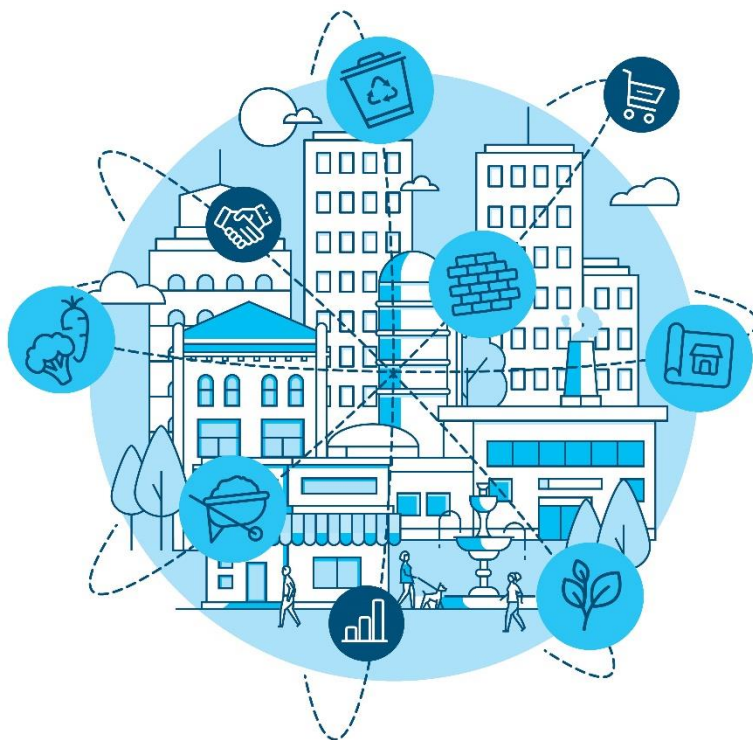





Evaluation Plan: CDW sector, Høje-Taastrup

Deliverable 6.2

Høje-Taastrup Municipality and Gate 21



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Abstract	This report details how the city of Høje-Taastrup will evaluate the impact of the CityLoops tools and demonstration activities aimed at improving the circularity of the Construction and Demolition Waste sector.
Keywords	Evaluation, Indicators, Høje-Taastrup Municipality, Construction and Demolition Waste
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1. Introduction

The objective of the CityLoops evaluation work is to ensure a comprehensive evaluation framework is established for all demonstration actions to assess their impact on sustainability and to assess the progress towards a more Circular Economy (CE).

This document will guide the practical evaluation work based on the evaluation framework and CE indicators presented in CityLoops Deliverable 6.1 Circular City Indicator Set (Vangelsten et al. 2021). The evaluation aims to cover all the four Vision Elements at the core of the CityLoops circular city definition from Vangelsten et al. (2021). Thus, the evaluation will monitor local level processes and behaviour aimed at improving circularity, impact in terms of more circular material flow and energy use as well as outcomes in terms of improvements on the environment and on human wellbeing. The evaluation will focus mainly on the demonstration actions but impacts at city scale are also included.

This Evaluation Plan presents a list of specific indicators to be monitored over the duration of the Demonstration phase of the CityLoops project (Month 18-44). It further details what data needs to be collected, who is responsible for doing this, how it will be done, and when. The overall responsibility of the development of the Evaluation Plan and its implementation lies with the Evaluation Manager appointed in Høje-Taastrup. The implementation of the Evaluation work will be documented in the Interim Evaluation Report to be submitted at Month 36 and the Final Evaluation Report to be submitted at Month 46.

Høje-Taastrup Municipality is located in the Greater Copenhagen Area in Denmark. The municipality is aiming to influence a large number of construction and demolition projects with different ownership in order to encourage circular practices. Some projects are municipal while others are private, and they are at different stages of planning and execution at the start of the project. This enables HTK to see what impact the municipality can have by getting involved at various phases of each project and to develop and test planning and decision-making through these cases.

The Evaluation Plan for Høje-Taastrup Municipality will be presented in this report. In the CityLoops project Høje-Taastrup Municipality is focusing on the CDW sector. 5 demonstration actions and 6 different tools will be developed and tested during the CityLoops project in Høje-Taastrup Municipality. The demonstration actions and tools will focus on soil management and circular building projects. The aim of the projects and the tools is to encourage circular practices, influence a large number of construction and demolition projects and to test and develop a planning and decision-making framework aiming at integrating it in Høje-Taastrup's normal procedures. The evaluation plan can help other municipalities replicating the circular building processes, business cases and guidelines for circular economy.

1.1. Demo Action 1: Implementing circularity when selling town hall for demolition

Short description

Høje-Taastrup intends to implement selective demolition and circularity when selling the existing town hall for demolition. The aim is to impose a criterion that as much building material as possible should be reused and as much soil as possible should be kept on-site. The recoverable materials will be incorporated into new buildings or crushed on-site and used as filler. Some materials may also be used in other (as of yet unidentified) building projects off-site. Soil is either prevented from being dug up or reused on site.

Tools tested: 1, 2, 3 and 5

Expected outcomes

- The use of CityLoops tools (selective demolition, pre-demolition screening, LCA for soil and concrete and soil tools) are a part of tendering material and improve the mapping of materials for future use
- Increased stakeholder dialogue, leading to more circularity in tendering material
- Improved practice of including sustainability and circularity considerations in urban development plans and tendering criteria when selling municipal property
- Out of 18,000 tons of soil, 80% is kept on site (15,000 tons)
- Reduced consumption of virgin resources, by using recycled materials instead
- 30 tons of CO₂e savings from soil kept on site. In addition, a reduction of CO₂ is expected due to a more circular handling of other CDW.

1.2. Demo Action 2: Høje-Taastrup's New City Hall

Short description

A new town hall will be built using recycled concrete in the building foundation and other components. The concrete comes from demolition of eight apartment blocks at Taastrupgård (Demo action 3). Excess soil from the construction of the town hall will be used in Taastrupgård.

Tools tested: 1

Expected outcomes

See Demo Action 3 below. The expected outcomes of DA2 and DA3 are considered together.

1.3. Demo Action 3: Taastrupgård

Short description

Demolishing of eight apartment blocks and recycling the concrete. KAB, a social housing company, owns Taastrupgård. The concrete will be used by the municipality and in other building projects. 10,000 tons of concrete can be recycled. Of this, 2,000 tons will go into making the foundation and other components of the future city hall (see demo action 2); the other 8,000 tons will go into other projects. Gadehavegård is a potential replication project in Høje-Taastrup.

