant to investigate the significance more closely and make a hypothesis about whether collaborations with a high degree of trust and a stronger relationship between the partners have a greater potential for success - and possibly better results at the same time?

By strengthening collaboration between the health sector, workplaces and schools, as well as leveraging technology to promote collective efforts, it will be possible to reduce health inequalities and improve well-being across society. To realize the full potential, long-term sustainability and systematic follow-up are necessary.

In the long term, it will be crucial to build sustainable collaborative models that connect the health sector with other sectors of society to ensure that health promotion initiatives are firmly anchored in society and lead to sustained improvements in both physical and mental health.

The future of Lighthouse Life Science lies in expanding technological solutions, reducing stigma, improving recruitment of vulnerable groups and creating robust models for data collection. This will ensure that the projects have not only short-term, but also long-term effects.

PERSPECTIVES: FUTURE HEALTH STRATEGIES

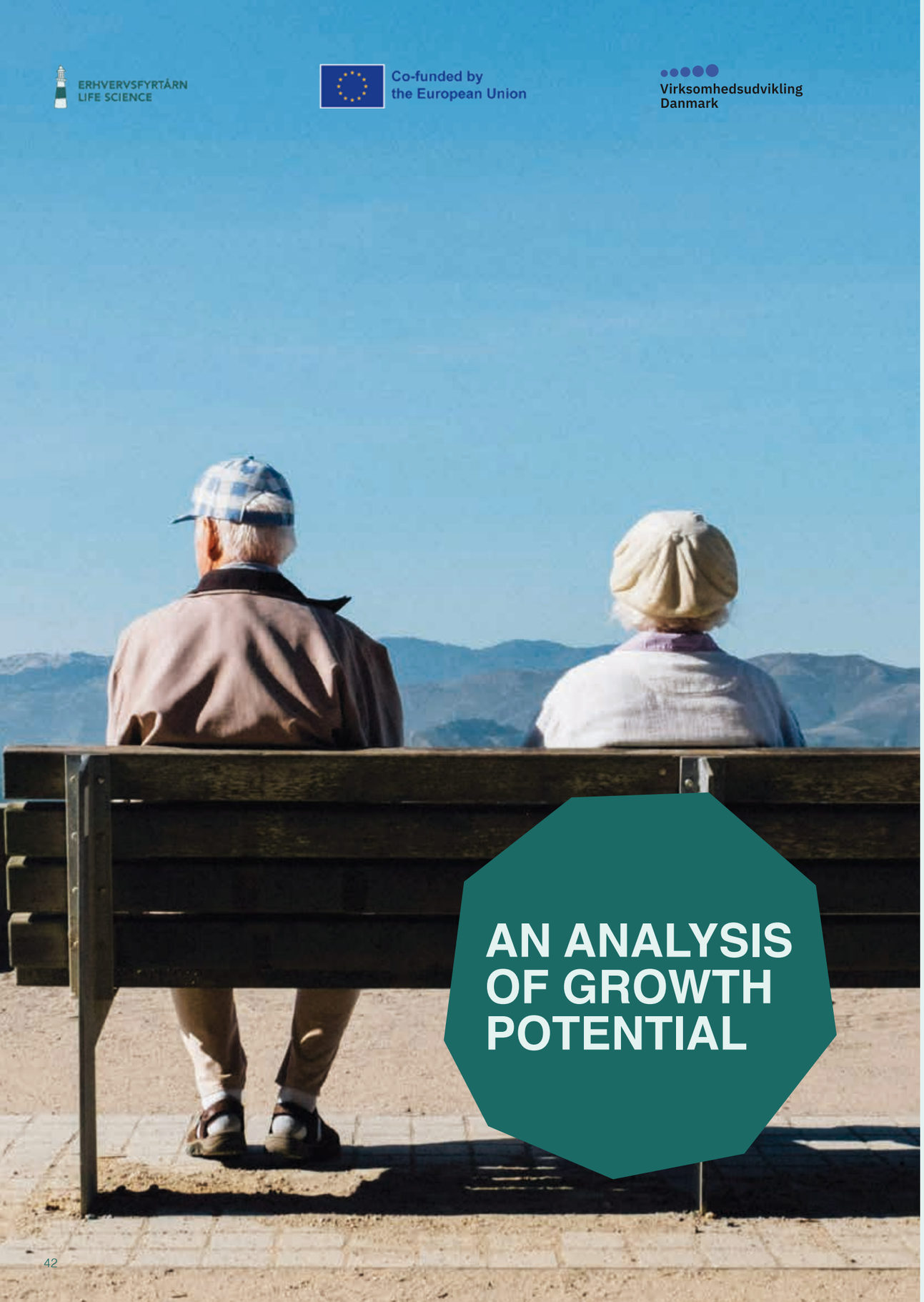
In a future policy perspective, it is crucial to anchor health promotion strategies in everyday structures, such as schools, workplaces and communities. Recent research indicates that social determinants such as education, income, and housing situation have a crucial impact on health outcomes (Braveman et al., 2017). A policy that integrates health as a structural component will therefore have a better chance of producing lasting results. Cooperation between the health sector, schools and workplaces should therefore be strengthened, with health promotion becoming an integral part of these arenas, as highlighted in the pilot projects. Marmot and Wilkinson (2005) emphasize that multi-stakeholder approaches that address social determinants are essential to increase health equity.

The technological dimension of health promotion should also continue to be prioritized, as digital innovation has proven to be an effective way to engage diverse populations and promote healthy habits (Firth et al., 2019). However, to ensure that technological solutions are scalable and accessible to everyone, there is a need for political support and regulation. Mazzucato highlights that the state plays an important role as a catalyst for innovation, and this role should be exploited to promote the use of health technologies in future health strategies (Mazzucato, 2013).

The stigma of overweight and mental health is found to be a significant barrier in several of the pilot projects, this is also supported by recent research. Pescosolido and Martin highlight that stigma can be reduced through social networks and supportive communities (Pescosolido and Martin, 2015), which supports the value-based approach used in the projects. This indicates that future interventions should focus on creating inclusive health strategies, where work is done to change language use and promote dialogue about health in a safe environment. Such an approach can both reduce stigma and promote participation among the most vulnerable groups in society.

Long-term political commitment is essential to ensure that the positive results of the pilot projects can be maintained and expanded. As Powell et al. point out, cross-sectoral collaborations are an effective way to foster innovation and create sustainable health solutions (Powell et al., 2017). Future health strategies should therefore prioritize cross-sectoral cooperation to ensure that health promotion initiatives become an integral part of Danish society. This will not only improve health but also reduce the financial costs of chronic diseases such as obesity and mental health problems.





AN ANALYSIS OF GROWTH POTENTIAL

INTRODUCTION

Small and medium-sized enterprises (SMEs) form the backbone of many national economies and are often the driving force of innovation, especially in sectors such as health technology. Lighthouse Life Science acts as a catalyst for economic growth and innovation in Danish SMEs by creating a collaborative environment with multi stakeholders like PPPs. By applying recent research into PPPs, innovation capital and internationalization, we can shed light on how the combined activities in the Lighthouse has created a solid platform for long-term economic growth.

The Lighthouse Life Science pilot projects (see section 2 for further information about the pilot projects) highlight how SMEs have achieved economic growth through their participation in the first phase 2022 – 2023. The available data show concrete results that can be put into perspective in relation to the future economic growth potential of SMEs. In addition, the growth platform has played a special role in creating success. The growth platform (see section 1 for further information about the Growth Platform) has supported and guided SMEs in PPPs throughout the innovation process from design, development and testing of solutions in clinical practice to market maturation and introduction to export markets. This has accelerated the process of maturing solutions for certification, implementation, sales, and scaling. Likewise, there have been opportunities to apply for risk-willing funds for development projects in the field of health equity.

This report is structured through a brief presentation of the financing of Lighthouse Life Science, followed by a description of the indications of economic growth potential in the Danish companies that have participated in pilot projects, development projects and activities through the Lighthouse. Finally, a conclusion on the importance for future economic growth finalizes the report.

FINANCING OF LIGHTHOUSE LIFE SCIENCE

The total funding for the two EU projects, focused on healthy weight and on mental health, is outlined below in accordance with the current guidelines for projects under the Regional and Social Fund and the Danish Decentralized Business Support Funds.

- **Lighthouse Life Science – Healthy Weight** (2022 – 2023)
    - Total public Funding: EUR 10.893.357
    - Total co-financing primary in terms of hours: EUR 2.241.128
- **Lighthouse Life Science – Mental Health** (Fall 2023 – 2026)
    - Total public funding: EUR 9.626.567
    - Total co-financing primary in terms of hours: EUR 5.594.185

The EUR 2.2 mill raised in co-financing illustrates a high level of engagement, as the participating partners have not received 100% funding in relation to their time spent on projects and activities. Figure 14, illustrates the total co-financing (disbursement of funds and co-financing in the form of hours) distributed among enterprises, state, regional, municipal and public-like organizations. Data is valid for Lighthouse Life Science in connection with reporting at the end of 2023.

Budget Distribution Among Companies and Organizations

Figure 14 demonstrates that various stakeholders have invested resources and time into the project. This co-financing reflects their commitment and engagement, as they have a vested interest in the project's success. By contributing their time and resources, these partners are not only supporting the project's goals but also sharing the responsibility and risks associated with it. Their involvement underscores the project's success in securing funds post-COVID-19, aimed at stimulating growth in businesses.

Furthermore, the data suggests that PPPs like Lighthouse Life Science are instrumental in securing risk capital for SMEs. This supports Mazzucato's

Figure 14: Distribution of the total budget among companies and organizations. Data is from Lighthouse Life Science – Healthy Weight, where the first grant was completed at the end of 2023

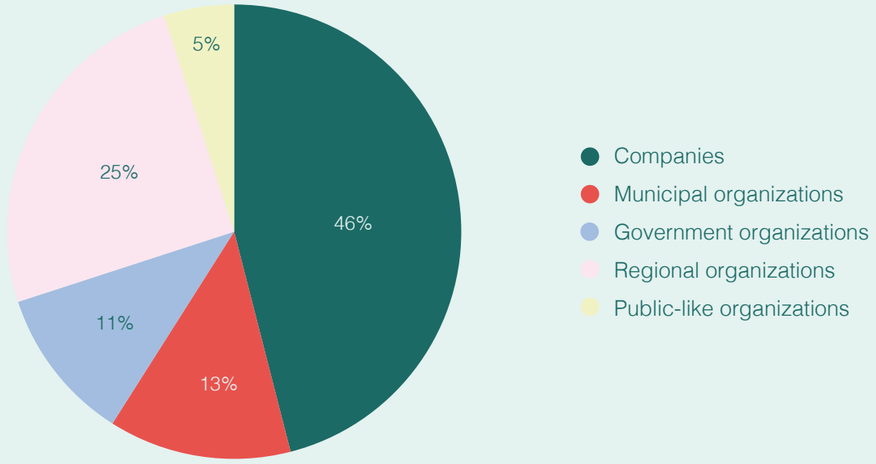


Table 1: Table showing the number and degree of fulfillment of impact targets related to data in connection with reporting to the Danish Business Authority at the end of 2023

Indicators for growth measured in the period 2022 - 2023	Realized indicators for growth	Expected indicators for growth	Performance in percentage
Number of enterprises in pilot projects and PPP projects	54	25	216
Number of companies participating in activities on the Growth Platform	315	100	315
Number of collaborations (pilot projects and PPP projects)	42	16	262
Number of new jobs	26	35	74
Number of companies attracted	3	3	100
Number of enterprise openings*	3	4	75

*The new companies have not yet established themselves with a VAT-number.

ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

assertion that public support for innovation is vital for mitigating risks and advancing technological development in SMEs (Mazzucato, 2013). The financing models employed in the pilot projects have generated economic growth opportunities that extend beyond the initial project timeframe, enabling SMEs to expand both nationally and internationally.

FINANCING MODELS AND VENTURE CAPITAL

The evaluation of Lighthouse Life Science highlights the critical role of risk capital in fostering the growth of SMEs, particularly within the health innovation sector. Traditional financing methods often fall short, making it challenging for SMEs to progress from the concept phase to market readiness. PPPs, such as those exemplified by Lighthouse Life Science, provide indispensable support, allowing SMEs to secure additional funding and extend their reach internationally. In 2023, 33% of the pilot projects successfully obtained additional financing, underscoring the effectiveness of these partnerships in mitigating risks and attracting investments.

Studies by Mazzucato (2013) and Block et al. (2021) lend credence to the idea that public innovation funding acts as a catalyst, enabling SMEs to break into international markets. For instance, one of the pilot projects companies, Emento's successful establishment of a subsidiary in Germany, along with securing contracts with German university hospitals, demonstrates the scalability and export potential. These findings emphasize the crucial interplay between public and private support in driving innovation and market expansion for SMEs. Furthermore, Clausen et al. (2019) have shown that public innovation support can generate a "leverage effect", facilitating the international growth of SMEs. By receiving funding, SMEs can invest in their products and services, thereby enabling them to penetrate new markets. This theory is validated by the interest shown in the SMEs' concepts developed under Lighthouse Life Science.

INDICATIONS OF GROWTH POTENTIAL

Lighthouse Life Science has been implemented with outcomes exceeding several of the impact goals for the period from 2022 to 2023. Table 1 shows the impact targets, comparing the expected and realized values, along with a profit percentage that indicates the degree of fulfillment of each effect during this period.

The correlation between activities and outcomes confirms the relevance and efficacy of the pilot-projects. The data highlights the success of the growth platform, which has seen 315 participating companies engage in activities. This underscores the importance of offering guidance and support to meet company growth needs.

However, the target for new job creation has not been fully met. Feedback indicates that job creation is influenced by multiple factors, suggesting a need for better alignment between innovation activities and company growth phases. Future phases of Lighthouse Life Science will prioritize closer alignment between activities and growth phases, alongside more frequent and systematic data collection to assess intervention success accurately.

ACCELERATING DEVELOPMENT PROCESSES FOR SMES

The Lighthouse Life Science has collected data from the companies related to the dividends achieved. This data was collected at the end of the first grant at the end of 2023. Questionnaires on the companies' perceived benefits of participation were distributed to the 54 project partners. Of these, 43 companies (81%) responded, and the data are illustrated in Figure 15.

Data from 43 of the 54 project partners (81%) was collected in connection with the final report to the Danish Business Authority at the end of 2023.

Compared to the other seven Danish Business Lighthouses (COWI 2024), a significantly higher percentage of companies participating in the Lighthouse Life Science reported benefits in testing and market validation of ideas/products/services, as well as in extended collaboration and

Figure 15: Overview of the companies' perceived benefits of participating in Lighthouse Life Science

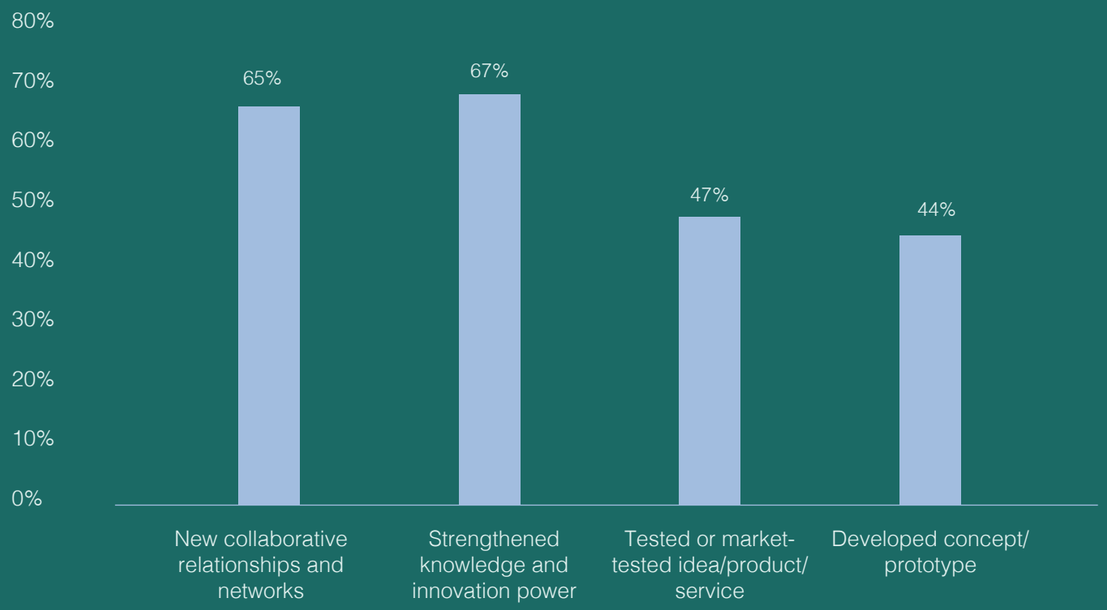
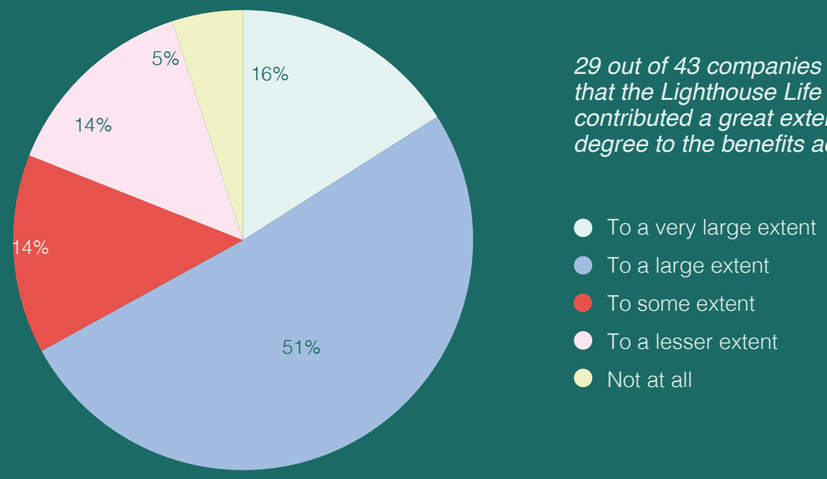


Figure 16: Overview of the companies' assessment of the extent to which Lighthouse Life Science has contributed to perceived benefits (Source: Data is from the report as of 31.12.2023, Lighthouse Life Science)



29 out of 43 companies (67%) believe that the Lighthouse Life Science has contributed a great extent or to very high degree to the benefits achieved

ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

networking with other actors and sectors. This is aligned with the goal of initiating projects at an early stage (feasibility study and pilot phase) that test a concept/prototype in interaction with users, the public sector, knowledge institutions, other SMEs, and large companies. Recruitment of new employees is also high compared to other Business Lighthouses, consistent with the fact that more personnel have been employed in connection with the projects. This likely results from innovation and testing funds allotted to pilot projects in Lighthouse Life Science.

None of the companies reported strengthening their green transition, which reflects the lower prioritization of this area among SMEs in the healthcare sector. It is imperative to focus on how companies can better document and prioritize green initiatives. Future efforts should emphasize competence development and measurement tools for optimizations. Other parameters indicate that companies generally experience similar benefits across the seven other Business Lighthouses in Denmark.

Figure 16 illustrates that 67% of the companies experienced that the Lighthouse Life Science was important to a very large (16%) or large (51%) extent for the company's development and growth.

The data are supported by an SME in the quote below:

> *"Participation in the Lighthouse Life Science has been very important because new areas of application for the company are highlighted and established with really good evaluation, which we can then use for further documentation for potential new customers who demand evidence to move forward with our solution."*
> - Emento

In summary, the data indicates substantial benefits for participating SMEs, notably in collaboration, innovation power and go to market. This success underscores the importance of continued support and resources for innovation and development within the Lighthouse Life Science framework.

MATURITY OF THE PROJECTS

Development in the maturity of the pilot projects has also been assessed in the cross-disciplinary evaluation conducted by the Centre for Clinical Research and Prevention (Larsen & Mossman, 2023). It is clear from Figure 17 that the SMEs have experienced a significant acceleration in their development processes because of participation in the Lighthouse.

The analysis revealed that at the pilot-project's inception, 73% of participating SMEs were in the initial idea development phase, with a mere 7% in the final implementation stage. By the conclusion of the initiative, 40% of these SMEs had advanced to the user testing phase. This notable progression within a relatively short timeframe underscored the effectiveness of the pilot projects in expediting the transition from conceptualization to testing.

Such acceleration highlights the role of Lighthouse Life Science as a significant catalyst for innovation within the SME sector. The structured support provided through these projects enabled SMEs to streamline their technological and product development processes, thereby shortening the time to market. This is particularly vital for SMEs, which often face resource constraints that hinder their capacity for extensive development and testing of new health solutions.

These findings align with theoretical perspectives, such as those posited by Mazzucato, suggesting that PPPs are instrumental in accelerating technological innovation within small businesses (Mazzucato, 2013). Empirical data from the pilot projects affirm that with the appropriate backing and innovation ecosystem, SMEs can overcome developmental hurdles and achieve critical growth milestones more efficiently, which is essential in the dynamic healthcare sector.

Further details on the specific pilot projects are available on the Lighthouse Life Science website https://erhvervsfyrtårnlifescience.dk/pilot-projects/ and in section two "Evaluation of the pilot projects in Lighthouse Life Science 2022 to 2023".

Figure 17: The growth model used in Lighthouse Life Science

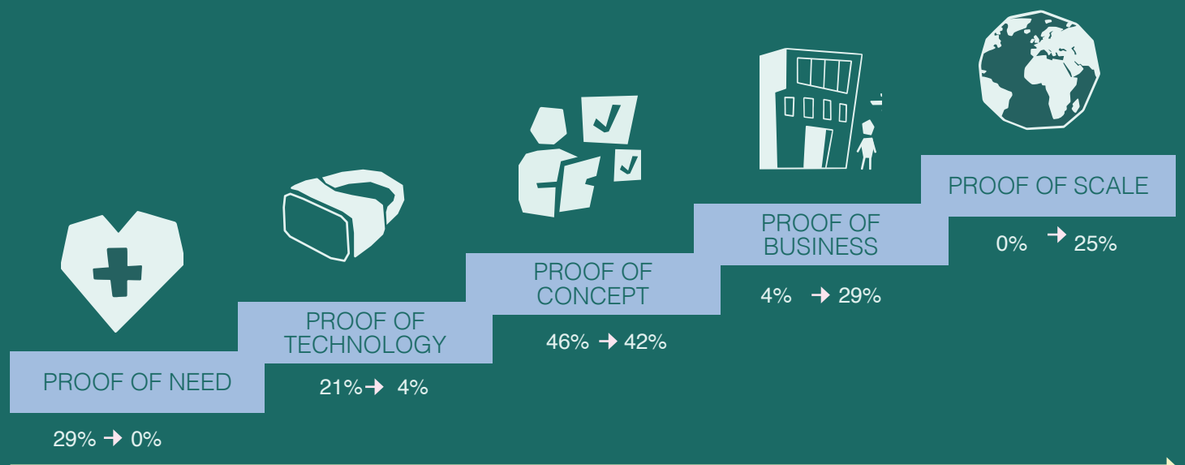
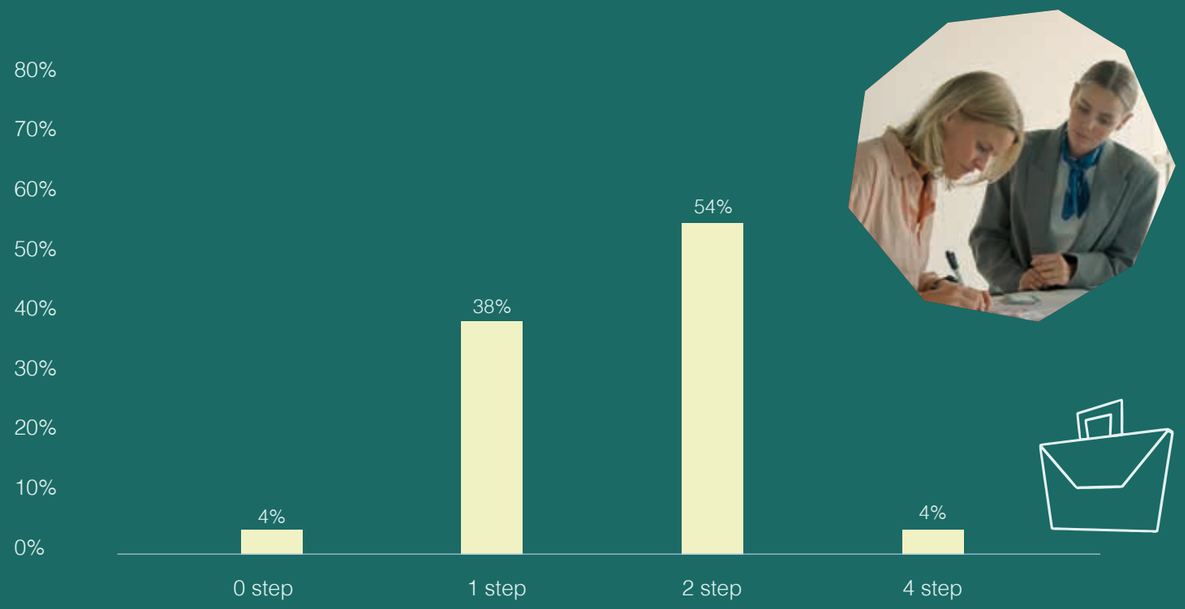


Figure 18: Number of steps projects have moved on the Growth Model



ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

THE GROWTH MODEL IN LIGHTHOUSE LIFE SCIENCE

The Lighthouse Life Science growth model is an iterative evaluation framework, see Figure 17. From 2022 to 2023, the Lighthouse Life Science growth model engaged 54 companies across pilot and pooled projects and evaluated their journey.

