

# Advancing Democracy and Resilience Through Industrial and Urban Symbiosis (IUS) and Industry Clusters

Authors: Maria Zachs and Inger Rydén,  
Lidköping Municipality

LEARNING CASE



Swedish International  
Centre for Local Democracy

## Introduction

This learning case offers insights into how local governments can advance climate justice by embedding accountability, transparency, equity, and civic participation. It invites local governments who seek to actively promote circular economy to learn about a holistic approach to public-private partnerships and the “industry cluster” method. It illustrates how strengthening local democracy is, and should be, an integral part of climate action and circular economy efforts.

The learning case is a roleplaying exercise, where you as a reader are asked to step into the shoes of a Lidköping official. It starts by introducing the municipality of Lidköping, Sweden, and why it chose to adopt an Industrial and Urban Symbiosis (IUS) approach, including the formation of a food industry cluster to facilitate broad stakeholder engagement. It then explains dilemmas of implementation, which you probably recognise from other policy areas, and invites you to find a way forward. It then reveals the real case solution. Lastly, it invites you to reflect on what elements may be applicable in your own context.



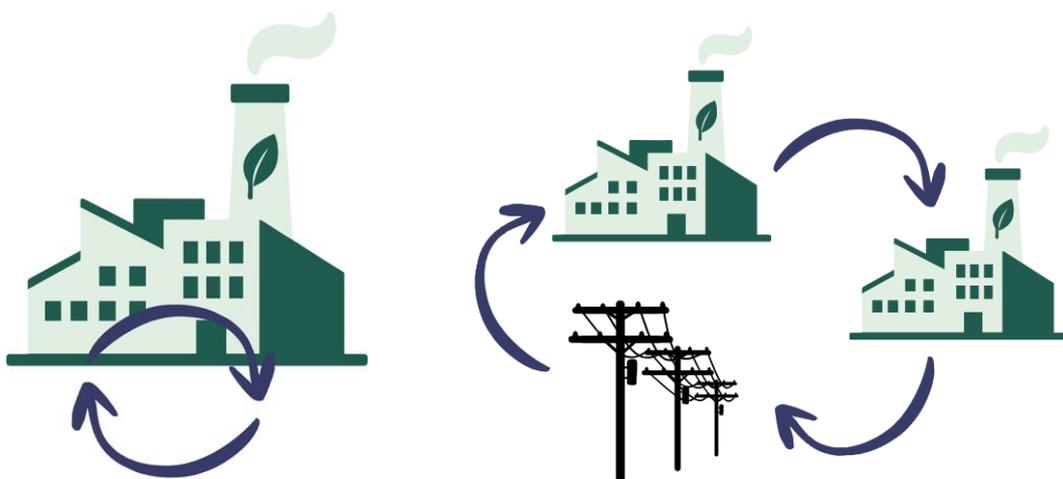
Lidköping – a welcoming and sustainable municipality

## Learning Objectives

- Learn how local governments can act as facilitators in sustainable food systems, even without a formal mandate.
- Explore how partnerships and multi-stakeholder networks can be used to coordinate food-related initiatives for a local circular economy and climate transition.
- Understand Industrial and Urban Symbiosis (IUS) and how it can align environmental, economic, democratic, and social goals.

The learning case is grounded in a multi-year municipal partnership between the Swedish municipality of Lidköping and Lusaka City Council in Zambia. Since 2022, the two municipalities have collaborated through the ICLD-supported project *Climate Smart and Resilient Municipalities* to strengthen local capacity for improved resource management and effective climate adaptation and mitigation.

Through the partnership, Lidköping and Lusaka have exchanged knowledge and explored how local governments can actively promote circular economy through public-private partnerships. Lidköping's work on Industrial and Urban Symbiosis (IUS) and a food industry cluster, alongside Lusaka's innovations in waste management and organic waste valorisation, shaped the joint learning journey.



Circular business model

vs.

Industrial and Urban Symbiosis

## Case Description

Lidköping is a mid-sized municipality in southern Sweden, situated on the southern shore of Lake Vänern, the largest lake in the European Union. With a population of approximately 40,000, the municipality combines a strong industrial heritage with vibrant rural landscapes and small-town charm. Its economy is shaped by a mix of manufacturing, agriculture, public services, and an expanding food industry. The presence of major employers in sectors like energy, engineering, and food processing reflects Lidköping's long-standing focus on innovation and sustainability. Lidköping belongs to Skaraborg, a subregion within Västra Götaland County. The county's regional capital and logistics hub is Gothenburg.