Tools tested: 1

Expected outcomes of DA2 and DA3

- Increased stakeholder dialogue, leading to more circularity in relation to CDW and soil reuse and recycling
- Improved practice of including sustainability and circularity considerations in the procurement process
- New business models for reuse, recycling, and valorisation of CDW and soil developed and validated
- Use of virgin resources (gravel) reduced by 1,088 tons
- The recoverable materials have been incorporated into new buildings or crushed on-site and used as filler. Some materials may also be used in other (as yet unidentified) building projects off-site
 - Recycling of 8,000 tons of concrete into filler in other projects
 - Recycling of 1,088 tons (high-value recycling) of concrete aggregate for the city hall foundation
- CO2 savings from reduced transport of soil and high-value recycling of concrete:
 - 9,000 tons of soil transported 3km instead of 25km, 15 tons of CO2e saved
 - CO2 savings from recycling 8,000 tons of concrete into filler in other projects. 4,000 tons are transported 3 km and 4,000 tons are transported 46 km.
 - CO2 savings from recycling 2,000 tons into 1,088 tons of concrete aggregate for the city hall foundation. Transport of concrete aggregate is halved, to approximately 50 km total. CO2 savings: 5 tons.

1.4. Demo Action 4: Recycled sidewalk tile

Short description

The concrete factory IBF will develop and produce a tile from 30% recycled concrete from excess concrete in their own production. It is locally produced in Hedehusene. Høje-Taastrup will look for possible test areas to try out the tiles in an area where the sidewalk is renovated.

Tools tested: None

Expected outcomes

- Increased awareness of using recycled tiles in projects (scaling potential)
- Reduced use of virgin material due to the use of recycled concrete aggregate
- Pilot project: 30% recycled concrete used in tiles
- CO2 savings from 100m sidewalk with tiles made from 30% recycled concrete

1.5. Demo Action 5: Circular soil management

Short description

Circular soil management at city level in order to keep excavation of soil to a minimum and use excess soil locally, instead of driving it farther away. A draft of the circular soil framework (tool 3) will be tested in this demo action, and results will feed into a template for the municipal soil strategy developed at later stage in the project. In HTK, the framework will be used for developing a politically adopted soil strategy, which will be used for managing soil from construction projects.

Tools tested: 3, 4, 5 and 6

Expected outcomes

- More local reuse of soil as a result of the implementation of CityLoops soil tools and LCA tool in soil management (25% reduction of what the prognosis predicts from 2020-2023)
- Increased involvement of planning department and developers has led to more awareness and earlier consideration of soil reuse potential
- New business models for reuse and valorisation of soil developed and validated
- General increase in reuse of soil on construction sites
- CO2 savings from 400,000 tons less excess soil transported

1.6. CityLoops Tools

Tools 1, 2, 3, 4, 5 and 6 are tested in the demonstration actions:

CityLoops Tools	Description
1. LCA	LCA tool for building materials and soil. Estimates the potential CO2-savings of keeping soil or reuse/recycle building materials.
2. Screening tool for selective demolition	Resource mapping with detailed screening for selective demolition. Guidelines for pre-demolition audit and selective demolition. Identifies materials with potential for reuse.
3. Framework for developing a circular soil strategy	The framework can help trying to influence the developers to reuse soil on site.
4. Instrument for predicting future excavated soil production	Predict annual volumes of future excavated soil within a period of 12 years (2020-2031). It will be evaluated by comparing predicted soil volumes with annual soil volumes reported for a period of 12 years.
5. Tool/methodology for assessing soil reuse potential	Geotechnical drilling tests will show what kinds of soil are present on site, to identify the types of soil and the reuse potential for different purposes.
6. Tool/methodology for identification and assessment of sites/projects fit for soil reuse	The general soil policy and strategic approach will focus on minimising the production of excavated soil and, secondarily, to keep excavated soil on-site if possible. The tool can be used when planning how to dispose of soil from construction sites within the municipality.

2. Indicators to be monitored

10 indicators have been chosen to evaluate the five demonstration actions and the six tools. The indicators represent both the different aspects of circular economy in the CityLoops project, and the different elements for a sustainable development where the environmentally, socially, and economically aspects also have to be considered. Furthermore, the indicators are chosen to represent the expected impacts from the project plan. The key impacts from the project plan includes scientific impacts, innovation/economic impacts, societal impacts, and environmental impacts. The indicators chosen in the evaluation plan can support a standardised documentation of the conductive elements with circular economy. The documentation can support replication of other CDW projects.

This chapter presents an overview of the indicators that will be monitored during the CityLoops Implementation Phase (see table below). The indicator selection has been made based on several criteria:

- **Relevance to the city's circularity strategies and the Demonstration Actions and Tools:** Each selected indicator will monitor specific processes and impacts related to the Demonstration Action activities (and if relevant the application of CityLoops tools outside the scope of the demonstration actions) and serve to evaluate against the expected outcomes of the action. Indicators may be monitored either at Demonstration Action scale or at City scale, or in some cases at both. For each evaluation scale, the indicator is paired with the expected outcome or target value listed in the table below. This will allow evaluation of the progress and impact of demonstration- and city-wide actions towards improved circularity as well as the effectiveness of activities and tools.
- **Data availability and quality:** Through dialogue with local stakeholders internally and externally to the CityLoops consortium, data availability, accessibility and quality has been mapped to ensure that the evaluation process for the selected indicators can be carried out in a practical and timely manner.
- **Cross-City comparison and adherence to the Circular City definition (Annex 2) and the CityLoops project plans (Annex 1):** As part of the process of developing the Evaluation Plans continuous dialogue between the cities and the CityLoops partner coordinating the evaluation work has been carried out to ensure some overlap and consistency in the selection of indicator between cities to allow comparison where practical. This dialogue has also ensured that indicators are selected to monitor progress towards circularity in a broad sense covering as much as possible all four Vision Elements of the Circular City definition as described in Vangelsten et al. (2021).

Table 1 to 4 list the selected indicators for each of the four Vision Elements in the CityLoops circular city definition (Vangelsten et al., 2021). The tables describe at which level the indicators will be applied (Demonstration Action or City level) and which Demonstration

Actions (and if relevant, application of CityLoops tools outside the Demonstration Actions) they will evaluate.

Table 1: List of indicators related to Vision Element 1 “Local Stakeholder Actions”

Indicat or #	Indicator name	Scope (Demo /City)	Demo action 1	Demo action 2 + Demo action 3	Demo action 4	Demo action 5
3	New tools for better mapping of resources and their location: Qualitative description	D	X			X
9	New formal CE-based collaboration platforms/networks	C				
10	Stakeholder contribution to improved circularity	D	X	X	X	X
12	Circularity requirements in procurement beyond existing levels	D	X	X		
19	Progress towards circular city strategy objectives	C				

Table 2: List of indicators related to Vision Element 2 “Circular business models and behaviour patterns”.