This framework is created to enable SMEs to develop without following every step of the process and to tailor their journey to meet their specific needs and accelerate their development. The model spans phases from Proof of Need to Proof of Scale, ensuring that each stage is carefully assessed both as a checkpoint and as an opportunity for ongoing improvement. By integrating feedback loops, the growth model promotes sustainable health solutions addressing societal challenges, while allowing SMEs to refine their strategies in response to insights gathered throughout development in collaboration with the 'problem owner'.

As a model, it establishes clear, measurable benchmarks to evaluate SME progress and success throughout these stages. This includes key performance indicators like time-to-market, certification achievement, growth in market share, and export readiness.

- **Proof of Need: Identifying core health challenges**
  The first stage, Proof of Need, is essential for validating the demand for a solution, ensuring it addresses significant, unmet health needs. This phase relies on data and formative evaluation to assess gaps in healthcare and verify that the proposed solution aligns with market demand and willingness to invest. In the Lighthouse Life Science context, this stage pinpoints specific areas where innovation can make a real difference.
- **Proof of Technology: Verifying technical feasibility**
  In the Proof of Technology phase, projects develop and test prototypes, with formative evaluation assessing technical viability in controlled environments. Here, potential technical challenges are identified and addressed early on, reducing future risks. Summative evaluation is used to confirm that the technology can perform as intended, laying a solid foundation for real-world application.
- **Proof of Concept: Testing practical application**
  The Proof of Concept phase brings the solution into real-world contexts, where data and formative evaluation assesses its adaptability and efficacy across diverse conditions in practice. This stage includes pilot testing and data analysis to ensure the solution effectively addresses the identified need and what it requires to be used in daily operations, with summative evaluation confirming its impact. Lighthouse Life Science leverages its collaborative, multi-stakeholder network to support rigorous testing, ensuring the solution's relevance and readiness for broader application.
- **Proof of Business: Establishing market potential**
  The focus shifts in the Proof of Business phase to commercial viability, using formative evaluation to develop and refine business models, funding strategies, and revenue channels. Summative evaluation then verifies market readiness, ensuring the solution's potential for financial sustainability while continuing to address health challenges in a broader context than the proof of concept at one organization. This stage empowers SMEs to build competitive, market-ready solutions.
- **Proof of Scale: Preparing for national and international scaling**
  The Proof of Scale phase refines established viability for broader deployment, spanning domestic and international markets. Formative evaluation identifies how solutions can adapt to different healthcare infrastructures, larger user populations, and new regulatory frameworks. Summative evaluation confirms the solution's performance at scale, ensuring consistent quality and measurable health outcomes across diverse contexts. Lighthouse Life Science supports SMEs in navigating these challenges by providing guidance on regulatory compliance, forging strategic partnerships, and crafting go-to-market strategies. By reaching the Proof of Scale, SMEs demonstrate their capacity to deliver impactful health technologies to new regions, fueling both public health improvements

and commercial growth.

One specific example is the company Emento, which through the implementation of the pilot project: Movement, healthy weight and well-being – a digital learning course for overweight pregnant women, increased two steps in the growth model, from Proof of Concept to Proof of Scale. Emento´s growth stages are shown in Figure 19.

Emento is scaled both nationally and internationally. Nationally, the project has been scaled to a larger target group, and a researcher has been hired to gather knowledge with a focus on evidence. Internationally, Emento has set up a subsidiary in Germany and obtained their first contract with a German university hospital. That the pilot project was carried out in collaboration with a knowledge institution responsible for the evaluation is one of the reasons for Emento's potential for growth.

Another SME, SENS Innovation, participated in a pilot project and has scaled their solution. SENS Innovation experienced the participation in the Lighthouse Life Science as an accelerator in their development.

"We also greatly appreciate the trust and great help the lighthouse project has been in getting our business idea and product development on the wings. The projects under the auspices of the lighthouse have both created concrete increased sales of existing products and a foundation for the development of a new innovative product with great expectations for the future."
- SENS Innovation

Figure 19: The growth development of the company, Emento, shows a development from Proof of Concept to Proof of Scale in connection with participating in the Lighthouse Life Science.



March 2023
Digital counseling for pregnant women and mothers, and test in a new hospital.

September 2024
Established a subsidiary company in Germany. Obtained the first German contracts, including a contract with a University Hospital.

PROOF OF NEED
PROOF OF TECHNOLOGY
PROOF OF CONCEPT
PROOF OF BUSINESS
PROOF OF SCALE

ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

PUBLIC-PRIVATE PARTNERSHIPS AS CATALYST FOR INNOVATION

An essential element of the success of the Lighthouse Life Science initiative is its ability to act as a catalyst for innovation through PPPs. These collaborations enabled the exchange of knowledge, resources, and technology between public entities, such as universities, municipalities, hospitals, and SMEs, which frequently lack access to such resources. In recent years, PPPs have proven to be a valuable mechanism for fostering innovation, particularly in the health sector. Chesbrough's concept of open innovation underscores the necessity of cross-sector collaboration to create a dynamic innovation ecosystem where knowledge and resources are shared freely (Chesbrough, 2020).

SMEs have highlighted that collaboration with public actors provided them with unique insights and access to target groups and data that would usually be difficult to obtain. One SME representative noted:

"It's great to get such a deep look into practice. It's quite unique and difficult to get as a private company normally."
- Company

This access allowed SMEs to test and validate their products in real-world contexts, which is critical in the healthcare sector, where evidence-based solutions are required before new products can be brought to market. Knowledge institutions working with SMEs observed that collaboration was characterized by faster decision-making processes, increasing the flexibility and agility of innovation processes. A researcher observed:

"We work with those who sit at the top of these companies and who also help to do the work, which is a completely different way of working."
- Knowledge institution

Public actors noted that collaboration with private companies provided them with technical expertise they lacked. This is particularly important for developing digital solutions, where private entities have a technological edge. A public representative stated:

"Having private companies on board means that we can deliver a product of higher quality than if we had to start from scratch."
- Public institution

This demonstrates how private sector expertise raised the technical standard of projects, making public solutions more efficient and functional — showing how collaboration between public and private entities can create superior solutions than working individually. On the other hand, quicker adaptation and decision-making often challenge larger public sector organizations with more complex decision-making processes which makes it necessary to continuously adjust expectations.

Hagedoorn et al. (2018) emphasize that PPPs enhance innovation speed and process efficiency, particularly in high-tech sectors. This is highly relevant for healthcare, where the development time for new technologies is lengthy due to strict regulations and testing requirements. The Lighthouse Life Science initiative allowed SMEs to shorten this timeframe by integrating testing and market readiness early in the development process, crucial for competing in national and international markets. For instance, the growth platform offered courses on understanding the public sector, medical device regulations (MDR), and continuous optimization of valuation through interaction with users and decision-makers both public and private. A MDR guide was developed to assist companies and public actors throughout the development process of a solution classified as a medical device. www.rigshospitalet.dk/innovation/ydelser/

The mission of the Lighthouse Life Science initiative was from the start to enhance multi-sector and multi stakeholder collaboration. This was operationalized through a collaborative model connecting SMEs with larger public entities via innovation projects where new health technologies and solutions were tested in practice. Klijn and Koppenjans highlight the effectiveness of close collaboration throughout

the innovation process (Klijn and Koppenjans, 2016). 54 SMEs participated in pilot and PPPs from 2022 to 2023, achieving faster market entry than traditional methods.

However, despite the scaling potential for the companies, none of the projects reached the implementation phase by the end of the evaluation, highlighting the need for more time dedicated to implementation and a long-term plan for testing and scaling prototypes. This requires extended financing models to support promising projects that show potential for both health and economic growth.

STRATEGIC PARTNERSHIPS AND THE ROLE OF SMES IN HEALTH

An important perspective is the significance of strategic partnerships between SMEs and larger companies. Data from the Lighthouse demonstrate that such collaborations are crucial for the development of SMEs and their ability to test solutions on a larger scale. For example, larger companies provide SMEs with access to markets, networks, and resources that will otherwise be difficult to obtain.

Collaboration between small and large companies emerge as a significant growth factor in modern innovation ecosystems. According to Ritala et al. (2021), SMEs often act as innovation engines, but their success depends on their integration into larger innovation networks, where large companies serve as anchors. Within Lighthouse Life Science, this dynamic was evident. SMEs collaborating with larger companies are able to test their solutions more extensively and leverage the market networks of these larger entities. Brown and Mason (2019) support this by highlighting that strategic partnerships offer not only funding but also essential knowledge and expertise, accelerating the innovation cycle.

For SMEs within the Lighthouse, such partnerships were invaluable. They helped overcome challenges in product development and internationalization by providing access to the expertise and customer bases of larger companies. This collaboration created a fertile environment for SME growth, allowing them to achieve new developmental milestones, and enabling SMEs to test solutions in larger markets and with broader user groups. This bolstered product development and increased the chances of successful implementation.

The cooperation models demonstrate how SMEs can act as innovation engines in the healthcare sector when integrated into the networks and infrastructure of larger companies. Supported by Klijn and Koppenjans (2016) emphasizing the importance of cross-sectoral collaborations in fostering innovation.

INTERNATIONALIZATION AND EXPORT POTENTIAL

Internationalization has been identified as a critical element for growth, particularly in the healthcare sector, where solutions have global applicability. SMEs often face significant challenges in accessing international markets, primarily due to limited resources and networks. Johanson and Vahlne (1977) and Clausen, Korneliussen, and Madsen (2019) argue that companies are hesitant to internationalize because of substantial investment needs and high uncertainty. Lighthouse Life Science initiative addressed this issue by offering courses on the growth platform and pilot projects that prepared Danish SMEs for export—an essential pathway to sustainable growth.

Through PPPs, such as those facilitated by Lighthouse Life Science, participating SMEs are shown to be better positioned to navigate these challenges. For example, pilot projects like Movement, healthy weight and well-being – a digital learning course for overweight pregnant women, successfully tested and market-readied technologies with global relevance. SMEs from these projects, including Liva Healthcare and Emento, have made notable progress in the UK and German markets, respectively. Mazzucato (2013) highlights that PPPs can create export opportunities by positioning new technologies and solutions within international markets. This is particularly pertinent in Denmark, where the ambition to be a global leader in health innovation necessitates the capacity for SMEs to scale their solutions internationally.

ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

CONCLUSION – IMPORTANCE FOR FUTURE GROWTH

The Lighthouse Life Science initiative has demonstrated significant growth potential for SMEs through their participation in pilot projects. The accelerated development, increased access to finance, and successful cooperation models have provided evidence that the participating SMEs are well-positioned for future growth. While these findings stem from the participating SMEs, they also demonstrate the broader influence SMEs enterprises can exert in shaping healthcare innovation. By leveraging new partnerships, resources, and insights, SMEs are primed to address pressing health challenges on both domestic and international fronts. In doing so, they not only pave the way for their own long-term success but also contribute to the advancement of global health solutions.

The gathered data indicate that Lighthouse Life Science has acted as a catalyst for growth and innovation among Danish SMEs in the healthcare sector. Strategic PPPs, venture capital, and innovation platforms notably have enhanced the innovation capacity of the SMEs and their market maturation process. This is corroborated by both quantitative and qualitative data, showing substantial progress in the development and testing of new technologies and solutions.

Participation in the Lighthouse Life Science pilot projects have accelerated the innovation cycle, facilitating a rapid transition from Proof of Concept to Proof of Scale. Approximately 33% of the pilot projects secured additional funding directly because of their participation in the Lighthouse, supporting theories that public innovation support acts as a lever for further public and private investment.

The financing model of Lighthouse Life Science, combining venture capital and public funds, reduced the financial risks associated with health innovation and facilitated faster market maturation. Notably, SMEs such as Emento and SENS Innovation have secured international contracts and established foreign subsidiaries, highlighting the initiative's impact on both national and international levels.

Multi stakeholder collaboration between public and private entities has emerged as a critical factor in developing and testing new solutions as PPPs provided SMEs with vital resources, including clinical testing environments, user data, and direct feedback from end-users, enabling faster decision-making and agile innovation.

However, challenges remain in realizing the full growth potential. For instance, the creation of new jobs did not meet the expected targets, suggesting that a longer implementation period would be necessary to fully translate innovation projects into economic growth and employment. Future initiatives should focus on systematic and structured data collection, to accurately estimate long-term growth potential.

Overall, the analysis concludes that Lighthouse Life Science has created significant growth opportunities for SMEs in the healthcare sector by fostering innovation through PPPs, venture capital, and a focused innovation environment. The approach of integrating national health innovation ambitions with concrete development and export strategies strengthen Denmark's position as an international player and leader in health innovation and life science. Continued focus on implementation and data-driven decision-making will be crucial to realizing the full growth potential in the coming years.

ERHVERVSFYRTÅRN LIFE SCIENCE

Co-funded by the European Union

Virksomhedsudvikling Danmark

PERSPECTIVES: CATALYST FOR GLOBAL HEALTH INNOVATION

Lighthouse Life Science represents a step forward for Danish SMEs in the health technology sector. The insights gained from this project can serve as a future model for innovation-driven growth initiatives across various sectors. The project demonstrates that a targeted approach combining financial support with strategic partnerships and accelerated innovation processes can yield substantial benefits for SMEs, which can positively impact the Danish economy.

This development aligns with international research trends emphasizing the need for agile and multi stakeholder collaboration models to address challenges in complex, technology-intensive sectors such as health. Recent studies highlight the crucial role of public institutions in sharing risk and fostering innovation, particularly at early development stages (Mazzucato, 2013, Chesbrough, 2020). Such collaboration is essential for creating dynamic innovation ecosystems where companies of varying sizes can collectively develop technological solutions with broad societal benefits. The experiences from Lighthouse Life Science can thus not only guide future innovation projects in Denmark but also inspire similar initiatives globally.

Internationally, Denmark can leverage its strengths in health technology, and Lighthouse Life Science can help consolidate its position as a key player in future health innovation. To sustain this momentum, it is essential to expand the results through continued investment in research, development, and internationalization, paving the way for new export opportunities and global partnerships.

This perspective underscores the necessity of future expansion of multi stakeholder and cross sectoral partnerships as strategic tools for addressing complex societal challenges and fostering sustained growth and innovation. Lighthouse Life Science exemplifies how such partnerships can facilitate a symbiosis between technological development, economic growth, and societal value.



Image on the next page is from the project ‘Movement, Healthy Weight, and Wellbeing – A Digital Learning Course for Overweight Pregnant Women’.

REFERENCES

Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. Journal of Public Administration Research and Theory, 18(4), 543-571.

Bandura, A. (2004). Health Promotion by Social Cognitive Means. Health Education & Behavior.

Block, J. H., Fisch, C., & Sandner, P. (2021). Venture Capital, Governmental Agencies, and Innovation: A Study on the Influence of Public Funding on Private Venture Capital Investments. Journal of Business Venturing.

Braveman, P., Egerter, S., & Williams, D. R. (2017). The social determinants of health: Coming of age. Annual Review of Public Health.

Brown, R., & Mason, C. (2019). Regenerative Entrepreneurship: Lessons from Scotland's High-Growth Firms. Entrepreneurship & Regional Development.

Chesbrough, H. W. (2020). Open Innovation Results: Going Beyond the Hype and Getting Down to Business. Oxford University Press.

Clausen, T. H., Korneliussen, T., & Madsen, E. L. (2019). Public Innovation Support and International Market Growth: A Study of Small Firms in the High-Technology Sector. Journal of International Entrepreneurship.

Co-designing a weight-neutral health intervention in Denmark: a protocol paper

COWI. (2024, March). Evaluering af erhvervsfyrtårne. https://erhvervsfyrtårnlifescience.dk/wp-content/uploads/2024/03/Evaluering-af-erhvervsfyrtaarne-COWI-1.pdf

Faulkner G, Taylor A, Munro K, et al. (2021). Physical Activity and Mental Health: A Short-term Intervention for Overweight Adults. Mental Health and Physical Activity.

Firth, J., Torous, J., Nicholas, J., Carney, R., Rosenbaum, S., & Sarris, J. (2019). The efficacy of digital health interventions for mental health in youth: A systematic review and meta-analysis of randomized controlled trials. Journal of the American Academy of Child & Adolescent Psychiatry.

Franz MJ, VanWormer JJ, Crain AL, et al. (2007) Behavioral Interventions for Obesity: A Systematic Review. Journal of the Academy of Nutrition and Dietetics.

Hagedoorn, J., Lokshin, B., & Zobel, A.-K. (2018). The Role of Public-Private Partnerships in Innovation. Research Policy.

Hansen-Skovmoes og Rosenkvist. Samtaler i organisationer. 2017. JMIR Public Health and Surveillance. 03/10/2024:59455 DOI: 10.2196/59455

Johanson, J., & Vahlne, J.-E. (1977). The Internationalization Process of the Firm: A Model of Knowledge Development and Increasing Foreign Market Commitments. Journal of International Business Studies.

Klijn, E. H., & Koppenjan, J. F. M. (2016). Governance networks in the public sector: A network approach to public problem solving, policy making and service delivery. Routledge.

ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

Larsen, A. K., & Mossman, F. (2023, June). Cross-cutting evaluation of Erhvervsfyrtårn Life Science - Healthy Weight 2022-2023. Center for Klinisk Forskning og Forebyggelse. Udarbejdet for Danish Life Science Cluster (DLSC). https://erhvervsfyrtårnlifescience.dk/wp-content/uploads/2023/10/Tvaergaaende-evaluering-af-Erhvervsfyrtaarn-Life-Science-Sund-Vaegt.pdf

Lin, N. (2001). Social capital: A theory of social structure and action. Cambridge University Press.

Lundvall, B.-Å. (1992). National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning. Pinter Publishers.

Marmot, M., & Wilkinson, R. (2005). Social Determinants of Health. Oxford University Press.

Mazzucato, M. (2013). The Entrepreneurial State: Debunking Public vs. Private Sector Myths. Anthem Press.

Meyer L, Køster-Rasmussen R, Christiansen AKL, Heitmann BL, Vesterlund GK, Larsen SC, Specht IO, Þorsteinsdóttir F, Steinbo EKF, Appel CL, Reventlow S, Waldorff FB, Sandholdt CT Co-designing a weight-neutral health intervention in Denmark: a protocol paper JMIR Public Health and Surveillance. 03/10/2024:59455 DOI: 10.2196/59455

Pescosolido, B. A., & Martin, J. K. (2015). The stigma complex. Annual Review of Sociology.

Powell, K., Thurston, M., & Bloyce, D. (2017). Local public health delivery: A case study in policy implementation. Health Policy, 121(6).

Prochaska, J. O., Redding, C. A., & Evers, K. E. (2008). The transtheoretical model and stages of change. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), Health behavior and health education: Theory, research, and practice (4th ed., pp. 97-121). Jossey-Bass.

Puhl, R. M., & Heuer, C. A. (2010). Obesity stigma: Important considerations for public health. American Journal of Public Health, 100(6), 1019-1028.

Putnam, R. D. (2000). Bowling Alone: The Collapse and Revival of American Community. Simon & Schuster.

Ritala, P., Husted, K., Olander, H., & Michailova, S. (2021). Innovation in Knowledge-Intensive Business Services: The Role of Collaborations and Networks. Journal of Business Research.

Photos from Unsplash/Pexels
Amina Filkins (p. 1, 7)
Sweet Life (p. 13, 14)
Nataliya Vaitkevich (p. 14)
SHVETS production (p. 23)
Matt Bennett (p. 42)



ERHVERVSFYRTÅRN
LIFE SCIENCE

Co-funded by
the European Union

Virksomhedsudvikling
Danmark



FOUNDATION OF THE DANISH LIGHTHOUSE LIFE SCIENCE

- Building Blocks of the Danish Lighthouse Model: Structures, Roles, and Processes

Nordic Wellbeing Academy

Nordic Healthcare Group

Danish Life Science Cluster

Lundbeck

novo nordisk

ERHVERVSFYRTÅRN LIFE SCIENCE

Co-funded by the European Union

Virksomhedsudvikling Danmark

FOUNDATION OF THE LIGHTHOUSE LIFE SCIENCE

Building Blocks of the Danish Lighthouse Model: Structures, Roles, and Processes

Copyright © 2025

Danish Life Science Cluster
Life Science Huset
Lersø Parkallé 101
2100 København Ø

ACKNOWLEDGMENTS
Acknowledge the following experts for sharing creative ideas and their critical thinking.

Consortium
The report has been created by a consortium under the auspices of the Danish Life Science Cluster. The consortium enabled experts from Novo Nordisk A/S, Lundbeck A/S, Nordic Healthcare Group, Nordic Wellbeing Academy and Danish Life Science Cluster to set out a framework of multi collaboration with an international group of KPI Domain experts.

KPI Domains
In creating the KPI Model, the KPI selection, and the suggested data gathering mechanisms, Danish Life Science Cluster and Nordic Wellbeing Academy co-developed the ESGH Domains with Kristoffer Hvidsteen and Annika Rømer (Prescient, Environment), Danny Graham (Engage Nova Scotia, Social), Michele Calabro (EUREGHA, Governance), and Kristine Sørensen (Global Health Literacy Academy, Health & Wellbeing).

Additional input
In the development of the report, we would also like to acknowledge.