Lidköping's vision is to be "*a welcoming and sustainable municipality*," where all residents feel included and future generations thrive. To guide progress toward this vision, the municipal council has defined strategic goals for 2030 that embed ecological, social, and economic resilience. Creating an enabling environment for Industrial and Urban Symbiosis (IUS) forms part of this ambition, supporting both circular resource use and inclusive local development.

Industrial Symbiosis (IS) is a collaborative approach in which underutilised resources from one actor or process become valuable inputs for another. In many industries, by-products, residues, excess energy, water, or materials go to waste, even though they could serve as raw materials elsewhere. This results in untapped resources, unnecessary environmental impacts, and missed business opportunities. It also makes the system less resilient and prevents smaller actors from creating value through circular solutions. IS addresses this mismatch by creating resource-sharing networks that enhance efficiency, reduce waste, and strengthen both urban and industrial sustainability. When public actors take an active role in enabling or coordinating these exchanges, the process is referred to as facilitated industrial symbiosis.

The urban extension, Industrial and Urban Symbiosis (IUS), integrates IS principles with societal systems like district heating, waste management, water resources, and infrastructure.

IUS is a practical expression of the circular economy, turning the goal of keeping resources in use for as long as possible into concrete collaborations between actors. It can advance climate justice when it engages citizens, benefits local communities through jobs and cleaner environments, integrates informal workers into safer systems, and ensures fair value-sharing and greater resilience for those most at risk.

Since 2023, Lidköping Municipality has initiated a *food industry cluster* to bring stakeholders from across the value chain together on a common platform. The purpose is to strengthen the region's role as a hub for sustainable food production and to create conditions for collaboration, innovation, and circular solutions. The area has a strong food industry base, and the initiative aims to support the long-term competitiveness and resilience of the sector, while also enabling more circular and shared use of resources. It further aligns with the broader ambition to make Lidköping and the Skaraborg region a leading centre for sustainable food systems.

**“If we are to save the climate and halt the ongoing warming, we must start using natural resources in a completely different way. We need to be much more efficient in our usage.”**

Yvonne Träff, Environmental Strategist,  
Lidköping Municipality



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To lead and coordinate the cluster, the municipality’s Business Development Unit was assigned overall responsibility, and a new role, Business Developer, was created specifically to establish and manage the cluster.

In parallel, the municipal council adopted a long-term vision of reaching 50,000 residents by 2045. Achieving this goal required the municipality to strengthen its position as one of Sweden’s most attractive locations for business establishment. As a result, the Business Development Unit is under increasing pressure to drive job creation and stimulate a dynamic business environment that could support population growth.

### **Case Study: Unlocking circular potential amid constraints**

You have just been appointed Business Developer with the task of facilitating Lidköping’s new food industry cluster.

The municipality has political support for a transition to a circular economy, but putting this into practice has proven challenging. You face three key challenges: engaging private sector partners despite resource constraints and limited trust, safeguarding a holistic approach without reducing it to narrow economic growth, and navigating political tensions between environmental and social priorities and economic interests. The following sections describe these and invite a brainstorming session on how you’d take the process forward. Select one or go through all three.

## Dilemma 1: Surviving the short term to win in the long run

Many companies show initial interest in the food industry cluster but hesitate to share data about their by-products, largely due to concerns about commercial confidentiality and a general lack of trust within the local business ecosystem. They also worry about added complexity, question whether the cluster meetings will translate into tangible profit, and struggle to find time alongside other priorities.

Without clear short-term business benefits, their engagement remains limited. At the same time, Industrial and Urban Symbiosis (IUS) depends on collaboration between actors with little tradition of working together. Awareness of IUS is still low, communication is uneven, and stakeholder engagement varies significantly.

There is, however, a growing number of social and green entrepreneurs eager to turn residual outputs into circular business opportunities, creating new jobs, diversifying the local economy, and making the labour market more inclusive.

Yet, they lack an enabling environment, such as access to credits and investors, and the municipality has neither mandate nor resources to finance them. Larger industries often view these newcomers as competitors rather than potential partners, creating a gap in the value chain where innovation could otherwise thrive.