Indicat or #	Indicator name	Scope (Demo /City)	Demo action 1	Demo action 2 + Demo action 3	Demo action 4	Demo action 5
23	Eco-innovation:	D		X		X

	Qualitative description ¹					
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Table 3: List of indicators related to Vision Element 3 “Closing material loops and reducing harmful resource use”

Indicator #	Indicator name	Scope (Demo /City)	Demo action 1	Demo action 2 + Demo action 3	Demo action 4	Demo action 5
27	Increased share of materials retained and reused on demonstration sites	D	X			X
34	Reduced use of virgin materials	D	X	X	X	
52	Quantity of material subjected to recycling	D		X	X	

Table 4: List of indicators related to Vision Element 4 “Improving human wellbeing and reducing environmental impacts”

Indicator #	Indicator name	Scope (Demo /City)	Demo action 1	Demo action 2 + Demo action 3	Demo action 4	Demo action 5
85	GHG emissions per year	D	X	X	X	X

Links between the selected indicators and the expected outcomes for the specific Demonstration Actions (and if relevant, application of tools outside the scope of the demonstration actions) are shown in the tables below.

Table 5: Linking expected outcomes to the selected indicators for Demonstration Action 1

Vision Element	Expected outcome	Indicator
1 Local Stakeholder Actions	The use of CityLoops tools (selective demolition, pre-demolition screening, LCA for	3. New tools for better mapping of resources and their location: Qualitative description

¹ CE business model refers for example to moving up the waste ladder/hierarchy described in D6.1 Figure 10 (page 40)

Vision Element	Expected outcome	Indicator
	soil and concrete and soil tools) are a part of tendering material and improve the mapping of materials for future use	
	Increased stakeholder dialogue leading to more circularity in tendering material	10. Stakeholder contribution to improved circularity
	Improved practice of including sustainability and circularity considerations in urban development plans and tendering criteria when selling municipal property	12. Circularity requirements in procurement beyond existing levels
3 Closing material loops and reducing harmful resource use	Out of 18,000 tons of soil, 80% is kept on site (15,000 tons)	27. Increased share of materials retained and reused on demonstration sites
	Reduced consumption of virgin resources, by using recycled materials instead	34. Reduced use of virgin materials
4 Improving human wellbeing and reducing environmental impacts	30 tons of CO ₂ e savings from soil kept on site. In addition, a reduction of CO ₂ is expected due to a more circular handling of other CDW.	85. GHG emissions per year

Table 6: Linking expected outcomes to the selected indicators for Demonstration Action 2+3

Vision Element	Expected outcome	Indicator
1 Local Stakeholder Actions	Increased stakeholder dialogue, leading to more circularity in relation to CDW and soil reuse and recycling	10. Stakeholder contribution to improved circularity
	Improved practice of including sustainability and circularity considerations in the procurement process	12. Circularity requirements in procurement beyond existing levels
2 Circular business models and	New business models for reuse, recycling, and valorisation of	23. Eco-innovation: Qualitative description

Vision Element	Expected outcome	Indicator
behaviour patterns	CDW and soil developed and validated	
3 Closing material loops and reducing harmful resource use	Use of virgin resources (gravel) reduced by 1,088 tons	34. Reduced use of virgin materials
	The recoverable materials have been incorporated into new buildings or crushed on-site and used as filler. Some materials may also be used in other (as yet unidentified) building projects off-site - recycling of 8,000 tons of concrete into filler in other projects - recycling of 1,088 tons (high-value recycling) of concrete aggregate for the city hall foundation	52. Quantity of material subjected to recycling
4 Improving human wellbeing and reducing environmental impacts	CO2 savings from reduced transport of soil and high-value recycling of concrete: 9,000 tons of soil transported 3km instead of 25km, 15 tons of CO2e saved CO2 savings from recycling 8,000 tons of concrete into filler in other projects. 4,000 tons are transported 3 km and 4,000 tons are transported 46 km. CO2 savings from recycling 2,000 tons into 1,088 tons of concrete aggregate for the city hall foundation. Transport of concrete aggregate is halved, to approximately 50 km total. CO2 savings 5 tons	85. GHG emissions per year

Table 7: Linking expected outcomes to the selected indicators for Demonstration Action 4

Vision Element	Expected outcome	Indicator
1 Local Stakeholder Actions	Increased awareness of using recycled tiles in projects (scaling potential)	10. Stakeholder contribution to improved circularity

Vision Element	Expected outcome	Indicator
3 Closing material loops and reducing harmful resource use	Reduced use of virgin material due to the use of recycled concrete aggregate	34. Reduced use of virgin materials
	Pilot project: 30% recycled concrete used in tiles	52. Quantity of material subjected to recycling
4 Improving human wellbeing and reducing environmental impacts	CO2 savings from 100m sidewalk with tiles made from 30% recycled concrete	85. GHG emissions per year

Table 8: Linking expected outcomes to the selected indicators for Demonstration Action 5

Vision Element	Expected outcome	Indicator
1 Local Stakeholder Actions	More local reuse of soil as a result of the implementation of CityLoops soil tools and LCA tool in soil management (25% reduction of what the prognosis predicts from 2020-2023)	3. New tools for better mapping of resources and their location: Qualitative description
	Increased involvement of planning department and developers has led to more awareness and earlier consideration of soil reuse potential	10. Stakeholder contribution to improved circularity
2 Circular business models and behaviour patterns	New business models for reuse and valorisation of soil developed and validated	23. Eco-innovation: Qualitative description
3 Closing material loops and reducing harmful resource use	General increase in reuse of soil on construction sites	27. Increased share of materials retained and reused on demonstration sites
4 Improving human wellbeing and reducing environmental impacts	CO2 savings from 400,000 tons less excess soil transported	85. GHG emissions per year

Table 9: Linking expected outcomes to the selected indicators for city level

Vision Element	Expected outcome	Indicator
1 Local Stakeholder Actions	<p>Internal and external CE-based collaboration platforms/networks established:</p> <ul style="list-style-type: none"> - Internal: A new environmental group is formed in the municipality focusing on implementing CE in the strategy of the city. The expected outcome from this group/network is to strengthen stakeholder engagement and create a better dialogue between the different departments in the municipality. - External: Scaling of the results from the demo projects to other municipalities and private projects within the municipality 	9. New formal CE-based collaboration platforms/networks
	<p>Raised awareness of circular practices across the administration and amongst local citizens and businesses. The internal sustainability group will make a roadmap for an action-oriented strategy for sustainability in the entire municipality.</p>	19. Progress towards circular city strategy objectives

3. Plan for monitoring

The tables below detail the monitoring plan for each of the selected indicators. This will guide the CityLoops evaluation work to be carried out and documented in the Interim Evaluation Report in Month 36 and the Final Evaluation Report in Month 46 of the project. The 16 metadata categories described for each of the selected indicators is based on the Circular City Indicator Set (Vangelsten et al. 2021). Metadata categories 1-5 and 7-8 are standard for all cities/waste streams whereas the others (6 and 9-16) vary from case to case and are therefore customized by each city to fit the scope and focus of their demonstration activities and the tools that they will test.