Maria Kristiansen, *Copenhagen University*

Thomas Alslev Christensen, *Novo Nordisk Foundation*

Ambassador Carolyn Bennet, *Canadian Embassy*

Ottar Ness and Dina von Heimburg, *Norwegian University of Science and Technology*

Thomas Allvin and Magda Chlebus, *European Federation of Pharmaceutical Industries and Associations*

Hans Christian Kongsted, *Copenhagen Business School*

Christian Bason, *Transformation Collective*

Peter Bentsen, *Center for Clinical Research and Prevention Capital Region*

The report development process was co-funded by Novo Nordisk, Lundbeck, Nordic Healthcare Group, and Danish Life Science Cluster.

The main content of reports 1-3 has been produced for the Danish Life Science Cluster coordinated by Lars Münter (NWA), Trine Søby Christensen and Krestian Borring (DLSC).

The content for this Report 2 has been primarily produced by a team of writers, coordinators, and researchers from Nordic Healthcare Group.

Nordic Healthcare Group
Rune Bang Puggaard
Jesper Luthmann
Anne Holm Jørring
Astrid Marie Mortensen

Additional information and the report is available at www.erhvervsfyrtaarnlifescience.dk



CONTENT

EXECUTIVE SUMMARY: 3
Building a Lighthouse Life Science Model 3
Trust and Relationships 3
Moving Forward with Impact 3

Acknowledgments 5
Consortium 5
KPI Domains 5
Additional input 6

Introduction: 7
Creating a Lighthouse Life Science Elsewhere 7
Strategic Long-Term Partnerships 8
Organizational Support and Competence Development 8
Trust and Relationships 8
Motivation and Commitment 8
User-Centered Processes 8
Facilitation of Knowledge and Roles 8
Communication and Dissemination 9
KPIs to Showcase Impact 9

Danish lighthouse case: 10
1. Change in the transformative character of innovations 11
2. Being A Model for Transformative Partnerships 11

How to build a lighthouse? 13
1. Assembly Phase 13
2. Build-Up Phase 13
3. Trust Building Phase 13
4.1 Short Term Results 14
4.2 Long-Term Results and Scaling 14
5. Implementation with Impact 14
Future Impact KPIs 15

Who are the Danish partners? 16
Growth platform 16

Analysis of the implications of the future-fit kpi model 18
Process and Visualization 18

References 20

EXECUTIVE SUMMARY

FOUNDATION OF THE DANISH LIGHTHOUSE LIFE SCIENCE

Denmark's life science sector serves as a cornerstone of economic growth, driving innovation and societal impact through a unique collaboration between public and private entities. The sector is focused not just on financial success, but on creating long-lasting improvements in health and well-being, addressing critical global challenges like aging populations, chronic diseases, and sustainability. Through breakthroughs in biotechnology, pharmaceuticals, and medical technology, Denmark positions itself as a leader in developing solutions that enhance quality of life both nationally and internationally.

A key strength of this sector lies in the collaboration between public institutions, private companies, and research organizations. Built on trust and shared goals, this collaborative approach ensures that new technologies and treatments are efficiently brought to market. However, there remains a need for deeper engagement in user-centered approaches and the development of new business models that support investments and procurement, ensuring that these innovative solutions are scalable and sustainable.

Building a Lighthouse Life Science Model

To replicate Denmark's successful Lighthouse model, several key elements are required:

1. Public-Private Partnerships (PPP): Strong partnerships that foster collaboration across sectors, integrating expertise from government, private industry, and research institutions.

2. Inclusive Financing Models: Blended public and private funding models that enable both large corporations and smaller enterprises to benefit, alongside clear fund allocation guidelines to sustain innovation.

3. Organizational Support:
Centralized structures to reduce administrative burdens, paired with competence development to ensure long-term value creation.

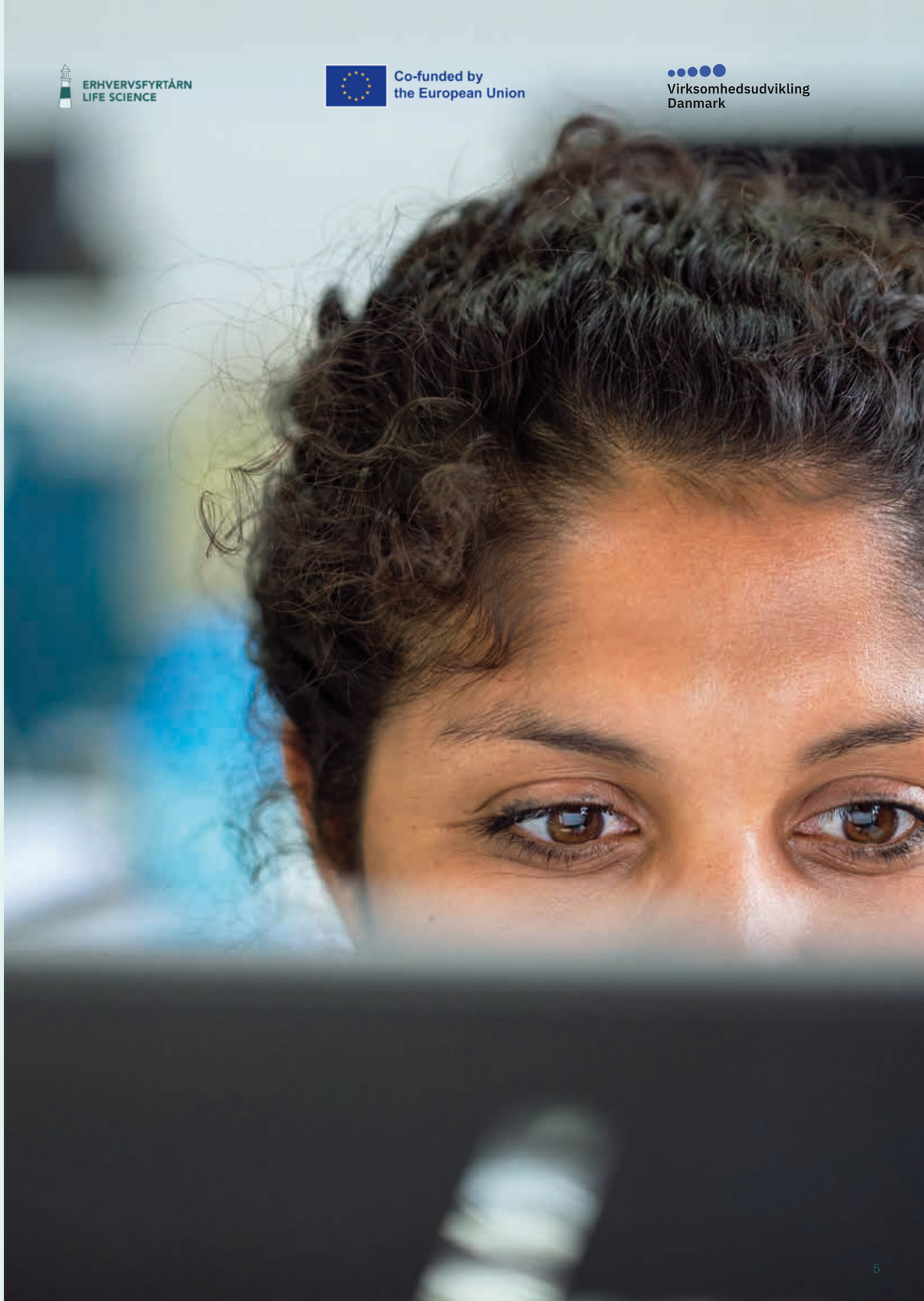
4. Strategic Long-Term Partnerships:
Partnerships that are resilient, capable of tackling complex societal challenges, and focused on continuous learning and capacity building.

Trust and Relationships
Trust is at the core of successful partnerships. It fosters an environment of open communication, risk-sharing, and collaboration. Confidence in each other's abilities—competency trust—is crucial for openness and cooperation, helping to develop innovative solutions and ensuring effective partnerships. Strong relationships across sectors drive collaboration, create opportunities for knowledge sharing, and are essential for delivering value-driven solutions.

Moving Forward with Impact
Key to Denmark's approach is the KPI model, designed to track the success of both economic and social systems. It measures progress based on contributions to human and environmental well-being, rather than traditional economic growth alone. With this model in place, Denmark's Lighthouse Life Science aims to promote national scaling, global exports, and growth, while positioning Denmark as an international leader in life science.

By focusing on inclusive financing, long-term partnerships, and a foundation of trust, the Danish life science sector continues to provide a model for driving economic growth and societal transformation, with lessons that can be applied globally.

ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark





FOUNDATION OF THE DANISH LIGHTHOUSE LIFE SCIENCE

INTRODUCTION

FOUNDATION OF THE DANISH LIGHTHOUSE LIFE SCIENCE

Denmark's life science sector is a driving force for economic growth, innovation, and societal transformation. At the core of this sector is the unique collaboration between public and private entities, working together not only for economic success but also to achieve long-lasting improvements in health and well-being. By fostering partnerships and emphasizing innovation, Denmark is positioned to drive meaningful change both nationally and internationally.

Innovation in Denmark's life science sector is not just about financial success. It's focused on making significant contributions to health through breakthroughs in biotechnology, pharmaceuticals, and medical technology. The sector addresses critical global challenges, including aging populations, chronic diseases, and sustainability. Denmark's life science industry is about developing solutions that improve quality of life and benefit society as a whole.

The collaboration between public institutions, private companies, and research organizations is central to this industry's success. Built on trust, this partnership encourages stakeholders to share resources and expertise to create a brighter future. This collaborative approach ensures that new technologies and treatments are not only developed but are efficiently brought to market and implemented on a large scale.

While Denmark's life science cluster has already achieved many milestones, there is still a need to focus on implementation and scaling. The sector must engage more deeply in user-centered approaches and develop new business models to support investments and procurement, ensuring that innovative solutions are both scalable and sustainable.

CREATING A LIGHTHOUSE LIFE SCIENCE ELSEWHERE

For any country to build a successful lighthouse model like Denmark's, several key elements must be in place. First, strong public-private partnerships are essential to foster collaboration across sectors, integrating expertise from government, private companies, and research institutions. Trust between stakeholders, built through transparency and shared goals, provides the foundation for effective collaboration.

Second, inclusive financing models are necessary to sustain innovation. These models should blend public and private funding, enabling both large corporations and smaller enterprises to contribute to and benefit from the partnership. Additionally, clear guidelines for fund allocation help reduce financial bottlenecks, ensuring that projects continue without interruptions.

Organizational support is equally important. Centralized structures that reduce administrative burdens and facilitate communication between partners can streamline processes, promoting efficiency and engagement. This must be paired with competence development to ensure that all stakeholders have the skills needed to drive long-term value creation.

Lastly, a country must prioritize long-term strategic partnerships that are resilient enough to tackle complex societal challenges. These partnerships should focus on continuous learning, capacity building, and addressing multifaceted issues such as health inequality. By ensuring that these elements are in place, any country can lay the groundwork for a sustainable and impactful lighthouse model that benefits both the economy and society.



Strategic Long-Term Partnerships

Long-term partnerships are critical to tackling complex challenges like social inequality in health. Evaluations of Lighthouse Life Science highlight that addressing these issues requires continuous learning and capacity building within partnerships. Sustainable solutions depend on effective collaboration, financing models, organizational support, and a strong foundation of trust and communication.

Financing Models for Sustainability

One of the biggest challenges facing strategic partnerships is financing. Inclusive financing models that blend public and private funds are essential to ensure the participation of both small and large organizations. Clear guidelines on fund allocation are necessary to address liquidity challenges and guarantee the continuity of projects, covering administrative and operational costs so that all parties can fully contribute and benefit.

Organizational Support and Competence Development

Organizational support is key to effective partnerships. Establishing a central partnership center can streamline administrative tasks and communication, reducing the burden on participants and promoting motivation. Competence development is equally important, ensuring long-term value creation.

Trust and Relationships

Trust is the cornerstone of successful partnerships. It fosters an environment of open communication, risk-sharing, and collaboration. Competency trust—confidence in each other's abilities—is crucial for openness and cooperation, helping to develop innovative solutions. Strong relationships across sectors drive collaboration, create opportunities for knowledge sharing, and are essential for effective, value-driven solutions.

Motivation and Commitment

Maintaining motivation and commitment is vital to partnership success. A shared narrative helps partners understand their roles and contributions, fostering active engagement. Continuous adaptation and alignment of expectations ensure that solutions reflect the complexity of the real world. Collaboration thrives when partners understand and respect each other's different goals and incentives.

User-Centered Processes

Involving users in development processes ensures that solutions are relevant and address real needs. A participatory process, which reflects the complexity of the problem and incorporates diverse perspectives, is essential for creating effective solutions.

Facilitation of Knowledge and Roles

Clear roles and responsibilities, strong relationships, and the utilization of resources are necessary for synergies and innovative solutions. A focus on cultural and organizational adaptation is essential to remove barriers to collaboration.

Communication and Dissemination

Effective communication is key to ensuring transparency and engagement. Regular updates and transparent decision-making processes ensure that all parties have insight into and influence on the direction of the project. Both internal and external communication of the partnership's goals and results are essential for visibility and support.
Formulating a Clear Narrative

A shared narrative is essential to align efforts within the partnership. It requires time for dialogue around common goals and values, strengthening collaboration, and fostering ownership of the partnership's objectives.

Strategic partnerships are critical for addressing complex societal challenges. Inclusive financing models, organizational support, trust, motivation, and effective communication are necessary for these partnerships to develop innovative and sustainable solutions. The LLS experiences highlight that partnerships require a flexible approach, clear goals, and a strong shared vision.

KPIs to Showcase Impact

Creating a KPI model is crucial for measuring the impact of partnerships and this model should support a holistic perspective and systematic data collection to track progress across projects and the whole model. Future projects should focus on building evidence through systematic knowledge gathering that supports national strategies and political priorities, addressing challenges such as mental health through prevention, early detection, and treatment.

The development of a KPI model that measures the success of both economic and social systems based on their contribution to human and environmental well-being is a key step forward. Lighthouse Life Science is uniquely positioned across various ministries, with the vision of improving health and well-being while promoting economic growth, national scaling, and global exports. A more holistic, methodical evaluation design based on uniform KPIs will strengthen Denmark's growth and facilitate learning within a global community in life science.

DANISH LIGHTHOUSE CASE:

APPROACH TO TRANSFORMATIVE INNOVATION AND PARTNERSHIPS

There are several strategic considerations related to the governance and collaboration choices behind the Life Science Lighthouse. These considerations are familiar to those who have worked in multi-stakeholder collaborative networks and are also well-documented in various management and social science research papers. In the following section, we highlight some of the central strategic considerations found in the literature. For the construct of governance, these considerations include:

• The **Network governance approach** (Klijn & Koppenjan, 2016): Network governance is crucial for OPI partnerships as it fosters collaboration across diverse stakeholders. By building and managing relationships, this approach ensures that various perspectives and resources are integrated, enhancing the collective ability to innovate and solve complex public issues and "wicked problems."



- **Social capital and infrastructure**

  (Nan Lin,1999): Building social capital through weak ties is vital for expanding the reach and effectiveness of OPI partnerships. These connections bring new ideas and resources from outside the immediate network, fostering creativity and innovation that can be harnessed within the partnership.**Political stakeholder management and compromise** (Sørensen & Torfing, 2008): Effective stakeholder management is essential for maintaining balance within OPI partnerships. By managing political interests and ensuring compromises, this approach aligns diverse goals, fostering a cooperative environment where joint innovation efforts can thrive.

These governance approaches influence the choice of methods for specific activities and projects. Given the mission to find new and innovative solutions to current “wicked problems”—challenges that require as-yet-unknown approaches—the organization must maintain a high level of agility and support multi-modal interactions. These needs have also been described in previous studies:

- **Loosely coupled organizations** (Weick, 1976): Loosely coupled organizations provide the flexibility needed for OPI partnerships to innovate. By allowing independent units to experiment, this approach supports the integration of diverse innovations, strengthening the overall partnership and its capacity to respond to challenges.
- **Iterative approach to innovation** (Ansell & Gash, 2008): The iterative approach supports the adaptability and resilience of OPI partnerships. By emphasizing continuous learning and experimentation, allows partnerships to evolve, ensuring that innovation is responsive to changing needs and contexts. This ongoing engagement strengthens trust and flexibility within the partnership, enabling it to better withstand and adapt to challenges.
- **Handling complexity through relationships** (Stacey, 2007): Managing complexity through relationships is key to the success of OPI partnerships. By focusing on the dynamic and emergent nature of relationships, this approach enables partnerships to navigate uncertainty and drive innovation in non-linear, adaptive ways.

In preparing to build the Lighthouse Life Science, there were also two fundamental observations about the evolution of innovative practices and how organizations can support this process.



1. Klijn, E. H., & Koppenjan, J. F. M. (2016). Governance Networks in the Public Sector. Routledge.

2. Lin, N. (1999). Building a network theory of social capital. Connections, 22(1), 28-51.

3. Sørensen, E., & Torfing, J. (2008). Theories of Democratic Network Governance. Palgrave Macmillan

4. Weick, K. E. (1976). Educational organizations as loosely coupled systems. Administrative Science Quarterly, 21(1), 1-19.

5. Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. Journal of Public Administration Research and Theory, 18(4), 543-571.

6. Stacey, R. D. (2007). Strategic Management and Organisational Dynamics: The Challenge of Complexity to Ways of Thinking about Organisations. Pearson Education.

ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

1. Change in the transformative character of innovations

Initially, innovation was technology-driven, focusing on developing and refining new technologies with engineers and developers at the core. Success was measured by the technological breakthroughs themselves, often without much regard for market demand or social impact.

As markets evolved, innovation became market driven. Companies shifted their focus to the market potential of technologies—how they met customer needs, could be commercialized, and generated profit. Understanding consumer behavior, market trends, and competition became essential.

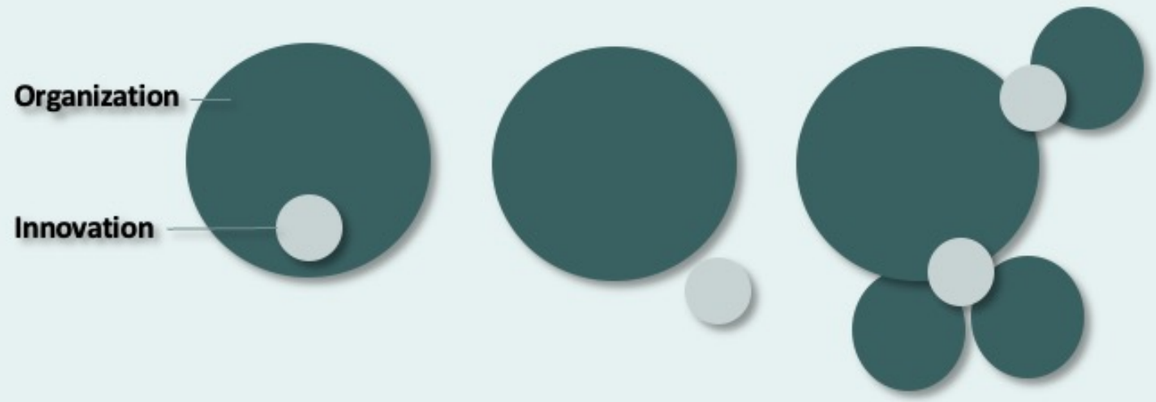
Today, innovation is increasingly socially driven. It emphasizes collaboration and addressing societal needs. Innovations are co-created with stakeholders—customers, partners, and even competitors—focusing on solutions that tackle social challenges, foster community involvement, and contribute to the common good.



2. Being A Model for Transformative Partnerships

We aim to transform partnerships rather than control them by predicting market trends. This requires acknowledging that not everyone possesses the necessary skills, and some may need support. While there is a risk of losing some knowledge in the process, the potential to reach a larger market outweighs this risk.

Building on Denmark’s experience with the Life Science Lighthouse, it’s clear that creating a model like this requires thoughtful planning, collaboration, and the right infrastructure. Transitioning from an established system of governance and innovation to a fully realized Lighthouse model involves several key steps that any country or organization is likely to follow.



Innovation should occur at the edges of a company or organization. This approach necessitates a network that exists outside the organization but maintains a strong, essential relationship with it. Gateways or entry points into this network are crucial, as they are founded on trust.

Now, we turn to the essential elements needed to build a Lighthouse - a framework that can support impactful partnerships, drive innovation, and produce sustainable outcomes on a national and global scale.

HOW TO BUILD A LIGHTHOUSE?

Based on the foundational considerations described above and the experiences of the Danish Lighthouse Case, there are five distinct phases to be aware of. While many would, of course, like to see change as quickly as possible, the path to building an effective Lighthouse might seem slow or require a very intricate network.

Collaboration between public and private entities, based on trust, ensures faster decision-making and seamless project management. This trust is built through transparency, communication, and shared goals. The industry's strategic framework includes three phases:

1. Assembly Phase

- The first step is to create a joint platform and appoint a neutral facilitator who ensures balance and fairness in the partnership.
- We focus on mapping and attracting committed stakeholders, ensuring broad representation to reflect the diversity of the partnership.

2. Build-Up Phase

- Establishing common goals and building a strategic framework for pilot projects and funding.
- We emphasize partnership building and developing the necessary competence within the network to move forward.
- Creating a strategic platform for project selection, management, and growth.

3. Trust Building Phase
Relational Strategies:

- Clearly articulate common goals and engage stakeholders in meetings, seminars, and workshops.
- Strengthen relationships through network activities that foster collaboration and trust.

Tactical Strategies:

- Build a common vision and select focus areas such as mental health or healthy weight.
- Test projects quickly to demonstrate concrete results and added value.
- Implement a framework to measure success and secure long-term financing.

Trusting Relationships:

- It is essential to establish transparent and frequent communication throughout the partnership. This ensures alignment and fosters clarity among all stakeholders.
- Create a joint operational framework for collective action, along with a safe learning environment that encourages innovation and experimentation.
- Partners should be able to see tangible benefits and experiences of added value that arise from collaboration, strengthening long-term trust.



ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

RECOMMENDATIONS

1. Attracting public and private funding (e.g. EU-REACT) to Lighthouse Life Science. Get appointed by The Danish Business Authority (EST) as Danish Life Science Cluster. Getting major players on board such as Novo Nordisk and making sure that the agenda for growth activities is an open an joint platform with a broad representation.
2. Appoint a neutral facilitator and attract committed stakeholders to ensure broad representation. Make sure that every partner enters with a contributing and a growth mindset shifting focus from what they gain to what they contribute. Every partner has onboarding meetings to ensure a collaborative network approach.
3. Invest time and energy in relationships, building on shared values while acknowledging that the individual value of each partner must be part of the design. Foster relationships through network activities, ensuring that the role of hosting meetings rotates among partners, and that partners contribute resources from their own organizations.
4. Appoint focus areas (e.g. healthy weight, mental health, equality in health). Attract and select projects for piloting funding / fast track projects. Ensure that the partnership quickly tests projects and obtains concrete results to learn from and experience added value. This also entails creating a framework for gathering evidence.
5. Transparent and frequent communication is key to maintaining alignment and clarity throughout the partnership, much like the Growth Platform, which emphasizes ongoing guidance to support growth. Transparent communication fosters a collaborative environment where information flows freely, helping to build trust among stakeholders.



The sector delivers short-term results through pilot projects and scaling innovative solutions for long-term growth. Health improvements and enhanced economic well-being are key outcomes.

4.1 Short Term Results

- Focus on achieving results through pilot projects supported by a growth platform. This involves securing hard funding or investments to ensure pilot projects are scalable.
- Share the findings with private funds and public actors, leveraging the methodologies and results to recommend actionable steps for broader implementation.