### You now face a strategic choice:

- Quick wins: Focus on established companies to deliver visible results and maintain political support, even if this risks sidelining **smaller actors and compromising a long-term holistic approach.**
- Long-term capacity development: Invest in dialogue, trust-building, and support for entrepreneurs, knowing this could slow progress, frustrate businesses, and risk losing political momentum.
- How would you navigate this situation? How would success look like in one year and for whom?

## Dilemma 2: Growth today or resilience tomorrow? Where to focus?

As part of its vision to reach 50,000 residents by 2045, your municipality is under strong political pressure to attract new businesses and create jobs. The Business Development Unit is expected to actively market the region, offer solutions for establishment, and show results that boost investor confidence.

At the same time, you are leading a local initiative to promote Industrial and Urban Symbiosis (IUS), a process that requires existing businesses to map residual outputs, share data, engage in multi-stakeholder dialogue, and experiment with resource-sharing models. It's slow, complex, and resource intensive. Some established companies feel burdened by the time and coordination efforts, while others question whether the outcomes will justify their investment.

New businesses, meanwhile, expect a streamlined, low-barrier process to establish themselves in Lidköping. They may be discouraged if asked to engage in complex IUS processes right from the start.



### This puts you in a strategic dilemma:

- Should you prioritise attracting new companies with a fast-track approach and minimal demands, or invest your limited capacity in deepening IUS among existing actors, even if it risks slowing down new business growth?
- What kind of narrative or value proposition would attract new businesses while also retaining and engaging existing ones in Lidköping?

How would you navigate this situation? How would success look like in one year and for whom?

## Dilemma 3: Between public pressure and political support

As the newly appointed Business Developer tasked with facilitating the municipality's food industry cluster, your role is to promote public-private partnerships, enable circular economy practices, and attract new businesses to the region. But tensions are increasing and from multiple directions.

Local environmental organisations have raised concerns in the local newspaper, accusing the municipality of prioritising business growth over meaningful climate action. They demand firmer environmental standards for new businesses and a stronger public commitment to climate justice, circularity, and transparency. In their view, without stricter guidelines, the cluster risks becoming just another example of greenwashing.

In response, groups facing high unemployment have pushed back. They argue that job creation must be the top priority and that economic revitalisation cannot wait. Their frustration is voiced in public meetings and online, where they accuse the municipality of listening too much to “activists” and not enough to the people who need jobs.

Adding to the complexity, a third group, comprising youth advocates, has entered the debate. They support the circular economy vision but insist that it must also include clear strategies for labour inclusion. They call for affirmative action to ensure that young people from socioeconomically disadvantaged areas can access vocational training and jobs in the food industry. They also advocate for supporting small-scale entrepreneurs from underrepresented groups to turn residual outputs like organic waste into new business

models that add value to larger industrial actors. Without this, they argue, the cluster will deepen existing inequalities rather than solve them.

Meanwhile, political support is starting to waver. The ruling party is worried that the growing public debate may alienate key voter groups. You fear that if this tension continues, the municipality's entire circular economy vision could lose momentum or be shelved entirely.

**You now need to navigate the competing interests of environmental integrity, economic growth, and social inclusion and face a real dilemma.**



- Slowing down the municipality's support to the food industry cluster could enable a broader and more inclusive dialogue but risks delays and frustration from businesses.
- Moving quickly may maintain political backing and show progress but could leave some groups behind and fuel perceptions of injustice.

How would you navigate this tension?

## Case Ending: Establishing the Food System Cluster in Lidköping

The process of establishing Lidköping's Food Industry Cluster and facilitating IUS has not been without challenges. A key lesson is that industry clusters require both openness and structure, as well as continuous responsiveness to stakeholder needs to remain relevant over time. Political support and policy alignment have also proven essential, not only to launch the cluster but to maintain momentum and secure human and financial resources for its long-term development.

To ensure transparency and inclusiveness the cluster was launched through a broad invitation to all actors with an interest in the food sector. This included local food companies as well as supporting organisations such as business innovation catalysts, credit institutions, civil society and research institutes. The inclusive start ensured that the cluster reflected the diversity of the local food ecosystem rather than being shaped by a single group of dominant actors.

