



Business case in Mikkelä 1

Description - Stripping and organizing reuse of demolition items

Mikkeli, Finland



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This text describes Mikkeli's business case in applying selective demolition, specifically stripping and organizing reuse of demolition items. The sections come from Mikkeli's CityLoops demonstration report available [here](#).

Stripping and organizing reuse of demolition items

Selective demolition is described in the CityLoops Guide for selective demolition as a systematic work method for maximizing the quantity of demolition materials delivered for reuse and high-quality recycling (upcycling)¹. Soft stripping is the first step of selective demolition and covers the removal of movables, easily dismantled indoor fixtures such as storage structures, HEPAC-installations. Stripping or indoor demolition is the mostly manual demolition phase of removing all or most non-bearing indoor structures.

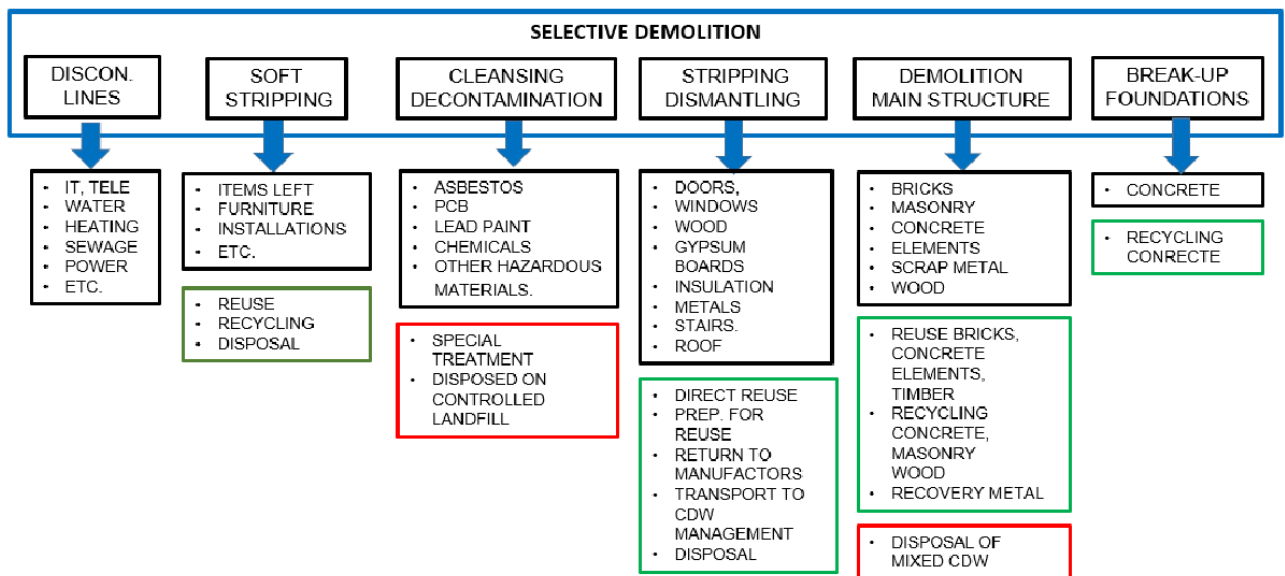


Fig. 1 Phases of selective demolition (Lauritzen 2022)

This business case studies the opportunities and obstacles for developing these soft stripping and actual stripping phases as a commercial service in the context of Mikkeli municipality. The concepts presented here emerged from the qualitative research of the demonstration case of demolishing the city owned Pankalampi Health Centre in 2021. The new business options were not applied in the demonstration, but they have been the subject of various interactions with relevant potential beneficiaries.

¹ Erik K. Lauritzen. Draft CityLoops guide for selective demolition. 23rd May 2022

National market conditions

Interest in stripping and reuse of demolition items is growing because of growing waste management costs and because of strategic goals and policy instruments promoting Circular Economy. In practice the scope and value of reused items has mainly been coincidental and poorly documented. Reuse of furniture or demolition items by the owner or latest user of the building have been random and are not based on systematic planning and partnerships.

The market for used furniture or used building items is mainly relying on the semi-informal and informal sector: flea markets, second-hand shops, and coincidental offering of second-hand products to customers by the renovation or construction contractors or HEPAC-contractors. Some decades ago, there used to be retail shops that specialized in second-hand construction items². On the other hand, informal trade through digital marketplaces from consumer to consumer or to small businesses is growing. Lately, also some demolition companies have opened their own digital sales of used building items³.