4.2 Long-Term Results and Scaling

- Use the results and methodologies from pilot projects to scale solutions nationally and internationally. This paves the way for new business opportunities and long-term growth.
- The collaboration creates opportunities for business growth, based on the impact and scalability of the projects.

5. Implementation with Impact

- Implement changes that contribute to improvements in health, well-being, and economic growth. This will be driven by large-scale results and partnerships.
- Results should be disseminated through national strategies and frameworks, ensuring broad implementation across sectors.
- Focus on measuring ESG benefits (Environmental, Social, Governance) derived from specific projects, as key indicators of long-term impact.

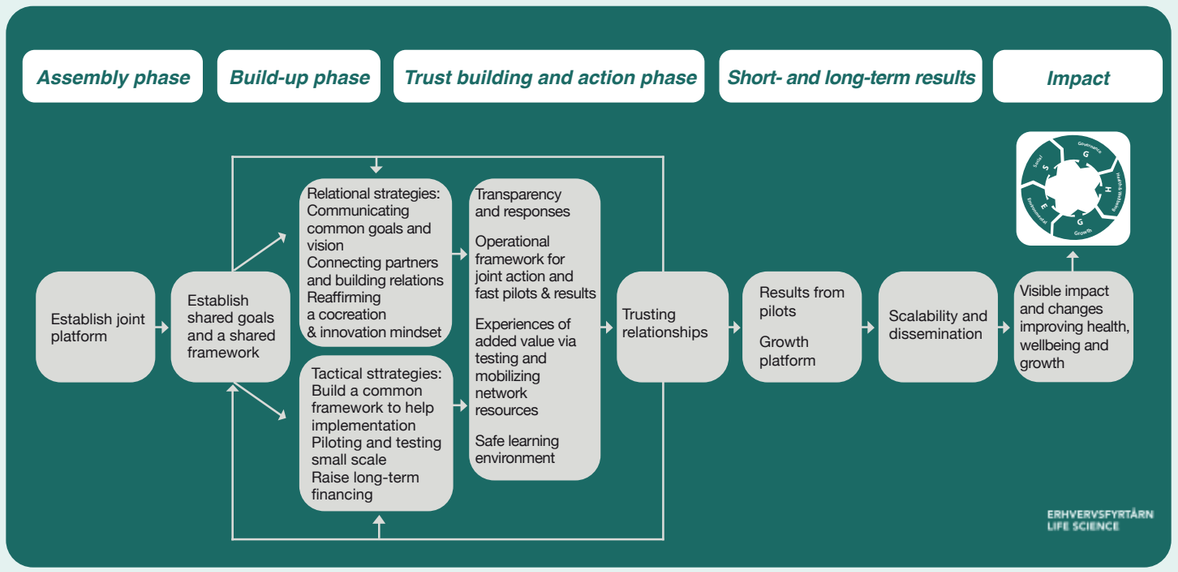
RECOMMENDATIONS

1. Learning from pilot projects and focus on qualification of existing pilot projects, allows the partnership to adjust strategies based on evidence, ensuring continuous improvement. Engaging in discussions about scalability is crucial for maximizing impact, reflecting the emphasis on national and international scaling to ensure projects contribute to broader goals.

2. Securing hard funding and investments, akin to the backstage elements like governance, recruitment, matchmaking events, is essential for expanding successful pilot projects. By leveraging results and methodologies, stakeholders can attract both public and private investments, driving continued growth within the network without going rigidly through every phase (proof of need, concept, business and scale).

The process can be described in this Theory of Change for the LLS and is illustrated in the figure below:

THEORY OF CHANGE FOR NORDIC LIGHTHOUSE MODEL



Future Impact KPIs

These activities and initiatives of course have a direct impact on health outcomes and growth possibilities, and there is also an interplay and impact with the Environmental, Social, and Governance issues of the wider society.

However, these effects are not only affected by the Lighthouse Life Science and the interplays, hence, require an expanded mapping and broader KPI's to be better understood and assessed.

ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

WHO ARE THE DANISH PARTNERS?

As mentioned above, the partnership requires strong personal relationships and regular 1:1 meetings throughout the build-up phase, along with continuous re-negotiations and reaffirmation of the commitment to the long-term goals and vision. These efforts are crucial in maintaining engagement and active participation from all partners, advancing specific projects, and driving overall success.

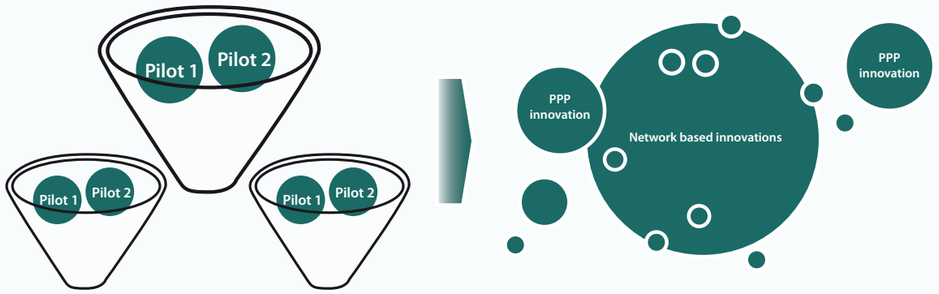
In addition to these foundational efforts, it is essential that partners actively utilize the resources within their own organizations. By integrating innovations and methodologies into their internal processes and networks, partners can create more effective pathways for the dissemination of innovations. This approach not only strengthens the partnership but also leverages the unique capabilities and expertise of each organization, thereby enhancing the overall impact and reach of the collaboration.

Partners play a vital role in the network, even if they do not have concrete pilot projects currently in development. Their contributions, whether in the form of emerging ideas or early-stage concepts, are invaluable to the collective innovation process.

A central point is that the network is not limited to intra-organizational projects. Instead, it fosters an environment where a project initiated within one organization can be piloted and refined by others. This collaborative approach allows the network to harness the innovation potential of multiple stakeholders, ensuring that ideas can evolve and gain momentum across the partnership.

Growth platform

By effectively utilizing the insights and strategies developed, entrepreneurs can secure both public and private investments, enabling continuous growth within the network. This approach allows small and mid-sized companies to progress without rigidly adhering to every step in the process (proof of need, concept, business, and scale). Instead, they can tailor their journey to meet their specific needs, accelerating their development and leading to long-term impacts.



These long-term impacts manifest in three major areas:

1. Dissemination and scaling of healthcare solutions: Expanding the market for the uptake of new solutions within public health and welfare services is critical. By developing a strengthened collaboration model for public-private partnerships (PPP), these solutions can be scaled efficiently, benefiting the broader healthcare system.

2. Business growth: The innovation-driven network stimulates the creation of new companies, increases revenue and competitiveness, and generates more jobs. This leads to enhanced exports and growth in international markets, fostering global business development.

3. Marketing Denmark as a showcase: Greater global recognition of Denmark and the Lighthouse Life Science partnership is achieved by increasing collaborations between Danish life science companies, startups, knowledge organizations, and public and international partners. This raises the profile of Danish innovation, attracting both talent and investors to the country.

In summary, these initiatives not only drive business growth but also position Denmark as a global leader in life science innovation, with far-reaching benefits for both the public health sector and the economy.

However, this does not fully describe the interrelationship between the PPP and the needs and capabilities of life science stakeholders in contributing to sustainable change and achieving SDGs. The Danish Life Science Cluster has therefore built a new KPI Model to capture the effects of trust and transformation on ESGH factors (see Report 3).

ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

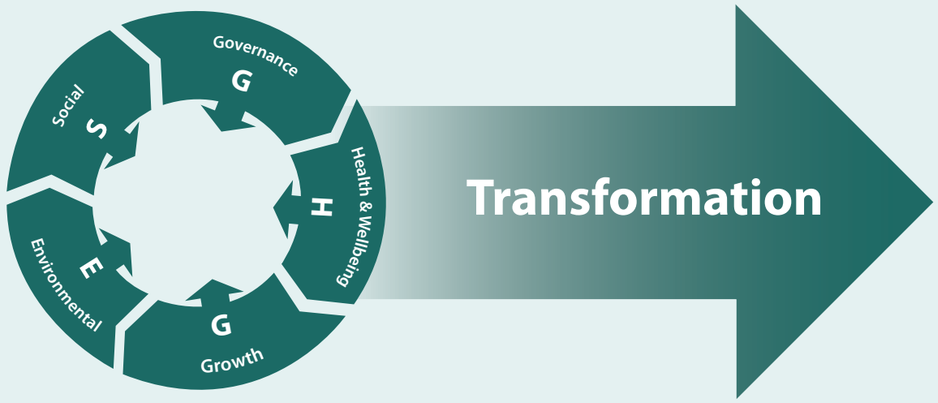
ANALYSIS OF THE IMPLICATIONS OF THE FUTURE-FIT KPI MODEL

PROCESS AND VISUALIZATION

The Danish Life Science Cluster has led the work of the Lighthouse Life Science - and has worked hard to deliver on outcomes, operations, structure, research, and reporting. The evaluations of the previous work - presented in the Report of Pilot Projects Evaluation - are mentioned above with one of the key recommendations about the creation of a KPI Model able to capture these multiple impacts and outcomes of the PPP in a more accurate and detailed manner than before.

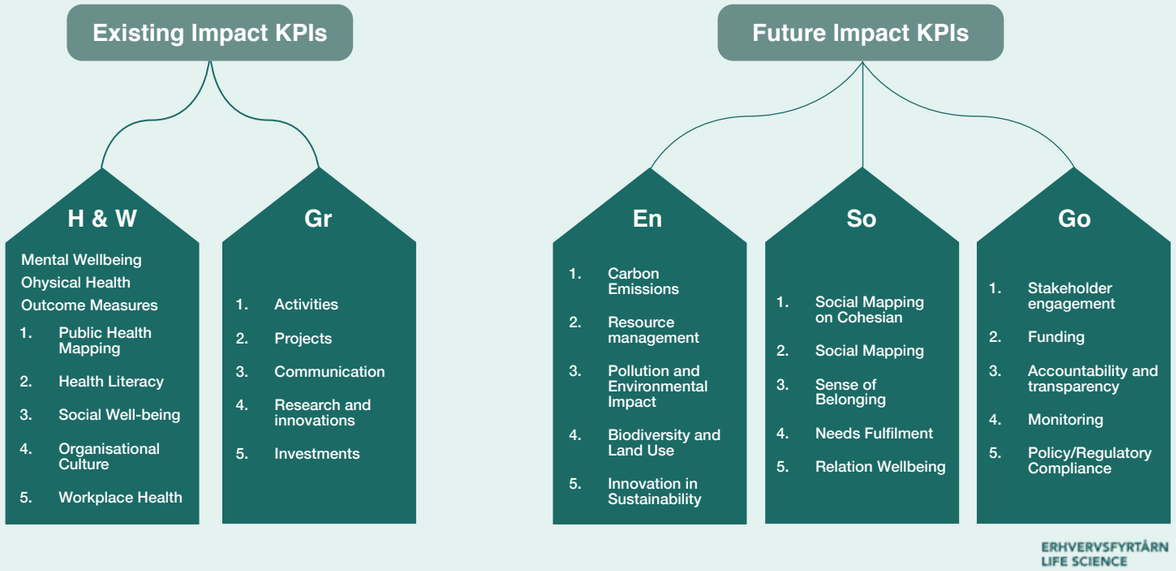
This work is presented in the Report “A New KPI Model for Collaboration and Change”. The work on the KPI Model is the result of a collaboration with EUREGHA, Engage Nova Scotia, Global Health Literacy Academy, and Prescient as Domain experts, while Novo Nordisk, Lundbeck, Nordic Healthcare Group, and Nordic Wellbeing Academy have worked to build the overall framework of the KPI Model and provide the data for this report, based on the new KPI Model. In the development of the KPI Model, the team has had conversations with Copenhagen University, Novo Nordisk Foundation, Technical University of Norway, Copenhagen Capital Region, Steno Diabetes Center Zealand, and Joint Action - and draw upon a great experience of other PPPs and researchers from the worldwide community of change-makers, transformation thinkers, and dedicated life science stakeholders.

KPI MODEL



The KPI Model builds upon the Theory of Change for our PPP, existing principles and legislation about contemporary business reporting, and the overall goals set out from the beginning of the LLS. In short, it gathers data into five Domains; Environment, Social, Governance, Health & Wellbeing, and Growth - and for all five Domains, it uses the data to explore how a PPP improve their ability to collaborate in a trust-based learning environment to transform society, mindsets, business models or local collaboration frameworks towards better outcomes for a sustainable future.

EXISTING FUTURE KPI DOMAINS



In this report, we draw upon the work done in developing the KPI Model and will do our best to present the existing baseline data that have been gathered for two of these domains.

As explained in the section below about data sources, the data in this report are gathered from a multitude of sources, as this is the first collection of its kind in our PPP.

We are aware that we have a huge task ahead of us in strengthening data gathering mechanisms to build the data sets for the Future Impact KPIs and in working to expand our understanding of the best situations to extract data, the best situations to push for change, and the best tools to enable both capabilities.

We recognize that the data does not represent our reality – It is a valuable attempt at describing reality. So, we also need to act with humility as we go forward, acknowledging that we may not have captured all the data we should, have and that we could have misinterpreted the data that we have. But we are dedicated to a better understanding of our performance, a better and wider understanding of our impact ourselves and our stakeholders, and a better path towards delivering impact. For this, we hope others will join us in using and exploring the data and the data tool and remain open to both questions and discussions about needed paths forward.



REFERENCES

- Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. Journal of Public Administration Research and Theory, 18(4), 543-571.
- Klijn, E. H., & Koppenjan, J. F. M. (2016). Governance Networks in the Public Sector. Routledge.
- Lin, N. (1999). Building a network theory of social capital. Connections, 22(1), 28-51.
- Metz et al; Building trusting relationships to support implementation: A proposed theoretical model, Hypothesis and Theory, 2022. https://doi.org/10.3389/frhs.2022.894599
- Stacey, R. D. (2007). Strategic Management and Organisational Dynamics: The Challenge of Complexity to Ways of Thinking about Organisations. Pearson Education.
- Sørensen, E., & Torfing, J. (2008). Theories of Democratic Network Governance. Palgrave Macmillan
- Von Heimburg D, Ness O. Relational welfare: a socially just response to co-creating health and wellbeing for all. Scand J Public Health [Internet]. 2021 Aug 1 [cited 2024 Aug 19];49(6):639–52. https://pubmed.ncbi.nlm.nih.gov/33323094/
- Weick, K. E. (1976). Educational organizations as loosely coupled systems. Administrative Science Quarterly, 21(1), 1-19.



ERHVERVSFYRTÅRN LIFE SCIENCE
Co-funded by the European Union
Virksomhedsudvikling Danmark

ERHVERVSFYRTÅRN
LIFE SCIENCE

Co-funded by
the European Union

Virksomhedsudvikling
Danmark



DANISH LIGHTHOUSE LIFE SCIENCE

A NEW KPI MODEL FOR COLLABORATION AND CHANGE

Nordic Wellbeing Academy

Nordic Healthcare Group

Danish Life Science Cluster

Lundbeck

novo nordisk

ERHVERVSFYRTÅRN LIFE SCIENCE

Co-funded by the European Union

Virksomhedsudvikling Danmark

DANISH LIGHTHOUSE LIFE SCIENCE

- A NEW KPI MODEL FOR COLLABORATION AND CHANGE

Copyright © 2025

Danish Life Science Cluster
Life Science Huset
Lersø Parkallé 101
2100 København Ø

ACKNOWLEDGEMENTS

Ackknowlege the following experts for sharing creative ideas and their critical thinking.

Consortium

This report has been created by a consortium under the auspices of the Danish Life Science Cluster. The consortium enabled experts from Danish Life Science Cluster, Lundbeck, Novo Nordisk, Nordic Healthcare Group, and Nordic Wellbeing Academy to set out a framework of collaboration with an international group of KPI Domain experts

KPI Domains

In creating the KPI Model, the KPI selection, and the suggested data gathering mechanisms, Danish Life Science Cluster and Nordic Wellbeing Academy co-developed the ESGH Domains with Kristoffer Hvidsteen and Annika Rømer (Prescient, Environment), Danny Graham (Engage Nova Scotia, Social), Michele Calabro (EUREGHA, Governance), and Kristine Sørensen (Global Health Literacy Academy, Health & Wellbeing).

Additional input

In the development of the report, we would also like to acknowledge.

Maria Kristiansen, *Copenhagen University*

Thomas Alslev Christensen, *Novo Nordisk Foundation*

Ambassador Carolyn Bennet, *Canadian Embassy*

Ottar Ness and Dina von Heimburg, *Norwegian University of Science and Technology*

Thomas Allvin and Magda Chlebus, *European Federation of Pharmaceutical Industries and Associations*

Hans Christian Kongsted, *Copenhagen Business School*

Christian Bason, *Transformation Collective*

Peter Bentsen, *Center for Clinical Research and Prevention Capital Region*

The report development process was co-funded by Novo Nordisk, Lundbeck, Nordic Healthcare Group, and Danish Life Science Cluster.

The main content of reports 1-3 has been produced for the Danish Life Science Cluster coordinated by Lars Münter (NWA), Trine Søby Christensen and Krestian Borring (DLSC).

Lead author for the content for this report 3:

Lars Münter, Nordic Wellbeing Academy

www.erhvervsfyrtaarnlifescience.dk

CONTENT

EXECUTIVE SUMMARY 2

ACKNOWLEDGEMENTS 4

PUBLIC-PRIVATE PARTNERSHIPS IN LIFE SCIENCE - SDG 17 6

PARTNERSHIPS FOR WELLBEING - IN COMMUNITIES AND ECONOMY 8
Measuring Wellbeing 8

USING PUBLIC-PRIVATE PARTNERSHIPS FOR TRANSFORMATION 10
Choosing a partnership model 10

TRUST FOR TRANSFORMATION 14
Measuring Trust 15

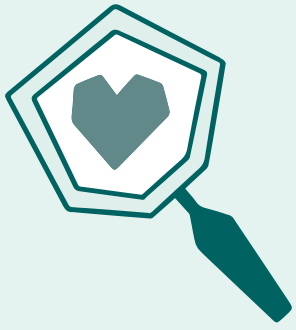
KPI LIGHTHOUSE MODEL - A FUTURE-FIT KPI STRUCTURE 18
Process and Visualisation 18
Materiality Assessment 19
Challenges and Considerations 21

KPI DOMAINS 22
Environmental 22
Social 26
Governance 31
Health & Wellbeing 36
Growth 41
Mitigation Measures 44

GLOBAL LIGHTHOUSE COMMUNITY - A HEALTHY COLLABORATION 45
The future of collaboration 46

REFERENCES 48

APPENDIX - DOUBLE MATERIALITY ASSESSMENT 49



EXECUTIVE SUMMARY

Strategic long-term partnerships are essential to tackle complex societal challenges. To strengthen these partnerships, a combination of inclusive funding models, organizational support, trust, motivation, commitment and effective communication is needed. By implementing these elements, partnerships can develop innovative solutions that have a lasting positive impact on multiple parameters.

The Danish government in 2021 established a ”lighthouse” for Life Science with the hope and intent that all kinds of stakeholders would participate in a public-private partnership that included the growing Danish Life Science industry from SME and startups to unicorns and global companies. This was a new approach, where the act of “pulling together” is explored as a solution to solving complex and difficult challenges.

The core observation was, that collaboration was healthy. And also, that better solutions for future health required collaboration. At thus the Lighthouse Life Science (LLS) was born.

The experiences from LLS show that successful partnerships require a flexible approach, clear goals and a strong shared vision. And also, that the success of a partnership requires a detailed KPI model for impact to be measured - especially when economic growth, innovation, societal development, and more equality in health are all important for the ambition.

We want to illustrate how this is implemented in practice, across sectors and boundaries. To accommodate this, we start from traditional definitions and evaluate how this Danish case of partnership and collaboration can make a difference. We believe this constitutes a model of collaboration based on trust, sharedness and common goals.

Our lesson is also that such a collaboration will benefit from a joint KPI reporting model, as this is crucial to ensure that the partnership is not only established and started correctly, but also maintains its sustainability and results in truly implementable and effective solutions. A KPI model with indicators that can support a holistic perspective with systematic collection of data both across the projects and across governance in the partnership.

Pilot projects and initiatives in LLS have not yet shown their full evolution potential due to constraints in time, funding, and evaluation structures. This is in part by design, as the purpose of these pilots is to show viability and scalability, not to develop industry spin offs or develop innovative health institutions. But we can recommend that future projects are designed with a focus on evidence gathering through systematic knowledge gathering on value creation, which also supports national strategies and political priorities by solving real health challenges with prevention, early detection and treatments in areas such as mental health.

It is therefore relevant to develop a KPI model with focus on measuring the success of economic and social systems based on their ability to promote human and environmental well-being rather than traditional economic growth alone. This approach involves a holistic evaluation of the impact of projects on different aspects of well-being.

One of the unique things about the lighthouse is precisely that it is anchored in ministries – and across the various ministries – which contributes to the vision being to create increased health and well-being combined with economic growth and business promotion through positioning, national scaling and global exports.

A core recommendation based on the summary of earlier evaluations is therefore that there is a need for a more holistic, stringent and methodical evaluation design that can be applied across the board and is based on more overall, uniform KPIs that can illustrate ongoing knowledge and learning to ensure better health in society for all, while at the same time strengthening the country’s growth and exports – and positioning Denmark as an international beacon in life science.

ERHVERVSFYRTÅRN
LIFE SCIENCE

Co-funded by
the European Union

Virksomhedsudvikling
Danmark




- NOT INCREASE
FLOOD RISK
IN TEMPORARY CASE
GATE

PUBLIC-PRIVATE PARTNERSHIPS IN LIFE SCIENCE - SDG 17

Sustainable Development Goal (SDG) 17 focuses on the critical role of partnerships in achieving the other 16 global goals. The rationale behind SDG 17 is rooted in the understanding that global challenges like poverty, inequality, climate change, and health crises are complex and interconnected. No single country, organization, or sector can tackle these challenges alone. Collaboration across governments, the private sector, civil society, and academia is essential for pooling resources, sharing knowledge, and ensuring the inclusivity of solutions.

The principle behind SDG 17 is the need for multi-stakeholder collaboration at local, national, and global levels. This means that different sectors and disciplines must align to address systemic barriers, create innovative solutions, and share responsibilities. International partnerships, such as those fostered by the UN, play a vital role in mobilizing financial resources, technology, expertise, and political commitment across borders. Without a strong foundation of cooperation, progress in addressing issues like climate change, hunger, or global health disparities would be insufficient and fragmented.

The Importance of Partnerships for Sustainable Solutions

Partnerships amplify the impact of sustainable solutions by allowing diverse entities to bring unique strengths and expertise to the table. Public-private partnerships, for example, combine the innovative capabilities of private enterprises with the public sector's regulatory oversight and ability to mobilize resources. Likewise, cross-disciplinary collaborations in science, technology, and social sciences can drive more holistic solutions that take into account the environmental, economic, and social dimensions of sustainability.

For a sustainable future, the partnerships are important as they enable:

- Resource Mobilization: Governments, NGOs, and corporations can pool financial, technological, and human resources to address large-scale problems. Partnerships help align funding mechanisms, avoid duplication of efforts, and create synergies for greater effectiveness.

