

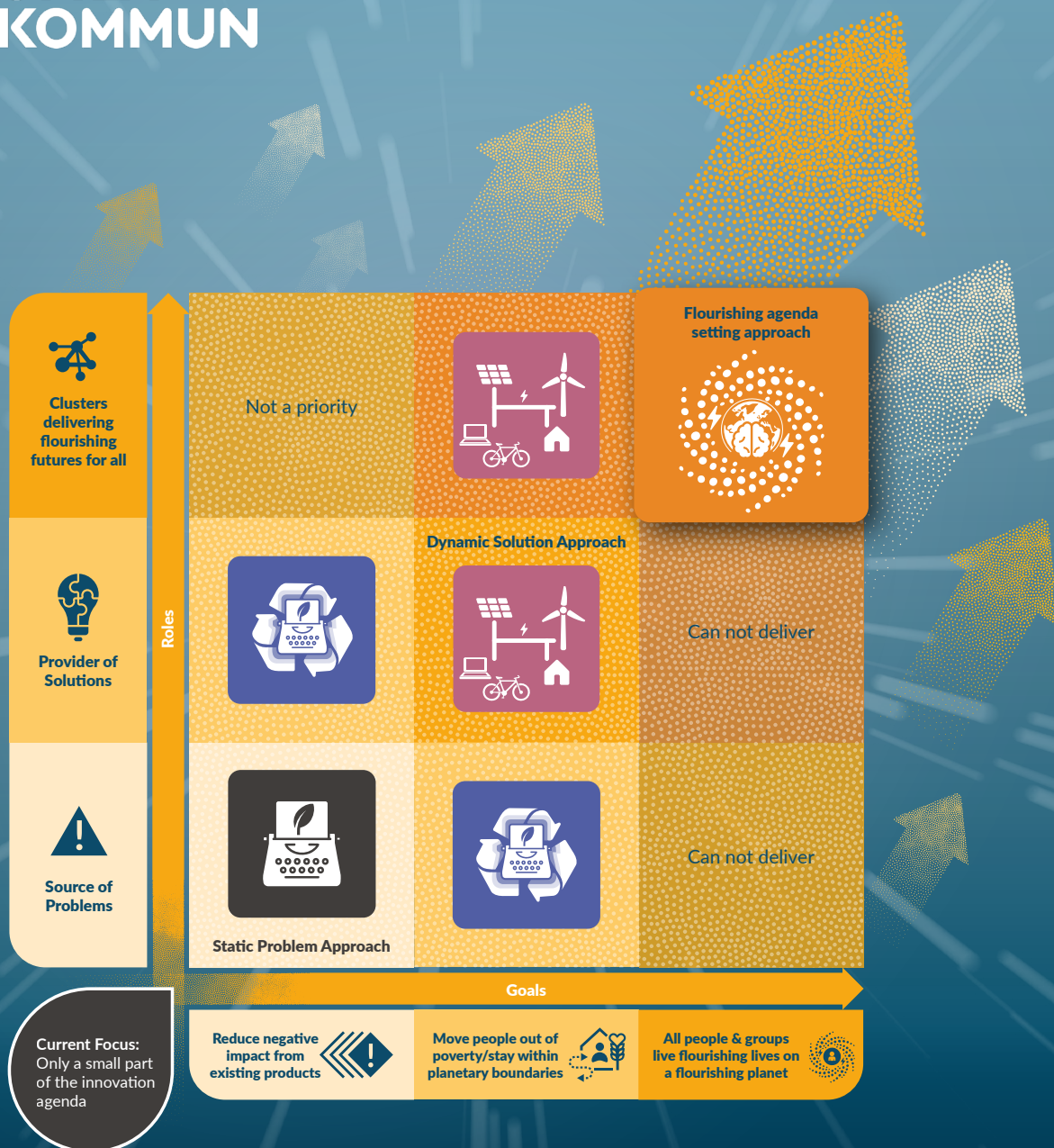
Cities Delivering Flourishing Lives on a Flourishing Planet

WIN THE FUTURE
with an expanded climate and innovation agenda



How cities can support flourishing lives for an aging population while avoiding emissions with an expanded climate and innovation agenda

Case: **UMEÅ KOMMUN**



Authors: Dennis Pamlin and Jay Hennessy

September 2025

Partners



Accelerating innovations towards
Flourishing Lives 4 All

NET-ZERO COMPATIBLE
INNOVATIONS INITIATIVE



Our measure of success should be simple: are we enabling all people to live flourishing lives while supporting a flourishing planet? Umeå shows how to make that real. By starting from human needs and building a practical portfolio, including Seniortorget's digital participation, preventive health, intergenerational programs, rural collaboration, Umeå delivers outcomes we can assess: about 355 tCO₂e avoided per year at today's participation levels and roughly 399 Flourishing Life Years (FLY) gained, with clear room to scale. This is innovation leadership that begins with people and ends with solutions that others can adopt.

The case also operationalizes an Expanded Climate & Innovation Agenda (ECIA) – with focus on flourishing lives for all and solution export from cities - moving beyond static problem-solving to dynamic solution provision. When Umeå's approach is exported, the impact becomes truly transformative: in the EU alone the scenarios range from 2.6 to 8.7 MtCO₂e avoided annually with 0.36–1.7 million FLY; across the OECD, 6.5–21.8 MtCO₂e and 0.9–4.2 million FLY; and at a global, medium scenario, about 50 MtCO₂e avoided and 9.8 million FLY per year. Notably, even the medium global pathway exceeds Sweden's total annual emissions - an extraordinary signal from a city of about 130,000 people.

Delivering such results requires more than technology swaps and marginal innovation; it calls for governance, business-model, and value innovation, with start-ups and civic actors woven into purpose-driven clusters. Umeå's leadership provides the practical compass cities need to design, invest, and scale the solutions of tomorrow. This is the essence of agenda-serving innovation: align portfolios to human needs, treat stakeholders as solution providers, and build exportable models that others can quickly adopt. This is precisely what we, at ICLEI, promote - so cities can "win the future" by expanding their climate and innovation agenda and by growing into global solution providers for flourishing lives on a flourishing planet.

Pourya Salehi,
Head of Urban Research, Innovation, and Development Team
ICLEI World Secretariat

Summary

Cities that are innovation leaders are uniquely positioned to move beyond static problem approaches to the climate challenge, where the only goal is territorial emission-reductions. Instead, they can also expand their approach and embrace the role of a solution provider with a focus on human needs. In such a role they focus on delivering flourishing lives while also becoming global solution providers, supporting and exporting innovations that deliver flourishing lives for all on a flourishing planet. This report highlights Umeå as a case study for how mid-sized, agile cities can lead this transformation using Umeå's world leading work in turning the need for flourishing lives for an aging population into a driver of innovation.