There are a few small retail shops specialized on second-hand construction materials. The best-known company is Metsänkylän Navetta [[Link](#)]. It focuses on building parts for renovation of old wooden country houses. A chain of companies called “Building Pharmacy” operates in at least four locations in Finland. They sell also new construction items for traditional construction. A similar small business Vanhoo Ossoo operated in Southern Savo, but the owner has closed this business and has concentrated in renovation design work⁴.

Reuse of products and prevention of waste is in theory higher in the waste hierarchy according to the Waste Framework Directive and the Finnish Waste Act. The Waste Decree 978/2021 25 § states that the building owner is obliged to plan and execute the demolition so that reusable construction items and materials are recovered and reused, and demolition waste is minimized. CDW must be source separated into 11 fractions or more. Source separated waste must be managed to maximize reuse and recycling as material. These articles are not enforced in practice in issuing the demolition permits or through ex post enforcement actions.

The main obstacles for reuse are the cost of careful manual dismantling, renovation of the dismantled part, storage costs and slow turnover of the storage⁵. On the demand side, the use of old building parts is very rarely considered in new construction. There are many barriers related to quality guarantees, standard and energy requirements, uniformity and style. As one business representative put it in a CityLoops workshop: “To design a house based on what second-hand building parts are available, would be like the tail wagging the dog”.

The potential for reuse of building parts is mainly in the renovation sector and in the do-it-yourself construction that takes place in the thousands of summer house premises in Finland.

² Interview of informant G, small scale demolition contractor, in market engagement event 22.6.2022 arranged by Miksei.

³ E.g., Purkupiha Ltd. <http://www.purkutori.fi/>; Terra Kierrätys Ltd. <https://terrakierratys.fi/>

⁴ Interview of informant F, owner of a second-hand shop for building items, interview 10.05.2021

⁵ E.g., interview of informant E, owner of log construction and renovation business 21.4.2021

Many buildings in Finland are demolished due to indoor air quality problems (verified or suspected mold spore contamination). The fear of liability issues has prevented the release of furniture or dismantled parts for use⁶.

A soft policy instrument for promoting reuse is the pre-demolition audit concept that the Ministry for the Environment (MoE) is advocating. MoE has published a set of guides for conducting a pre-demolition audit. The auditing of hazardous materials is obligatory and the estimate of quantities of waste fractions is a prerequisite for obtaining a demolition permit. The inventory of reusable items is voluntary. Preparing a full pre-demolition audit is promoted by MoE through a Green Deal (Voluntary Agreement) with major premise owner organizations.

MoE has commissioned a study of the possibilities for overcoming the barriers of using second-hand construction materials. The study shows that precast concrete, brick, steel and unprocessed sawn timber do not contain particularly problematic raw materials based on the existing information, therefore their reuse may be possible from a safety or health point of view. There is however significant challenge currently for the reuse of dismantled construction products due to the ambiguity of the qualification procedures. In the short term, clarification of existing regulations and development of official interpretations can clarify the situation and streamline product approval processes for reusable construction products. In the long run, the reform of the EU Construction Products Regulation should establish principles for the product approval and validation of reusable building components. In addition, it must be accepted that reusable building components may also be used for purposes other than their original use. This creates room for innovation and is therefore encouraged⁷.

The business case in brief

A pre-demolition audit was commissioned by CityLoops-project for the Dental Clinic, a separate building that was part of the Pankalampi Health Centre demonstration site. The audit was conducted by Ramboll Finland, Mikkeli Unit. In addition, a group of XAMK students conducted an inventory of reusable items within the Dental Clinic, in cooperation with Mikkelin Toimintakeskus (Mikkeli Activity Centre). Some recovered items were advertised using the digital marketplace [\[Link\]](#) developed as one of the CityLoops tools.

⁶ E.g., CityLoops workshop 11.3.2020. Working group 2. report

⁷ Ying Zhu, Harriet Lonka, Katja Tähtinen, Markku Anttonen, Päivi Isokääntä, Anssi Knuutila, Jukka Lahdensivu, Selma Mahiout, Anne-

Marie Mäntylä, Markku Raimovaara, Tiina Rantio, Tiina Santonen & Tuuli Teittinen. Purkumateriaalien kelpoisuus eri käyttökohteisiin turvallisuuden ja terveellisyden näkökulmasta. VALTIONEUVOSTONSELVITYS - JÄTUTKIMUSTOIMINNAN U L K A I S U S A R J A 2022:15.