- Knowledge Sharing and Capacity Building: Partnerships foster collaboration in research and knowledge transfer, which is especially critical in developing regions. Organizations can build local capacities by transferring skills and technology, enabling more sustainable, long-term solutions.

- Innovation and Scalability: Collaborative efforts encourage innovation by blending diverse perspectives and expertise. Partnerships help scale up successful pilot projects and replicate them in new contexts or regions.

- Accountability and Inclusivity: By engaging multiple stakeholders, partnerships ensure that sustainable solutions are more inclusive and representative of diverse interests, which increases accountability and broadens the impact of initiatives.

Implications for Life Science Partnerships

In the life sciences, partnerships are particularly vital. The field of life sciences, which includes biotechnology, pharmaceuticals, health care, and environmental biology, plays a critical role in addressing SDGs related to health (SDG 3), hunger (SDG 2), and climate action (SDG 13). The complexity of challenges in these areas requires collaborative innovation, such as in drug development, biotechnology applications, and global health initiatives.

Partnerships between academic institutions, pharmaceutical companies, biotech firms, and governmental organizations are essential to accelerate scientific discoveries and bring new treatments or sustainable solutions to market. For example, during the COVID-19 pandemic, the rapid development of vaccines was only possible through global partnerships that integrated knowledge from various scientific disciplines, financial backing from governments, and logistical support from international organizations.

In addition to health, life science partnerships are key in areas like sustainable agriculture, where biotech companies work with environmental organizations to develop crops that are more resilient to climate change. These partnerships enable breakthroughs in food security, disease prevention, and ecosystem conservation.

Collaborations in life sciences are crucial for translating research into practical applications. These partnerships can improve access to life-saving medicines, advance global health outcomes, and support sustainable ecosystems—ensuring that progress in one area does not come at the cost of another.

SDG 17 emphasizes that partnerships are the foundation for achieving sustainable development. As global problems grow in complexity, the need for strong, diverse, and equitable partnerships across sectors and borders becomes increasingly evident. In the life sciences, partnerships are indispensable, driving innovation, improving global health, and ensuring sustainability through collaboration and shared responsibility.

PARTNERSHIPS FOR WELLBEING - IN COMMUNITIES AND ECONOMY

We live in a time with complex challenges, where key factors for well-being; sickness and avoidable deaths are fundamental challenges for societies across the globe.

Denmark has a high standard of living and financial growth. Despite the financial growth, year over year, we are facing societal and environmental challenges. As an example, the economic inequality is increasing, mental health is deteriorating, more people suffer from stress, it is increasingly difficult to retain workers on the labour market, greater social inequality and an imbalance in risks and well-being. In addition, significant environmental changes are experienced with inappropriate precipitation and heat wave records. Similarly, we experience a deterioration of biodiversity and the amount of microplastic found in people and in nature is increasing.

Towards a Wellbeing Economy

To accommodate for the well-known and well documented challenges there is a need for implementation and application of the Wellbeing Economy principles, to an even higher degree compared to more traditional financial models.

Today, Wellbeing Economy is an agenda that is pushed forward by organizations across the world, and it is applied by more and more governments that we in Denmark can be compared to. The Wellbeing Economy represents a visionary approach to economic development in that it prioritizes well-being, social justice and sustainability. This model challenges the traditional perception of financial success and aims to create a future where economy serves humans and the planet rather than to ignore these.

In a wellbeing economy our definition of societal success changes from a GDP-growth focus to a measure of well-being. This involves a fundamental change to our system. A good economy is when rules and incentives are designed to ensure that everyone has enough to ensure a life of comfort, security and happiness. When humans feel safe and when they can use their creative energies to support the flourishing of life on the planet. When we thrive in a restored, safe and living natural environment, because we have learned to give just as much back as we have been given. When we have a voice over our collective destiny and find a sense of belonging and purpose through genuine connections to the people and the planet that sustains us.

- **Fairness**: Justice in all its dimensions at the heart of economic systems.
- **Participation**: Citizens are actively engaged in their communities and economic decisions.
- **Nature**: Humans are one with nature and we

give as much back as we take from the ground.

- **Purpose**: We all have a shared sense of belonging & our institutions serve the common good.
- **Dignity**: Everyone has enough to live in comfort, safety and happiness.

Measuring Wellbeing

Progress shown below is based on the recommendations made in 2009 by the Commission on the Measurement of Economic Performance and Social Progress to which the OECD contributed significantly. It also reflects earlier OECD work and various national initiatives in the field.
This Framework is built around three distinct components:

Current wellbeing, inequalities in wellbeing outcomes, and resources for future wellbeing.

These KPIs and the reporting of them allows OECD Member States to assess key impacts and challenges and also to build strategies and policies for improving wellbeing for country and/or regions or communities. The use of a wider set of KPIs enables holistic understanding of complex problems and builds a better map for navigating paths forward.

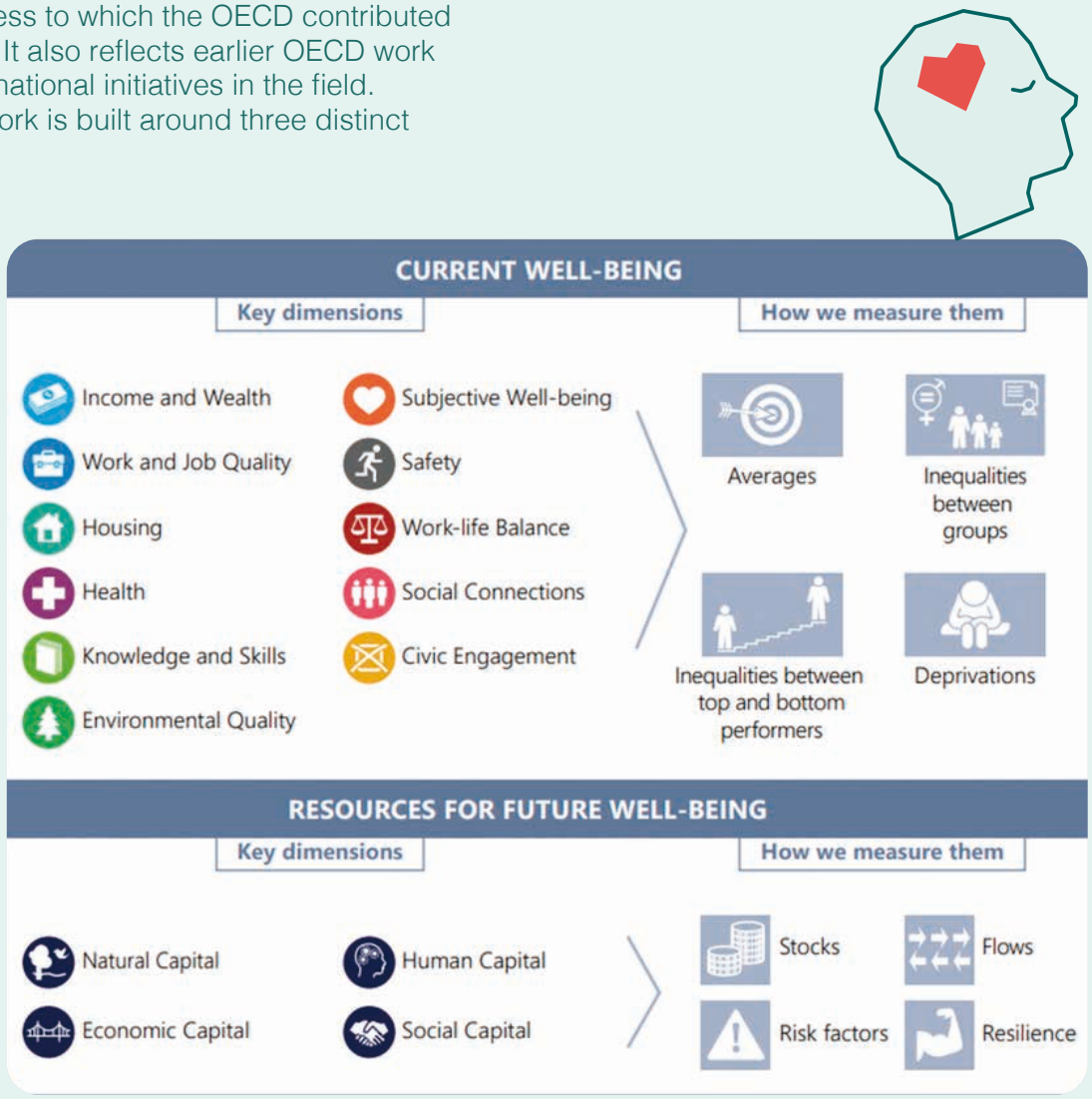


Figure 1: OECD wellbeing framework.

Reference https://www.oecd.org/en/topics/sub-issues/measuring-well-being-and-progress.html

USING PUBLIC-PRIVATE PARTNERSHIPS FOR TRANSFORMATION

There are several ways of constructing public-private partnerships (PPPs). The term can often be used to describe transactional relations, where a specific public task is to be solved by a private partner:

A long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility and remuneration is linked to performance.[2]

Increasingly however, the idea of partnership has evolved from this task-orientation to more mission-oriented partnerships:

A mission-driven partnership is a type of collaboration where entities, such as nonprofits, governments, or businesses, come together with a shared objective that aligns closely with the mission of at least one of the partners involved. Unlike traditional partnerships, which might focus primarily on mutual benefits or financial gains, mission-driven partnerships are deeply rooted in advancing a specific mission, often related to sustainability, social justice, or public health.[3]

These partnerships often involve a "mission-driven convener," an organization that initiates and supports the partnership to achieve its own broader mission. For example, a nonprofit might establish cross-sector partnerships to further its sustainability goals, such as creating more sustainable supply chains or addressing climate change through collaborative efforts. The convener's role in these partnerships is not just to facilitate cooperation but to ensure that the partnership's outcomes align with their coremission, thereby driving meaningful change in the targeted area.

This approach is particularly effective in addressing complex, systemic challenges that require coordinated action across different sectors, such as achieving the United Nations Sustainable Development Goals (SDGs) or for addressing other wicked problems—complex, multifaceted challenges that cannot be easily solved by a single entity. These partnerships leverage the strengths of both sectors: the public sector's commitment to the common good and regulatory power, and the private sector's innovation, efficiency, and resources.

By collaborating, they can pool knowledge, share risks, and align incentives toward common goals, allowing for more comprehensive and adaptive solutions. This cooperative approach fosters innovative strategies and dynamic responses, making it possible to tackle the interdependent and evolving nature of wicked problems in ways that would be unattainable for either sector alone.

Choosing a partnership model

The choice of the specific model can vary depending upon local tradition, experience and mission, but also share a lot of characteristics. A key to this choice would be to have an extensive discussion about how best to align public goals with private expertise and resources. Here's a breakdown of key methodologies, their benefits, and a comparison of their differences and challenges:

1. Public Finance Initiatives (PFI)

- Description:
  - A form of partnership where the private sector finances, builds, and operates public infrastructure, with the public sector repaying the costs over time through long-term agreements.

2 World Bank Online Reference Guide

3 World Resources Institute, MDPI

ERHVERVSFYRTÅRN
LIFE SCIENCE

Co-funded by
the European Union

Virksomhedsudvikling
Danmark



- Key Benefits:
  - Access to Private Capital: Facilitates the completion of public projects without immediate government spending.
  - Lifecycle Accountability: The private sector is responsible for the asset's long-term quality and maintenance.
- Challenges:
  - High Long-Term Costs: Can be expensive over time due to repayment structures and profit margins.
  - Complex Financial Arrangements: Managing these partnerships requires sophisticated financial oversight.

2. Build-Operate-Transfer (BOT)

- Description: The private sector finances, constructs, and operates a project (such as infrastructure) for a specific period, after which it transfers ownership to the public sector.
- Key Benefits:
  - Risk Transfer: Significant risks, including construction and operational risks, are transferred to the private partner.
  - Innovation: Encourages innovative approaches in project delivery and management.
- Challenges:
  - Complex Negotiations: Requires detailed contracts to manage various project phases and ensure smooth transitions.
  - High Initial Costs: Often involves substantial upfront investment, making it suitable mainly for large-scale projects.

3. Joint Ventures

- Description: The public and private sectors co-invest in a project, sharing risks, rewards, and management responsibilities, often in areas like infrastructure development or technology initiatives.
- Key Benefits:
  - Shared Risk and Reward: Both sectors share the financial risks and potential benefits, aligning their interests.
  - Enhanced Collaboration: Promotes a deep level of cooperation and alignment of strategic goals.
- Challenges:
  - Complex Governance: Requires clear agreements on decision-making processes and profit-sharing.
  - Cultural Differences: Potential conflicts can arise due to differing operational cultures between the public and private sectors.

4. Mission-Based Partnerships

- Description: The public and private sectors collaborate on a shared mission or goal, often in sectors like healthcare, education, or environmental sustainability. These partnerships focus on achieving specific outcomes rather than financial returns.
- Key Benefits:
  - Aligned Social Goals: Both sectors work together to address societal challenges, leveraging each other's strengths.
  - Flexibility: These partnerships can be more flexible, adapting to the needs of the mission rather than being bound by rigid financial structures.
- Challenges:
  - Measurement of Success: Defining and measuring success can be complex, as outcomes may not be purely financial.
  - Sustainability: Ensuring long-term commitment and resources from both sectors can be challenging.



Method	*Risk Transfer*	*Cost to Public Sector*	*Complexity*	*Flexibility*	*Public Control*
Public Finance Initiatives	High	High	High	Low	Low
BOT	High	Low	High	Low	Low
Joint Ventures	Shared	Shared	High	High	Shared
Mission-Based Partnerships	Medium	Medium	Medium	High	Medium

Differences and Challenges

1. Risk Allocation: BOTs typically involve a higher transfer of risk to the private sector, while Mission-Based Partnerships often feature shared or balanced risk, depending on the nature of the mission.

2. Financial Structure: Public Finance Initiatives and BOTs often involve complex and long-term financial commitments, whereas Mission-Based Partnerships and Joint Ventures may be more flexible and focused on social outcomes rather than financial returns.

3. Flexibility and Control: Mission-Based Partnerships offer more flexibility and a stronger alignment with public goals, while BOTs and PFIs provide less public control and are more rigid due to their financial nature.

4. Public Perception and Political Risk: PFIs can be politically sensitive, especially in sectors like healthcare or education, where the public may resist private involvement. In contrast, Mission-Based Partnerships tend to garner broader support due to their focus on social benefits.

Each methodology presents unique trade-offs, and the choice depends on the project's goals, the sector, and the capacity of both public and private partners to manage the partnership effectively.

The Danish Lighthouse Case

In the case of the Danish Lighthouse Case, the choice was made to use a Mission-Based Partnership due to the high applicability to issues related to healthcare and the ability to work with flexibility to achieve the complex goals.

But as mentioned above and in our Pilot Project Evaluations, getting a clear measurement of success and outcomes becomes trickier and requires a different model than traditional transactional partnership. Indeed, the value of the partnerships should likely be seen through a different lens than e.g. traditional outcome or ROI assessment criteria. Essentially because the true value goes beyond this type of results, with the strong action-learning bonds leading to trust and thus also a very different level of ownership and engagement in the activities.

> *We consider trust and co-creation between stakeholders to be the key ingredients to empower people and communities to drive the transformation of systems…* (WHO, Tallinn Charter 2023)

In the Report 2, this structure for innovation and learning is described in further detail. Including the fact that an important and significant factor in these types of partnerships is the ability to also enable knowledge transfer between sectors, disciplines, and partners, and the ability to work in co-creative ways to extend networks, relations, and build trust. This is indeed a core additional value creation in these partnerships and crucial to the success, as this remains a key - but often elusive - ingredient for systems transformation.

In the Report 1, this can also be seen via the unique high level of pilot projects that have found a path across the traditionally tricky research-implementation gap with an impressive 88% of projects leading to continued practice.

The next chapter will explore the element of trust further and the interrelation it has with both process and results.

ERHVERVSFYRTÅRN
LIFE SCIENCE

Co-funded by
the European Union

Virksomhedsudvikling
Danmark



TRUST FOR TRANSFORMATION

The nature of transformation always has elements of uncertainty. People or organizations take a step into the unknown to embrace new connections, new workflows, new tools or some other different element than the old status quo. This can often happen with little or no challenges in a safe environment, but even at the best of times and with the best of intentions, transformations can be tricky, have unexpected outcomes or even fail.

A significant factor for the success of such a process is often the existence of trust. Few transformations can have a 100% guarantee of success, but trust can often enable the frail attempts to survive, the first iterations to be repeated, or the doubt to turn into hope - and later confidence.

Trying to attempt transformations without trust will sometimes be needed. A ceasefire in war will sometimes fail. And sometimes be the first step towards peace. Yet in most human relations we are fortunate to be able to build our transformation on an existing level of trust.

But a key message from a Nordic perspective is also; With the right strategy and effort, you can build trust. Trust is not just a coincidence, but an outcome of dedicated efforts and initiatives that support the creation of stronger bonds.

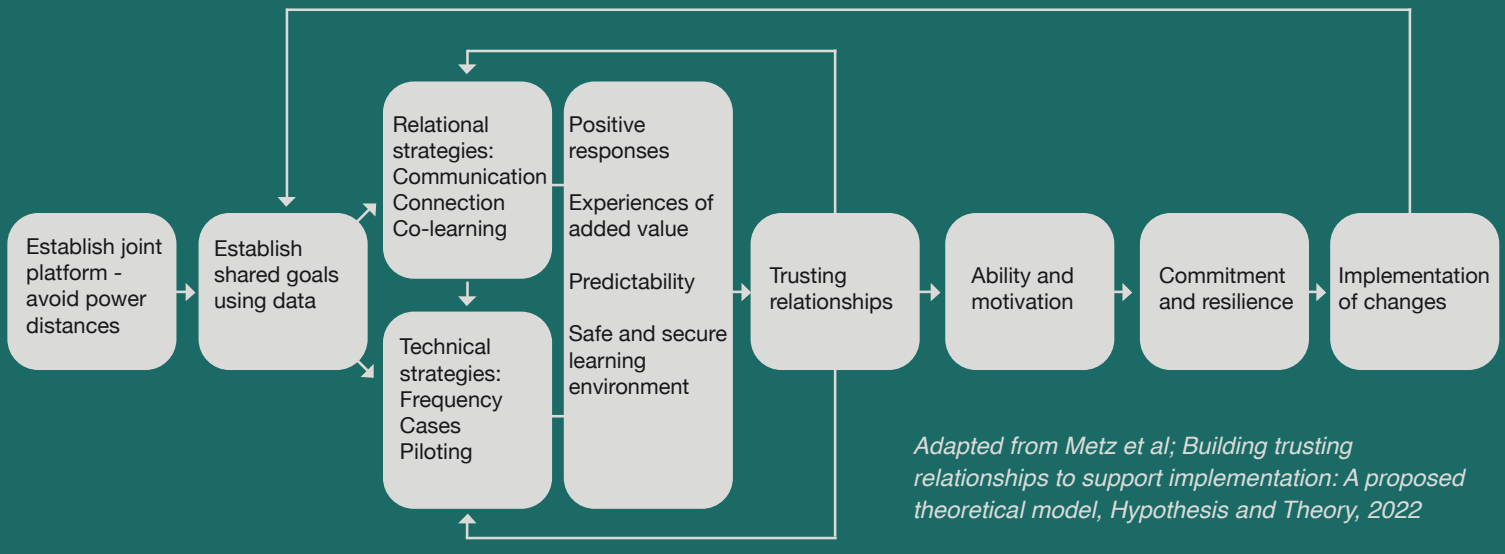
So, one of the key objectives of a Danish Lighthouse is the creation of trust to be able to pave the way for transformation.

This interrelation can be described in the graphic below - and is both a core element in the theory of change for the individual pilot projects but are also the foundation for the ambition of this public-private partnership.

It is of course important to note that this interrelation and process is not to be taken lightly. Even with good intentions and support, the willingness and readiness of the stakeholders before beginning the process are also to be considered, as well as a robust set of contingency plans when good strategies for change meet challenges - as they will. When reading the evaluations of the LLS, it is clear that both misunderstandings and hiccups are to be expected, but these also be used as an opportunity for stronger bonds.

One cannot claim that the path towards higher trust between organizations is always smooth and easy, but one can claim that joint experiences - including some from conflict or challenges - can be the basis for a prosperous joint understanding and better ability to solve issues in the future.

Figure 2: Building trusting relationships



Adapted from Metz et al; Building trusting relationships to support implementation: A proposed theoretical model, Hypothesis and Theory, 2022

https://doi.org/10.3389/frhs.2022.894599.

MEASURING TRUST

As part of our preparation and deliberations about the best way to construct a model for assessment of impact and outcomes, we realized that our method of measuring trust was vital to our entire understanding of progress and impact.

While previous research and publications have shown the strong intrinsic value of trust in Denmark (Svendsen, 2018), the power of trust is also often taken for granted among Danish institutions, organizations, and citizens. The means that while using trust and enhancing trust are often at the core of collaborative initiatives and projects, the actual change in trust levels is rarely measured - even as the existence of it is vital to most interactions in society (see below).

In effect, this leads Danish initiatives to both depend on, use, and produce trust, but also have little to no reporting of these dynamics and outcomes. And ironically, these effects are fundamental to the successful transformation of health systems and societies across the globe towards future-fit concepts and practices.

The WHO Tallinn Charter of 2023 mentioned briefly above highlighted the importance of establishing better mechanisms to support the creation of trust and to ensure inclusivity in all public and private initiatives.

Especially the last bullet of the Charter rings true for our work in both the Danish Life Science Cluster and the building of a new KPI model; governance frameworks should be established to ensure that collaboration with the private sector functions to benefit the public and contribute to strengthening of health systems.

Figure 3: Trust is crucial for success, NHG 2024

Nordic Healthcare Group

Background: Trust is crucial for both economic stability and successful relationships.

This presentation explores why trust is important and how society, partnerships and businesses can build and maintain it.

Economic Stability and Welfare

Trust reduces transaction costs and fosters cooperation.
According to Professor Gert Tinggaard Svendsen, trust is the foundation of Denmark's economic prosperity and welfare state.
A lack of trust can lead to increased control measures, which are costly and inefficient. High levels of trust mean that verbal agreements suffice, and people can move freely and safely.

The Finanacial Crisis and the Collapse of Trust

During the financial crisis, trust in financial institutions plummeted due to fraud and opportunistic behaviour. According to G. Corsetti and colleagues, this led to higher costs and lower investments. The erosion of trust caused investors to pull back, leading to liquidity issues and tighter credit conditions.
Rebuilding trust in the financial sector is essential to ensure a resilient economic framework.

Trust as a Strategic Resource

Deloitte insights highlights that trust should be treated as a strategic resource. Companies that build and maintain high trust can experience significant economic benefits and outperform the S&P 500 (stock market index that measures the performance of 500 of the largest companies) in the United States by up to 50%. trust must be integrated into all financial integrity, to create a robust and sustainable organization.

Corporate Trust Crisis

The pandemic revealed a trust crisis in many companies, leading to trends like "quiet quitting" and "the Great Resignation". These phenomena reflect a lack of trust in companies' ability to support their employees. Research shows the employee disengagement cost the global economy $ 8.8 trillion in lost productivity annually. This disengagement can also lead to higher turnover rates and a decline in overall workplace morale. Companies must prioritize trust to enhance employee satisfaction and organizational resilience.

Trust is a strategic asset for economic prosperity, welfare and stability.

Trust crisis in financial and corporate sectors: Key to economic stability and employee engagement.