Globally, the number of people aged 65+ exceeds 800 million today and will likely reach 1.5 billion by 2050. Instead of treating this as a fiscal or social burden, Umeå's experience shows that aging populations can be an important and positive catalysts for systemic innovation, delivering healthier, more meaningful lives among the aging population as well as the population at large, while also reducing emissions in ways that are compatible with a sustainable 1.5°C pathway.

Umeå's "Seniortorget" (the Senior Square) ecosystem combines digital platforms, physical meeting places, intergenerational programs, rural collaboration, and preventive health strategies. These programs demonstrate measurable benefits for both climate and well-being.

Initial assessments of Umeå's Seniortorget-related initiatives show:

- Avoided emissions: Approximately 355 tonnes CO₂e/year at current participation levels, through reduced travel (digital participation, telehealth), fall prevention, and more efficient service design.
- Flourishing Life Years (FLY): About 399 FLY/year now, with potential for several thousand more as participation expands to all 23,600 residents aged 65+.

These dual metrics—avoided emissions and FLY—capture the true value of human-needs-driven climate innovation and give Umeå a distinctive leadership advantage.

What makes Umeå's model powerful is its scalability. Seniortorget-style innovations rely on relatively low-cost digital and social infrastructure and are adaptable across cultures and geographies. If exported beyond Umeå, the potential is transformative:

- Rest of Sweden: Scaling to 2.1 million seniors could yield:
 - Low: 38,000 tCO₂e avoided annually; 7,400 FLY/year
 - Medium: 133,600 tCO₂e avoided annually; 26,000 FLY/year
 - High: 190,800 tCO₂e avoided annually; 37,100 FLY/year
- EU: With 97 million seniors the potential impact is:
 - Low: 2.6 million tCO₂e avoided annually; 362,500 FLY/year
 - Medium: 6.1 million tCO₂e avoided annually; 1.19 million FLY/year
 - High: 8.7 million tCO₂e avoided annually; 1.7 million FLY/year
- OECD countries: Across 242 million seniors, avoided emissions could reach:
 - Low: 6.5 million tCO₂e/year; 900,000 FLY/year
 - Medium: 15.3 million tCO₂e/year; 3 million FLY/year

- High: 21.8 million tCO₂e/year; 4.2 million FLY/year
- The World (global 65+ 800 million today, 1.5 billion by 2050):
 - Low scenario: 14 million tCO₂e avoided/year; 3 million FLY/year
 - Medium scenario: 50 million tCO₂e avoided/year; 9.8 million FLY/year
 - High scenario: 100 million tCO₂e avoided/year; 18 million FLY/year

Note that these figures do not include indirect multiplier effects (e.g., healthier diets, reduced caregiver travel), making the estimates conservative. The figures demonstrate the transformative potential for a city like Umeå expanding the innovation and climate agendas and use major trends, such as demographic aging, and reframe them as opportunities for innovation. By combining well-being metrics and climate goals, Umeå has the potential to position itself as a global leader by exporting sustainable aging solutions that can turn a trend that many see as a problem to an innovation driver that delivers better lives in better ways, and helps hundreds of millions around the world to live flourishing lives while reducing emissions worldwide.

Even a medium, global scenario results in an avoided emission potential that is larger than the total CO₂-equivalent emissions from Sweden. This a city with a population of about 130 000. It positions Umeå to become a global hub for sustainable aging innovation.

While megacities often get the media attention, mid-sized cities like Umeå are more agile, able to test integrated solutions faster and export them globally. Umeå's unique assets include:

- Participatory design and gender-equal urban planning.
- Digital inclusion and outdoor health ecosystems connecting physical and mental well-being.
- A culture of cross-sector collaboration linking startups, universities, public services, and civil society.
- World-class research on health and capability metrics (e.g., CALY-SWE).

The report calls for a reframing of climate and innovation agendas:

1. An expanded innovation and sustainability agenda with focus on dynamic solution approach and not only a static problem approach.
2. Aging populations as engines of innovation, not a risk to manage.
3. Dual metrics (avoided emissions + FLY) to guide urban investments.
4. Cities as exporters of human-needs-driven solutions that are globally scalable and equitable.

In an era of demographic shifts and climate urgency, Umeå shows how cities can deliver flourishing lives for an aging population while avoiding emissions, and how these innovations can be exported globally to help billions live well on a flourishing planet.

Umeå already demonstrates how investments in seniors' autonomy, health, and meaning can reduce emissions, increase well-being, and generate exportable knowledge. In an era of demographic shifts and climate urgency, such an approach is not only desirable, it is essential for building a future where aging populations are a catalyst for globally sustainable, flourishing lives.

1. Introduction

Cities are often seen as centres of consumption and emissions from a climate perspective, but with an expanded climate and innovation agenda they are uniquely positioned to be providers of flourishing lives and exporters of the globally sustainable solutions that make such lives possible on a flourishing planet.

The climate challenge is still primarily approached with a static risk-based approach by most stakeholders, where the focus is on reduction of emissions in existing systems, from countries, companies, cities and regions. For most cities and regions, climate leadership has traditionally meant setting targets to reduce territorial emissions, essentially creating demand for solutions that provide fossil free versions of current solutions. While reducing territorial emissions is important, leadership goes beyond just generating demand for yesterday's ways of providing solutions. It also involves identifying, supporting and accelerating the uptake of new globally sustainable ways to deliver on human needs.

In 2002, more than 20 years ago, Baoding, a city 140 km from the Chinese capital, started billing itself as a renewable energy centre. One deciding factor was the success of Yingli Green Energy Corporation, a local startup founded in 1987 that grew into a major supplier of solar panels. Local city leaders officially declared Baoding to be a "Clean Energy City" in 2006.

In addition to cities like Baoding that made solar affordable, early adopters of solar panels also played a key role. Cities like Freiburg, Europe's "solar city" began their journey already in the 1970's. Freiburg has continued to lead the way with renewable energy. Cities ready to lead—like Baoding in collaboration with Freiburg and other leaders—represent the next generation of innovation and climate leadership, staying ahead of the curve and enabling flourishing lives for their residents while developing and delivering the solutions the world needs.

It is time for a new generation of city leadership that identify, support and export the innovations that the world needs, i.e. cities and regions that become solution providers of globally sustainable innovations that deliver flourishing lives for all on a flourishing planet.