Dental Clinic, a separate building at the Pankalampi Health Centre

The soft stripping and stripping work in Pankalampi and Tuukkala demonstration sites were conducted by the demolition contractors, correspondingly Ahosen Palvelut Ltd. and Terra Infra Ltd. The indoor demolition was conducted according to their normal practices. No specific targets were set by the procurer, except for a reference to the source separation requirements in the waste regulations.



Conventional indoor demolition at Tuukkala Hospital

The concept, barriers, and opportunities for establishing business cases related to stripping and reuse of construction items has been discussed in CityLoops workshops and webinars, and several demolition contractors and other actors in the field have been interviewed one-to-one. As a summary of these findings the following business options have been identified:

1. Soft stripping and organizing reuse of dismantled parts.
2. Stripping and upcycling as a separate demolition service

Lessons learned and replication opportunities

The Mikkeli CityLoops team concludes, that reuse cannot be promoted without pre-demolition audit, and re-recommend process, roles, and division of responsibilities of demolition actors as depicted in figure 2 and

Pre-demolition audit as service

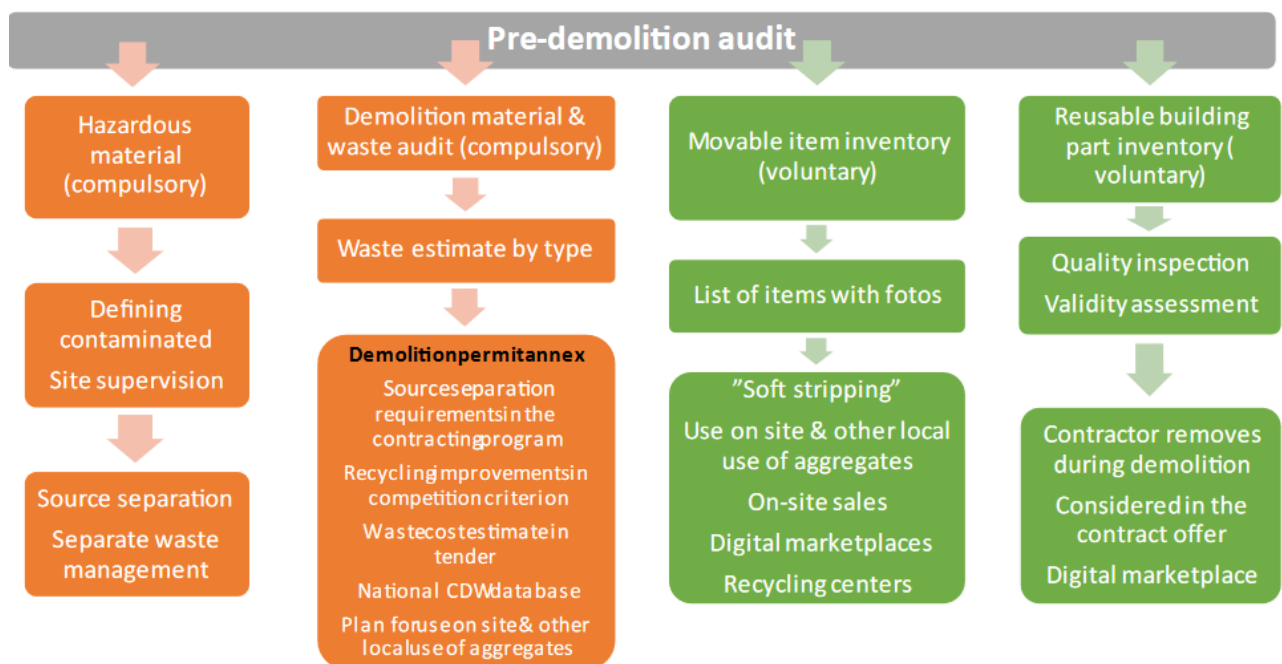


Fig. 2. Shows expected action in pre-demolition audit as a service, which will include more specific separation and quality assessment and increase the reuse/recycling opportunities.