**“We need to start somewhere, and naturally it begins with us meeting within our respective industries.”**

Andreas Lundgren, Supply Chain Director, Fazer Mills



Andreas Lundgren, Supply Chain Director, Fazer Mills

From the outset, participants were invited to co-create the cluster's purpose and scope. Industry players defined what the cluster should and should not be, identified pressing challenges, and set out shared long-term goals. This approach built trust and ownership, which proved crucial for sustained engagement.

The priorities illustrate how social, ecological, and economic perspectives are deeply interconnected and essential for long-term resilience, underscoring that the transformation toward sustainable food systems requires a holistic approach. The themes became the foundation for working groups and collaborative initiatives.

As the cluster grew, value chain mapping was introduced. Each actor (such as primary producers, processors, distributors, logistics providers, retailers, and recycling operators) positioned themselves along the chain, which highlighted existing strengths and revealed critical missing links. The exercise identified gaps that limit the region's capacity to increase food self-sufficiency and fostered a sense of shared responsibility for societal resilience that goes beyond individual business interests.



An illustration of Lidköping Municipality's role as a facilitator and catalyst for multi-stakeholder engagement and an enabling environment for IUS.

Through the workshops, participants agreed on several priorities:

- Profitability – improving margins and business resilience
- Attractiveness – making the sector appealing to workers and investors
- Skills and labour – tackling competence shortages
- Climate change and energy – preparing for risks and exploring synergies
- Food innovation – developing new products, systems and crops for climate and societal resilience
- Land use and logistics – balancing needs and improving efficiency

Mapping residual products was another critical step for enabling IUS. By identifying by-products, excess energy, water streams, and other underutilised resources, new opportunities emerged that individual actors might not have seen alone. Using a structured mapping tool, data was collected and analysed, but the main lessons concerned the process: **trust and confidentiality were essential, and the dialogue created through the mapping was the real value.** It uncovered synergies, built confidence, and highlighted practical next steps including logistical gaps and the need for new enterprises to fill missing functions in the circular value chain, such as shared transport, residue collection, or small-scale processors who can turn by-products into valuable inputs for larger actors.

To keep up the momentum, several support functions proved necessary:

- Knowledge exchange – peer learning across critical functions within organisations, such as production, logistics, sustainability, and management.
- Operational coordination – joint initiatives to streamline processes and reduce duplication.
- Advocacy – a collective voice to influence policy at regional and national levels.
- Advisory services – with the municipality helping scope research needs and opportunities and connect businesses with academia.
- Skills development – new training programmes developed with Campus Lidköping to address labour and competence needs.

**“The municipality is very important to us, especially in how they facilitate, invite, and create forums.”**

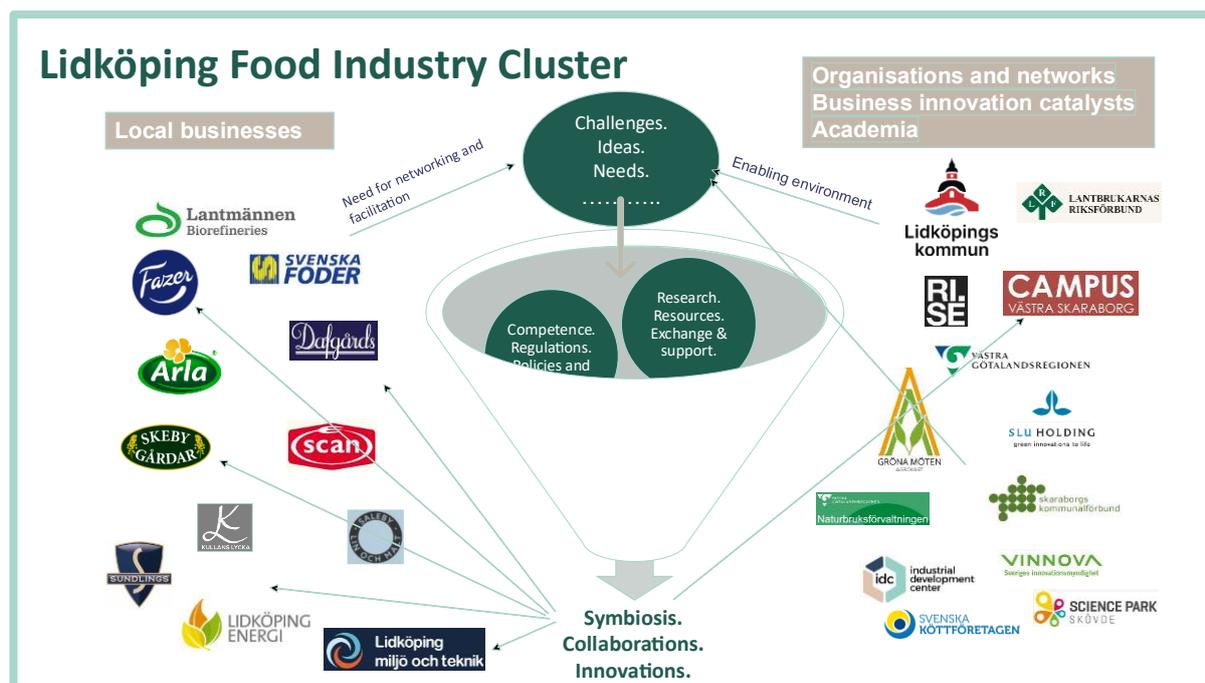
Johan Andersson, Head of Operations,  
Lantmännen Biorefineries