3.1. New tools for better mapping of resources and their location: Qualitative description

Metadata group	#	Metadata category	Fill in data for indicator	
Identifier	1	Indicator number	3	
	2	Indicator name	New tools for better mapping of resources and their location: Qualitative description	
Link to Circular City Definition	3	Vision Element	x	1. Local stakeholder actions
				2. Circular business models and behavioural patterns
				3. Closing material loops and reducing harmful resource use
				4. Improving human well-being and reducing environmental impacts
	4	Category	1	x Engagement and capacity building
				x Regulation and incentives
				x Vision and urban management
			2	Circular design and business models
				Circular value chains and infrastructure
				Private investments, jobs and gross value added
			3	Material/energy flow
				Re-use and recycling
				Waste generation/management
			4	Well-being
				Environment impacts (global)
				Environment impacts (local)
				Economic impacts
				Impacts on urban resilience

Indicator definition and description	5	Definition / Description of indicator	Qualitative description of individual tools, including scope and scale (e.g. demonstration vs city level), target users.
	6	Rationale	<p>The tools that are being used/tested in the demonstration actions will help make the projects more circular. The mapping of resources and their location can help the municipality with planning, reuse/recycling and get an overview of the resources in the area.</p> <p>The indicator will be used in the same way with all the demonstration actions. On demonstration level, the tools will be described more detailed. On city level, the tools will be described in a more general manner.</p> <p>The expected outcome is that the tools listed above will be used to improve mapping of CDW and soil resources in Høje-Taastrup municipality. It is expected that the tools will be scaled and integrated in normal procedure in Høje-Taastrup, and that the project managers using the tools have the adequate competence level to use the tools. The use of tools in the demo projects is expected to have a significant impact on recycle and reuse of CDW and soil and minimise the CO2 impact of the construction projects. These expected outcomes are listed in the demo projects above.</p>
	7	Methodology	Qualitative description of how tools were used for each demo action and lessons learned + quantitative description, number of tools used for each demo action
	8	Unit	Qualitative data
Data	9	Baseline data / definition	Short qualitative description of tools available before the CityLoops tools were developed.
	10	Data Sources / Relevant Databases	<p>Høje-Taastrup Municipality will provide the qualitative and quantitative description needed for the tools.</p> <p>The qualitative description will focus on:</p> <ol style="list-style-type: none"> 1. How the tools are integrated in normal procedure in Roskilde Municipality (procedure description). 2. How the tools are used by the project managers and assessment of capacity and knowledge to use the tools (interview). <p>The quantitative description will focus on</p> <ol style="list-style-type: none"> 1. How many of the tools are used (number)
	11	Overall accuracy	Reasonably accurate local level qualitative insights
Context	12	Sector coverage	CDW
	13	Reference area / Spatial implementation scale	Demonstration actions: DA1 and DA5
	14	Reference period	1.10.2019 – 30.9.2023, three times of monitoring (baseline, interim - M36/Sept22, final - M44/May23)
	15	SDG Reference	12

Other	16	Comments	Corresponds to the project plan: Impact 1, Indicator 1a. <i>Reduced consumption of virgin construction and organic materials.</i>
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3.2. New formal CE-based collaboration platforms/networks

Metadata group	#	Metadata category	Fill in data for indicator
Identifier	1	Indicator number	9
	2	Indicator name	New formal CE-based collaboration platforms/networks
Link to Circular City Definition	3	Vision Element	<input checked="" type="checkbox"/> 1. Local stakeholder actions <input type="checkbox"/> 2. Circular business models and behavioural patterns <input type="checkbox"/> 3. Closing material loops and reducing harmful resource use <input type="checkbox"/> 4. Improving human well-being and reducing environmental impacts
			<input checked="" type="checkbox"/> Engagement and capacity building <input type="checkbox"/> Regulation and incentives <input type="checkbox"/> Vision and urban management
			<input type="checkbox"/> Circular design and business models <input type="checkbox"/> Circular value chains and infrastructure <input type="checkbox"/> Private investments, jobs and gross value added
			<input type="checkbox"/> Material/energy flow <input type="checkbox"/> Re-use and recycling <input type="checkbox"/> Waste generation/management
	4	Category	<input type="checkbox"/> Well-being <input type="checkbox"/> Environment impacts (global) <input type="checkbox"/> Environment impacts (local) <input type="checkbox"/> Economic impacts <input type="checkbox"/> Impacts on urban resilience
	5	Definition / Description of indicator	# of CE-based collaboration platforms/networks
			# of members in CE-based collaboration platforms/networks
Indicator definition and description	6	Rationale	<p>It is important to know how the demo projects influence other relevant stakeholders. Therefore, the indicator will be divided into internal and external CE-based collaboration platforms/networks.</p> <p>Internal: A new environmental group is formed in the municipality focusing on implementing CE in the strategy of the city. The expected outcome from this group/network is to strengthen stakeholder engagement and create a better dialogue between the different departments in the municipality.</p>

			<p>External: Learning network with other municipalities. The expected outcome of the network is to share know-how and experience by working with CE in the construction sector in the municipalities with the objective of scaling the results from the demo projects to other municipalities.</p> <p>The indicator will be used in the same way with all the demonstration actions.</p>
	7	Methodology	<p>Counting:</p> <p>a) Number of formalised CE-based collaboration platforms/networks</p> <p>b) Number of people in formalised CE-based collaboration platforms/networks and their position/department in the municipality.</p>
	8	Unit	<p>Number of networks</p> <p>Number of people (plus their position/department)</p>
Data	9	Baseline data / definition	Baseline is 0 (only activities during the project are measured)
	10	Data Sources / Relevant Databases	<p>The data needed for the internal CE-based collaboration platforms/network will be provided by Høje-Taastrup Municipality.</p> <p>The data needed for the external CE-based collaboration platforms/network will be provided by Gate 21. Participants lists, interviews with stakeholders, and lists of networking meetings will be used.</p> <p>Gate 21 provides a template for both.</p>
	11	Overall accuracy	Reliable data
Context	12	Sector coverage	CDW
	13	Reference area / Spatial implementation scale	City: Høje-Taastrup Municipality
	14	Reference period	1.10.2019 – 30.9.2023, Data collected continuously (data will be filled in in the template after each meeting)
	15	SDG Reference	15
Other	16	Comments	<p>Corresponds to the project plan:</p> <p>Impact 4, Indicator 4b. <i>Improved stakeholder collaboration in relation to CDW and soil reuse and recycling</i></p>