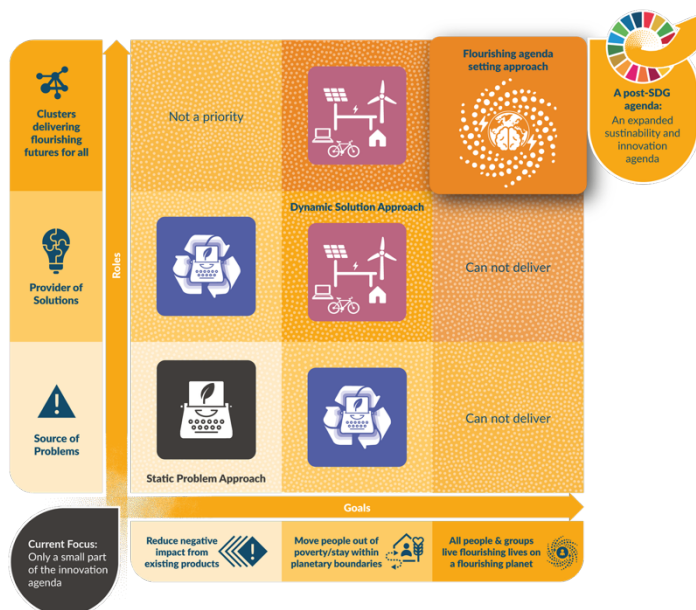
Still, very little attention is given to cities and regions as solution providers of flourishing lives, or as enablers of innovation to develop, support, implement and scale the next generation of globally sustainable solutions.

In Sweden, Umeå is a city with unique opportunities to lead an expanded climate and innovation agenda with its strong focus on providing a good life for its population and a strong innovation ecosystem that could result in significant export opportunities.

2. From a static problem approach to a human need driven approach in cities

The fact that cities and regions are uniquely positioned to be leaders, and enable and provide globally sustainable and innovative solutions that deliver on human needs, makes an expanded climate and innovation agenda (ECIA) important to guide the strategies of both cities and regions.

Today more than 8 billion people have the right to live flourishing lives. By 2050 there will probably be close to 10 billion and by the end of this century the most likely scenario is about 10.5 billion, but it can also reach 12 billion, before the population is estimated to stabilize.



In order to have margins, we should be able to provide flourishing lives for at least 12 billion people while limiting resource use to allow for a Half-Earth society, ensuring a flourishing planet.

In addition, recent data from IPCC scientists indicates that climate strategies need to include a full risk assessment, as the probabilities for warmings that pose an existential threat to human civilization ($>6^{\circ}\text{C}$) are increasing rapidly. This has significant implications for the kind of actions that can be seen as acceptable, e.g. betting on future technological CCS solutions as the only option to reduce emissions, or meeting targets with forest offsetting, are not acceptable responses from a full risk perspective. Instead, immediate action that delivers on human needs, using granular, smart solutions, delivered by new clusters of stakeholders, is more important than ever.

Instead of only the reduction of emissions from existing structures in cities, the main challenge, from a long-term global perspective, is to avoid emissions while delivering on human needs, i.e. we need incentive structures to deliver solutions in support of 1.5°C compatible pathways, where 11 billion people can live flourishing lives on a regenerative planet in balance.

While the current actions of cities, business and policymakers, to reduce emissions from current structures, make a globally sustainable 1.5°C future increasingly unlikely, the climate is not a negotiating partner and giving up on this goal is to give up on future generations.

Urban environments that maximize natural light can enhance well-being, reduce energy consumption, and contribute to sustainable city living. Incorporating outdoor spaces designed for recreation can further improve urban life.

Three major shifts are needed in cities for an expanded climate and innovation agenda:

1. Flourishing lives (Not only emission reductions in existing systems)

The dominant urban climate strategy has focused on retrofitting existing systems to reduce emissions. While this is necessary, it is insufficient. An expanded agenda must begin not with emissions but with human needs, reframed through the lens of flourishing lives. This shift moves the objective from harm reduction to value creation. Cities should prioritize solutions that provide access, autonomy, and meaning, such as walkable neighbourhoods, local food systems, inclusive public spaces, and educational and creative infrastructures. These are not co-benefits but core design criteria. As the FL4ALL agenda outlines, this means organizing infrastructure, innovation, and investment around positive social outcomes (e.g. well-being, equity, opportunity) while avoiding emissions entirely, thus leapfrogging legacy systems rather than adapting them.

2. For all (Focus on globally sustainable solutions that makes life better for all)

Most current strategies emphasize fossil fuel phase-out in industrialized regions but fall short of addressing equity, both planetary and within nations. A truly effective agenda must be globally scalable and just, enabling 10–12 billion people to flourish on a flourishing planet. This means not only supporting sufficiency-based approaches that meet human needs with lower energy and material throughput, but also actively countering growing disparities in wealth and power within countries and regions with a focus on ensuring flourishing lives for all.

As capital and decision-making concentrate in the hands of a shrinking minority, climate and innovation agendas risk deepening social exclusion and ecological harm. An equitable transition must include measures to democratize access to clean energy, healthy environments, and meaningful livelihoods. It must also embrace learning from and co-developing with communities in the Global South, many of whom are already pioneering low-energy, high-wellbeing models.

As highlighted in an ECIA city paper by FL4ALL and ICLEI, cities and regions must understand themselves as interconnected nodes in a global transformation.¹ They should lead in co-producing inclusive, culturally relevant, and sustainable urban living patterns, not only across borders, but within their own societies.

3. Export (Leaders share and turn the transformation into an innovation driver)

Cities and regions must shift from focusing solely on internal improvements to becoming active exporters of transformation. This means sharing not only technologies but also governance models, incentive structures, procurement practices, and cultural narratives that support systemic change.

By positioning themselves as *solution providers*, and not just emission reducers, pioneering cities can drive demand for innovations that are aligned with the 1.5°C pathway and flourishing life goals. This includes building cross-sectoral innovation clusters that link climate action with housing, health, food, and mobility in ways that others can adopt and adapt. Exporting these approaches helps reframe climate action from burden to opportunity, turning sustainability into a competitive and collaborative advantage for the decades ahead and can inspire citizens, leading to a virtuous cycle.

¹ <https://www.fl4all.world/publications/an-expanded-climate-and-innovation-agenda-for-cities-and-regions>

3. Urban challenges as drivers of innovation for flourishing lives on a flourishing planet

Cities in the 21st century face converging, complex challenges that cannot be solved through technological innovation alone. Instead, they demand systemic responses, governance innovation, business model innovation, and value innovation, that harness the full power of local ecosystems, including start-ups and civic actors. Below are six major challenges, each explored in terms of (A) their scope and impact, and (B) their potential to drive innovation for a flourishing future.

These challenges are deeply interconnected. Mental health is linked to inequality and technology use; aging intersects with environmental vulnerability and social cohesion. Addressing them in isolation risks techno-fixes that reinforce existing problems.

Systemic transformation requires:

- Governance innovation (e.g., participatory and adaptive policy frameworks)
- Value innovation (e.g., reframing success around well-being rather than GDP)
- Business model innovation (e.g., moving from extractive to regenerative urban economies).

Start-ups are vital to this shift, offering agility, experimentation, and purpose-driven approaches that larger institutions often lack. When supported by enabling policy and inclusive ecosystems, they can pioneer the co-creation of flourishing lives, locally and globally.