We consider trust and co-creation between stakeholders to be the key ingredients to empower people and communities to drive the transformation of systems. This requires that:

- equity and inclusivity are prioritized in all aspects of the transformation;
- people of all ages and gender, from across the socioeconomic gradient and from diverse cultural backgrounds, trust the system and those who provide care to act in their and the wider public's best interests above all other considerations, and are meaningfully engaged in co-producing health;
- health and care workers trust that their work, their careers and their wellbeing are valued;
- transparent and inclusive forms of communication and the fostering of a shared understanding of transformation goals are recognized as integral to building and maintaining trust;
- policy-makers in all sectors recognize that better health is central to the well-being economy, and trust that the health system will use investment effectively to deliver for all their citizens;
- all people, including persons living in vulnerable situations and communities, are meaningfully engaged in health service design and implementation, and use their full potential to support transformative action and to build resilience for themselves, health systems and societies;
- the public, patients, and health and care workers are equipped with strong health literacy skills;
- evidence-informed initiatives are implemented to counter the negative and inequitable health impacts of misinformation and disinformation; and
- governance frameworks are established to ensure that collaboration with the private sector functions to benefit the public and contributes to strengthening of health systems.

Figure 4: Excerpt from the WHO Tallinn Charter 2023

And while the LLS was created before the Tallinn Charter, the ethos of the need for trust and collaboration was at the center from day one. As part of the core vision of the LLS is thus this ambition; It is healthy to collaborate. This core observation is then expanded as follows:

- *Lighthouse Life Science exists to create a healthier society for all, and at the same time strengthen the country's growth and exports – positioning Denmark as an international beacon within life science. The means to achieving this goal is collaboration.*
- *By working together across the public health sector, academic institutions and private companies, we can create new health solutions that spread like ripples in water: from one case to the next, from the capital to the rest of the country, from Denmark to the world.*
- *Together, we have the strength to solve pressing health challenges for the benefit of the teenager and the worker, the health care system, research, the business sector, Denmark and the entire world.*

https://erhvervsfyrtårnlifescience.dk

However, the ambition to use collaboration to produce trust does not in itself require a measurement of the trust produced or the mechanisms involved. And while measuring improvements of trust in a highly trusting environment can have challenges, the point is not to measure the exact level of trust, but rather the evolution of it - as accurately as possible and as diligently as possible.

The Nordic HealthCare Group has produced an insightful report on the best contemporary ways of measuring trust and the different relations that trust might work in - a community of peers, from citizens to public, among institutions, and a number of other societal interrelations. But for the LLS the main interest is of course the trust generated by and within a public-private partnership. The image below describes a key methodology for measuring this kind of trust.

TRUST DATA

Questions

Interpersonal trust

1. I invite partners to explore discrepancies in their views and opinions
2. I use clear and specific feedback when addressing issues within the partnership.
3. I provide resources when necessary to support the partnership's objectives.
4. I have complete confidence in the reliability of our organization.
5. I trust that our partner organization will act with integrity.
6. I believe this person has my best interests at heart.
7. I feel confident about the person's skills.
8. I feel there is mutual respect among the team members.

Safe learning environment (Psychological safety)

1. Members of the partnership feel comfortable raising problems and tough issues.
2. Members of the partnership feel that taking risks is safe within the partnership.
3. Members of the partnership find it easy to ask others for help when needed
4. Members of the partnership feel that it is safe to openly express their opinions.
5. Members of the partnership feel there is room for expressing uncertainties.
6. Members of the partnership request consultation or input from others when needed for better decision-making.
7. Members of the partnership ask for clarification and confirmation to ensure mutual understanding among partners.
8. Members of the partnership evaluate decisions made within the partnership.

Trust in public-private partnerships

1. The partners involved in the partnership are able to handle deadlocks and problems.
2. The parties believed that each party is competent for their work.
3. The partners uphold their commitments within the partnership.
4. There is trust in the partners initiative to fulfill their responsibilities.
5. There is mutual respect and high level of trust among public and private partners.
6. A belief that the partners genuinely consider each other's interests.
7. There is a prevailing atmosphere of mutual trust among the partners.
8. The partners involved in the partnership have succeeded in managing internal conflicts and disagreements in an adequate manner.

Strengths

- The questions demonstrate high validity and reliability across international contexts.
- Adapted to a public-private partnership and captures a range of trust-related behaviors.
- Consolidated into a framework.

Weaknesses

- The synthesis is not validated but adaptable to fit a public-private partnership.
- The questions are not supported by the same research background and remains to be seen transferred from interpersonal relations between two individuals or a team to a partnership amongst different organizations.

What makes public-private partnerships work?

In depth

Questions	**Measurement of network cooperation and trust (likert scale 1-10)** 1. Managing internal conflicts: The actors involved in the network have succeeded in managing internal conflicts and disagreement in an adequate manner. 2. Presence of deadlocks: I did not experience any cumbersome deadlocks during the process. 3. Course of cooperation: The actors have improved the cooperation over the past years. **Measurement of network management (likert scale 1-10)** 4. Defining principles: When information is being collected, the focus is on developing and establishing common principles and information needs for both public and private actors in the project. 5. Involving partners: (Private) Contractors are consulted and involved in project management decisions. 6. Communication: Much time is spent on the communication between various actors. 7. Aligning interests: During deadlocks and problems, the management focuses mainly on aligning conflicting interests. **Measurement of trust: 10-point Likert scale** 1. Range (1) 'There is no trust between public and private partners' (10) 'There is a lot of trust between public and private partners.
Strengths	• The questions demonstrate high validity and reliability across international contexts. • Adapted to a public-private partnership and captures a range of trust-related behaviors. • Consolidated into a framework.
Weaknesses	• The synthesis is not validated but adaptable to fit a public-private partnership. • The questions are not supported by the same research background and remains to be seen transferred from interpersonal relations between two individuals or a team to a partnership amongst different organizations.

Source: Warsen, R., Nederhand, J., Klijn, E., H., Grotenberg, S., & Koppenjan, J. (2018) What makes public-private partnerships work? Survey research into the quality of cooperation in PPPs. Public Management Review, 20(8), 1165-1185. https://doi.org/10.1080/14719037.2018.1428415
- https://www.tandfonline.com/doi/full/10.1080/14719037.2018.14284157?scroll=top&needAccess=true#d1e182

Figure 4: Measuring trust in PPP. NHG 2024

For the future of the LLS, the importance of collaboration and trust generation cannot be understated. And consequently, measuring the evolution of trust in the partnership will be a key priority.



KPI LIGHTHOUSE MODEL - A FUTURE-FIT KPI STRUCTURE

PROCESS AND VISUALISATION

To develop a KPI Model able to capture the needs shown in the previous evaluations, the Danish Life Science Cluster has collaborated with a number of Danish and international knowledge partners to assess the needs, implications, and possibilities within an updated model for measuring PPP impact.

Based on the mentioned Theory of Change (see figure 2) and the key conclusions of the previous evaluations, the observations were clear, that while it is healthy to collaborate, the needed KPIs to both demonstrate this observation in detail and to lead strategy and initiatives to streamline PPP activities, did not yet exist.

Following a series of explorative discussions with the experts, the process identified five Domains to gather a new set of KPIs for. With the ultimate goal still, of course, to demonstrate both overall and detailed impact of activities on either processes or outcomes for members or stakeholders of all kinds.

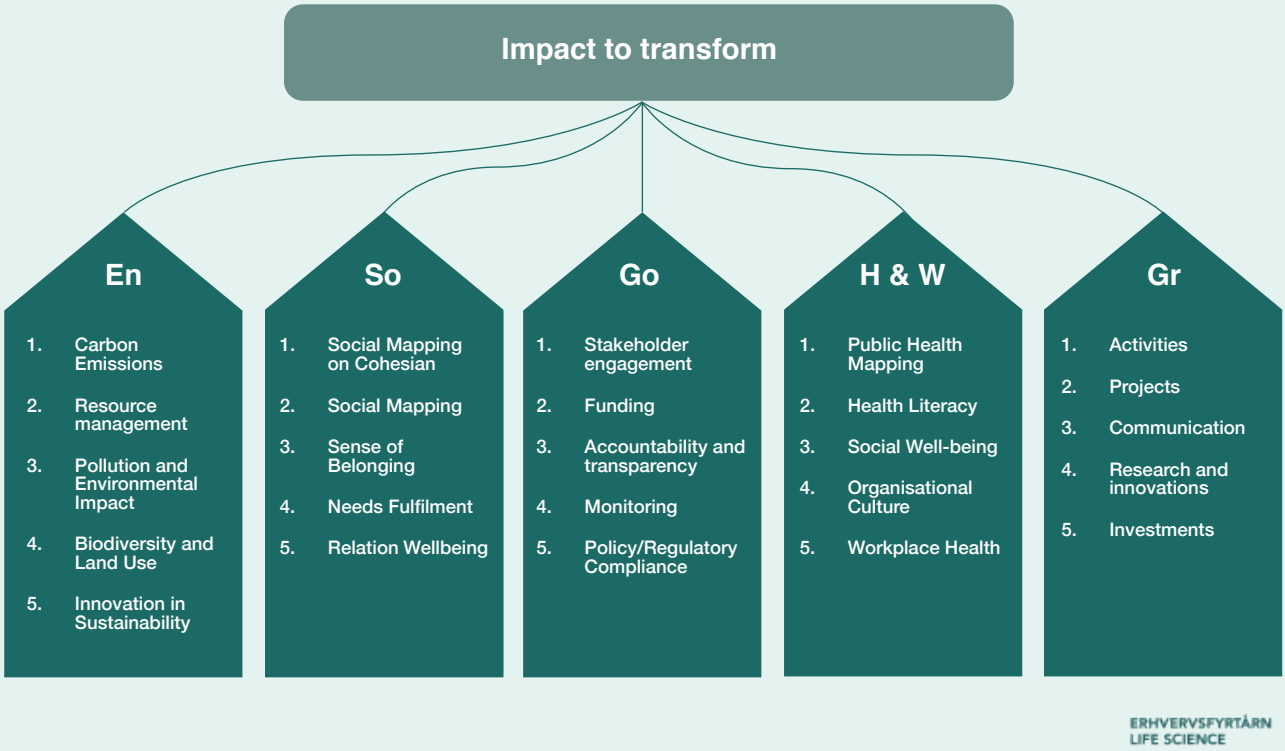
These five Domains drew upon existing and contemporary categories for reporting in the socalled ESG framework, that are commonplace for business reporting, but so far not as used by PPP or public domain institutions or organisations. The traditional ESG factors cover the impact and outcomes of an organization's activities on Environmental, Social, and Governance-factors.

KPI MODEL



ERHVERVSFYRTÅRN LIFE SCIENCE

KPI DOMAINS - IMPACT INDICATORS



MATERIALITY ASSESSMENT

To understand, assess and prioritize ESGH impacts the partnership should undertake a double materiality assessment for the partnership for the duration of the envisaged partnership, focusing on the expected or planned partnership activities. The EU CSRD regulation prescribes the double materiality process in detail, one which is mandatory to undertake for EU incorporated companies of a certain minimum size. The regulation – and the integral nature of the double materiality approach to the professional ESGH community ensures significant experience is present in relevant functions by many market participants.

The double materiality process can be summarized in 5 key steps, which should be undertaken by the partnership participants jointly (for more detail the CSRD regulation may be consulted, see also Appendix 1):

1. Identify Key Stakeholders and Material Issues

- **Engage Stakeholders**: Identify and consult key stakeholders relevant to the partnership (e.g., partners, beneficiaries, local communities).
- **Determine Relevant Issues**. Based on stakeholder input, identify sustainability issues that could impact the partnership (financial materiality) and how the partnership activities impact society and the environment (impact materiality).

2. Assess Financial and Impact Materiality

- **Financial Materiality**: Evaluate how sustainability issues could affect the partnership's financial outcomes, including risks and opportunities over the four-year period.
- **Impact Materiality**: Analyse the partnership's activities to assess their environmental and social impacts, prioritizing those with significant positive or negative effects.

- **Prioritize Material Issues**

3. Prioritize Material Issues

- **Create a Materiality Matrix**: Map the identified issues based on their financial significance and impact on stakeholders and the environment.
- **Validate Findings**: Review the prioritized issues with all partners to ensure alignment and consensus.

4. Report and Communicate Findings

- **Document the Assessment**: Prepare a report outlining the materiality assessment process, key findings, and rationale for the identified material issues.
- **Integrate into Partnership Strategy**: Ensure that the material issues are reflected in the partnership's goals, actions, and reporting.

5. Monitor and Update Regularly

- **Ongoing Review**: Continuously monitor the identified material issues and adjust the assessment if significant changes occur during the partnership.
- **Annual Update**: Reassess and update the materiality findings annually to stay aligned with evolving risks and impacts.

For any public-private partnership a double materiality assessment does not just lead to selection of KPIs, but also adds some key benefits for strategy and communication. The Double materiality helps PPPs enhance risk management by identifying not only the financial impacts of environmental, social, and governance (ESGH) issues but also how their activities impact these areas.

This dual perspective allows for better risk management by ensuring that all significant risks—both to the partnership and the broader community—are recognized and addressed. It also strengthens the basis for stakeholder trust and transparency as the PPP can demonstrate their commitment to transparency and sustainability and shows the partnership is aware of and actively managing its broader societal impact.

And finally, it is one of the better ways to create an alignment with regulatory and stakeholder expectations. These benefits make the partnership more resilient and socially responsible and supports the long-term success and sustainability of the partnership.

CHALLENGES AND CONSIDERATIONS

It is mission-driven partnerships, that simple, numerical KPIs can be very hard to uncover and misleading by nature. The essential quality of the partnership is no different than other action learning environments where individuals across organisations try to solve interrelated and complex challenges by using mixed-methods or sometimes trial-and-error approaches.

And while the Theory of Change is an important backbone for operations and approaches, the PPP is also part of a complex society where other events and stakeholders are acting in the same space and framework with perhaps similar, competing, or even opposing agendas.

Based on the principles of Action Learning , this calls for three key considerations:

1. Qualitative vs. Quantitative

Partnership relations are inherently qualitative, so numerical growth KPIs often need to be supported by qualitative assessments like interviews and surveys to capture nuances among partners and intentions and perceptions behind initiatives and actions.

2. Context-Specific

The relevance and importance of these KPIs can vary depending on the specific goals and structure of the partnership. This both mean that new members in the partnership may lead to a shift in the needed KPIs as their networks, needs, and experiences can lead to different outcomes and should thus be leveraged in a different way that the former composition of the network.

3. Time Lag

The impact of this type of partnerships, and especially the trust-building initiatives among them will often take time to manifest, so long-term tracking is essential. To quote Stephen Covey; “Change happens at the speed of trust” - so while the specific deadline for trust can be harder to predict than other measures, it will certainly not happen

Action Learning - Understanding Time Lag

1. In any learning organisation trying to deliver change, the first important relation to remember is:
2. $L > C$
3. where L is the rate of learning and C is the rate of change. This means that organisations need to learn faster than things change to keep up and prosper.
4. The second relation is: $L = P + Q$
5. where L is learning, P programmed, or existing knowledge and Q is questioning or emerging insights. In combination with the first relation, this means that existing knowledge will not be sufficient to solve growing challenges.
6. So for organisations to consistently enable change, a strong focus on emerging insights and understanding of relations and concepts have to be developed as fast or faster than the desired change. Without understanding the involved complexities of change, the organisation will either fail or stand still - and without emerging insights from new interactions, the existing knowledge will not be able to solve the challenges or handle the change needed.



[6] John Edmonstone, The Handbook of Action Learning, Routledge 2024.

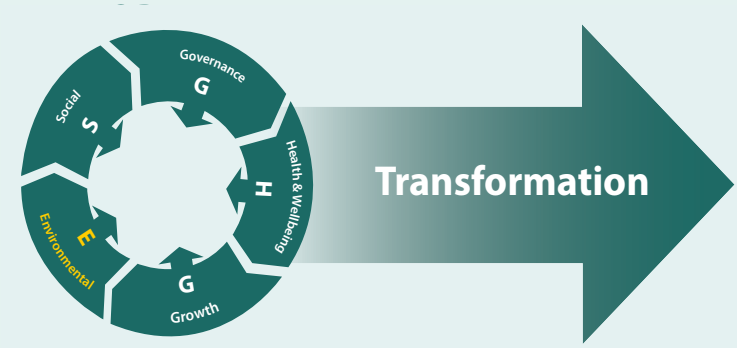
KPI DOMAINS

ENVIRONMENTAL

Introduction

Public-private partnerships (PPPs) in the life sciences sector are crucial for addressing several key environmental factors, including climate change, pollution, and biodiversity loss. By combining the strengths of public institutions and private enterprises, these collaborations drive innovation and sustainability efforts that significantly impact the environment, climate, and nature.

One critical environmental factor that PPPs influence is climate change. Through joint initiatives, public and private entities can develop and implement renewable energy technologies, such as biofuels and biomass energy, reducing greenhouse gas emissions and dependence on fossil fuels. These partnerships also enable the advancement of carbon capture and storage technologies, helping mitigate the impact of industrial activities on the climate.



Biodiversity conservation is also a key focus of PPPs in life sciences. These partnerships can spearhead initiatives to protect endangered species and restore degraded ecosystems. By combining scientific research with practical applications, PPPs can develop and implement strategies for habitat conservation, sustainable land use, and the prevention of invasive species. These efforts are essential for maintaining ecological balance and ensuring the survival of diverse plant and animal species.

Furthermore, PPPs play a vital role in addressing the intersection of environmental health and public health. They can develop innovative solutions to monitor and reduce the impact of environmental pollutants on human health, such as air and water quality improvement technologies. By integrating health and environmental data, these partnerships can inform policies and practices that protect both human populations and natural ecosystems.

In the following, we'll demonstrate key factors to measure and use to leverage this important potential.

The environmental domain

The environmental domain as it relates to partnerships consists of the positive and negative impacts on the environment resulting directly or indirectly from partnership activities. The process by which to identify the material environmental impacts is previously described in the proposed approach to a double- materiality assessment.

This section outlines the broader scope of environmental impacts which broadly falls in three domains:

- **Impacts on airshed, land and/or water bodies from resource extraction and pollution**
- **Impacts on the health of the natural environment – biodiversity and eco-systems**
- **Opportunity to improve the environment with partnership innovation**

The double materiality assessment process is applied to determine which environment topical areas are triggered and assess to what extent the identified impacts are material to the partnership and society at large. The below listed topical areas serve as inspiration on what topics to consider on one hand and on the other introduce approaches to drive value creation for the environment with e.g. circular economy and innovation.

For each topical area there are professional standards for measurement with one point of reference for specific topical KPIs is the CSRD and ESRS reporting data standards relevant to the topic.

ERHVERVSFYRTÅRN
LIFE SCIENCE

Co-funded by
the European Union

Miljøministeriet
Miljøstyrelsen
Danmark

KPIs FOR ENVIRONMENTAL TOPICS



Considering the significant and urgent environment pressures calling for action on climate, water and biodiversity it is recommended that the partnerships collect data to measure the on the following three KPIs across partners as a fundamental ask to help drive initiatives, inform decision-making, and to initiate ideation that can help the partnership to contribute to a significant reduction of the impact of these elements on the wider society, communities, and planet:

- **Climate impact** – t CO2e (as defined by the GHG protocol)
- **Water use** – m3 water consumed
- **Biodiversity** – net m2 protected area

KPIs for Environmental topics

The environmental component of Environmental, Social, and Governance (ESG) refers to the criteria used to evaluate a partnerships' impact on the environment and how it manages environmental risks and opportunities. This component is critical in assessing a partnerships' commitment to sustainability and its long-term viability. Here's an explanation of the key aspects:

1. Climate Change and Carbon Emissions

- **Greenhouse Gas (GHG) Emissions:** Partnerships are assessed on their total emissions of greenhouse gasses. This includes emissions from direct operations (Scope 1), indirect emissions from energy use (Scope 2), and emissions across the value chain (Scope 3).
- **Climate Risk Management**: Evaluation of how partnerships identify, assess, and manage risks associated with climate change, such as regulatory changes, physical risks (e.g., extreme weather), and market transitions.
- **Emission Reduction Targets:** Partnerships are expected to set and pursue targets to reduce their carbon footprint, aligning with global initiatives like the Paris Agreement.

2. Resource Management

- **Energy Efficiency**: Partnerships are assessed on how efficiently they use energy in their operations and whether they are transitioning to renewable energy sources.
- **Water Use and Conservation**: Evaluation of how Partnerships manage water resources, including efforts to reduce consumption, improve water quality, and ensure sustainable use in water-scarce regions.
- **Material Sourcing and Waste Management**: Partnerships are judged on their sourcing of raw materials, efforts to minimize waste, and strategies to promote recycling and a circular economy.

3. Pollution and Environmental Impact

- **Air, Water, and Soil Pollution**: Partnerships are evaluated on their efforts to minimize and manage pollution, including emissions to air, discharges to water, and soil contamination.
- **Toxic Substances**: Management of hazardous chemicals and toxic substances is also scrutinized, especially in industries like manufacturing, chemicals, and agriculture.
- **Waste Management:** Partnerships are assessed on how they manage waste, including reducing production waste, promoting recycling, and safely disposing of hazardous waste.

4. Biodiversity and Land Use

- **Impact on Ecosystems and Habitats:** Partnerships are evaluated on how their activities impact biodiversity, including the destruction or conservation of natural habitats and ecosystems.
- **Land Use and Deforestation:** Partnerships involved in activities like agriculture, mining, or real estate are assessed on their land use practices, with a focus on avoiding deforestation and land degradation.
- **Conservation Efforts**: Evaluation of company initiatives to protect and restore biodiversity, such as supporting wildlife habitats, reforestation projects, and conservation partnerships.

5. Innovation in Sustainability

- **Sustainable Products and Services**: Partnerships are evaluated on their development of environmentally friendly products and services, such as energy-efficient appliances, low-emission vehicles, or sustainable packaging.
- **Research and Development**: Investment in R&D for sustainable technologies and processes, including innovations that reduce environmental impact and support sustainability goals.
- **The environmental component of ESG** is crucial for understanding a Partnerships sustainability practices and its ability to mitigate environmental risks. It reflects the company's commitment to protecting natural resources, minimizing its ecological footprint, and contributing to a sustainable future.

The listed environmental factors are designed to provide a comprehensive view of a partnership's environmental impact and how it manages environmental risks and opportunities, aligning with broader EU sustainability goals and the ESRS reporting standards.

It is also vital to consider regulatory compliance. This element can be placed in the Governance Domain also, but one should be conscious of the current differences between environmental reporting requirements (and emerging needs and standards) that are not integrated in diversity standards.

Environmental Compliance and Reporting

- **Regulatory Compliance**: Partnerships are assessed on their compliance with environmental regulations and standards at local, national, and international levels.
- **Transparency and Reporting**: Partnerships are expected to disclose their environmental impact and performance, including transparent reporting on metrics like carbon emissions, water usage, and pollution levels. This often includes adherence to recognized frameworks like the CSRD and ESRS, the Global Reporting Initiative (GRI) or the Task Force on Climate-related Financial Disclosures (TCFD).

Additional undertakings for environment

- **Identifying the material environmental** impacts, risks and opportunities through a double-materiality process lays the foundation for a partnership creating environmental value for partners and society at large. In addition to the materiality assessment across environmental topics the partnership should consider the following undertakings:

Environmental targets and performance

- **The Partnerships** should set specific environmental targets (e.g., emission reductions, resource efficiency) and report on progress towards these goals.
- **Performance indicators** must be provided to measure and explain the Partnerships environmental performance over time.
- **Integration with Strategy**
- **Partnerships must explain how** environmental factors are integrated into their overall business strategy, including how they align with global sustainability goals and regulatory requirements.