3.3. Stakeholder contribution to improved circularity

Metadata group	#	Metadata category	Fill in data for indicator	
Identifier	1	Indicator number	10	
	2	Indicator name	Stakeholder contribution to improved circularity	
Link to Circular City Definition	3	Vision Element	x	1. Local stakeholder actions
				2. Circular business models and behavioural patterns
				3. Closing material loops and reducing harmful resource use
				4. Improving human well-being and reducing environmental impacts
	4	Category	x	Engagement and capacity building
			1	Regulation and incentives
				Vision and urban management
			2	Circular design and business models
				Circular value chains and infrastructure
				Private investments, jobs and gross value added
			3	Material/energy flow
				Re-use and recycling
				Waste generation/management
			4	Well-being
				Environment impacts (global)
				Environment impacts (local)
				Economic impacts
				Impacts on urban resilience
Indicator definition and description	5	Definition / Description of indicator	Qualitative description of input from stakeholder activities and how it has contributed to improved circularity	
	6	Rationale	<p>The dialogue and collaboration between the municipality and the stakeholders are strategically important for the city. Both the internal and external CE-related stakeholder activities contribute to know-how, knowledge sharing and an increased awareness of CE.</p> <p>Expected outcome: New local stakeholder partnerships and procedures. Improved stakeholder collaboration in relation to CDW and soil reuse and recycling.</p> <p>The indicator will be used in the same way with all the demonstration actions.</p>	
	7	Methodology	a) List inputs from stakeholders	

			<p>b) Describe how it has been used by those that invited the stakeholder activity</p> <p>c) Describe how it has contributed to improved circularity</p> <p>Both the intern and extern stakeholder activities will incorporate interviews from the participants in the network. The focus will be on barriers and solutions. The information can be used as inspiration for other CE building projects.</p>
	8	Unit	Qualitative data + potential quantitative impact data
Data	9	Baseline data / definition	Baseline is 0 (only activities during the project are measured)
	10	Data Sources / Relevant Databases	<p>Interviews with internal stakeholder contribution to improved circularity will be provided by Høje-Taastrup Municipality and RUC. The data needed for the external stakeholder contribution to improved circularity will be provided by Gate 21. The data will be based on interviews with stakeholders.</p> <p>Invites, agenda and minutes from the different stakeholder meetings, workshops will be an important source of information</p>
	11	Overall accuracy	Reasonably accurate local level qualitative insights
Context	12	Sector coverage	CDW
	13	Reference area / Spatial implementation scale	<p>The reference areas for the internal network are: City: Høje-Taastrup Municipality taking point of departure in the demonstration actions: DA1, DA2, and DA3</p> <p>The reference area for the external network is: Greater Copenhagen.</p>
	14	Reference period	1.1.2021 – 30.9.2023, Data collected continuously
	15	SDG Reference	15
Other	16	Comments	<p>Corresponds to the project plan:</p> <p>Impact 4, Indicator 4b. <i>Improved stakeholder collaboration in relation to CDW and soil reuse and recycling</i></p>

3.4. Circularity requirements in procurement beyond existing levels

Metadata group	#	Metadata category	Fill in data for indicator
Identifier	1	Indicator number	12
	2	Indicator name	Circularity requirements in procurement beyond existing levels

Link to Circular City Definition	3	Vision Element	x	1. Local stakeholder actions
				2. Circular business models and behavioural patterns
				3. Closing material loops and reducing harmful resource use
				4. Improving human well-being and reducing environmental impacts
	4	Category	1	Engagement and capacity building
			x	Regulation and incentives
				Vision and urban management
			2	Circular design and business models
				Circular value chains and infrastructure
				Private investments, jobs and gross value added
			3	Material/energy flow
				Re-use and recycling
				Waste generation/management
			4	Well-being
				Environment impacts (global)
				Environment impacts (local)
				Economic impacts
				Impacts on urban resilience
Indicator definition and description	5	Definition / Description of indicator		Description of requirements in procurements going beyond what is current standard practice
	6	Rationale		Procurement requirements are important to increase circularity in public demolition projects. The requirements will be tested in the demonstration actions in Høje-Taastrup Municipality. The indicator will be used in the same way with all the demonstration actions. I
	7	Methodology		The methodology is a four-step approach: 1. Decide which procurements are relevant for analysis (e.g. demo action focused procurements only or a wider range of procurements). 2. Describe current standard practice in terms of CE requirements. 3. For each procurement case, describe additional requirements beyond standard practice. 4. In case of several relevant procurements, summarize relevant progress beyond existing levels.
	8	Unit		Qualitative data + potential quantitative impact data
Data	9	Baseline data / definition		The baseline data will be a description of the current circularity requirements. The data will be described with the same methodology as used in this indicator.

	10	Data Sources / Relevant Databases	The data needed will be provided by Høje-Taastrup Municipality Construction and demolition tenders and contracts will be used. Qualitative description from project manager (interview) supported by specific criteria tenders.
	11	Overall accuracy	Reasonably accurate local level qualitative insights but not scalable data.
Context	12	Sector coverage	CDW
	13	Reference area / Spatial implementation scale	Demonstration actions: DA1, DA2+DA3
	14	Reference period	1.1.2021 – 30.9.2023, three times of monitoring (baseline, interim - M36/Sept22, final - M44/May23)
	15	SDG Reference	12
Other	16	Comments	Corresponds to the project plan: Impact 4, Indicator 4a. <i>New Decision making guidelines and Circular procurement methods and guidelines</i>

3.5. Progress towards circular city strategy objectives

Metadata group	#	Metadata category	Fill in data for indicator
Identifier	1	Indicator number	19
	2	Indicator name	Progress towards circular city strategy objectives
Link to Circular City Definition	3	Vision Element	<input checked="" type="checkbox"/> 1. Local stakeholder actions
			<input type="checkbox"/> 2. Circular business models and behavioural patterns
			<input type="checkbox"/> 3. Closing material loops and reducing harmful resource use
			<input type="checkbox"/> 4. Improving human well-being and reducing environmental impacts
	4	Category	<input type="checkbox"/> 1. Engagement and capacity building
			<input type="checkbox"/> 2. Regulation and incentives
			<input checked="" type="checkbox"/> 3. Vision and urban management
			<input type="checkbox"/> 4. Circular design and business models
			<input type="checkbox"/> 5. Circular value chains and infrastructure
			<input type="checkbox"/> 6. Private investments, jobs and gross value added
			<input type="checkbox"/> 7. Material/energy flow
			<input type="checkbox"/> 8. Re-use and recycling
			<input type="checkbox"/> 9. Waste generation/management
			<input type="checkbox"/> 10. Well-being
			<input type="checkbox"/> 11. Environment impacts (global)