Johan Andersson, Head of Operations, Lantmännen Biorefineries

A key lesson in balancing short- and long-term goals was the need to stay agile and ensure relevance throughout the process. Strong political backing and clear anchoring in steering documents were essential to remain aligned with the vision of a welcoming and sustainable Lidköping. This required courage, trust, and close cross-sector collaboration within the municipality, as no single business developer could lead the work alone.

Overall, the process has shown that enabling IUS and developing a regional food industry cluster demands strong governance, broad participation, and sustained coordination. By setting shared priorities, building collaborative structures, and adapting to emerging needs, Lidköping has laid the foundation for a long-term circular transition. The ongoing challenge will be to maintain momentum while ensuring that environmental, economic, and social benefits are realised. The newly adopted Energy and Climate Plan further strengthens the municipality’s long-term commitment to this vision. See more in this five-minute video: <https://play.mediaflow.com/ovp/16/41NEY65QM1>



## Lessons learned

The ICLD-funded project *Climate Smart and Resilient Municipalities – Lidköping and Lusaka* added important new perspectives. When Lidköping first initiated the Food Industry Cluster, the focus was mainly on business development and circular solutions. Less attention was given to how the cluster could strengthen local democracy and human rights through accountability, transparency, equity, and civic participation. Stakeholder engagement was present but not framed as a right and to ensure equity and accountability. Participation in the ICLD Climate Action Network and peer exchanges within the partnership has since raised this awareness. These insights will guide the continued facilitation of the cluster and the design of future initiatives.

In summary, these are examples how each principle supports effective IUS ensuring that the transition is fair, locally legitimate, and socially grounded.

**Accountability.** Because symbiotic systems rely on shared resources and joint decisions, actors must trust that responsibilities are clear and commitments are kept. This reflects a core democratic principle: public and private stakeholders need to show how their actions align with agreed goals. Transparent reporting, shared standards, and clear follow-up help ensure fairness and prevent misuse. Building accountability in this way strengthens both circular systems and public confidence in the transition.

In summary: Clear roles, traceable decisions, and shared responsibility, ensures fairness and trust. In practice, this can be achieved by:

- Clearly defining expectations and commitments for all actors.
- Using shared documentation and transparent follow-up processes.
- Agreeing on common standards for data-sharing and participation.

**Transparency.** For IUS to function, both companies and the municipality must be open about relevant processes and data. Transparency fosters trust, enables better joint decision-making, and allows citizens to understand and scrutinise how shared resources are managed. It supports accountability while also helping actors identify opportunities for improvement and collaboration.

**“For me, collaboration is based on trust, on being open and honest, on sharing information.”**

Johan Andersson, Head of Operations,  
Lantmännen Biorefineries

In summary: open communication counters mistrust and supports collaboration.

In practice, this can be achieved by:

- Explaining why data is collected and how it will be used.
- Sharing meeting notes, decisions, and progress dashboards.
- Use aggregated data or anonymisation when needed.

**Equity.** A well-designed symbiosis system advances equity by creating inclusive opportunities for employment, resource sharing, and cost savings. Through collaborative governance, IUS ensures that the benefits of circular systems are distributed fairly across communities, empowering small businesses, residents, and underrepresented groups. This contributes to a more just and balanced local economy.

In summary: a circular transition must benefit all, not only larger industries.