Pre-demolition process and operators

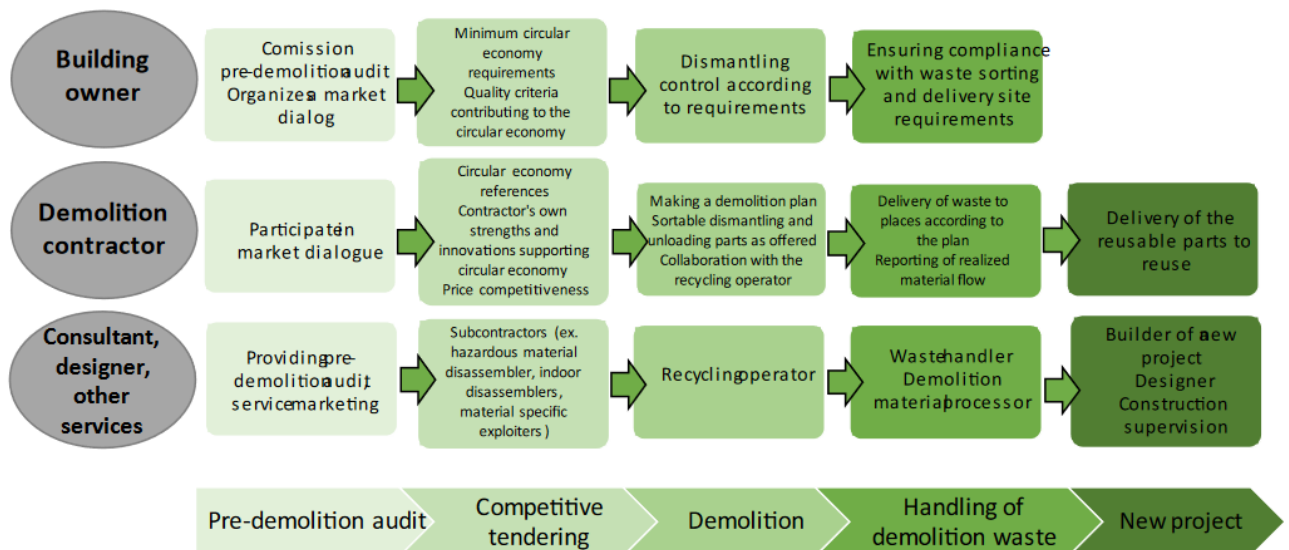


Fig. 3. Shows the optimized organization of the pre-demolition process, the involved operators, and their responsibilities.

CityLoops Mikkeli team proposes that the Mikkeli City Consortium would adopt a practice that a pre-demolition audit is performed for all demolition cases exceeding 250 m². In addition, the City Consortium organizations should consider creating a “pipeline” of future demolition cases within 5-10 years scope by creating a database of basic data of the material masses and reusable construction parts.

CityLoops Mikkeli team has contributed to developing a CityLoops guide for pre-demolition audits and selective demolition. The use of these guidelines and the use of the pre-demolition audit reporting software can be replicated by any European city.

Appropriate timing of soft stripping and stripping

At least the soft stripping phase must be executed promptly after the last user of the premises has moved out. Soft stripping and organizing the reuse of items should occur before moisture and vandalism ruins the items.

In Mikkeli it is common that city owned building can stand empty for years, even more than 10 years, because there is low pressure for new construction in Mikkeli. This means that also the materials that could be recycled or reused from the stripping phase will probably be ruined.

The benefit of a separate stripping contract is that the timeframe for the work could be more relaxed and would allow on-site sales of items and temporary storage of dismantled parts.

After the stripping phase there would be less risk for vandalism. The tendering for heavy demolition would be more transparent because it would be clearer to the contractor what materials will have to be transported and managed.

The stripping phase does not need a demolition permit, which reduces the bureaucracy and time. The separate contracting would benefit local companies.

The concept of separating the soft stripping, indoor demolition and heavy demolition contracts can be replicated by any city, taking into considerations the optimal timeline for each phase and available tenderers.

Clear definition of roles and duties

The demolition procedure must be formalized with clear roles and duties for each participant. For example, in the Urpola case the headmaster of the school was expecting that the income from the pop-up auction would be accounted for the Education Department. The Activity Centre was allowed to start the soft stripping operation only five days before the demolition contractor started the demolition work.

There are too many actors in the soft stripping phase and their rights and obligations are improvised case by case. The last users of the premises leave behind their property, for example confidential archives, hazardous wastes or valuable equipment that end up being managed by the demolition contractor. The municipal construction department may or may not use some selected building parts, such as fire escape stairs in new construction. The Activity Centre and the Vocational school teachers scavenge for selected items. Private households ask for windows or other items and sometimes end up in the restricted area where the demolition is already on-going. Hazardous situations have occurred where for example the electricity has not been switched off as expected⁸.