				Environment impacts (local)
				Economic impacts
				Impacts on urban resilience
Indicator definition and description	5	Definition / Description of indicator	Describe to which degree the city is making progress towards its circularity objectives. Identify categories of relevant strategy documents, select documents and relevant selected CE targets.	
	6	Rationale	Høje-Taastrup Municipality strives to incorporate CE in the building process. In 5 years, using recycled materials will be a commonly integrated component of building projects, and in 20 years it will be the new standard practice.	
	7	Methodology	For each of the identified targets: Describe ambition and judge on scale 1. no progress, 2. little progress, 3. some progress, 4. ambition nearly reached, 5. ambition reached or beyond	
	8	Unit	Score on categorical scale (1-5)	
Data	9	Baseline data / definition	The baseline (2019) will be defined on the categorical scale used in this indicator.	
	10	Data Sources / Relevant Databases	The data needed will be provided by Høje-Taastrup Municipality. The city's strategy documents, decisions and commitments on the promotion of CE will be used.	
	11	Overall accuracy	Reasonably accurate local level qualitative insights but not scalable data.	
Context	12	Sector coverage	CDW	
	13	Reference area / Spatial implementation scale	City: Høje-Taastrup Municipality	
	14	Reference period	1.1.2021 – 30.9.2023, three times of monitoring (baseline, interim - M36/Sept22, final - M44/May23)	
	15	SDG Reference	12	
Other	16	Comments	The circular city strategy objectives from the project plan can be found in 'Key impacts of CityLoops aimed for in the years following the conclusion of the project'	

3.6. Eco-innovation: Qualitative description

Metadata group	#	Metadata category	Fill in data for indicator	
Identifier	1	Indicator number	23	
	2	Indicator name	Eco-innovation: Qualitative description	
Link to Circular City	3	Vision Element		1. Local stakeholder actions
			x	2. Circular business models and behavioural patterns
				3. Closing material loops and reducing harmful resource use

Indicator definition and description	4	Category	4. Improving human well-being and reducing environmental impacts	
			1	Engagement and capacity building
				Regulation and incentives
				Vision and urban management
			2	Circular design and business models
				Circular value chains and infrastructure
				Private investments, jobs and gross value added
			3	Material/energy flow
				Re-use and recycling
				Waste generation/management
			4	Well-being
				Environment impacts (global)
				Environment impacts (local)
				Economic impacts
				Impacts on urban resilience
Indicator definition and description	5	Definition / Description of indicator	Describe the business model, including how it contributes to moving up the waste hierarchy.	
	6	Rationale	Business cases for reuse, recycling, and valorisation of CDW are developed during the CityLoops project in Høje-Taastrup Municipality. Business models for building materials (concrete) and soil will be described. The expected outcome is a business case on the demo-projects. The indicator will be used in the same way with all the demonstration actions.	
	7	Methodology	For each model, a qualitative description of model, its circular strategy	
	8	Unit	Qualitative data	
Data	9	Baseline data / definition	Baseline is 0	
	10	Data Sources / Relevant Databases	The data needed will be provided by Høje-Taastrup Municipality and the Danish Association of Construction Clients.	
	11	Overall accuracy	Reasonably accurate local level qualitative insights	
Context	12	Sector coverage	CDW	
	13	Reference area / Spatial implementation scale	Demonstration actions: DA2+DA3 and DA5	
	14	Reference period	Project period 1.1.2021 – 30.9.2023, baseline data and in the end of the project.	
	15	SDG Reference		

Other	16	Comments	Corresponds to the project plan: Impact 4, Indicator 4c. <i>New products, service concepts and business models relating to the reuse/recycling of the specific material flows addressed, leading to new business opportunities and job creation</i>
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3.7. Increased share of materials retained and reused on demonstration sites

Metadata group	#	Metadata category	Fill in data for indicator
Identifier	1	Indicator number	27
	2	Indicator name	Increased share of materials retained and reused on demonstration sites
Link to Circular City Definition	3	Vision Element	<input type="checkbox"/> 1. Local stakeholder actions
			<input checked="" type="checkbox"/> 2. Circular business models and behavioural patterns
			<input type="checkbox"/> 3. Closing material loops and reducing harmful resource use
			<input type="checkbox"/> 4. Improving human well-being and reducing environmental impacts
	4	Category	<input type="checkbox"/> 1 Engagement and capacity building
			<input type="checkbox"/> Regulation and incentives
			<input type="checkbox"/> Vision and urban management
			<input type="checkbox"/> 2 Circular design and business models
			<input checked="" type="checkbox"/> Circular value chains and infrastructure
			<input type="checkbox"/> Private investments, jobs and gross value added
			<input type="checkbox"/> 3 Material/energy flow
			<input checked="" type="checkbox"/> Re-use and recycling
			<input type="checkbox"/> Waste generation/management
			<input type="checkbox"/> 4 Well-being
			<input type="checkbox"/> Environment impacts (global)
			<input type="checkbox"/> Environment impacts (local)
			<input type="checkbox"/> Economic impacts
			<input type="checkbox"/> Impacts on urban resilience
Indicator definition and description	5	Definition / Description of indicator	The relative share of materials retained and reused on demonstration sites, measured for selected/key on-site waste material fractions and the total mass of waste materials.
	6	Rationale	Høje-Taastrup Municipality strives to increase reused/recycled materials in building projects. It is relevant to keep the materials and the soil on site, to reduce the CO2 emissions from both transportation and from consumption of virgin resources. The expected outcome is listed above under demo-projects. The indicator will be used in the same way with all the demonstration actions.

