Introduction: Roadmaps SURFLOGH (text for full strategy report)

One of the critical elements of the sustainable development of cities is City Logistics. The livability of our cities depends largely on improved air quality, noise reduction, suitable accessibility and road safety. At the same time, we want to benefit from the advantages of city life – entrepreneurs and citizens alike – and continue to receive goods and parcels. The main objective of the Smart Urban Freight Logistics Hubs (SURFLOGH) project, part of Interreg North Sea Region, is to improve the role of logistic hubs and sustainable logistics solutions in the structure of urban logistics in the North Sea Region.

Since 2017, the SURFLOGH project partners have successfully collaborated to develop, implement and share smart and sustainable solutions with public and private parties concerned with urban logistics. The livability of our cities depends largely on improved air quality, noise reduction, suitable accessibility and road safety. At the same time, we want to benefit from the advantages of city life - entrepreneurs and citizens alike - and continue to receive goods and parcels.
The Province of Drenthe (NL), the South East Scotland Transport Partnership (SEStran) (UK), Napier University (UK) and the Cities of Groningen (NL), Mechelen (BE) and Borås (SE) have succeeded in balancing the city logistics conundrum by doing research, holding interactive and transnational innovation sessions and eventually testing more than 20 sustainable transport solutions in medium sized cities in the North Sea Region whereby:

- Collaboration between logistics service providers and retailers reduced the number of transport movements (a reduction of more than 150 traffic movements per pilot project);
- The development of logistics city hubs and locker services, in connection with the wide-scale use of electric vehicles and cargo bikes, more than 380,000 parcels have been delivered in a sustainable way;
- More than 103 new sustainable vehicles were deployed and tested, resulting in a significant reduction in emissions for each pilot project.

These results have contributed to a significantly positive impact on the livability of the inner city zones related to the pilot projects.

In the SURFLOGH project an innovative approach proved to be essential for the long-term prosperity of city hubs. That is why the project set up a specific work package in which several interactive and transnational sessions have been held dealing with innovative urban freight solutions.
The city freight innovation labs functioned as innovation platform for city hubs and urban and regional logistics. The main role of the city labs was to accelerate innovation from horizon 1 (process innovation in existing business models) to horizon 2 (business model innovation) or even horizon 3 (development of new processes in new business models).
The city labs were organized as open platforms. Target groups from the cities, regions, logistics SME's, start-ups and service providers have been invited to participate in the activities of the platforms and meet and cooperate with all the stakeholders.
The city labs supported SURFLOGH to explore and boost new exciting opportunities and business models in urban logistics by combining the mutual intelligence and creativity of urban professionals, logistic professionals and new economy. The city labs brought together these different actors to

exchange knowledge, work on development of innovative ideas, prepare innovative pilot projects and implement results within policy strategies and the urban logistics system. Each partner organized events and meetings to support these processes in each geography.
The results of the city lab activities, such as new business models, ideas for new services and technologies were used as input for the pilot projects in the cities and regions, and support the initiators and stakeholders of these pilots with new tools to support the rate of success in each pilot.
In order to disseminate findings from the city labs (both national and transnational events) to other cities and stakeholders in the North Sea Region, general lessons and insights have been integrated in several Roadmaps, elaborated in this document. The roadmaps consist of different approaches, the do's and don'ts and the practical solutions that are the result of the activities in the city labs and the pilots held within SURFLOGH.

The roadmaps are aimed to show examples of general approaches that could be applied in different geographies throughout the North Sea Region and beyond.

The roadmaps cover four important themes from the SURFLOGH project:

1. Stakeholder engagement in urban logistics, because engaging with (key) stakeholders like logistics service providers, retailers/shop owners and residents in inner cities, is crucial to the success of any sustainable city distribution policy, concept or project
2. The role of the city or region in sustainable urban logistics, because the governmental body can set policies and accelerate sustainable initiatives
3. The implementation of urban logistics hubs and the use of cargo bikes and electric vehicles, because those have shown big potential in the SURFLOGH project
4. The implementation of parcel lockers for the urban last mile, because this has shown to be an effective method to contribute to livability and reducing emissions in urban areas

In the final phase of the SURFLOGH project, an extra Roadmap has been developed, outlining a path for a more integrated approach to a City Logistics initiative, based on the Perth-West case in Scotland:

5. Concept development for an Urban Consolidation Center/Last Mile delivery service, combined with a sustainable and smart development of the designated location and the city/municipality

For each roadmap the following elements are covered:

1. **Why**, the rationale of the theme
2. **What**, the goals and objectives of the theme
3. **How**, different generic approaches from the SURFLOGH project that can be applied elsewhere

Each roadmap also includes short descriptions of best practices from the SURFLOGH project partners.