At the initiative of the CityLoops project, a written agreement on re-use was drafted in March 2021 between the Municipal Premises Centre and the Mikkeli Activity Centre (the NGO). A process description was drafted as an annex to this agreement. Up till now (July 2022) the agreement is still not signed by the parties. An important part of the proposed agreement is the obligation of the Activity Centre to conduct and report an inventory of all potential items that could be recovered in the soft stripping phase. This would fulfil the missing (voluntary) part of the pre-demolition audit that Mikkeli administration has not yet adopted.

Another option is to outsource the reuse audit and reuse operations to a private operator as outlined in the business concept above.

Creating demand for reuse and recycling through procurement criteria

Waste legislation sets general targets and requirements for waste prevention, waste hierarchy and source separation of CDW. These are not reflected in demolition permits, because the building permit authority is not an expert in waste management and the environmental authority

⁸ Interviews with informants representing Mikkeli Activity Center and Vocational School (ESEDU)

rarely involved in individual demolition or construction permits and is mainly involved in regulating waste management companies.

This emphasises the role of the public procurement units. Public procurement should set ambitious targets for promoting circular economy. The minimum requirements should clearly define what is the minimum level of source separation, based on the estimate of waste generation by type in the pre-demolition audit.

Measurable recycling rates could be used as qualitative criteria in tendering or ex post verified and higher than minimum recycling rates could be awarded with bonuses.

Setting minimum targets for reuse in procurement is difficult because the market price and demand for reusable items is so item specific. It may be practical to separate soft stripping and reuse of easily dismantled items from the demolition tendering.

Second, all major demolition tenders should set qualitative criteria that encourage reuse and upcycling and innovative solutions. In Mikkeli the demonstration of such criteria was not possible, because of the in-house position given to the Municipal Waste Company (Metsäsairila Ltd), virtually requiring the contractor to deliver all the demolition material to the Company. Reuse and upcycling of CDW are not part of the business strategy of Metsäsairila Ltd.

This practice is in conflict with the City Climate Program goal that the “City will promote and execute circular economy and will establish an operation model based on cooperation between the municipality and companies.”

The Mikkeli Activity Centre has been informally given a similar in-house position, even though it is an NGO, not a part of Mikkeli administration. It has the preferential right to soft stripping, but in practice it does not have the human resources and business contacts to organize systematic reuse audits and sales. Such an in-house position should be questioned and new partnerships with private sector reuse operators should be demonstrated.

The issue of hazardous material assessment is essential to guarantee work safety and safety of the reused items. Asbestos waste management is well organised in city owned demolition sites, but the procurement of hazardous material audits needs to be improved in other organizations and chemicals other than asbestos are often neglected.

The Mikkeli CityLoops team was not successful in incorporating circular criteria in the procurement process in the demonstration cases, because there was not enough time and enough political ambition to change the standard procedures. Other cities may replicate the proposed actions, but they must be implemented in the unique context of each organization and country.

The business case in details

Soft stripping and organizing reuse of dismantled parts

Soft stripping generates the following types of items with potential for reuse: usable furniture (movable or easily dismantled) other equipment left by the last user of the premises: office equipment, equipment specific to the type of building (school, health care, workshop etc.) easily dismantled HEPAC items such as sinks, taps, sanitary ware, air conditioning equipment, heating equipment, radiators, lamps (indoor/outdoor) unusable items often consist of many different materials and are classified as mixed demolition waste.



Unused furniture and items from the Tuukkala Hospital

Economic aspects and benefits

The business income consists of the following elements:

- fees for the dismantling and clean-up of the premises
- income from the sales of recovered items.

The expenditures consist of the following elements:

- low-skill manual labour cost for dismantling items and logistics, basic checking, and cleaning of items.
- protective clothing and masks, hand tools.

- vehicles for logistics, drivers.
- warm and dry temporary storage.
- waste management cost for items that could not be sold.
- medium skilled supervisor for conducting the audit for reusable items, supervising staff, ensuring work safety, interaction with building owner.
- medium skilled staff for quality control and eventual maintenance of sellable technical equipment.
- sales staff for pricing of items, organizing sale (pop-up sale, digital marketplaces, permanent second-hand shops, business to business sales).
- advertising costs of sales.