1. Growing inequality

Urban inequality is rising globally. According to UN-Habitat, income inequality in cities is higher than in rural areas in more than 75% of countries.² This disparity manifests in segregated housing, unequal access to education, healthcare, and jobs, and contributes to social unrest. The World Bank also highlights that urban inequality often intersects with racial, gender, and migratory discrimination.³

Inequality can spur innovation when cities invest in inclusive urban design, equitable mobility, and local ownership models (e.g. community land trusts). Governance innovations like participatory budgeting and business models like platform cooperatives challenge extractive dynamics and distribute value more fairly. Start-ups can scale micro-finance, localized job platforms, and shared mobility solutions tailored to underserved communities.

2. Increased mental health challenges

Urban environments are increasingly associated with mental health disorders. Studies suggest city dwellers have a 40% higher risk of depression and a 20% higher risk of anxiety.⁴ Urban stressors include crowding, social isolation, noise, and pollution. WHO estimates that over 970 million people globally are living with a mental disorder.⁵

² UN-Habitat (2020). World Cities Report 2020: The Value of Sustainable Urbanization. https://unhabitat.org/sites/default/files/2020/10/wcr_2020_report.pdf

³ World Bank (2016). Taking on Inequality. <https://openknowledge.worldbank.org/handle/10986/25078>

⁴ Peen, J., et al. (2010). The current status of urban-rural differences in psychiatric disorders. *Acta Psychiatrica Scandinavica*, 121(2), 84–93. <https://doi.org/10.1111/j.1600-0447.2009.01438.x>

⁵ WHO (2022). World Mental Health Report. <https://www.who.int/publications/i/item/9789240049338>

Rethinking cities for mental well-being involves value innovations such as prioritizing silence, beauty, and nature. Initiatives like “mental health urbanism” incorporate therapeutic green spaces, creative expression zones, and community cohesion into planning. Start-ups can contribute with apps that promote nature connection, community resilience platforms, and purpose-based learning environments.

3. Technological and AI-driven disruption

AI and automation could displace up to 30% or more of global jobs by 2030.⁶ Additionally, algorithmic bias, surveillance, and cyber-risks threaten democratic values and human autonomy.⁷

This disruption can drive ethical AI ecosystems and inclusive digital infrastructure. Governance innovations such as algorithmic transparency regulations and digital commons frameworks can ensure AI serves the public good. Start-ups can lead in developing AI for accessibility, mental health diagnostics, or low-energy smart urban services that align with human needs.

4. Aging populations

By 2050, one in six people globally will be over 65.⁸ Many cities are not age-friendly, and aging intersects with poverty, loneliness, and increased demand for care and accessible infrastructure.⁹

The aging challenge invites innovations in intergenerational housing, mobility, and preventive health. Governance innovations can involve seniors in co-design processes, ensuring age-friendly cities. Start-ups can provide robotic companions, mobility solutions, or wellness platforms tailored for elder autonomy and dignity.

5. Environmental instability

Climate change poses existential risks to urban life. Over 90% of urban areas are coastal and highly vulnerable to sea-level rise, extreme heat, and floods.¹⁰ Urban ecosystems are also major drivers of biodiversity loss, water stress, and waste production.

Environmental threats can be addressed through regenerative design, circular economy models, and nature-based solutions. Cities can become carbon sinks and biodiversity havens. Business model innovations—such as performance-based procurement or ecosystem service markets, can be incubated by mission-driven start-ups that scale climate-positive solutions.¹¹

6. Loss of meaning and purpose

Despite rising material standards, many urban residents experience loneliness, spiritual emptiness, and disconnection from place and purpose. Leading organisations, from the

⁶ McKinsey Global Institute (2017). Jobs lost, jobs gained. <https://www.mckinsey.com/featured-insights/future-of-work/jobs-lost-jobs-gained-what-the-future-of-work-will-mean-for-jobs-skills-and-wages>

⁷ Eubanks, V. (2018). Automating Inequality.

<https://us.macmillan.com/books/9781250074317/automatinginequality>

⁸ United Nations DESA (2019). World Population Prospects. <https://population.un.org/wpp/>

⁹ WHO (2007). Global Age-friendly Cities: A Guide. <https://www.who.int/publications/i/item/9789241547307>

¹⁰ IPCC (2021). Sixth Assessment Report, Working Group II. <https://www.ipcc.ch/report/ar6/wg2/>

¹¹ Rockström, J. et al. (2009). A safe operating space for humanity. *Nature*. <https://doi.org/10.1038/461472a>

WHO to the OECD emphasize that meaning, belonging, and agency are essential for mental and social well-being.¹²

Cities can become places that nourish the human spirit by embracing arts, community rituals, and lifelong learning. Innovation here is not about new gadgets but cultural regeneration and sense-making systems. Start-ups can contribute through platforms for civic engagement, creative collaboration, and interfaith dialogue.

¹² WHO (2021). World Mental Health Report. <https://www.who.int/publications/i/item/9789240049338>
OECD (2020). How's Life? 2020: Measuring Well-being. <https://www.oecd.org/statistics/how-s-life-23089679.htm>

4. Innovating with start-ups for a shift from reducing of the “bad” in current systems to delivering flourishing lives on a flourishing planet

Start-ups are widely recognised as the key driver of significant changes and disruptions in society, and this is supported by academic literature over the last decades. Below are three areas that highlight the unique characteristics and advantages that start-ups have over incumbent companies when it comes to innovation and driving change that deliver global sustainability.

- Trying new things
- Developing new business models
- Attraction of top talent



If we look at all key parts of society that have changed over the last 30 years, from how energy is converted and how we move, to how we find information and how we eat, start-ups have been leading the change while the incumbents have protected the old ways of providing services.

With start-ups so significant when it comes to the kind of changes needed in society, they should be included in all relevant strategies and initiatives that focus on the future and where more than optimisation of current systems is of interest. Only stakeholders, strategies and initiatives that exclusively focus on optimising existing systems in the short-term (1-2 years) can ignore start-ups and the start-up ecosystem.

Key areas for start-ups with new business models include:

1. **Social entrepreneurship:** Social enterprises, particularly in the Global South, are creating business models that prioritize both social impact and financial viability. These companies blend traditional knowledge with cutting-edge technology, delivering scalable solutions that address local needs while contributing to global sustainability.
2. **Sharing and platform economies:** The rise of the sharing economy is fostering sustainable consumption models, even if most current start-ups only optimize existing resources. However, Cohen & Kietzmann argue that this trend reflects a broader shift in business models that focus on access over ownership, a trend that could be guided to promote more sustainable use of resources.¹³
3. **Sustainable consumer models:** Businesses are increasingly focusing on extending the lifecycle of products through repair and reuse. Outdoor companies, for example, have pioneered business models based on selling long-lasting products and offering repair services, promoting a shift away from the fast fashion model toward more

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https://www.researchgate.net/publication/267757539_Ride_On_Mobility_Business_Models_for_the_Sharing_Economy

sustainable consumption.¹⁴ For nutrition, smart packaging and recipes that encourage reduced food waste are areas where start-ups are active.