Roadmap 1 – Stakeholder engagement

Why, rationale:

Engaging with (key) stakeholders like logistics service providers, retailers/shop owners and residents is crucial to the success of any sustainable city distribution policy, concept or project:

- Key stakeholder opinions and insights are incredibly valuable in the early stages of co-creation, planning and development processes
- Effective engagement helps translate stakeholder requirements/needs/information into policy or project objectives
- Effective engagement creates the basis of an effective policy- or project implementation;
- A point of consensus or shared motivation helps stakeholders to arrive at a shared understanding and mutual decision on objectives…
- ….and to share work in the implementation phase of practical (pilot-)projects
- Unique perspectives of stakeholders help to discover strengths and weaknesses of policies or project ideas and provide first-hand knowledge of what it takes to deliver the envisioned policy of project outcome

What, goals/objectives:

Objectives are connected to a continuum of relevant stakeholder relations. A successful Stakeholder Engagement strategy for city logistics connects the appropriate engagement format to the right stakeholder context (or project phase):

a. Identify: start with the selection of (key) stakeholders who are linked to critical issues, policy and/or pilot-project
b. Monitor: focus on the beliefs, ideas and actions of (key) stakeholders. This can be done trough scans, searches, conversations and ad-hoc meetings
c. Message: create and target messages to specific stakeholders
d. Advocate: enlist support for a specific effort or position
e. Consult: solicit explicit feedback or input on a project or plan, understand the specific interest of groups of stakeholders and market dynamics
f. Discuss: initiate or participate in (a) dialogue(s), focused on mutual learning, understanding and/or solutions (including 'co-creation')
g. Commit: aim for mutual agreement/promise to perform certain actions and/or common objectives
h. Collaborate: share work on common objectives ('co-implementation')

How, 3 different approaches from the perspective of the City (Municipality) or Region:

1. <u>Stakeholder engagement through an organized consultation, working group or network, including a strategic plan or City-Logistics covenant</u>:

The city or region can establish a specific City-Logistics working group or network, with representatives of all key stakeholders. Common objectives (or an agreement to perform certain actions can result in a mutual strategic plan or covenant. A working group or network focused on

implementation should ideally include all relevant stakeholders, both public and private (logistics service providers, retailers, residents, Municipality and/or Region).

- This approach works best in a situation where:
    - public objectives are clear, including political agreement on the level of the Municipality or Region
    - key stakeholders are known and interested or committed
- A City-Logistics group or network for City Logistics can sometimes be based on another existing consultation format (e.g. City - Shop owners, or City - Residents), or a stakeholder group linked to a specific project (described in approach 3)
- This approach includes stakeholder engagement objectives a, c, d, e, f, g and h

Best practice: '**Focus Group Sustainable Logistics City of Groningen**'

In 2017 the Focus Group Sustainable Logistics Groningen was installed, under chairmanship of the municipality of Groningen. It includes representatives of all relevant interest groups, business associations and institutions like the University of Groningen, related to Urban Logistics. The focus group reflects on policy and projects and liaises with members. The focus group discussed on which joint ambitions for sustainable logistics could be defined. An action plan to realize the ambitions has been drawn up and the actions have been assigned to the members of the focus group. Both the ambitions and the action plan were drawn up in the Covenant 'Sustainable Urban Logistics Groningen' that has been signed by all members on 31 October 2018.

2. Strategic cooperation with knowledge institutions with a specialization in logistics and a relationship with the city or region:

An alternative approach is based on learning from already available knowledge about the logistics system and its stakeholders. The city or region use the network or contacts of regional or national knowledge institutions to obtain an overview of logistics companies and stakeholders.

- This approach fits well in a situation where initial (public) objectives are clear (including political agreement) but the City or Region has limited insight in existing network(s) or stakeholders linked to the objective(s)
- It includes stakeholder engagement objectives a, b, c, d

Best practice: '**Collaboration Universities and province of Drenthe**'

Our local universities – University of Groningen and NHL Stenden University of Applied Sciences – both have a specialization in logistics: Centre for Operational Excellence and Lectoraat Green Logistics. We have a long term relationship with both universities and cooperate in several projects in the logistics field. Besides excellent knowledge, they have a broad network among stakeholders and logistics companies in our region. Their active involvement combined with the use of knowledge and their practical network were a key component to our SURFLOGH activities.

3. Project-driven stakeholder engagement, involving stakeholders at the level of an individual pilot-project, without further commitment to broader goals related to city logistics:

A third approach includes the selection and consultation of a limited group of stakeholders, directly linked to the successful implementation of a (pilot)project. The project and project funding are drivers to organize contacts between actors and stakeholders. One or more successful projects, with several private stakeholders involved, can build the basis for a structural stakeholder engagement format (described in approach 1).

- This approach works best in a situation *without* overall political agreement on a municipality level, and/or a situation where overall goals for city logistics have not yet been clearly defined
- It Includes stakeholder engagement objectives a, c, d, e, f, h

Best practice: '**Bottom-up stakeholder approach City of Mechelen**'

Our bottom-up approach, involving stakeholders in small pilot projects, has proven successful to establish a broad network of logistics companies and other stakeholders involved in city distribution and last mile deliveries. By involving and listening to the stakeholders participating in individual projects, we established a logistics working group with 29 retailers, special interest organizations and logistics service providers, committing to a city logistics covenant. The covenant sets a horizon for 2030: zero emission logistics in the inner city of Mechelen. The signatories of the covenant set sub-targets to keep the distant goal in mind.