	7	Methodology	For selected waste fractions and total mass of waste materials: Retained and reused mass of materials / total mass of (waste) materials at demonstration site
	8	Unit	Mass %
Data	9	Baseline data / definition	The baseline 0
	10	Data Sources / Relevant Databases	The data needed will be provided by Høje-Taastrup Municipality and other relevant organizations involved in the project. (Registration system for soil transport and for waste, prognosis for soil and waste production.) Data from CityLoops tools will be used.
	11	Overall accuracy	Reliable data
Context	12	Sector coverage	CDW
	13	Reference area / Spatial implementation scale	Demonstration actions: DA1 and DA5
	14	Reference period	Evaluation period 1.1.2021 – 30.9.2023, three times of monitoring (baseline, interim - M36/Sept22, final - M44/May23)
	15	SDG Reference	
Other	16	Comments	Corresponds to the project plan: Impact 1, indicator 1e. <i>Materials retained on demonstration sites.</i>

3.8. Reduced use of virgin materials

Metadata group	#	Metadata category	Fill in data for indicator
Identifier	1	Indicator number	34
	2	Indicator name	Reduced use of virgin materials
Link to Circular City Definition	3	Vision Element	<input type="checkbox"/> 1. Local stakeholder actions
			<input type="checkbox"/> 2. Circular business models and behavioural patterns
			<input checked="" type="checkbox"/> 3. Closing material loops and reducing harmful resource use
			<input type="checkbox"/> 4. Improving human well-being and reducing environmental impacts
	4	Category	<input type="checkbox"/> 1. Engagement and capacity building
			<input type="checkbox"/> Regulation and incentives
			<input type="checkbox"/> Vision and urban management
			<input type="checkbox"/> 2. Circular design and business models
			<input type="checkbox"/> Circular value chains and infrastructure
			<input type="checkbox"/> Private investments, jobs and gross value added
			<input checked="" type="checkbox"/> 3. Material/energy flow
			<input type="checkbox"/> Re-use and recycling
			<input type="checkbox"/> Waste generation/management
	4		<input type="checkbox"/> Well-being

			<input type="checkbox"/> Environment impacts (global) <input type="checkbox"/> Environment impacts (local) <input type="checkbox"/> Economic impacts <input type="checkbox"/> Impacts on urban resilience
Indicator definition and description	5	Definition / Description of indicator	Estimate the reduced use of virgin materials
	6	Rationale	It is important to reduce (harmful) raw material consumption The expected outcome for the indicator is listed above under table 6
	7	Methodology	Sum of reduced use of virgin materials
	8	Unit	tons
Data	9	Baseline data / definition	The use of virgin materials from similar projects previously done by Roskilde Municipality
	10	Data Sources / Relevant Databases	The data needed will be provided by Høje-Taastrup Municipality and other relevant organizations involved in the project.
	11	Overall accuracy	Reliable with some estimation uncertainties.
Context	12	Sector coverage	CDW
	13	Reference area / Spatial implementation scale	Demonstration action: DA2
	14	Reference period	Project period 1.10.2019 – 30.9.2023 Data will be collected three times (baseline, interim - M36/Sept22, final - M44/May23)
	15	SDG Reference	
Other	16	Comments	Corresponds to the project plan: Impact 2, Indicator 2a. <i>Increased recycling/reuse rate of CDW/soil and organic matter within the city boundaries.</i>

3.9. Quantity of material subjected to recycling

Metadata group	#	Metadata category	Fill in data for indicator
Identifier	1	Indicator number	52
	2	Indicator name	Quantity of material subjected to recycling
Link to Circular City	3	Vision Element	<input type="checkbox"/> 1. Local stakeholder actions
			<input type="checkbox"/> 2. Circular business models and behavioural patterns
			<input checked="" type="checkbox"/> 3. Closing material loops and reducing harmful resource use

Indicator definition and description	4	Category	4. Improving human well-being and reducing environmental impacts	
			1	Engagement and capacity building
				Regulation and incentives
				Vision and urban management
			2	Circular design and business models
				Circular value chains and infrastructure
				Private investments, jobs and gross value added
			3	Material/energy flow
				Re-use and recycling
				Waste generation/management
			4	Well-being
				Environment impacts (global)
				Environment impacts (local)
				Economic impacts
				Impacts on urban resilience
Indicator definition and description	5	Definition / Description of indicator	Estimate material subjected to recycling at demo, sector and city level. 'Recycling' means processing of materials to achieve the original high-quality or reduce to low quality.	
	6	Rationale	Recycled materials are important for a sustainable development for Høje-Taastrup Municipality. Several demonstration projects aim to promote recycling of demolition materials in Høje-Taastrup. The expected outcome is listed above under demo-projects. The indicator will be used in the same way with all the demonstration actions.	
	7	Methodology	Sum up mass of each waste material category subjected to recycling. Data may come from contractors, statistical offices, waste management companies or the Sector Circularity Assessment Method. The aim is to develop a methodology to differentiate high-value and low value recycling. CDW is already recycled in Denmark but to a low value. The aim is to increase the level of high-value recycling.	
	8	Unit	tons/year	
Data	9	Baseline data / definition	The quantity of material subjected to recycling from similar projects previously done by Høje-Taastrup Municipality.	
	10	Data Sources / Relevant Databases	The data needed will be provided by Høje-Taastrup Municipality and other relevant organizations involved in the projects.	
	11	Overall accuracy	Reliable with some estimation uncertainties.	
Context	12	Sector coverage	CDW	
	13	Reference area / Spatial implementation scale	Demonstration action: DA2+DA3 and DA4	

	14	Reference period	Project period 1.10.2019 – 30.9.2023 Data will be collected three times (baseline, interim - M36/Sept22, final - M44/May23)
	15	SDG Reference	12
Other	16	Comments	Corresponds to the project plan: Impact 2, Indicator 2a. <i>Increased recycling/reuse rate of CDW/soil and organic matter within the city boundaries.</i>

3.10. GHG emissions per year

Metadata group	#	Metadata category	Fill in data for indicator
Identifier	1	Indicator number	85
	2	Indicator name	GHG emissions per year
Link to Circular City Definition	3	Vision Element	<input type="checkbox"/> 1. Local stakeholder actions <input type="checkbox"/> 2. Circular business models and behavioural patterns <input type="checkbox"/> 3. Closing material loops and reducing harmful resource use <input checked="" type="checkbox"/> 4. Improving human well-being and reducing environmental impacts
			<input type="checkbox"/> Engagement and capacity building <input type="checkbox"/> Regulation and incentives <input type="checkbox"/> Vision and urban management
			<input type="checkbox"/> Circular design and business models <input type="checkbox"/> Circular value chains and infrastructure <input type="checkbox"/> Private investments, jobs and gross value added
			<input type="checkbox"/> Material/energy flow <input type="checkbox"/> Re-use and recycling <input type="checkbox"/> Waste generation/management
	4	Category	<input type="checkbox"/> Well-being <input checked="" type="checkbox"/> Environment impacts (global) <input type="checkbox"/> Environment impacts (local) <input type="checkbox"/> Economic impacts <input type="checkbox"/> Impacts on urban resilience
	5	Definition / Description of indicator	The indicator measures annual emissions of the so called 'Kyoto basket' of greenhouse gases. The indicator is calculated for demonstration actions. Focus is on direct emissions.
	6	Rationale	All the actions in the CityLoops project aim to have an impact on the reduction of GHG. Høje-Taastrup Municipality is part of 'DK2020', a partnership between Danish municipalities, that aims to develop climate action plans in line with the Paris Agreement and C40 framework. The reduction of GHG is an important element in this strategy.