The future of innovation and sustainability in cities is no longer only about doing less harm, increasingly it's about doing more good.

With a focus on human needs and the next generation of solution providers the role of start-ups is different compared with many existing matchmaking processes and incubators/accelerators' focus. Instead of only asking start-ups to deliver solutions to address the companies' problems (pain points) a human needs driven matchmaking explores ways that start-ups can support new offerings, accelerate current solutions and unlock new opportunities that deliver on human needs in ways that are globally sustainable. Such an approach tends to require a broader approach where new clusters are created that can deliver flourishing lives.

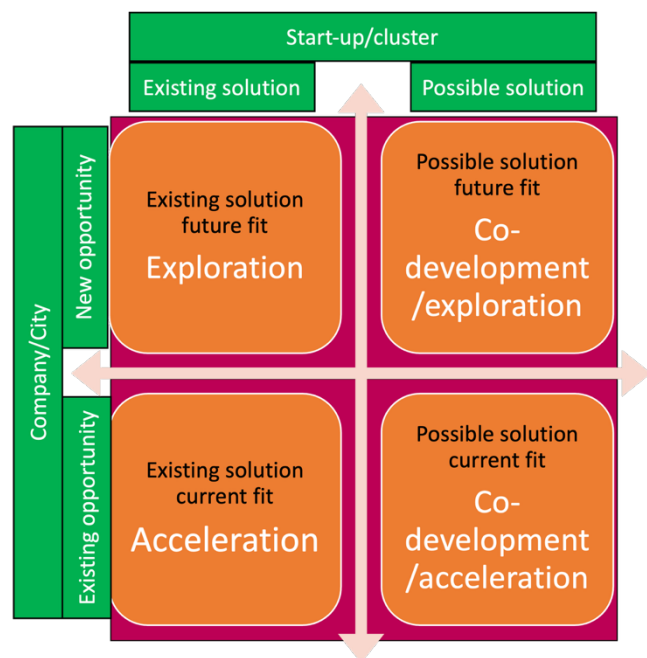


Fig: IGNITE/RISE/FL4ALL
based on *Value creation in startup-corporate interactive spaces*
Blomquist, Gaim & Nair, 2020

¹⁴ <https://icebug.com/sustainability/there-are-no-green-shoes>, <https://houdinisportswear.com/en-se/campaigns/live-large-with-less>, <https://www.vaude.com/de/en/blog/post/yours-forever-give-our-products-a-long-life.html>

5. Current leadership, potential areas for global leadership and export

Umeå has long stood out as a progressive and inclusive city, deeply rooted in the Scandinavian ethos of “det goda livet”, the good life. This vision aligns closely with the emerging global agenda for Flourishing Lives with a focus of time spent in meaningful, healthy, empowered, and socially engaged living. In the context of an accelerating climate crisis, demographic shifts, and mental health challenges, Umeå is well-positioned to become a global model for climate-positive, human-centred innovation.

Rather than seeing sustainability as merely a constraint or technical problem, Umeå can lead with a solution-oriented agenda: one that focuses on how cities can enhance life quality while reducing emissions, as well as exporting these solutions. By embedding flourishing lives into its climate strategy, Umeå has a unique opportunity to drive transformation in ways that are globally relevant and locally empowering.

Umeå’s commitment to health, mobility, outdoor life, and education provides a natural foundation for addressing complex challenges such as:

- Transportation emissions and sedentary lifestyles through active commuting, walkable infrastructure, and outdoor sport initiatives.
- Mental health challenges among youth by investing in inclusive, nature-connected, and creative urban environments.
- An aging population by designing urban systems that support autonomy, intergenerational engagement, and lifelong vitality.

These local investments align with Umeå’s social sustainability program goals: “to contribute to good and equal life conditions for all citizens,” especially by strengthening participation, mental well-being, and access to meaningful activities.¹⁵

Umeå stands at the intersection of tradition and transformation. With a long-standing commitment to education, inclusion, health, and sustainability, the city has quietly cultivated areas of excellence that place it among the most forward-looking mid-sized cities in the world. But in the face of global challenges—climate change, aging populations, growing mental health concerns, and resource scarcity—Umeå’s approach offers more than local value: it holds international relevance.

This chapter highlights Umeå’s current areas of leadership, many of which are already gaining global recognition, as well as emerging opportunities where the city can become a world leader and exporter of innovative, sustainable solutions that support flourishing lives on a flourishing planet.

5.1 Current leadership in umeå

Umeå’s leadership is grounded in decades of visionary investment in science, culture, equality, and sustainable infrastructure. From world-class research in life sciences and cognitive health to award-winning urban planning and industrial symbiosis, the city has created fertile ground for innovation. These strengths are not abstract ambitions—they are

¹⁵ Program för social hållbarhet

<https://www.umea.se/kommunochpolitik/kommunfakta/kommunensmal/programforsocialhallbarhet.4.62b6e32a18c2f89114284eb.html>

realized practices already delivering results, supported by institutions like Umeå University, the city municipality, and a strong civic culture.

This section outlines key domains where Umeå is already recognized as a national or regional leader, and in some cases, a global pioneer.

Life sciences and medical research

Umeå University hosts prominent research centres such as the Umeå Centre for Microbial Research (UCMR) and the Umeå Centre for Molecular Medicine (UCMM), focusing on microbial pathogenesis, molecular biology, and clinical research.¹⁶

Cognitive and brain research

Research at Umeå University explores the impact of physical activity on cognitive function and brain health, contributing to our understanding of how lifestyle factors influence mental well-being.¹⁷

Gender equality and inclusive urban planning

Umeå is internationally recognized for gender-sensitive planning through initiatives like the “Gendered Landscape,” which integrates equality considerations into urban development.¹⁸

Culture-driven urban development

As the European Capital of Culture in 2014, Umeå integrated culture as a catalyst for urban renewal, blending creativity with sustainability in city planning.¹⁹

Circular economy and industrial symbiosis

Umeå’s Eco Industrial Park promotes circular and resource-efficient industrial models with the goal of becoming fossil-free by 2040.²⁰

5.2 Potential areas for global leadership and export

Beyond what Umeå already does well lies a growing ambition to shape the future. By aligning its innovation agenda with global needs—such as healthy longevity, low-emission urban living, and inclusive well-being—Umeå is uniquely positioned to move from excellence to global influence.

This section explores areas where Umeå can not only lead but export its models, metrics, and methods to other cities and regions. These include novel frameworks like Flourishing Life Years, adaptive strategies for winter urbanism, and health-centred approaches to mobility, food, and outdoor life. With its vibrant startup ecosystem and deep public-sector collaboration, Umeå has the capacity to become a global solution provider for a flourishing 21st century.