Roadmap 2 – Role of the City or Region

Why, rationale:

Taking the lead as a city or region (in policy or practical initiatives or projects regarding sustainable city logistics) is often linked to a broader vision behind objectives for sustainable City Logistics:

- An attractive and liveable city center with benefits for residents, shopkeepers and visitors (e.g., reduction of traffic, less pollution and space for bicycles/pedestrians)
- A healthy environment for residents, employees and visitors (e.g., reduction of NOX)
- Contribution to mitigation of climate change (e.g., reduction of CO2)
- An accessible and safe city center (e.g., less traffic movements, no double parking, free space for bicycles and pedestrians)

Next to this, policies, regulations and/or restrictions with regard to last-mile logistics create a fair 'level playing field' for sustainable logistics business models (e.g., UCC's in combination with Cargo Bikes, Low- or Zero-emission vehicles, LEV's). The city or region can also play a pioneering role in disseminating information about sustainable logistics alternatives or projects

What, goals/objectives:

Objectives are linked to the quality of life in the city center (and society as a whole), focusing on:

a. Reduction of Transport: a decrease in freight traffic in the inner City, in conjunction with:
   - CO2 reduction (mitigation of climate change)
   - NOX reduction (healthy environment in the city center)
   - Less accidents (increased safety for pedestrians and cyclists)
b. Stimulating collective action: open communication to share innovative ideas en practices, bringing potential 'business-partners' for sustainable solutions together
c. Targeted implementation: execution of specific regulations for freight traffic (Low- or Zero Emission zones, time-slots for loading/unloading, traffic and parking regulations)

How, 3 different approaches from the perspective of the City (Municipality) or Region:

1. Developing supporting policy or practical measures in the field of an attractive and liveable inner city ('**Carrot**'):

This first approach aims for the implementation of an overarching policy with regard to the quality of life in the inner city. A city or region can connect municipal objectives with the interests and objectives of shopkeepers (attract visitors/customers, create an ultimate shopping experience), residents (healthy environment, safety) and visitors (accessibility, safety, experience). Municipal budgets can be allocated in line with shared objectives, e.g., targeted public investments that encourage private investment from shopkeepers and residents.

- This approach works best in a situation with political consensus and a clear vision on quality in the inner City

- It has an Important link with stakeholder engagement (Roadmap 1), an can be linked to an approach with restrictions for freight traffic (see approach 2)

Best practice: '**Continuous development of city center liveability in the City of Borås'**

Perhaps unusually within a local authority, Borås does have a high focus and expertise in logistics/freight transport. Furthermore, the city is currently engaged in several development projects, spanning from regional terminal structure, to efficient and emission free transports in the city center. The latter is closely linked with the Borås ambition of a vibrant, green, and safe city street environment, where the traffic system constitutes an important aspect. The real estate owners play an important part in assessing the potential for different kinds of measures and, solutions as well as the merchant organization of Borås city. The main parts of the focus area in Borås are central areas that are regulated as pedestrian zones. However, as a part of the continuous development there are a few measures being considered to reduce traffic in certain areas of the city, where length restrictions for vehicles will be the next step.

2. Restrictive policies and/or measures to target conventional last-mile logistics and loading/unloading nuisance in inner cities (**'Stick'**):

In this approach, the city or region implements a restrictive policy to limit unwanted (polluting) freight traffic and nuisance from loading and unloading activities. This can be done, for example, by:

A. Implementation of loading/unloading time slots or restrictions, differentiating between sustainable and non-sustainable transport
B. Implementation of low- or zero-emission zone for freight traffic in the inner City, following a number of consecutive steps:
   - ✓ Clearly define a zone and restrictions within the zone (low emission or zero emission)
   - ✓ Set a realistic date for implementation (not to soon: not feasible and fair for logistics service providers and shopkeepers, not too late: no sense of urgency for logistics service providers)
   - ✓ Start an open consultation with all stakeholders (logistics service providers, retailers, residents, real estate owners, special interest groups)
   - ✓ Define temporary exception rules for special traffic or small businesses
   - ✓ Initiate and facilitate alternative (sustainable) services for inner City logistics (link with Roadmap 3 and 4)
   - ✓ Assess all financial implications: investments/CAPEX (Road Signs, Cameras) and OPEX (Cost of operation, communication, enforcement)
   - ✓ Define an implementation strategy (including political support on a municipal level)

- This approach works best in a situation with political consensus and a clear vision on mitigation of climate change (CO2) and reduction of pollution (e.g. NOX)
- It an be linked to an approach focusing on specific policies and investments to enhance the quality of life and attractiveness of inner Cities (see approach 1)
- A national strategy with regard to zero emission zones or climate measures (e.g. Green Deal ZES and the National Climate Agreement in the Netherlands) can be an important driver for municipalities to develop such policies and measures. In the absence of such an overarching policy at regional or national level, it is often more difficult for cities to independently implement these zones and restrictions

Best Practice: **'Space for Zero-Emission City Logistics in the City of Groningen'**

More space for you! In a clean and safe city center. That is what the city of Groningen wants to achieve. We take all kinds of measures for logistics traffic. Main goals: reducing the number of trucks and delivery vans in the city center and the remaining logistics traffic must be emission free. We do this, among other things, through stricter rules for deliveries to shops, companies, and the hospitality sector. Fewer trucks and delivery vans mean more space for pedestrians and cyclists in a beautiful, lively city center.