The sale of furniture and easily removable construction items is so far a very occasional and small-scale activity. At the Pankalampi demo site, the Activity Centre took a small number of products from the Pankalampi dental clinic for sale. The estimated market value of these was 3700 € and the work input was estimated at 90 person-hours. 70 % of the sales value was allocated to a mechanical garage door. With a typical salary and social care cost of a low skilled construction worker the staff cost would be about 1560 €. Estimated other costs listed above could bring the total cost to 2500 €. In this case the gig was economically feasible for the Activity Centre because they could take the items for free, and they could choose only those items that were considered easy to sell. They had no further obligations towards the Municipality, for example re- porting or cleaning of debris.

Factor	Value
Value of the products (e) €	3700
Labour resource h	90
Labour cost €	1560
Other costs €	940
Provision	1200

Table 1. Example of the profitability of soft stripping (The operator didn't have to pay anything for the products)

A significant amount of furniture remained unused due to lack of time, human resources, and lack of storage space. No inventory was made in the main building of the health centre. In Tuukkala, all furniture was broken or spoiled due to vandalism.

Cities that have municipal recycling centres or partnerships with third sector recycling centres report some success stories of soft stripping operations, for example open house events where soft stripping items have been sold to private consumers. These events have been framed rather as circular awareness activities than business activities⁹. In Mikkeli a similar pop-up auction day was held at Urpola school in 2021¹⁰.

The Mikkeli Activity Centre provided 4 workers and two drivers. Examples of items sold were 400 chairs, clothes racks, cupboards, musical instruments, tables, books, teaching equipment etc. The buyers were private citizens, especially alumni of the school. The income from the auction was 6500 €, so the event was profitable for the Activity Centre, because they received all items for free. The critical question regarding the role of Mikkeli Activity Centre is whether it should be given the monopoly for soft stripping phase in city owned demolition projects. The experience in Pankalampi demonstration case showed that they have very limited capacity to conduct the work in due time. They don't have the network for conducting business to business activities. The workforce is continuously changing. The monopoly, informally provided by the city administration may obstruct the creation of commercial business and permanent jobs.

Risain Ltd. is an example of a new business concept. The company calls itself "recycling operator". The business logic is based on two elements¹¹:

1. the company conducts a pre-demolition audit of reusable items with a fixed fee. The audit provides a full report to be used in corporate responsibility reporting, including list of reusable items, their classification, estimated market value and carbon footprint of logistics. The company is specialized in reuse, so the audit is probably more realistic and cost efficient than when using an engineering office. In one example case the fee for this reuse audit was 9000 €.
2. the company provides turn-key services for finding buyers and organizing the dismantling and logistics, including the procurement of waste management services. The reusable items are photographed and announced in digital marketplaces. Risain collects the income from sales and shares the net profit with the client sharing the profit with an agreed percentage. Risain can also arrange a pop-up auction on site if requested by the customer.

This model has the potential of maximizing reuse, because the reuse auditor earns most of their profits from selling of the items. Also, this model minimizes logistic costs because all items are sold on-site without need for temporary storage.

⁹ HSY, Espoo

¹⁰ Urpolan koulun myyntipäivä. Raportti 13.10.2021. Uutta Työtä Kiertotaloudesta. (Pop-up sale at Urpola School. Report 13.10.2021.

New Work from Circular Economy – project. Mikkeli Activity Center & South Savo Vocational School)

¹¹ Sirpa Rivinoja, Resain Ltd. director, interview 7.6.2022

Risain is offering these services to municipalities and businesses (e.g., retail chain) in demolition cases, in cases of moving to new locations and cases of refurbishing existing premises. Risain Ltd is in partnership with Purkupiha Ltd. one of the biggest demolition contractors in Finland.

The outcomes of CityLoops business case activities have so far been:

- development and publishing of a digital marketplace [\[Link\]](#) for used building items.
- demonstrating models and reporting schemes for reuse audits.
- proposal for an agreement with Mikkeli Activity Centre regarding soft stripping.
- promoting cooperation between Mikkeli Social Housing company (Mikalo Ltd.) and Mikkeli Action Centre.
- interaction with Mikkeli Consortium companies in circular procurement issues and market engagement.

Social aspects and benefits

Mikkeli Activity Centre (Mikkelin Toimintakeskus ry) is an NGO that was established in 1991 to activate un- employed people and help them to acquire counselling, education, and work experience to promote their path to permanent jobs. Mikkeli Municipality has outsourced this work to the Activity Centre and pays annually more than 1 M€ for these services. To provide work experience to their unemployed customers Activity Centre is operating recycling centres, second-hand shops, and repair workshops. In 2022 130-150 people were working in these activities with 100 % salary subsidy from the labour administration. The salary subsidy generally applies only for 6 months, after that the people must be rotated. Separately, Mikkeli Activity Centre is providing rehabilitation activities to about 500 people, who have health and social issues that currently pre- vent them from entering the labour market.