¹⁶ <https://www.umu.se/en/research/our-research/features-and-news/life-science>

¹⁷ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6527141>

¹⁸ <https://www.ebrdgreencities.com/policy-tool/the-gendered-landscape-umea-sweden>

¹⁹ <https://www.northsweden.eu/media/3568/umeaa2014.pdf>

²⁰ https://www.oecd.org/content/dam/oecd/en/publications/reports/2020/03/the-circular-economy-in-umea-sweden_e60b0212/4ec5dbcd-en.pdf

Flourishing Life Years (FLY) as a metric for urban development

Umeå is pioneering the use of Capability-Adjusted Life Years (CALY-SWE), a novel metric that evaluates quality of life based on individuals' capabilities and opportunities, rather than solely on economic indicators like GDP. Developed by researchers at Umeå University, CALY-SWE aims to inform public policy by assessing the broader impacts of social and health interventions on citizens' well-being.²¹

> Potential contribution to Flourishing Life Years:

By focusing on capabilities—such as health, education, and social inclusion—CALY-SWE provides a more holistic understanding of what it means to lead a flourishing life. This approach enables policymakers to design interventions that enhance individuals' real freedoms and opportunities, thereby directly contributing to increased Flourishing Life Years.

> Potential for Global Emissions Reduction:

Adopting CALY-SWE globally can shift policy focus toward sustainable well-being, encouraging investments in low-carbon sectors like public health, education, and social services. This reorientation can lead to systemic changes that reduce emissions, such as promoting active transportation and energy-efficient housing, while simultaneously improving quality of life.

Year-round active mobility in cold climates

Through the BATS (Baltic Sea Region Active Mobility Solutions) project, Umeå is developing strategies to promote walking and cycling even during harsh winter conditions. This includes infrastructure adaptations, maintenance practices, and community engagement to make active mobility a viable year-round option.²²

> Potential contribution to Flourishing Life Years:

Encouraging active mobility enhances physical health, reduces stress, and fosters social interaction, all of which are key components of a flourishing life. By making walking and cycling accessible throughout the year, Umeå supports residents' well-being and autonomy.

> Potential for Global Emissions Reduction:

Implementing Umeå's active mobility strategies in other cold-climate cities can significantly reduce reliance on fossil-fuel-powered transportation. This shift not only cuts greenhouse gas emissions but also decreases air pollution, contributing to healthier urban environments worldwide.

Integration of plant-based diets for public health and sustainability

Researchers at Umeå University are exploring the role of fermented plant-based foods in promoting health and facilitating dietary transitions. Studies indicate that such diets can meet nutritional needs while reducing environmental impacts associated with animal agriculture.²³

²¹ <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0263231>

²² <https://interreg-baltic.eu/project-posts/bats/developing-a-citizen-activation-guide-for-year-round-active-mobility>

²³ https://www.umu.se/en/news/future-diet-plant-based-fermented-foods-on-the-plate_11963844

> Potential contribution to Flourishing Life Years:

Plant-based diets are linked to lower risks of chronic diseases, improved mental health, and increased longevity. By promoting these diets, Umeå contributes to the physical and psychological well-being of its population, enhancing overall life satisfaction.

> Potential for Global Emissions Reduction:

Transitioning to plant-based diets can significantly lower greenhouse gas emissions, land use, and water consumption. Umeå's research and public health initiatives can serve as models for other regions aiming to achieve similar environmental and health benefits.

Outdoor and sports innovation for public health

Umeå's emphasis on outdoor activities and sports, supported by behavioural research and public health programs, positions the city as a leader in integrating physical activity into daily life. Initiatives like "Health on Campus" offer free activities and lectures to promote well-being among students and staff. Umeå's strong culture of outdoor activity and proximity to nature, combined with behavioural research and public health, makes it ideal for exporting solutions that integrate movement, nature, and mental well-being.²⁴

> Potential contribution to Flourishing Life Years:

Regular physical activity in natural settings improves physical health, mental well-being, and social cohesion. By facilitating access to outdoor sports and recreation, Umeå enhances residents' capabilities and quality of life.

> Potential for global emissions reduction:

Promoting outdoor recreation can reduce energy consumption associated with indoor facilities and encourage environmentally friendly transportation options. In addition, there are savings related to positive health impacts, e.g. reduced need for medical care. Umeå's model can inspire other cities to develop similar programs that align health promotion with sustainability goals.

Example of exportable innovations and models

Export Category	Example from Umeå
Measurement Tools	Flourishing life-years measures for public well-being evaluation
Policy Frameworks	Human need oriented urban planning & participatory models with an aim to deliver flourishing lives for all on a flourishing planet
Urban Design	Infrastructure adapted for outdoor and sport with regenerative nature
Health & Nutrition	Clusters delivering outdoor/sport activities, healthy and sustainable nutrition, and smart health services for creative lives, including measures supporting youth and older people that are often ignored

²⁴ <https://www.umu.se/en/research/groups/sport-physical-activity-and-health-psychology/>
<https://eupea.com/moving-for-health-project-highlights-from-the-umea-meeting-from-research-to-practice/>

Appendix 1: Initial assessments

Umeå's Seniortorget ecosystem offers a replicable model for turning demographic aging into a driver of sustainable innovation. By combining digital participation, preventive health, intergenerational programs, and co-designed services, it reduces emissions and improves well-being.

Below is a table with eight Seniortorget initiatives and indicative estimates for (a) avoided emissions and (b) Flourishing Life Years (FLY).

Initiatives and program content are drawn from Umeå's official pages for Seniortorget, Digitala Seniortorget, Aktiv vänskap över gränser, Landsbygdsnätverk/ Landsbygdssamverkan, Stark och säker & fallförebyggande, seasonal program & livesändningar, plus the tjänstedesign and projektet Seniortorget write-ups under "Vi bygger Umeå tillsammans."

Table: Indicative assessment

#	Initiative	Participants /yr (assumed)	Key effect & assumptions	Avoided CO ₂ e (t/yr)	FLY/participant/yr	FLY/yr
1	Digitala Seniortorget (portal)	3,500	6 in-town trips avoided/person/yr; 12 km r/t; 0.2 kgCO ₂ e/km.	50	0.03	105
2	Live-streamed lectures & replay	2,300	15 online events replacing on-site; 12 km r/t; 0.2 kgCO ₂ e/km.	83	0.02	40
3	IT workshop & telehealth adoption	1,200	2 telehealth visits &/or virtual workshops /person; 15 kgCO ₂ e/visit global avg.	36	0.04	44
4	Active friendship across borders	1000	4 car trips avoided (12,5 km per trip, 0.2 kgCO ₂ e/km) + social health gains.	10	0.05	25
5	Rural network	1000	8 rural trips; 50 km r/t; 0.2 kgCO ₂ e/km.	80	0.03	20
6	Strong and Safe (fall prevention)	1,500	25% fewer falls; avoided clinic/hospital travel (30 kgCO ₂ e/visit).	45	0.05	75
7	Campaign "Say Hello!"	1,500	Small travel optimization; local clustering.	5	0.02	30
8	Service design (enabler)	—	15% uplift to other programs through better reach/design.	46	—	60

Totals: 355 t CO₂e avoided/year (Umeå base) and 399 FLY/year (3,990 FLY over 10 years).