Ongoing assessment of environmental impacts, risks and opportunities

- **Partnerships should evaluate** how environmental factors might affect their financial performance, such as risks from climate change, regulatory changes, or resource scarcity on an ongoing basis, updating the materiality assessment as needed.
- **This may warrant the inclusion** of scenario analysis and risk assessments to gauge the potential financial implications of environmental risks.

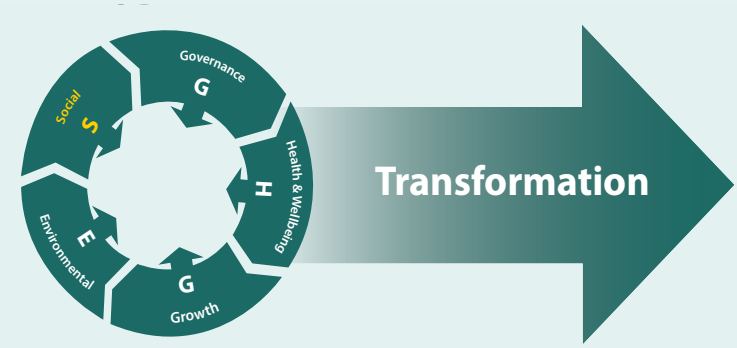
The approach ensures that Partnerships provide a comprehensive view of their environmental responsibilities and the associated risks and opportunities, fostering greater transparency and accountability in their sustainability practices.

SOCIAL

Introduction

Public-private partnerships (PPPs) in the life sciences sector are also recognized as vital mechanisms for addressing complex health challenges and driving innovation. These collaborations harness the strengths of both the public and private sectors, combining resources, expertise, and capabilities to achieve shared goals.

Key social factors that significantly influence the success of PPPs in life sciences include community engagement, equity in healthcare access, and the fostering of public trust. Community engagement ensures that the needs and perspectives of diverse populations are considered, enhancing the relevance and acceptance of new health solutions.



Equity in healthcare access is critical, as PPPs must strive to address disparities and ensure that advancements benefit all segments of society, particularly underserved and marginalized groups. Additionally, fostering public trust through transparency, ethical practices, and effective communication is essential for building long-term support and collaboration.

By prioritizing these social factors, PPPs in life sciences can create more inclusive, sustainable, and impactful health outcomes. In the following we dive into key factors and methods used in the KPI Model to assess impact on these factors.

Context

Through joint projects, research and knowledge mobilization the Life Sciences PPP (LSPPP) should examine and emulate the basic social conditions for a successful society,

The complexity of many challenges in society has their antecedence in failures to consider, measure and improve conditions in society – for everyone.

The pervasive decline in self-reported mental health is directly related to a field of social issues captured by the notion of social connections, for example. Similar factors are at play for physical health.

Health care systems invest predominantly in the response to illness and unwellness. Our understanding of how these arise has privileged physical illness and the “upstream” remedies have focused on improving healthy lifestyle behaviours.

KPIs

To track success in the Social Domain the PPP should establish KPIs – for society (and for the partnership itself) – fields related to the following:

Social Health Mapping on Cohesion

Social cohesion data is crucial for life science because it provides insights into how social relationships and community dynamics impact health outcomes and the effectiveness of public health interventions. In life science, integrating social cohesion data allows for a more holistic approach to health, considering not just biological factors but also the social environments that profoundly influence individual and community health.

1. Social Cohesion

Self-reported loneliness.

- Loneliness is a significant social determinant of health. For both lifestyle, empowerment, engagement and more, loneliness is a common denominator/challenge that needs addressing if other initiatives are to succeed.

Number of relationships for times of need

- The social network of individuals are important for support and efficacy of health promotion and efforts, and are an indicator for probability of interventions, changes or concepts to take root. Having one or more persons one can rely in times of change, stress, and need substantially strengthens personal resilience and wellbeing.

ERHVERVSFYRTÅRN
LIFE SCIENCE

Co-funded by
the European Union

Virksomhedsudvikling
Danmark



Trust landscape (health care, research, media, government)

- Trust is a vital component for societal and individual change. Understanding the landscape of trust is important to also understand challenges and opportunities for change. Trust is the medium through which successful undertakings and societal resilience depends. Interpersonal trust (amongst strangers, neighbours, colleagues and close relations) can be distinguished from institutional trust (government, media, business, academia and the community/NGO sector) and can be measured separately. This KPI also relates to a KPI on Partnership Trust - see below.

Experiences of discrimination

- External and internal, the reported experience of discrimination are an important factor to monitor to also enable the needed trust or changes to current operations that can lead to change. Experiences of discrimination can severely undermine other efforts of learning and transformation.

Diversity landscape (gender, ethnicity etc)

- Ensuring focus on challenges of diversity in terms of services, labour market, education or other are linked to challenges of health and transformation.

2. Social Health Mapping on Inequality

Integrating data on wellbeing inequalities ensures that the PPP initiatives for more research and public health also consider how efforts can help reduce gaps in health equity, leading to a more just and inclusive approach to improving population health. The data can help to uncover causes of health disparities, such as unequal access to resources, education, and opportunities, which can lead to variations in physical and mental health - important for building new health innovation, ideas, and initiatives.

Inequalities of Social Health

Happiness

- Self-reported levels of happiness and its landscape enables an understanding of the current perceived quality of life. International Happiness Index Scores and complex relations are indicative of progress in social cohesion, health and wellbeing.

Purpose and Meaning, Hope, Autonomy

- These indicators are vital for an understanding of the capacity to cope with both personal or community adversities and transformations.

Financial Resources

- Current income levels and available resources across geography, social groups, education levels and more are amongst the most important variables for ensuring wellbeing for persons of limited means. Without the ability to meet basic needs, a cascade of complex problems is experienced in families and the broader society.

Literacy/Education

- If not measured as a KPI in health and wellbeing, educational systems and challenges in them are also social determinants of health that are vital to monitor.

Data gathering for Social Health Mapping

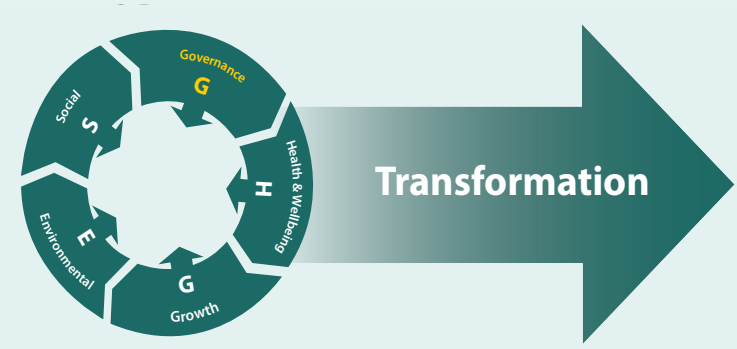
Social mapping data are often available in national statistical datasets. And while gathering them for the benefit of the KPI tool does not lead to change, it is a vital component in understanding the social landscape that any efforts made by life science have to work within and sometimes work towards. High levels of loneliness can be a key barrier for successful implementation of health initiatives, but changes in this social domain can also work as a powerful enabler for increased efforts for health and wellbeing.

GOVERNANCE

Introduction

The success of PPP collaborations heavily relies on robust governance factors that ensure effective coordination and accountability. These governance factors include clear regulatory frameworks, transparent decision-making processes, and strong leadership.

Clear regulatory frameworks provide the necessary guidelines and standards to align the interests of public and private entities, ensuring compliance and safeguarding public health. Transparent decision-making processes are vital for building trust and ensuring that all stakeholders have a voice in shaping the partnership's direction and priorities.



Strong leadership is essential for driving the partnership forward, navigating challenges, and maintaining a focus on shared goals.

By emphasizing the right governance factors, the PPP can drive and achieve greater efficiency, accountability, and impact, ultimately leading to more innovative and sustainable health solutions. In the following we dive into the consideration, key factors and methods used in the KPI Model to assess impact on these factors.

Health governance defined

For the purpose of this project, we can define health governance as the structures, processes, and activities through which decisions about health policy, strategy, and resources are made and implemented.

Health governance encompasses the roles and responsibilities of various stakeholders—including government bodies, international organizations, healthcare providers, and the community—in shaping and managing the health system. The stakeholders -levels' depend of course on how the health systems are organised, and can be focused on national, regional and local level.

The governance dimension thus has a unique role to organise and oversee the integration between different parts of the health systems, between health and care systems, and with 'external' sectors that have an impact on the health governance, such as environment, education, transportation, etc.

The governance dimension thus has a unique role to organise and oversee the integration between different parts of the health systems, between health and care systems, and with 'external' sectors that have an impact on the health governance, such as environment, education, transportation, etc.

KPIs for Governance

Using the described Double Materiality Assessment mentioned previously, the following elements are to be taken into consideration to develop the specific and dedicated KPIs into five overall areas. In the framework of the KPI Model it is also worth mention that the governance Domain could be looked at as a more structural element of the model, with its KPIs not just being somewhat parallel with the other Domains, but also but equally providing the structure and oversight framework of all the other KPIs.

The KPIs highlighted in green are especially important in the early stages of developing the PPP. Considering that it can be a challenge to secure sufficient resources to develop a full set of data for these KPIs in the initial stages of a partnership, these elements are mission critical, especially for a mission-driven partnership.

1. Stakeholder Engagement

This governance dimension is focused on the strategic involvement of all stakeholders, at different levels, that play a crucial role in decision making processes, planning and implementation of PPPs, to ensure the interconnection between regulation, resources and health needs. In parallel to stakeholder engagement, we surely have the element of 'trust', enabled, fuelled and maintained via transparent, organised and meaningful stakeholders engagement.

A. Mapping for diversity

- **Focus**: A mapping of X categories of stakeholders, in which Y stakeholders, for each category, would be identified for engagement activities. A precise numerical KPI cannot be identified in an overarching manner but should rather be focused on the specific sector/level of governance and stakeholder engagement (national, regional, etc). Furthermore, the mapping should consider the engagement of other sectors outside of the pure healthcare dimension to support other elements of the lighthouse model.
- **Purpose**: A numerical KPIs identifying the number, type of stakeholders and the dedicated engagement activities most suitable for each of them,

B. Engagement Activities

- **Focus**: A numerical KPI identifying several different activities that would serve as stakeholders engagement following the initial mapping. The evaluation of these activities will be carried out in the context of the engagement score analysis. Activities would equally cover the regular information actions that would be targeted to all stakeholders for transparency purposes.
- **Purpose**: list and number of stakeholders engagement activities, for each stakeholder/ stakeholder type.

C. Engagement Score

- **Focus**: A composite score to measure the level of quality of engagement of the different stakeholders involved. It could be seen as a composite KPI including elements such as how timely the engagement was, how clear the engagement information and details was, how productive meetings/activities were, how clear the engagement actions (from the side of the stakeholders) were and how easy it was to 'follow'/implement them. This will be strongly linked to the KPI in the Social Domain on Trust.
- **Purpose**: To evaluate the level (on a multiple scale touching different elements as above) of perceived engagement satisfaction and impact on the process of decision making/partnership.

Data gathering

In addition to internal assessments, the validated Joint Action survey tool can deliver a solid part of these data. One can also consider adding focus groups and interviews to add to the qualitative elements of these data.



2. Funding

Frameworks guiding the allocation of resources, financial, human and technological. Concerning PPP, this element is linked to the allocation of resources and investments directed to achieve the health needs of the population. It helps both visualise the efficiency of the PPP, but also the relative ability to exact change, considering the level of funding (absolute or over time).

A. Allocation of financial resources

- **Focus**: This KPI would measure the percentage of financial resources, over an overall budget, dedicated to projects
- **Purpose**: The KPI would visualise the amount of resources, in a set budget, dedicated to PPPs.

B. Financial resources efficiency

- **Focus**: Either a ratio between the outcomes achieved and the amount of resources utilised, or an index assessed by external experts evaluating these two elements.
- **Purpose**: This KPI would measure the effectiveness of resources allocation (financial) vs. The desired and intended results and positive change in the population's needs. The results and expected changes should be equally identified beforehand as part of the model.

Data gathering

The KPIs should of course be linked to the economic reporting - and then added an internal analysis and assessment based on the mentioned factors

3. Accountability and Transparency

This governance dimension focuses on mechanisms aimed at holding institutions and individuals accountable for actions, initiatives and decisions, and thus ensuring full respect of policies, regulations, allocation of resources and decision-making processes. Equally said implementation and processes should remain open to external analysis and scrutiny. It can equally include elements of ethics.

- **Focus**: A KPI based on a score measuring the quality and transparency of communication between the actors involved in a PPP initiative.
- **Purpose**: A measure of the quality of the information fluxes between the different actors.

Data gathering

A survey consisting of internal and external data points. The analysis should be undertaken by an external evaluator

4. Monitoring

Linked directly to the accountability mentioned above, this governance KPI is responsible and central in defining tools and methodologies to guarantee standardised, fair monitoring and evaluation.

A. Project/initiatives success vs. proposals

- **Focus**: A composite KPIs including the percentage of projects that have successfully reached the foreseen goals and an evaluation scale, evaluated by experts, of the project success quality, including compliance with existing policies and regulations and compliance with ethical rules.
- **Purpose**: To identify not only how many projects reached the expected results, but equally on what scale of quality/respect of the proposals. This scale could be composite and based on targets/objectives, budgets, timeline, plus provide an overview result.

B. Processes efficiency measure

- **Focus**: The KPI assesses time spent on admin and coordination issues, in order to provide an index of quality and efficiency of the processes involved in a partnership/project, from decision making to adaptation.
- **Purpose**: To assess and evaluate the quality and efficiency of the different steps of a partnership/project process, from its inception to proposal drafting/submission and decision, and its implementation/management.

C. Adaptation to change

- **Focus**: this KPI would be focused on giving a score to the reactivity of the Partnership to adapt to unforeseen issues or necessary changes, through time measurement and an adaptation index.
- **Purpose**: The KPI It would be composed by a measure identifying the time needed to react to possible adversity/changes, and an index measuring the successful or unsuccessful adaptation. It would also include an assessment of the use and implementation of any risk management strategies.

Data gathering

The measuring of project success can be done via internal evaluation but should include comments from external evaluators in the shape and form of either scores, or a transfer of qualitative feedback into a positive, neutral and/or negative response. For the Process's efficiency, an external interviewer can structure data from a series of interviews and an internal mapping. The Adaptation to Change can be done via an analysis of risk strategies or key mitigation initiatives during the reporting period.

5. Policy/Regulatory Compliance

The PPP should be using a mechanism of formulating policies addressing population needs in an equitable and sustainable way. In the case of PPP, this element is linked to the alignment of policies and regulations between health provision and equity and the correct involvement of the private sector. The data gathered about Public Health Mapping, Social Health Mapping and Environment should inform the actual policies in this KPI.

A. Regulatory Evaluation

- **Focus**: A KPI based on a score measuring how policies or regulation facilitate or hinder PPPs in their set domain and level (national, regional, local or even European).
- **Purpose**: measure how PPP-friendly existing or new policies are on a set scale. An explanation of obstacles and facilitation elements should be equally provided.

B. Overall governance system and coordination evaluation

- **Focus**: A KPI based on a score measuring how the governance system framework in a set location (national/regional/local) guarantees low, sufficient or optimal coordination between healthcare levels and between healthcare and other sectors (e.g., environment).
- **Purpose**: To measure how the governance system framework manages to ensure coordination across the partnership.

C. Partnership longevity and renewal

- **Focus**: A KPI measuring the duration of the partnership, numbers of partnership renewals and/or a score index identifying the feasibility of a partnership extension/renewal if not achieved yet.
- **Purpose**: By measuring how strong the partnership would be, matching the initial intended timeline with possible extended duration or even renewal (ongoing or perspective through an index). This KPI would thus measure the stability of the PPP and its governance system.

Data gathering

Regulatory and governance system reporting should be done by a combination of internal reporting and a review by an external evaluator. The partnership renewal rate should be linked to the financial reporting, but add an extra insight from the composite basic financial measure.



ERHVERVSFYRTÅRN
LIFE SCIENCE

Co-funded by
the European Union

Virksomhedsudvikling
Danmark



HEALTH & WELLBEING

Introduction

In addition to Environment, Social, and Governance factors, the integration and promotion of Health & Well-being are central to the success of PPPs. Health & Well-being is a key objective and foundation for the achievement of Well-being Economies and therefore included in the Nordic Lighthouse Model too.

Ensuring people- and patient-centric approaches, promoting preventative healthcare, and enhancing the overall quality of life are fundamental to the objectives of PPPs in this field. A patient-centric approach ensures that the development and implementation of health solutions are tailored to the needs and experiences of patients, leading to more effective and acceptable outcomes.



Emphasizing preventative healthcare helps reduce the burden of diseases through early intervention and health promotion, which is crucial for long-term public health improvement. Enhancing overall quality of life involves addressing not just medical needs but also social determinants of health, such as nutrition, housing, and education, to foster holistic wellbeing.

Life quality indicators, such as life expectancy, disease prevalence, and access to healthcare services, are critical metrics that reflect the overall health status of a population. These indicators are essential for guiding PPPs in developing strategies that not only address immediate health issues but also contribute to positive societal development. By focusing on improving life quality indicators, PPPs can drive meaningful progress in public health, leading to healthier, more resilient communities. This, in turn, supports broader societal goals, including economic stability, social cohesion, and improved quality of life for all citizens. By prioritizing health and wellbeing factors and leveraging life quality indicators, PPPs in life sciences can achieve sustainable, inclusive, and impactful health outcomes that foster positive societal development.

Promoting health and well-being helps individuals and organizations build resilience, enabling them to build positive relationships and cultures as well as better handle challenges and adapt to changes. Trust is enhanced when people see that an organization supports their capacity to cope with and overcome difficulties.

By prioritizing health and well-being, organizations and communities can enhance communication, demonstrate competence, promote fairness, and build a positive culture, all of which are fundamental to establishing and maintaining trust.

Measuring health and well-being is multifaceted, as it encompasses for instance physical, mental, and social dimensions. When tracked and analyzed regularly, KPIs in this area can provide a comprehensive picture of an individual's, organizational or a population's health and well-being.

In the context of public-private partnerships (PPPs) focused on health and well-being, KPIs are critical for measuring the effectiveness, efficiency, and impact of collaborative efforts between public entities and private organizations. These KPIs help ensure that the partnership is achieving its goals, delivering value to all stakeholders, and improving quality of life as well as public health outcomes.



KPI FOR THE HEALTH & WELLBEING DOMAIN

1. Public Health Mapping

To enable the Partnership to relate activities and strategic choices, a series of societal KPIs as a background for performance would enable and strengthen the overall reporting. And while it would obviously be ideal if the partnership could magically fix all problems and challenges, the intent is simply to provide a joint understanding and background for the conversations, communication initiatives, and strategic development of the PPP.

- **Disease Incidence and Prevalence Rates.** Monitoring changes in the incidence and prevalence of specific diseases or conditions targeted by the partnership (e.g., reductions in diabetes, cardiovascular disease, or infectious diseases).
- **Mortality and Morbidity Reduction.** Tracking reductions in mortality and morbidity rates related to specific health issues addressed by the PPP.
- **Self-Reported Health Status.** Asking individuals to rate their overall health on a scale (e.g., excellent, good, fair, poor).
- **Happiness and Quality of Life.** Using surveys like the Satisfaction with Life Scale (SWLS) to gauge overall happiness and contentment.
- **Mental Well-being Index.** A composite score based on surveys like the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) or WHO-5 Well-Being Index.
- **Quality of Social Support Networks.** The quality and extent of social connections and perceived support from friends, family, and community.
- **Lifestyle related Indicators.** Statistics on smoking, alcohol, physical activity, diet, sleep, screen behaviour.

Data gathering

Several of these indicators will be available from national reporting sources - but will be most enlightening for the individual partners so reduce silo thinking, but also helpful across borders and sectors to have a better understanding of the landscape of Health & Wellbeing that the specific PPP are operating in. Specific diseases or challenges are more relevant if the prevalence is high - some social determinants are important to be aware of as factors or barriers.

2. Health Literacy

Health literacy is the ability to obtain, read, understand, and use healthcare information to make appropriate health decisions and follow instructions for treatment. It involves not just the ability to read but also the skills to navigate complex health systems and critically evaluate information related to one's health. Measuring progress on the ability of the PPP to improve health literacy will both reflect short and long term improvements on life quality and empowerment.

- **Health Literacy Improvement** The degree to which the partnership's initiatives have improved health literacy among target populations, leading to better health outcomes.
- **Self-Reported Health Literacy** Asking individuals to rate their overall health literacy using the HLS or another tool.
- **Organizational health literacy** Identifying general health literacy strategies, policies, action plans and programmes within organizations.
- **Health literacy responsiveness** Identifying health literacy responsiveness to meet specific needs of vulnerable population groups.

Data gathering

Used in various countries, a number of validated HLS tools have been measured and are in continuous use to assess different dimensions of health literacy and are often used in research and public health assessments. This data can be used for reporting. The existence of plans and strategies among partners can also be done by using dedicated HLS tools. In addition, the International Health Literacy Association can assist in identifying local sources that can provide comprehensive data on the current status of health literacy, as well as insights into the effectiveness of various local strategies and initiatives aimed at improving it.

3. Social Well-being

For any partnership or community, the internal relations between partners and stakeholders are a vital component in the ability to learn, transform, or grow. KPIs in this area will help the PPP to both identify strengths and opportunities to further develop relations for ideation, collaboration, or impact.

- **Sense of Belonging**
  Feeling of connectedness and inclusion in one's community or social circles. (if not reported in Social)
- **Stakeholder Satisfaction Scores**
  Regular surveys to assess the satisfaction of all stakeholders involved, including public agencies, private partners, and beneficiaries of the partnership.
- **Community Engagement Levels**
  The extent to which the partnership engages with the community, including participation in decision-making processes and feedback mechanisms.
- **Transparency and Communication**
  The effectiveness of communication between public and private partners, as well as transparency in decision-making and reporting. (if not reported as part of Governance)

Data gathering

Internal surveys that also connect with onboarding data and progress during day-to-day operations and events are useful for this area. A checklist (and documentation for the level of use of the suggested steps or barriers to their implementation) and evaluation mechanism that includes data on and from community interactions are also helpful for these KPIs.

4. Organisational Culture

A partnership - of any kind - is a sum of a whole, that should ideally create a synergy based on the individual members. Data to assess the quality of these interactions and relations are therefore also vital to enable strategic choices for either the overall PPP or the individual partners on the progress of the partnership. These factors are very critical to the speed, quality, and complexity of problem solving that the PPP can manage.

- **Positive Organizational Culture**
  Organizations that prioritize health and well-being often cultivate a positive culture that values respect, support, and inclusivity. This positive culture fosters trust among employees, stakeholders, and the broader community.
- **Relational Capacity in the Partnership**
  Quality and outcome of relationship initiatives contribute to collaboration. Positive, supportive, and trustful relationships organisational environments contribute to health & wellbeing and higher quality of partnership outcomes.
- **Alignment with Values**
  Aligning organizational practices with the values of health and well-being reinforces trust by demonstrating that the organization's actions are consistent with its stated values.
- **Collaboration and Teamwork**
  In workplaces and communities that emphasize well-being, individuals are often more collaborative and supportive of each other. This cooperative spirit helps build and sustain trust. (if not reported in Governance)

Data gathering

The validated data tool Joint Action is a great way to measure relational capacity. This gives the entire PPP good data on both the capacity itself, the "temperature" of the organisation and the general perception and connectedness of the full partnership. Using this data tool can ensure that the reporting also includes data from otherwise silent partners and can thus reduce the challenge of bias from more active or vocal partners.