Timetable:

2022: Expansion of the area with time frame for logistics
2022: Stricter exemption policy for traffic in the city center
2022: Enforcement with ANPR cameras around the regulated area
2025: zero-emission zone for City Logistics

3. Storytelling and matchmaking on Sustainable Urban Logistics ('spread the word'):

The value storytelling possesses in policy work concerning sustainable urban logistics is profound, with the concept allowing people to gain a greater understanding of the current situation in inner cities, while also seeing the challenges different actors (both public and private) face. Storytelling is a way to spread awareness and call for action. Cities or regions can organize and/or facilitate meetings, presentations, pitches, talk shows to 'showcase' sustainable logistics policies and specific projects. Matchmaking goes one step further: cities can organize and/or facilitate events where stakeholders (and potential partners) in sustainable city logistics can meet, mingle and talk about business opportunities.

- This approach is suitable in all kind of different situations, and in combination with:
    - Projects concerning Logistics City Hubs, Cargo Bike services, Electric Vehicle deliveries (Roadmap 3)
    - Projects focusing on the implementation of Locker services (Roadmap 4)
    - Supporting policies on liveable inner Cities (this Roadmap, Approach 1)
- In addition Storytelling is also linked to Roadmap 1 (Stakeholder Engagement): create and target messages to specific stakeholder groups

Best practice: **'The Cargo Bike Talks'**

Groningen is the cargo bike capital of the world. We want to maintain our leading position and Groningen is the breeding ground of new developments and initiatives in the field of cargo bike policy. Part of this is the organization of the Cargo Bike Talks, an online broadcast in which we present new cargo bike concepts like low-nuisance deliveries (PostNL), electric trailers (Nüwiel) and new business concepts (Go-Fast). Main goals: to show what the cargo bike can mean for the quality of life in our cities, to encourage other cities to adapt their policies and to enable companies to switch to sustainable logistics. With examples from Groningen and other cities, the broadcasts attract an international audience, from within and outside Europe. The Cargo Bike Talks are a collaboration between the municipality of Groningen, SURFLOGH and the International Cargo Bike Festival.

Roadmap 3 – Hubs/UCC's, Cargo Bikes and Electric Vehicles

Why, rationale:

To stimulate alternatives to conventional modes of transport (truck, delivery van), cities or regions can proactively set up (pilot) projects, to encourage innovative and sustainable logistics solutions. An urban consolidation center (City Hub or UCC), based near the city center, can serve as a collection point for logistics flows to the inner city. From this collection point, the goods/parcels can be delivered in an efficient or sustainable manner. Cargo bikes or light electric vehicles can be used for this last mile deliveries. In this way, deliveries in the city center can be efficiently coordinated and carried out as sustainably as possible.
Successful implementation of the pilots is largely related to involving the right stakeholders (see Roadmap 1) and policy aimed at logistics in the city center (see Roadmap 2). In addition, when setting up pilot projects, it is also important to consider the continuation of projects after the pilot phase. A feasible business model for logistics service providers and the same or lower costs (while service remains the same) for retailers are crucial

What, goals/objectives:

Objectives are linked to successful implementation of pilot projects, on a strategic, tactical and operational level:

- Strategic: A significant reduction of transport movements (a decrease in freight traffic in the inner City), in conjunction with, CO2 reduction, NOX reduction (healthy environment in the city center), less accidents (increased safety for pedestrians and cyclists)
- Tactical: continuation of the initiative after the pilot phase (commercial service)
- Operational: successful implementation of the pilot project, in cooperation with (and with contributions of) all partners involved

How, 3 different approaches from the perspective of the City (Municipality) or Region:

1. <u>Multi-pilot approach</u>:

This approach consists of a number of consecutive short pilot projects, to test business models for sustainable city logistics. In this way knowledge and experience from one project can be used in the next project. Lead time of pilot projects can vary between 3 months (to get first impressions of a new sustainable logistics concept) to 10-12 months (to properly test the feasibility over a longer period, whereby minor adjustments can also be made during the term of the pilot). In the case of short pilot projects, it is important to properly inform participants (e.g. retailers) about the duration and structure of the pilot, to make clear what participants can expect.

- This approach works best in a situation with:
  - A clear overall municipal policy and targets for sustainable city logistics
  - Clear political commitment
  - A local network of multiple large logistics service providers + local SME companies, who are willing to participate in several pilot projects

- This approach has a link with storytelling (Roadmap 2, approach 3): organizing meetings or events that can serve as a creative platform for new project ideas and matchmaking of large logistics service providers and small local start-ups in logistics

Best practice: **'Cargo Bikes, more pilots = more results'**

Short lead times are a common characteristic of our SURFLOGH pilots. A conscious choice to achieve results quickly. As a result, we can build in our pilots on the knowledge and experience we gained in earlier ones. This way we quickly adapt and know what works and what doesn't. Through this approach, we have gained insight into a wide range of aspects that influence the business case of cargo bike logistics. Think, for example, of ICT applications, vehicle size, type of customers, partnerships, business concepts, size of the working area, location of the hub and the city's access policy.