Umeå has about 24 000 residents aged 65+ (2023), putting participation of these initiatives at 2–15%, so scaling participation can push totals substantially higher.

Export potential

To ensure conservative estimates lower estimates for the scaling are used. For emissions no uplift due to service design is assumed, and for flourishing life years we use an order of magnitude lower impact to have significant margins due to different demographic and social situations. As better data becomes available these numbers are very likely to be adjusted upward.

1. Rest of Sweden

- Population context: Sweden's total population in 2025 is approximately 10.59 million, with 20% aged 65+ (2.12 million seniors).
- Base scenario assumption: Umeå has 23,600 seniors; of these 3,500 participate in programs. Scaling similarly:
 - Low (15%): 318,000 seniors engaged
 - Medium (35%): 742,000 seniors engaged
 - High (50%): 1,060,000 seniors engaged

Scenario	Seniors Participating	Avoided CO ₂ e/year	FLY/year
Low	318,000	38,000 t	12,100
Medium	742,000	133,600 t	25,970
High	1,060,000	190,800 t	37,100

2. The EU

- Population context: EU total population 450 million (2025). Seniors (65+) are about 21.6%, or 97 million.
- Participation scenarios:

Scenario	Participating (of 97 M)	Avoided CO ₂ e/year	FLY/year
Low (15%)	14.5 million	2.6 million t	362,500
Medium (35%)	34 million	6.1 million t	1.19 million
High (50%)	48.5 million	8.7 million t	1.7 million

3. The OECD

- Population context: OECD countries average 18.6% seniors in their populations. OECD total population is roughly 1.3 billion, so seniors 242 million.
- Participation scenarios:

Scenario	Participating (of 242 M)	Avoided CO ₂ e/year	FLY/year
Low (15%)	36 million	6.5 million t	900,000
Medium (35%)	85 million	15.3 million t	3 million
High (50%)	121 million	21.8 million t	4.2 million

4. The World

Globally, the number of people aged 65 and over is currently estimated at 800 million (around 10% of the total world population). According to UN projections, this figure is expected to rise to 1.5 billion by 2050, with the share of seniors approaching 16% of the global population. Growth is particularly rapid in Asia, Latin America, and Africa, where urbanization and rising life expectancy are reshaping demographic patterns. These regions also often have higher travel distances for care, less energy-efficient healthcare, and rapidly expanding digital infrastructure, which creates both challenges and opportunities for scaling Umeå-style solutions.

Scenario	Participation Rate (of 800M)	Avoided CO ₂ e per participant	Total Avoided CO ₂ e/year	FLY gain per participant	FLY/year
Low	15% (120M)	0.12 t	14 mil t	0.025	3 mil
Medium	35% (280M)	0.18 t	50 mil t	0.035	9.8 mil
High	50% (400M)	0.25 t	100 mil t	0.045	18 mil

Table: Summary impact per year

Region	Low	Medium	High
Sweden	38,000 tCO ₂ e 12,100 FLY	133,600 tCO ₂ e 26,000 FLY	190,800 tCO ₂ e 37,100 FLY
EU	2.6 MtCO ₂ e 0.36M FLY	6.1 MtCO ₂ e 1.19M FLY	8.7 MtCO ₂ e 1.7M FLY
OECD	6.5 MtCO ₂ e 0.9M FLY	15.3 MtCO ₂ e 3.0M FLY	21.8 MtCO ₂ e 4.2M FLY
The World	14 MtCO ₂ e 3M FLY	50 MtCO ₂ e 10M FLY	100 MtCO ₂ e 18M FLY

Methodology and Guardrails

The following assumptions and guardrails guide these estimates:

- Travel emissions: For Umeå base, car travel modelled at 0.2 kgCO₂e/km (global avg); 12 km round-trip urban, 50 km rural. In Sweden-specific analysis, lower fleet factors apply.²⁵
- Telehealth savings: 3–20 kgCO₂e avoided/visit; we assume 10–15 kgCO₂e globally for mid-range.²⁶
- Clinic/hospital visit footprint: 20–30 kgCO₂e per in-person visit (system-level life-cycle estimate).²⁷
- Falls prevention baseline: 1 in 3 seniors fall annually; 20–25% relative reduction assumed for program participants.²⁸
- Institutional care avoidance: Some avoided emissions come from delayed or avoided institutionalization; these are conservative and not fully counted.
- FLY (Flourishing Life Years): Based on FL4ALL methodology; conservative deltas (0.025–0.05 FLY/participant/year) used.

²⁵ <https://sustainabletravel.org/our-work/carbon-offsets/calculate-footprint/>

²⁶ <https://www.nature.com/articles/s41746-023-00818-7>

²⁷ <https://onlinelibrary.wiley.com/doi/10.1111/jan.15671>

²⁸ <https://jamanetwork.com/journals/jama/fullarticle/2819574>

- Participation rates: Medium scenario assumes 35% of global seniors reached within 10–15 years via digital inclusion and policy support.
- Exclusions: Does not include indirect multiplier effects (e.g., healthier diets, reduced caregiver travel), making these estimates conservative.
- Flourishing life years (FLY) for different solutions
 - Digitala Seniorsörget (portal)
 - **FLY mechanism:** Digital access to information, services, and social activities reduces travel burden and enables older adults to participate more fully in community life. This supports mental stimulation, autonomy, and reduced isolation.
 - **Key evidence:**
 - Digital inclusion enhances older adults' subjective well-being and reduces loneliness.²⁹
 - Tele-access to cultural and social services correlates with improved life satisfaction and mental health.³⁰
 - **FLY gain:** In the table *Indicative assessment*, 0.03 FLY/participant/year reflects modest improvements in autonomy and connectedness.
 - Livesända föredrag & replay
 - **FLY mechanism:** Live-streamed educational/cultural events provide cognitive engagement and cultural participation without mobility barriers, key components of flourishing.
 - **Evidence:**
 - Participation in arts/learning increases quality of life and reduces depression among older adults.³¹
 - **FLY gain:** 0.02 FLY/participant/year (mental stimulation and inclusion).