According to Activity Centre, EU regulations are threatening the continuity of this model because it does not allow subsidies to distort competition with commercial businesses. 100 000 € turnover is planned to be de- fined as the lower limit of commercial repair and reuse, after which the subsidy restrictions would be applied. If the drafted Finnish regulations enter into force, the Activity Centre could only employ 4-5 people per year in total compared to the current 130-150¹². However, if the salary subsidy is smaller than 100 % the regulation of market distortion is more lenient.

Informant A is project manager in the municipal employment demonstration in Mikkeli. In the demonstration project the labour services are transferred from national authorities to the local level. The informant pointed out that that in the long run circular construction cannot be implemented with government subsidies. The activities must bear the reasonable salary costs. Subsidies should only be used in demonstrating new concepts. He supports the CityLoops

¹² Palkkatuki uudistus uhkaa viedä Uutta elämää groupilta työntekijät – Mikkelin kierrätysmyymälän toiminta on vaarassa. Länsi-Savo 13.6.2022. Juhis Ranta.

proposal of procuring the stripping phase separately from total demolition. This would make possible the participation of local smaller companies that could then recruit unemployed people locally. Partial salary subsidy can be used in the start-up phase by companies to reduce the risk of employing new staff. In his opinion, the role of the Activity Centre is not to provide such permanently needed workforce – such services should be provided by businesses. The role of the Activity Centre is to provide a transition period for unemployed people to train and rehabilitate them to be ready to enter the free labour market¹³.

Soft stripping activities and the related maintenance and repair of recovered items for sale fit well into this concept of employing low-skill workers. Mikkeli Activity Centre could support unemployed people to enter the permanent labour market by providing training with support from the Mikkeli Municipality. This requires partnership with the local or national level contractors.

Environmental aspects and benefits

The main environmental benefit of a systematic reuse audit and a separate soft stripping service is the potential increase of reuse of building items and the associated prevention of waste and the saved carbon and material footprint of producing an equivalent product.

Cultural aspects and benefits

As pointed out in the case of Urpola School pop-up auction, the inhabitants value items from the past decades and have the interest to reuse rustic furniture and other items which have cultural and personal significance for them.

Separate stripping service as business

The market engagement events in Mikkeli indicated that small and medium sized companies that operate mainly in refurbishing of buildings are potential candidates for separate stripping contracts. Another group of such candidates are asbestos demolishing companies. They could expand their work from asbestos clean-up to all aspects of stripping and selective indoor demolishing.

Economical aspects and benefits

Company B is a local demolishing contractor that has a license for asbestos removal from buildings. 40 % of the turnover (about 1 M€) comes from asbestos work, 40 % from other types of stripping work and 20 % from diamond cutting and drilling. The business is usually based on sub-contracting. The company participated as subcontractor for asbestos removal in the Tuukkala demonstration case.

¹³ Informant A, Mikkeli Municipality project manager, interview 8.4.2021

Informant C, the owner of Company B assessed that combining asbestos removal with stripping work could reduce the total cost of demolishing. In the current practice, where asbestos removal is provided by a sub- contractor, but the remaining stripping work is conducted by the main contractor, the scheduling of the work is not as fluent as it would be if the asbestos contractor could shuffle between asbestos removal and normal stripping¹⁴. Offering small contractors, the possibility of separate contracting for stripping work could also reduce total costs, because of increased competition with big total demolition companies.

The duplication of costs of fencing, when dividing the contract into separate stripping contract and heavy demolition contract can be avoided, according to the interviewee. The stripping contractor can transfer the rental of the fencing and construction site barrack to the next contractor (assuming that there is little delay between the phases).

The company has 11 staff, five of them have a certificate to conduct asbestos removal. It is difficult to recruit asbestos workers that have the appropriate attitude required in this hazardous work. The company has used Estonian workers, for example in the Tuukkala case. Unfortunately, the company was sold in 2021 to a company located in another city and the company is no longer operating in Mikkeli.