2. Planned UCC pilot approach:

This is a step-by-step approach to identify and test the potential of a Urban Consolidation Center (UCC) or City Hub with sustainable last-mile logistics (through the use of Electric Vehicles and/or Cargo Bikes):

- ✓ *First step*: mapping of current goods flows to and from the inner City (different kind of goods, return flows, volumes, timetables, transport companies involved) in order to find out the potential (volume) for a sustainable last-mile concept involving a UCC. In some cases mapping could be organized in cooperation with knowledge institutions/universities with a local connection
- ✓ *Second step:* dialogue with stakeholders (interviews with retailers, Real Estate owners, logistics service providers, local service providers) to investigate preconditions and requirements set by potential customers
- ✓ *Third step*: Building a preliminary business case (base case) for an in depth understanding of the business potential (before the Municipality starts a competitive dialogue with interested private partners). In parallel the city can investigate and secure options (locations, real-estate) to develop or re-develop an UCC (near the City Center);
- ✓ *Fourth step*: Formal competitive dialogue or informal dialogues with logistics service providers , to prepare the formal procurement process and inform interested companies about the upcoming procedure
- ✓ *Fifth step*: Formal procurement process for Logistics Service during UCC pilot phase, including the development of an UCC, the operation of the UCC, and the organization of the sustainable last-mile deliveries
- ✓ *Sixt step*: preparation of the site of the UCC and start of the UCC pilot
- ✓ *Seventh step*: mid-term evaluation, focusing on operational changes, scale-up opportunities and marketing to attract new (return) flows
- ✓ *Eight step*: end of pilot phase, consultation with logistics companies involved to continue the project as a commercial service

- Works best in a situation with:
    - A clear overall municipal policy and targets for sustainable city logistics
    - Strong political commitment

- Professional project management (provided by Municipality or Region and the companies involved)
- Presence of multiple large logistics service providers (with own volumes as basis for pilot project)

Best practice: **'A UCC for Good Goods in Boras'**

The objective of the Pilot 'Good Goods' was to create solutions for consolidation of goods to the city center, as well as zero emission distribution of goods and waste. As such, the municipality of Borås, the Merchant Organization Borås City, and the real estate owners association set up a formal procurement procedure to select a suitable logistics service provider. Based on their winning bid, the local service provider Stures Åkeri, set up a sustainable logistics service for the SURFLOGH Pilot "Good Goods". During the pilot a secondary revenue flow was established in collaboration with the municipal company Borås Energi och Miljö to provide a collection service for dry waste, hence introducing an element of a two-way flow into the operation. An electric vehicle designed for goods distribution and waste recycling was introduced respectively, as well as a consolidation terminal adjacent to the city center. The operation has proven to work very well this far, and given the existing base flows of goods and waste, there are good prerequisites for a commercially sustainable solution in the long term.

- Organic UCC approach:

This approach starts with a clear definition (high level) of the problem and potential sustainable logistics solutions for last mile deliveries by the Municipality, with basic political commitment (high level). Based on this, the city or region starts a market dialogue with one or several innovative start-up/scale up companies (small logistics service providers) with a sustainable business model already tested in a similar environment (other city or region).

The city/region, select a start-up logistics service provider, and start a collaboration based on a basic agreement:

- ✓ In the first phase the pilot project (service) is designed at a (very) small scale (e.g., small city hub, one cargo bike)
- ✓ The start-up uses momentum or ad-hoc chances to grow (e.g., a contract with a large logistics service provider to deliver a small part of their volume by cargo bike)
- ✓ The start-up or scale-up ideally optimizes the logistics operation for each new step (e.g., enlargement of the hub, extra cargo bikes)
- ✓ The city or region only provides public funding (grants or loans) for parts of the operation that are not (yet) commercially viable
- ✓ Public funding is reconsidered for every new step, and is phased out as the business/volumes grow

- This approach works best in a situation with high trust between public and private partners. This trust can be build trough stakeholder engagement (Roadmap 1) and/or storytelling and matchmaking (Roadmap 2, approach 3)
- It is based on the presence of one or more start-up companies willing to cooperate

Best practice: **'Entrepreneurial approach and relationship building in Edinburgh (SEStran)'**

A key part of the success of the Edinburgh pilot has been the entrepreneurial approach and relationship building of the hub director Charlie Mulholland (Zedify). This has been characterised by a classical one to one sales ethos and an agile approach to business development, being able to identify opportunities and move quickly to realise them. For example, Charlie was able to build a core of regular business in Edinburgh with FedEx based on a previous discussion that had gone cold, he was able to act when his contact moved to Edinburgh, re-engaging with them to present the potential form them in Edinburgh with Zedify. The DNA of the hub is also characterised by a 'let's do it' approach to new business and a willingness to accept risk in order to meet customer expectations. This approach is supported by the Zedify franchise team and is very much part of the overall brand identity at Zedify.