²⁹ Chen, Y. R. R., & Schulz, P. J. (2016). The effect of information and communication technology interventions on reducing social isolation in the elderly: A systematic review. *Journal of Medical Internet Research*, 18(1), e18. <https://doi.org/10.2196/jmir.4596>

Sum, S., Mathews, R. M., Hughes, I., & Campbell, A. (2008). Internet use and loneliness in older adults. *CyberPsychology & Behavior*, 11(2), 208–211. <https://doi.org/10.1089/cpb.2007.0010>

³⁰ Bolin, K., Lindgren, B., Lindström, M., & Nystedt, P. (2003). Investments in social capital - Implications of social interactions for the production of health. *Social Science & Medicine*, 56. DOI:10.1016/S0277-9536(02)00242-3

³¹ Creech, A., Hallam, S., Varvarigou, M., & McQueen, H. (2013). Active music making: A route to enhanced subjective well-being among older people. *Perspectives in Public Health*, 133(1), 36–43. <https://doi.org/10.1177/1757913912466950>

Tymoszuk U, Perkins R, Fancourt D, Williamon A. Cross-sectional and longitudinal associations between receptive arts engagement and loneliness among older adults. *Soc Psychiatry Psychiatr Epidemiol*. 2020 Jul;55(7):891-900. doi: 10.1007/s00127-019-01764-0. Epub 2019 Sep 11. PMID: 31511928; PMCID: PMC7303087.

- IT-verkstad & telehealth adoption
 - **FLY mechanism:** Digital literacy workshops and telehealth uptake improve self-efficacy, access to health care, and autonomy.
 - **Evidence:**
 - Digital health use improves perceived control and health outcomes.³²
 - Telehealth reduces travel strain and enables timely interventions.³³
 - **FLY gain:** 0.04 FLY reflects combined benefits in health management and digital empowerment.
- Aktiv vänskap över gränser
 - **FLY mechanism:** Intergenerational friendship programs build social capital and purpose, reducing loneliness.
 - **Evidence:**
 - Social connectedness is strongly associated with healthy aging and subjective well-being.³⁴
 - **FLY gain:** 0.05 FLY due to strong psychosocial benefits.
- Landsbygdsnätverk / Landsbygdssamverkan
 - **FLY mechanism:** Peer networks in rural areas reduce geographic isolation, improve access to community services.
 - **Evidence:**
 - Rural seniors face higher isolation; community networks enhance well-being and resilience.³⁵
 - **FLY gain:** 0.03 FLY reflects connectivity gains in underserved areas.
- Stark och säker (fall prevention)
 - **FLY mechanism:** Fall prevention programs maintain mobility, independence, and prevent injury-related decline.
 - **Evidence:**

³² Zhao YC, Zhao M, Song S. Online Health Information Seeking Behaviors Among Older Adults: Systematic Scoping Review. *J Med Internet Res*. 2022 Feb 16;24(2):e34790. doi: 10.2196/34790. PMID: 35171099; PMCID: PMC8892316.

³³ Shigekawa, E., Fix, M., Corbett, G., Roby, D. H., & Coffman, J. (2018). The current state of telehealth evidence: A rapid review. *Health Affairs*, 37(12), 1975–1982. <https://doi.org/10.1377/hlthaff.2018.05132>

³⁴ Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and social isolation as risk factors for mortality: A meta-analytic review. *Perspectives on Psychological Science*, 10(2), 227–237. <https://doi.org/10.1177/1745691614568352>

Haslam, C., Cruwys, T., & Haslam, S. A. (2014). “The we’s have it”: Evidence for the distinctive benefits of group engagement in enhancing cognitive health in aging. *Social Science & Medicine*, 120, 57–66. <https://doi.org/10.1016/j.socscimed.2014.08.037>

³⁵ Warburton J, Winterton R. A far greater sense of community: The impact of volunteer behaviour on the wellness of rural older Australians. *Health Place*. 2017 Nov;48:132-138. doi: 10.1016/j.healthplace.2017.10.005. Epub 2017 Nov 6. PMID: 29121536.

- Exercise and multifactorial fall programs reduce fall incidence and improve quality of life.³⁶
- **FLY gain:** 0.05 FLY; major health & independence benefits.
- Kampanj “Säg hej!”
 - **FLY mechanism:** Micro-interventions promoting social greetings and neighborly behaviour boost belonging and trust.
 - **Evidence:**
 - Even small increases in neighbourhood social cohesion improve subjective well-being.³⁷
 - **FLY gain:** 0.02 FLY; modest but broad-based psychosocial benefit.
- Tjänstedesign (enabler)
 - **FLY mechanism:** Co-design and service innovation improve reach and user experience across all initiatives.
 - **Evidence:**
 - Participatory design in eldercare leads to higher uptake and satisfaction (Greenhalgh et al. 2016; Steen et al. 2011).³⁸
 - **FLY gain:** Shown as 15% uplift to others; indirectly raises FLY through better program design.

Across all initiatives, FLY is derived from:

1. Enhanced well-being and mental health (digital access, arts, social capital).
2. Maintained independence & mobility (fall prevention, telehealth).
3. Increased agency and self-efficacy (digital literacy, co-design).
4. Social cohesion and intergenerational solidarity (friendship programs, neighbourhood greetings).

³⁶ Hopewell S, Copsey B, Nicolson P, et al Multifactorial interventions for preventing falls in older people living in the community: a systematic review and meta-analysis of 41 trials and almost 20 000 participants *British Journal of Sports Medicine* 2020;54:1340-1350. <https://bjsm.bmj.com/content/54/22/1340>
Sherrington C, Fairhall NJ, Wallbank GK, Tiedemann A, Michaleff ZA, Howard K, Clemson L, Hopewell S, Lamb SE. Exercise for preventing falls in older people living in the community. *Cochrane Database Syst Rev*. 2019 Jan 31;1(1):CD012424. doi: 10.1002/14651858.CD012424.pub2. PMID: 30703272; PMCID: PMC6360922.

³⁷ Rogers, S.H., Halstead, J.M., Gardner, K.H. *et al.* Examining Walkability and Social Capital as Indicators of Quality of Life at the Municipal and Neighborhood Scales. *Applied Research Quality Life* 6, 201–213 (2011). <https://doi.org/10.1007/s11482-010-9132-4>

³⁸ Greenhalgh, T., Jackson, C., Shaw, S., & Janamian, T. (2016). Achieving research impact through co-creation in community-based health services: Literature review and case study. *Milbank Quarterly*, 94(2), 392–429. <https://doi.org/10.1111/1468-0009.12197>

Steen, M., Manschot, M., & Koning, N. de. (2011). Benefits of co-design in service design projects. *International Journal of Design*, 5(2), 53–60. <http://www.ijdesign.org/index.php/IJDesign/article/view/890>



It is time for a new generation of cities and regions that identify, support and export the innovations that the world needs, i.e. cities and regions that become solution providers of globally sustainable innovation that deliver flourishing lives for all on a flourishing planet for cities and regions around the world. This leadership is needed as many cities lack capacity to deliver these solutions themselves

Still, very little attention is given to cities and regions as solution providers in their own right, or as enablers of innovation to develop, support, implement and scale the next generation of globally sustainable solutions.

In Sweden, Umeå is a city with unique opportunities to lead an expanded climate and innovation agenda with its strong focus on providing a good life for its citizens and a strong innovation ecosystem that could result in significant export opportunities.

Partners



Accelerating innovations towards
**Flourishing
Lives 4 All**

NET-ZERO COMPATIBLE
**INNOVATIONS
INITIATIVE**