Company C is a local demolition contractor with a turnover of 1...2 M€ and 19 workers. 50 % of the turnover comes from diamond drilling and asbestos removal work, the remaining from other demolition work. The company is licensed to do asbestos audits and it has several authorized asbestos removal workers. It has adequate equipment for indoor demolition work but not heavy demolition. It also provides waste transport services. Informant C, the owner of the company considered subcontracting to total demolition companies as unfeasible. They provide too little time for the indoor demolition. Asbestos removal must be conducted before indoor demolition. Partitions, doors, and windows cannot be removed before asbestos work, because the working space must be insulated, and negative pressure induced. The informant is for separate tendering of indoor demolition. This would lower the price of heavy demolition and the total cost would probably be lower. Indoor demolition does not require considerable costs for fencing. Demolition materials can be discharged from windows without removing the window. The company does not consider the reuse of building parts.

Company D is a construction company located in the Mikkeli region. The business consists of construction, renovation, and earthworks. It has experience of stripping work as part of renovation. It expressed interest in separate contracting of stripping services. The challenges for reuse are related to the short timeframe allocated for the stripping phase, storage costs of items that are not immediately sold, overstatement of the risks linked to indoor air quality and approval procedures required for building materials¹⁵.

The separate procurement of stripping works would probably benefit local businesses, because of cost savings compared to nationally operating companies that must bring workers from other locations with associated cost of lodging and per diem. In cases of subcontracting

¹⁴ Informant C, interview 20.4.2021.

¹⁵ Informant D in the market engagement event. 22.6.2022.

the stripping work by the main contractor there will be added cost to the customer from the margin taken by the main contractor.

Social aspects and benefits

Contracting local businesses for the stripping phase as alternative to total demolition would benefit local employment and the increased experience of local skilled workers specialized in demolition work. The stripping work would probably not provide permanent work alone, but it would be a new source of income for companies in the construction and renovation field. Socially this would be better than recruiting temporary migrant workers from e.g., Estonia. Work safety is probably better when using permanent staff than temporary staff. Local businesses could form partnerships with the Activity Centre and offer opportunities for permanent employment to the customers of the Activity Centre. They could also find synergy with the local Vocational school by recruiting students, student entrepreneurs and newly graduated people.

Environmental aspects and benefits

Engaging local enterprises in soft stripping and stripping contracts could have environmental benefits in promoting reuse of building items. Building a local network of buyers would reduce transport costs and would enable on-site sales.

Building parts that have cultural and historical value to Mikkeli inhabitants would more probably find buyers locally than nationally.

Business case impact indicator calculations

Indicator 22 in the CityLoops evaluation plan sets the goal of introducing eco-innovations: new products, service concepts and business models relating to the reuse/recycling and upcycling of the specific material flows established, leading to new business opportunities.

Indicator 23 monitors the quantitative impacts of each eco-innovation in monetary terms. In this Mikkeli business case A two eco-innovations have been studied: one is the soft stripping and reuse operation business and the other is the indoor demolition or stripping phase where the soft stripping operations can be included or excluded. *In this report the soft stripping business is selected as the basis of the impact indicator.* The soft stripping business can be roughly assessed using the example of the dental clinic in the Pankalampi demonstration case. The turnover that Mikkeli Activity Centre calculated was 3746 €. The floor area of the dental clinic was 1416 m², so the realized selling value was 2,65 €/m². During 2018-2021 the Municipality has typically demolished about 10000 m² of municipal public buildings per year. In this figure the demolition projects managed under Mikalo (municipal rental housing company) and Naistinki (manager of city owned business premises) or other city owned companies are not included in the estimate.

If the dental clinic case is used as a benchmark, the value of reusable soft stripping items from city owned buildings would be about 30000 € per year. Based on observations from the demo site the potential would have been much more, but due to constraints in time, human resources, and lacking sales channels the potential was not realized. The pre-demolition audit only covered the dental clinic. The impact indicator 23 is tentatively given the value 30 000 €. There is potential for much more.

The total sales of reusable items in the New Life shop of Mikkeli Activity Centre were 423926 € in 2021¹⁶. Most of the income obviously came from sales of furniture, used household items and household appliances donated by private citizens. Compared to this sales figure the share of items that could be recovered from to-be-demolished municipal buildings would be 7 %. Most of the recovered items are currently furniture, not actual building parts such as water fixtures.

Find more inspiration about circular market and business models in this CityLoops report: [Business Cases for Circular Construction & Demolition Projects](#)

¹⁶ Financial report of Mikkeli Activity Center (NGO) from 2021.

CITYLOOPS

CityLoops is an EU-funded project focusing on construction and demolition waste (CDW), including soil, and bio-waste, 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 soil, and bio-waste, 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 aspects of CityLoops are stakeholder engagement and circular procurement.

CityLoops started in October 2019 and will run until September 2023.



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