Roadmap 4 – Locker Services

Why, rationale

Parcel deliveries in cities boom due to e-commerce and online shopping. This has been an ongoing process already for quite some years, but Covid restrictions have proven to be a real accelerator since 2020. In the future further growth is expected. The deliveries cause additional movements by parcel companies, that are often operated by van. The extra traffic has a negative effect on environment and road safety, while cities aim at less city logistics movements and less pollution. They strive to improve livability for both residents and visitors. A solution that has proven to be successful within SURFLOGH is setting up a network of parcel lockers, both in inner cities and rural areas. Delivery of parcels in one location (the locker) reduces the number of transport movements in city streets and benefits residents, local businesses and logistics service providers. On top, parcel recipients have access to their deliveries 24/7 on convenient locations.

What, goals/objectives

The installation of a parcel locker network can contribute to various policy goals and ambitions:

- Reduction of transport movements: Because deliveries are made on one location, the residence time of the van in the city is shortened. On top, it reduces transport movements and ensures less freight traffic, which causes less CO_2 emissions. Also less NO_x and particulate matter is emitted which contributes to a healthier environment. Road safety is improved because of less traffic and the van does not cause congestion by making a stop every few meters in narrow and busy streets.
- Improvement of service: The lockers provide extra services for local residents and businesses in the inner city because they ensure 24/7 accessibility, contactless deliveries and self-service pick-ups and shipments.
- Logistics efficiency: Finally, additional benefits for logistics service providers can be obtained. First, by securing a more efficient trip delivering all parcels in one location. Secondly, because of mitigating the risk of loss, misplacement or theft.

How, 3 different approaches from the perspective of the City (Municipality) or Region:

1. Large LSP/service provider in the lead

In the first approach a large logistics service provider, probably a parcel delivery company or parcel locker operator, is responsible for facilitating the entire process. The activities can be seen as business development, hence as part of their business strategy.
Usually the company approaches the municipality or region with a request to install a parcel locker network. The company carries out the whole procedure on their own, sometimes facilitated by the municipality/region who could help with searching for a location or obtaining the necessary permits. The operator is responsible for buying or leasing the lockers. Other logistics service providers, business or retailers cannot use the lockers directly, but only via the parcel network of the service providers who owns the lockers, or in case the owner is a locker operator, via a service agreement.

- This approach is suited if a city or region requires a fast and large scale implementation, with *pro's* (quick and efficient implementation, large scale and network access of logistics service provider) and *cons* (other, and smaller logistics providers can only access the service trough a service agreement with the large logistics company involved)

Best practice: **'Bpost's Ecozone in the City of Mechelen: efficient implementation'**

Bpost's Ecozone is a new logistics concept that was first tested in Mechelen within the SURFLOGH project. Nowadays the concept is expanding to different Belgian cities thanks to the learnings of the Mechelen trial. In an Ecozone, bpost – Belgium's national mail and parcel delivery company – commits itself to zero-emission deliveries to and from an extensive network of parcel lockers. In addition, it nudges the inhabitants to have their parcels delivered in the lockers instead of at home. With the help of SURFLOGH, bpost was able to implement the zone quickly and efficiently on a large scale. A little over a year after the first meetings with the city of Mechelen, 50 parcel lockers were installed (and intensively used). And only a few months after that, bpost was able to switch its fleet to a full zero emission one to serve the entire inner city of Mechelen for every (home) delivery.

2. Municipality or Region in the lead:

The municipality or region can take the lead in the whole process, working on their policy goals. In this case, the entity is responsible for actively searching and approaching market parties or entrepreneurs who can exploit the parcel lockers.
The municipality or region facilitates the process, starting with finding a commercial partner, which could be a large company but also more scale-up like businesses (if they have good contacts and experience with parcel companies and retailers). The governmental body can buy or lease the lockers through a procurement procedure. A way to do this could be a buy and lease back construction, or an investment made by the municipality/region and the market party leasing the locker.
The lockers can be used by several logistics service providers and other businesses/retailers under a white label concept. In this approach, the locker operator is a different party from the parcel delivery companies that make the deliveries in the locker unit.

- The approach fits well if a city or region wants to test a new locker concept with open access for all interested logistics service providers and customers (white label). Implementation of the concept might take longer compared to approach 1 (with a large logistics service provider in the lead), and requires a large(r) effort of the public authority involved

Best practice: **'Lockers at public transport hubs in Drenthe'**

Inspired by the locker pilot initiated by SURFLOGH partner Mechelen, the province of Drenthe decided to start a similar locker pilot. The characteristics of our region are slightly different. Instead of the inner city we focus on the more peripheral areas surrounding the cities. We chose to install the lockers at 3 different public transport hubs. These hubs are strategically placed across the main roads at the entrance of the villages. Besides the effects in terms of bundling and CO_2 reduction, the main goal is to incorporate the lockers in the local economy. In the tender procedure we agreed on the terms and conditions of the use of the lockers by local companies. During the pilot we involved local stakeholders and encouraged them to use the opportunities of the lockers for their businesses. National television broadcasted an item on this initiative.