In practice, this can be achieved by:

- Actively involving SMEs, youth, women and depending on context, informal workers.
- Using inclusive formats and pre-meetings to reduce power imbalances.
- Linking IUS initiatives to new opportunities for underrepresented groups.

**Civic participation.** Civic participation is central to successful IUS. By involving residents, community organisations, and local businesses in shaping how resources are used and shared, IUS reinforces the democratic principle that those affected by decisions should have a voice in them. Because symbiotic systems are implemented locally, they rely on participatory processes such as dialogue, co-design, and shared decision-making. Meaningful engagement allows community knowledge and priorities to shape solutions, deepening trust and ensuring that benefits are felt broadly across the society.

In summary: those affected by decisions should take part in shaping them.

In practice, this can be achieved by:

- Co-creating priorities and defining the cluster’s focus areas together.
- Holding public forums and multi-stakeholder roundtables.
- Meaningfully integrating community knowledge, concerns, and ideas.

## Final discussion round

Now step out of the Lidköping scenario and back into your own home context.

1. **Getting started.** If a cluster or IUS initiative was launched in your municipality, who should be invited first, and who could act as champions or connectors?
2. **Local context.** What enabling conditions and barriers exist in your municipality?
3. **Ownership and inclusion.** How can you ensure stakeholder ownership and integrate community voices, rather than keeping it municipality-driven?
4. **Resources and gaps.** What unused resources or value chain gaps exist locally, and how could you map them?
5. **Sustainability.** What political, financial, and practical support is needed to keep a cluster running, and how can you balance quick wins with long-term goals?

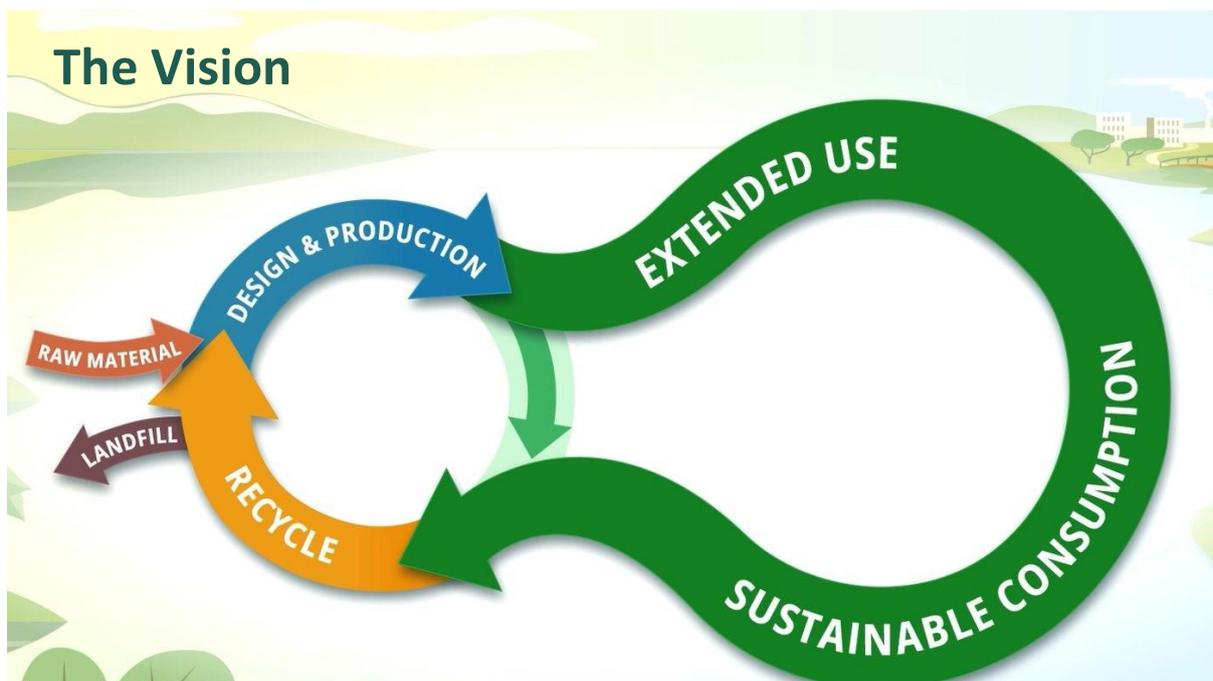


Illustration: The Swedish Environmental Protection Agency (Naturvårdsverket)