			The expected outcome is listed above under demo-projects. The indicator will be used in the same way with all the demonstration actions.
	7	Methodology	Direct GHG emissions per demo project calculated with use of LCA tool. Data is volume of reused/recycled material and transportation distances from demolition place to and from depot to construction place
	8	Unit	Tons CO2-equivalents
Data	9	Baseline data / definition	Demonstration level: baseline is 0
	10	Data Sources / Relevant Databases	Statistics from Høje-Taastrup Municipality In demo project 1 the demolition is planned to take place in 2023. All data might not be available within the time frame of CityLoops. However, a calculation based on assumptions/potentials can be carried out.
	11	Overall accuracy	Medium accuracy, estimated
Context	12	Sector coverage	CDW
	13	Reference area / Spatial implementation scale	Demonstration actions: DA1, DA2+DA3, DA4, and DA5
	14	Reference period	1.10.2019 – 30.9.2023, yearly or per demonstration case
	15	SDG Reference	
Other	16	Comments	Corresponds to the project plan: Impact 1, Indicator 1c. <i>Reduced emissions of CO2, NOx and PM related to extraction, processing and transportation (incl. logistics) of construction and organic materials.</i>

4. References

Vangelsten, B.V., Bjarne Lindeløv, Nhien Nguyen, Jens Ørding Hansen, Are Jensen, Nikolai Jacobi, Simon Clement, Carolin Bellstedt, Aristide Athanassiadis, Pernille Kern Kernel, Edwin Keijzers (2021). Circular City Indicator Set. CityLoops Deliverable 6.1. 2021.

5. Annex 1: CityLoops impacts as listed in the Grant Agreement

Scientific impacts

- Sector and City-Wide Material Flow and Stock Accounting Methodology
- Development of an open source urban metabolism data repository
- Circular Procurement tools and indicators
- Operationalisation of EC circular economy monitoring framework to small and medium cities
- IT decision making support tools
- Planning and decision-making framework for reuse and recycling of CDW

Innovation/economic impacts

- Increased CE jobs potential in demonstration and replication cities
- New innovative CE related procurement partnerships and dialogues in demonstration and replication cities
- Growth in green economy (e.g. increase in reuse / recycling infrastructure capacity)
- Business cases for valorisation of CDW and soil
- Increased use of new decision-making support tools to improve circular management practices
- Optimised and new links between the social economy and other sectors, promoting circularity (e.g. links between food distribution sector and the social economy sector decreasing food waste production)

Societal impacts

- Sustained community benefits including skills, training and green jobs
- Improved Well Being (e.g. QoL indicators)
- Provision of food support to economically disadvantaged families in the social economy sector
- New jobs for currently unemployed people due to development of CE

Environmental impacts

- Increased reuse and recycling of CDW and soil resulting in reduced energy consumption, improved resource efficiency, reduced heavy-duty transport
- Recycling of OW
- Reduced landfill
- Reduced greenhouse gas emissions

6. Annex 2: Strategic objectives defined in D6.1

Vision Element 1 “Local stakeholder actions”: Strategic Objectives

- Facilitation of repair and reuse platforms, and the secondary materials market
- Increased capacity building on CE for public employees and other local stakeholders
- Increased collaboration with local and regional stakeholders in CE planning and implementation, and the promotion of regional upscaling
- Increased engagement with national and international policy makers and researchers on the CE
- Increased provision of information on CE to local stakeholders
- Improved regulatory framework to support circularity
- Increased use of economic incentives and fiscal measures to promote circularity as well as removal of subsidies hindering circularity
- Integration of circularity principles into public procurement and financing processes
- Existence of city-wide strategy on CE with measurable objectives translated into targeted actions
- Integration of circularity principles into asset management, including publicly owned land, buildings and infrastructure
- Integration of circularity principles into urban planning decisions such as zoning and planning decisions, construction and demolition permits, and mobility planning

Vision Element 2 “Circular business models and behaviour patterns”: Strategic Objectives

- Increased asset lifetimes, including through flexible design and use
- Increased provision of local, sustainable and healthy food
- Increased rate of exploitation of assets (including equipment, machinery, buildings, infrastructure)
- Increased sustainable urban mobility options
- Enhanced waste collection, treatment and processing systems, including increased on-site reuse and treatment of waste
- Increased cooperation among sectors
- Increased use of repair and reuse platforms, and the secondary materials market
- Localisation of supply chains
- Increased gross value added of circular economy activities (repair, reuse, sharing, recycling)

- Increased number of jobs in the local circular economy (repair, reuse, sharing, recycling, ecodesign)

Vision Element 3 “Closing material loops and reducing harmful resource use”: Strategic Objectives

- Reduced (harmful) raw material consumption
- Reduced overall energy demand and increased share of renewable energy
- Increased share of renewable and secondary raw materials in overall material demand
- Increased self-sufficiency / self-reliance
- Increased quantity of materials available for the next cycle
- Reduced waste generation
- Reduced incineration and landfilling activities and amounts subjected

Vision Element 4 “Improving human wellbeing and reducing environmental impacts”: Strategic Objectives

- Improved education
- Improved public health
- Improved recreational services
- Improved access to basic services
- Reduced unemployment
- Reduced poverty and inequality
- Human-centred land-use and urban planning
- Biodiversity loss and deforestation
- Improved water quality
- Improved air quality
- Reduced soil degradation
- Mitigate climate change
- Reduce global adverse environmental impact of local consumption
- Transformed, sustainable local economy
- Increased resilience of local economy
- Reduced risk of urban infrastructure against natural disasters



CityLoops is an EU-funded project focusing on construction and demolition waste (CDW), including soil, and organic waste (OW), where seven European cities are piloting solutions to be more circular.

Høje-Taastrup and Roskilde (Denmark), Mikkeli (Finland), Apeldoorn (the Netherlands), Bodø (Norway), Porto (Portugal) and Seville (Spain) are the seven cities implementing a series of demonstration actions on CDW and OW, and developing and testing over 30 new tools and processes.

Alongside these, a sector-wide circularity assessment and an urban circularity assessment are to be carried out in each of the cities. The former, to optimise the demonstration activities, whereas the latter to enable cities to effectively integrate circularity into planning and decision making. Another two key aspect of CityLoops are stakeholder engagement and circular procurement.

CityLoops runs from October 2019 until September 2023.



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