3. Choosing the right location for lockers

Since parcel lockers have to be installed in public space, it involves some practical and official procedures before they can eventually be found in the streets.
First, a selection process has to be carried out in which the right locations for the lockers have to be found, based on population data, people passing-by, network density and market research. In SURFLOGH it was found that commuter locations could be very useful, both in cities and the rural areas (where lockers could also be combined with mobility hubs).
Basic requirements are also: a location that is 24/7 accessible (public space), accessibility for LSP's (delivering in the lockers), accessibility for customers (nearby, safe location), road safety around the lockers (pedestrians, cyclists) and a location that causes minimal nuisance for residents and nearby shops, cafes and restaurants. Other requirements for larger lockers include electricity and a foundation for the lockers. Also permits may be required as it comes to spatial planning procedures.

- Choosing the right location for lockers has a clear link with Roadmap 1, which concerns stakeholder engagement with residents and businesses in the direct vicinity of the locker location

Best practice: **'Finding the right spot in Mechelen'**

The lockers in the Ecozone were designed to overcome installation challenges that were encountered with the first-generation parcel lockers: they were smaller, needed no anchoring and relied on battery power so no socket was needed. Finding a good spot, however, could still be a challenge since a range of city services had to be consulted before the board of alderman would approve: safety, heritage, urban planning… among others. However, with a little perseverance and a good eye, we managed.

Roadmap 5 – An integrated approach: UCC development and Sustainable and Smart Area Development

Introduction of the case study

Perth has been identified as a case study due to its size as a medium (50,000 people) scale city located at the centre of the Scottish Trunk network. The city faces many of the same challenges as other cities around climate change, air quality and congestion, a growing online business and retail sector leading to increasing (and disparate) parcel and good deliveries, and a city centre that is dealing with changing consumer patterns. Perth & Kinross Council (PKC) have a clear and progressive policy framework to deliver positive, place based solutions to these challenges, though investment and collaborations that enhance the quality of life for its communities.

Perth West is a 260 hectare site allocated for mixed use development located on the western edge of the city along the A9 for up to 3,500 homes, 25 hectares of employment land and a series of neighborhood centres. The ambition for Perth West is to accelerate clean inclusive growth of Perth through investment in economic concepts, infrastructure and land that enables climate change adaptation, skilled employment opportunities and public amenities to come forward at speed.

Why, rationale:

When a municipality or region intends to develop a UCC (Urban Consolidation Centre) within a specific area or zone, it is worthwhile to carefully consider how the establishment of such a logistics consolidation point and the logistics concept for smart and sustainable urban delivery can contribute to the area's development. This includes aspects such as the implementation of sustainable energy concepts or the development of smart and sustainable infrastructure solutions. In return, this concepts or solutions can also strengthen the (business)case for the UCC development. Furthermore, an integrated approach can help to validate and refine a land use framework for the area, phasing plan and the suitable role for the City or Region (*see also Roadmap 2 – The role of the City or Region*).

What, goals/objectives:

The objectives for an integrated approach or development lie, on the one hand, in the realm of economic feasibility (which can be enhanced through combinations of initiatives), but on the other hand, also in increasing the societal added value and impact of the combined developments. Identifying smart combinations among various types of measures regarding logistics, energy and infrastructure, involves an assessment and smart combination of:

a. Policy frameworks: Identify how municipal/regional (and possibly national) policies in various fields can be combined
b. Stakeholder buy-in: Identify all relevant stakeholders in the overlapping areas, assess their interests, and involve them through a tailored stakeholder engagement process (*see also Roadmap 2 – Stakeholder Engagement*)
c. Technical capabilities: Conduct sub-studies to investigate the technical feasibility of the measures and their combinations. Involve universities/research institutions where possible to leverage knowledge from specific research programs for the specific urban or regional case

d. Spatial integration: Map out the measures spatially in a spatial framework plan and coordinate this with the competent authority to ensure spatial feasibility
e. Strengthening or improving different components: Assess how a combination of measures can strengthen the individual components. Use this information to engage stakeholders on specific subtopics (see point b) and align them with a combined project
f. Economic feasibility: Substantiate the economic viability through a business plan (both overall and for each component)
g. Societal impact: Illustrate the societal value of the combination of projects, both for the immediate surroundings or development area and for the municipality or region as a whole.

How, 3 approaches:

In Perth West the approach towards developing integrated logistics – energy - infrastructure concepts that can drive change, has been framed around three themes that emerged through consultation with local stakeholders and the SURFLOGH programme: integrated data sourcing at micro level, UCC development and Smart Local Energy Systems, and UCC development and sustainable infrastructure solutions:

1. <u>Integrated data sourcing at micro level</u>:

In this approach, the focus lies on the structured gathering and organizing of information and data about development components to be combined (such as a UCC, logistics concept, and innovative infrastructure solutions). This needs to be done at various levels within the local context:

- Policy frameworks and ambitions of the municipality or region (either independently or in conjunction with national frameworks and ambitions)
- Experts (universities, research institutions, specialized companies)
- Logistics Service Providers and other companies or entities involved in potential services
- Stakeholders (residents, shop owners, users, visitors, etc.) at the municipal, neighborhood, and area levels (micro level)

In practice, design of solutions (combination concepts) is built from the micro level (bottom up), aiming to maximize societal value and impact for the local community.