5. Workplace Health

For several PPP, the day to day operations are solved in a joint secretariat or by a single leading partner. The health and wellbeing of this core group has a profound importance to the individual members and the PPP in general. And while the purpose of the PPP is of course not the Health & Wellbeing of specific employees, but challenging or toxic environments in this part of the organisation will often have enormous practical and political impact on the PPP in general. And without data, also rumours of such challenges can have disastrous effects on short and long-term goals.

- **Absenteeism and Presenteeism Rates**
  Tracking the frequency and reasons for absence or reduced productivity.
- **Job Satisfaction and Engagement**
  Measuring how satisfied and engaged individuals are with their work.
- **Frequency of Mental Health Symptoms**
  Tracking the occurrence of symptoms like anxiety, depression, or burnout.
- **Ergonomic Assessments**
  Ensuring workspaces are designed to minimize physical strain and injury.

Data gathering

Internal surveys and data gathering on workplace performance are commonplace and should be readily available for organisation with an employer-employee relation to a number of individuals. These data should be gathered for the purposes of the KPI tool also to add to the insights and documentation about transparency and operational efficiency.



GROWTH

Introduction

All of the mentioned factors so far have at their core, the power of the PPPs to leverage the strengths of both public and private entities to achieve shared objectives, which can also have significant implications for economic growth.

Key factors that enable PPPs to contribute to economic growth include fostering innovation, creating jobs, and enhancing healthcare infrastructure. By combining resources and expertise, PPPs accelerate the development and commercialization of new medical technologies, treatments, and pharmaceuticals, driving innovation and expanding market opportunities.



This innovation, in turn, spurs job creation, not only within the life sciences sector but also in related industries such as manufacturing, logistics, and information technology.

Moreover, PPPs contribute to the enhancement of healthcare infrastructure, improving the efficiency and effectiveness of healthcare delivery. This leads to healthier populations, which are more productive and can contribute more robustly to the economy. Investments in healthcare infrastructure through PPPs also attract further investment, creating a positive feedback loop that stimulates economic activity. Additionally, improved health outcomes reduce the economic burden of disease, lowering healthcare costs and increasing disposable income and economic participation.

By focusing on these economic factors, PPPs in the life sciences can drive substantial economic growth, fostering a more dynamic and resilient economy. The synergistic benefits of innovation, job creation, and enhanced healthcare infrastructure underscore the vital role of PPPs in promoting not only health and wellbeing but also sustainable economic development.

KPIs to assess the Growth Domain

To measure the growth factors of the impact of the partnership, a set of Key Performance Indicators (KPIs) can be developed around the five elements: Members, Activities, Projects, Communication, Research Initiatives, and Investments.

1. Activities

The ability of the partnership to engage partners and stakeholders in activities during the reporting period - relative to both the existing funding and the reported interest/needs of the members gives an insight into both the productivity and scope of the PPP.

- **Participation Rate in Activities**
  Measures the percentage of members and non-members actively participating in partnership activities and open events, signaling their interest in partnership issues.
- **Satisfaction with Activity Outcomes**
  Surveys or feedback mechanisms to gauge member satisfaction with the outcomes of activities, reflecting their satisfaction with the partnership's activities and offers.
- **Activity Completion Rate**
  The percentage of planned activities that are successfully completed, indicating the operational capabilities.

Data gathering

This is done via internal reporting based on the activity report. Data on satisfaction has to be surveyed immediately after or at the events in question.

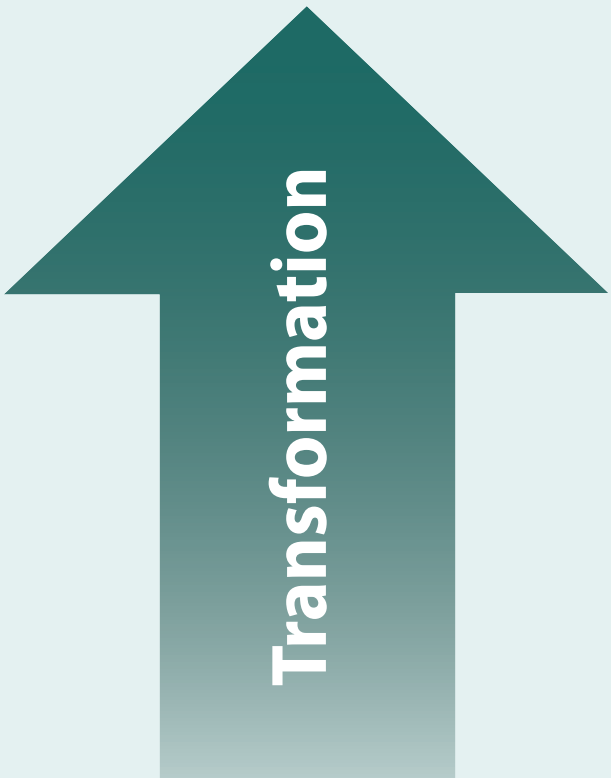
2. Projects

In addition to the different activities, the actual projects - defined as externally funded, externally coordinated and/or internal predefined projects (including pilot projects funded and/or governed by the PPP) with set goals, timelines, and budgets - will be assessed in this category. The KPIs are strongly linked to the KPIs reported in the Governance Domain for Efficiency also.

- **Project Success Rate**
  Measures the percentage of partnership projects that meet their goals, on time and within budget, demonstrating partnership's project management capabilities.
- **Stakeholder Involvement in Projects**
  The level of involvement of different partners and stakeholders in projects, reflecting their trust and commitment to the partnership.
- **Quality of Collaboration in (Pilot) Projects**
  Assesses the effectiveness of collaboration through post-project reviews, highlighting the challenges, benefits and trust between partners during joint efforts.

Data gathering

This is done via internal reporting based on the project reports and use of a mixed/methods approach to gather insights from projects.



3. Communication

The activity level and the efficiency of the PPP communication remains a vital component to both supplement activities, events, and projects, but also provide the needed pathways across sectors and geography to share insights in and from the PPP.

- **Frequency of Communication**
  Measures how often communication occurs from the PPP and between partners, indicating the level of ongoing engagement and trust.
- **Responsiveness**
  Tracks how quickly and effectively partners respond to communications, reflecting the reliability and trustworthiness of the partnership.

Data gathering

Based on an internal reporting by the communication team, supplemented by data analytics from key media/SoMe metrics.

4. Research Initiatives

While sometimes more or less identical with other projects and initiatives, the ability to build or connect with researchers or to contribute to academic publications are inherently different from other communication or event activities. These are therefore highlighted in an individual KPI to both underline the importance also for PPPs focusing on implementation or innovation, that it is vital to remember the importance and impact of a research based approach where at all possible.

- **Number of Joint Research Initiatives**
The number of research projects initiated and completed collaboratively, indicating trust in each partner's expertise and contributions.

- **Adoption of Research Findings**
Measures how widely research findings are implemented or adopted by partners, reflecting trust in the partnership's intellectual outputs.

- **Peer Review and External Validation**
The extent to which research outputs are validated by external experts, indicating the credibility and trust in the partnership's research activities.

5. Investments

The ability to attract investments - not just as projects, but also in terms of framework funding, donations, new revenue streams or other - are an important cornerstone to secure a sustainable mission-driven partnership. Striving for a diversity of funding is also very important, even if existing funding seems adequate for current operations.

- **Financial Commitment/Generation of Funding**
  Tracks the ability to attract funding from foundations, members, stakeholders, authorities, income-generation, and all other sources. This is of course also covered in financial reporting, but for the benefit of growth factors, the level and time-line of funding is also a key performance indicator.
- **Funding Diversity**
  The range of funding sources, indicating trust from a broad spectrum of stakeholders in the partnership's initiatives.

Data gathering

These data should be possible to extract from the financial reporting, but especially the breakdown of sources and types are important to also provide strategic insights for.



MITIGATION MEASURES

The purpose of reporting KPI and outcomes of course goes beyond some kind of fascination with numbers. The ability to report performance should be considered a fundamental requirement for both internal and external stakeholders as a tool to not just measure success (or failure if so be it), but more accurately to provide information on the progress so far.

With the analogy of navigation across open seas, the information contained in the KPI Model are mostly important to inform the navigator, crew, and captain about course adjustments, maintenance needs, and current status on cargo and supplies - all to enable the best chances of the success for the current mission or journey.

Therefore, in addition to the described methods of mapping and assessing location, it is also vital to have an adequate sense of relevant mitigation measures that can enable a course correction or solution to upcoming challenges in the navigation. Across the many different KPIs, however, this becomes less straightforward than it might sound. The mitigation measures vary by context, resources, history, and other factors - but even so, good knowledge sharing can still be the key to progress.

So while the experience of the Danish Lighthouse Case are the key building blocks for developing the KPI Model, the actual implementation of the KPI Model and the challenges of implementing mission-based partnerships will still be before us all.

Having this as a basic recognition in the nature of co-creative, trusting partnerships, the Danish Life Science Cluster intends to explore the potential of a global community of practice, that can explore both the specific use of the KPI Model, the general use of KPIs for strategic change, and the experiences of local stakeholders in life science as transformation agents.

This ambition and idea will be described in further detail in the following chapter. In addition, the Danish Life Science Cluster will initiate a series of webinars on mitigation measures to both share local experiences and to integrate global experiences in a joint dialogue about possible actions and initiatives that can either deliver on needed challenges or help change course when circumstances calls for it.

What is important to realize is certainly that the KPI Model is not a truth sayer, that tells a captain where the ship can go. But it is a vital tool to inform a captain on mission critical needs and possibilities that can help guide the ship safely across the seas.

As a further help in this ambition, in coming years the Danish Life Science Cluster intends to lead a conversation among partners at a global level to build both a generic and a purpose-fit catalogue of mitigation measures based on local experiences, data, and outcomes. And in this particular journey, we hope many will join us to learn more - the next chapter will share more - or read more about this initiative at the Erhvervsfyrtårn Life Science website and read about or join upcoming webinars for more information.

ERHVERVSFYRTÅRN
LIFE SCIENCE

Co-funded by
the European Union

Virksomhedsudvikling
Danmark



GLOBAL LIGHTHOUSE COMMUNITY - A HEALTHY COLLABORATION

DETAILS AND VISION

Considering the first chapters of this report as an introduction to the concept of the Public-Private Partnerships in Life Science and the benefits of this for the Danish Life Science community, it will come as little surprise, that we believe that public-private partnerships have a unique and powerful role to play in transforming local and international health care, in solving local issues, and in securing a vital new interaction of stakeholders, that enable a greater trust and basis for solving our local and global challenges.

So a global community of Lighthouses would also work to promote a useful model for public-private partnerships in life sciences that in turn offers multifaceted values, ranging from enhanced innovation and economic growth to improved quality of life and strengthened healthcare systems. By prioritizing inclusivity, sustainability, and collaboration, these partnerships can make a profound and lasting impact on local and global health outcomes.

A global network of these Lighthouse-partnerships can also foster international collaboration, enabling the sharing of knowledge, resources, and strategies across borders. This collaborative approach enhances global health security and preparedness.

But there are multiple, additional values of a global community of Public-Private Partnerships in Life Science:

SPEED OF IMPLEMENTATION

By leveraging the expertise and resources from both public and private sectors, Lighthouse PPPs foster an environment conducive to breakthrough innovations. These partnerships accelerate the development of new drugs, therapies, and medical technologies, addressing unmet medical needs and improving patient outcomes. And allows for a faster time from idea to implementation of new technology into practice and into life science research, further enhancing efficiency and precision in healthcare solutions.

QUALITY OF LIFE

The partnerships can lead to a significant boost in the quality of life for local communities (depending on the focus), where innovations developed within these partnerships ensure that local communities have access to the latest medical advancements. This leads to improved diagnostics, more effective treatments, and better management of chronic diseases, significantly enhancing the quality of life.

The KPI Model presented also emphasizes inclusivity and equity, ensuring that advancements in healthcare are accessible to all segments of society, particularly underserved and marginalized groups. This reduces health disparities and promotes social justice.

Economic Growth and Development

Establishing PPPs in life sciences leads to the creation of high-quality jobs in research, healthcare, and technology sectors. Additionally, local communities benefit from skills development programs and training opportunities, enhancing their employability and economic prospects.

Successful lighthouse projects also attract both public and private investments, boosting local economies. The presence of cutting-edge research facilities and healthcare innovations can turn regions into hubs of economic activity.

ERHVERVSFYRTÅRN LIFE SCIENCE

Co-funded by the European Union

Virksomhedsudvikling Danmark

SUSTAINABLE HEALTHCARE

PPPs can lead to more efficient use of resources and cost savings in healthcare delivery. By sharing expertise and funding, these partnerships reduce duplication of efforts and streamline processes, making healthcare more sustainable in the long run.

Lighthouse partnerships emphasize capacity building, equipping local healthcare systems with the knowledge, tools, and infrastructure needed to handle current and future health challenges. This results in more resilient and responsive healthcare systems.

Global Health Impact through scalable Solutions: Innovations and best practices developed within the KPI Model can be scaled and adapted to different regions worldwide. This has the potential to address global health challenges, such as pandemics, more effectively.

COMMUNITY ENGAGEMENT AND EMPOWERMENT

An inclusive participation that engages local communities in the decision-making process ensures that their needs and perspectives are addressed. This leads to healthcare solutions that are culturally sensitive and widely accepted.

These partnerships also often include initiatives to improve health literacy and awareness among local populations, empowering them to make informed decisions about their health and well-being.



THE FUTURE OF COLLABORATION

The Danish Life Science Cluster therefore proposes to initiate and coordinate a three-year strategy to Build a Global Community of Public-Private Partnerships Based on the Danish Lighthouse Case for Life Science. This has the following timeline and steps;

YEAR 1: FOUNDATION AND COLLABORATION

1. Develop Collaborative Platforms:

a. Create online platforms and forums for knowledge sharing, collaboration, and best practices dissemination among PPPs globally.

b. Organize thematic workshops and webinars focused on specific challenges and innovations in life sciences.

2. Set Up Initial Lighthouses:

a. Launch pilot projects in a few strategic locations to serve as initial lighthouses. These will act as models showcasing successful PPPs in life sciences. Secure funding and resources for these pilot projects through joint investments from public and private entities.

3. Strengthen Regulatory and Ethical Frameworks:

a. Work with international regulatory bodies to harmonize standards and guidelines for PPPs in life sciences.

b. Promote ethical practices and transparency in all partnership activities to build trust and credibility.

YEAR 2: INTEGRATION AND INNOVATION

1. Integrate Technological Solutions:

a. Leverage digital health technologies, big data, and AI to enhance research, development, and delivery of healthcare solutions.

b. Facilitate partnerships with tech firms to incorporate cutting-edge technologies in PPP projects.

2. Promote Cross-Sector Innovation:

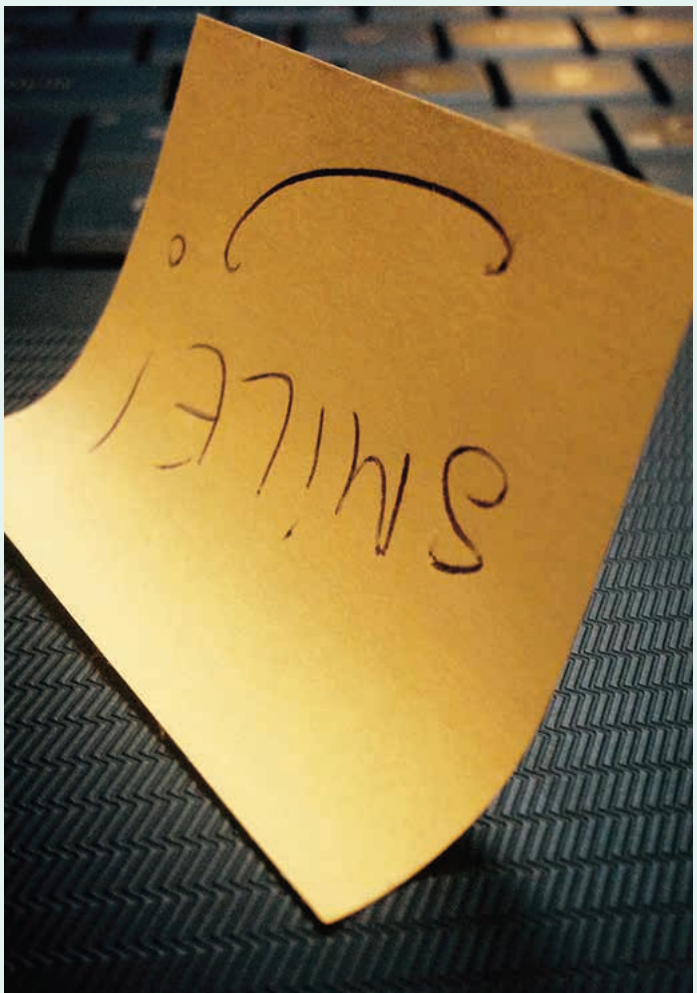
a. Encourage cross-sector collaborations, bringing together stakeholders from various industries such as pharmaceuticals, biotechnology, IT, and healthcare.

b. Launch innovation challenges and grants to support breakthrough ideas and solutions.

3. Enhance Capacity Building and Training:

a. Develop training programs and workshops to build capacity among stakeholders, focusing on project management, regulatory compliance, and innovative research methodologies.

b. Foster exchange programs and internships to facilitate knowledge transfer and skills development across regions.



YEAR 3: CONSOLIDATION AND SUSTAINABILITY

1. Evaluate and Refine Strategies:

a. Conduct comprehensive evaluations of the PPP initiatives to assess their impact, sustainability, and areas for improvement.

b. Refine strategies and models based on feedback and lessons learned.

c. Institutionalize Successful Practices:

d. Institutionalize best practices and successful models into standard operating procedures for future PPPs.

e. Create a certification or accreditation system to recognize and standardize exemplary PPPs.

2. Ensure Long-Term Sustainability:

a. Develop strategies for long-term financial sustainability, such as diversified funding sources, public grants, private investments, and revenue-generating activities.

b. Strengthen local capacities and infrastructures to ensure the longevity and independence of PPP projects.

3. Global Dissemination and Advocacy:

a. Promote the global adoption of the Nordic Lighthouse model through international conferences, publications, and partnerships with global health organizations.

b. Advocate for policies and frameworks that support the growth and sustainability of PPPs in life sciences worldwide.

By following this strategic plan, a global community of public-private partnerships in life sciences can be effectively built, drawing on the strengths of the Danish Lighthouse Case and the KPI Model to foster innovation, sustainability, and equitable health outcomes on a global scale.



REFERENCES

• Aboueid, S. et al,: How do you measure trust in social institutions and health professionals? A systematic review of the literature (2012–2021), Sociology Compass. 2023;17:e13101, https://doi.org/10.1111/soc4.13101

• Cottam H. Radical Help. Virago; 2019

• Edmonstone, John, The Handbook of Action Learning, Routledge 2024

• Metz et al; Building trusting relationships to support implementation: A proposed theoretical model, Hypothesis and Theory, 2022.

https://doi.org/10.3389/frhs.2022.894599

• Von Heimburg D, Ness O. Relational welfare: a socially just response to co-creating health and wellbeing for all. Scand J Public Health [Internet]. 2021 Aug 1 [cited 2024 Aug 19];49(6):639–52.

https://pubmed.ncbi.nlm.nih.gov/33323094/

APPENDIX

Double Materiality Assessment

Additional details on the process of a Double Materiality Assessment

Undertaking a double materiality assessment according to the Corporate Sustainability Reporting Directive (CSRD) involves a structured approach to evaluate and disclose both financial materiality and impact materiality.

For in-depth guidance as to process and content, we can recommend consulting specialized consultants, but the basics are accessible for all dedicated organisations. Here's how to approach this process:

1. Understand the Scope and Requirements

• Familiarize with the CSRD: Understand the specific reporting requirements under the CSRD, including which sustainability topics are mandatory to assess (e.g., climate change, biodiversity, human rights).

• Identify Reporting Boundaries: Determine the boundaries for reporting, including the entities and operations covered, supply chain considerations, and stakeholder groups affected.

2. Stakeholder Engagement

• Identify Stakeholders: List key internal and external stakeholders (e.g., employees, investors, customers, suppliers, NGOs, local communities, regulators).

• Engage with Stakeholders: Use surveys, interviews, workshops, and other engagement methods to gather input on what sustainability issues are material from their perspective.

• Understand Expectations: Stakeholder feedback helps identify what impacts matter most to them, guiding the impact materiality assessment.

3. Materiality Assessment

• Financial Materiality (Inside-Out Perspective):

• Identify Sustainability Risks: Determine how various sustainability issues could impact the company's financial performance, position, and development. Consider risks related to regulations, market changes, environmental events, and social factors.

• Assess Impact on Financial Metrics: Analyze how these risks might affect revenue, costs, asset values, liabilities, and cash flow.

• Impact Materiality (Outside-In Perspective):

• Identify Company's Impacts: Assess how the company's operations, products, and services impact the environment, people, and society. Consider areas such as carbon emissions, water use, human rights, labor practices, and community effects.

• Evaluate Significance: Evaluate the scale, scope, and irremediability of these impacts to determine their materiality.

• Prioritize Impacts: Prioritize the issues that have significant positive or negative impacts, using stakeholder feedback and impact assessments.

4. Data Collection and Analysis

• Gather Data: Collect quantitative and qualitative data on identified material issues. Use internal data sources, industry benchmarks, and third-party data where available.

• Analyze Data: Analyze the data to quantify impacts and financial risks, applying appropriate methodologies. Scenario analysis and risk modeling can be useful for assessing financial materiality.

5. Determine Material Topics

• Map Material Issues: Create a materiality matrix that plots financial materiality against impact materiality. This visual tool helps to highlight which issues are most material from both perspectives.

• Review and Validate: Involve senior management and the board in reviewing and validating the materiality assessment results to ensure alignment with the company's strategy and risk management framework.

6. Reporting and Disclosure

• Prepare the Sustainability Report: Disclose the material topics identified, explaining the process undertaken, the stakeholder engagement involved, and the rationale for the selected material issues.

• Include in Financial Statements: Integrate financially material sustainability risks into the company's financial reporting and risk management disclosures.

• Communicate Double Materiality: Clearly articulate how both financial and impact materiality have been assessed, providing transparency about the process and outcomes.

7. Continuous Monitoring and Improvement

• Monitor Changes: Regularly monitor changes in sustainability risks, stakeholder expectations, and regulatory requirements.

• Update the Assessment: Periodically update the double materiality assessment to reflect new information, evolving stakeholder concerns, and changing business contexts.

• Continuous Stakeholder Engagement: Maintain ongoing dialogue with stakeholders to keep the assessment relevant and aligned with emerging issues.

8. Integration with Strategy

• Align with Corporate Strategy: Ensure that the insights gained from the double materiality process are integrated into the company's overall strategy, risk management, and decision-making processes.

• Set Targets and Actions: Based on material issues, set specific sustainability targets and action plans that align with both financial goals and impact reduction.

By following these steps, companies and organizations can effectively undertake a double materiality assessment in line with the CSRD, ensuring that they address both the financial implications of sustainability issues and their broader impacts on society and the environment.