This approach works best in a situation where:

- Public objectives (framework, ambitions) are clear, including political agreement on the level of the Municipality or Region
- Key stakeholders on all levels are known and interested or committed. An alternative is to build an extensive stakeholder network from scratch (this requires a more extensive process). See also *Roadmap 1 – stakeholder engagement*.
- This approach includes the aforementioned objectives a, b

Best practice Perth West: '**Integrated Logistics Framework Study**'

In 2022 and 2023, a targeted study was conducted for Perth West on an integrated Logistics Framework for the location (potential development of a UCC, potential logistics concepts for supplying the city center of Perth, potential combinations with other functions and infrastructure in the area). The following steps were taken:

- Development of a communication and stakeholder engagement plan, followed by a series of stakeholder workshops at the municipal, expert, service provider, and micro-level stakeholders' levels (city, neighborhood, area)
- Development of a business model plan that identifies and assesses logistics services options, outlining the resulting opportunities, dependencies, barriers, costs, and revenue sources
- Identification of key logistics facilities, land use distribution, design principles, and regulations
- Identification of combinations with other functions such as a clean energy hub, renewable energy for transport, innovative infrastructure concepts, and their impacts at both the micro-level and municipality-wide
- Designing multiple scenarios for an integrated Logistics Framework, including corresponding measures and investments in other areas such as energy and infrastructure

2. UCC development and Smart Local Energy Systems:

Smart local energy system (SLES) can help achieve the Government target of net-zero by enabling the integration of local renewable generation and demand-side business models (e.g., a UCC and/or a Logistics transport concept). The approach focuses on unlocking the benefits of SLES by studying new market combinations and subsequent business models. It build on the basis of Area development incorporating clean energy technologies to serve smart city growth and sustainable development e.g., (smart an fast) electric charging facilities, E-fuels and Hydrogen services. This sustainable infrastructure can be linked to (a cluster of) business and industry concepts, like a UCC).

This approach works best in a situation where:

- Public objectives (net-zero framework, ambitions) are clear, including political agreement on the level of the Municipality or Region
- Objectives for sustainable (or net-zero) Area development are clear and incontrovertible
- Key incentives for businesses (Logistics and other) are in place, both 'carrot and stick' (*see Roadmap 2 – Role of City or Region*)
- This approach includes the aforementioned objectives d, e, f and g

Best practice Perth West: '**Case study for the value of greenfield smart local energy systems**'

This case study started with an analysis and evaluation of the potential sources of energy generation, demand, storage, and flexibility in the Area energy system. The mapping of these factors provided valuable insights into the optimal design and techno-economic feasibility of a smart local energy system for Perth West, linked to the use of local residents, a potential UCC and other economic functions. The study also considered the costs, benefits, and carbon reduction potential of the proposed system. In addition, a social study (including specific focus groups) was conducted to understand the public perception and acceptance of the overall concept. The study clearly demonstrated the potential and various scenarios in which a Smart Local Energy System can contribute to a cost-effective development of the location and specific functions, such as a UCC/Urban Logistics deliveries concept.

3. UCC development and sustainable infrastructure solutions:

A third approach focuses on combining UCC development (or the development of a specific concept for Urban Logistics) with innovative, smart and sustainable infrastructure concepts - both on-site and

in the broader environment or transport corridor to the city. This can involve specific infrastructure design tailored to logistics vehicles (driving, parking, loading/unloading), as well as innovative infrastructure solutions such as Electric Road Systems.

This approach works best in a situation where:

- Public objectives (net-zero framework, ambitions) are clear, including political agreement on the level of the Municipality or Region
- Objectives for sustainable (or net-zero) Area development and Transport are clear and incontrovertible
- The overall scope includes a specific area (including a UCC), within a larger geographical perimeter (a city or part of a city)
- This approach includes the aforementioned objectives c, d, e, f and g

Best practice Perth-West: '**Charging forward, an Electric Road System linked to a UCC development**'

This project explored the environmental, social and economic case for an electric road infrastructure system (ERS) for the city of Perth, and the Perth-West Area. An electric road system (ERS) enables charging of electric (logistics) vehicles while in use. There are different types of ERS solutions. Distinctions include if the charging is conductive (direct contact) or inductive (contactless), and if the charging is stationary (in a parked position) or dynamic (while in motion). In addition to power supply, the ERS can include smart technology controlling access, safety, real-time interaction with traffic, smart billing, data, and more.
ERS was being considered as part of a wider city logistics and mobility strategy (including an UCC in the Perth-West Area). A specific assessment focused on the question whether ERS could support the decarbonization of an urban logistics concept and bus based transport in Perth, taking into account key stakeholders' perceptions on needs, opportunities, challenges, and synergies.