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Q: What did the pilot in The Hague look like?

A: The original plan and objectives were the following:

- Increase awareness among businesses of the untapped value in their waste streams, with special attention paid to residual waste. Specific focus on the ZKD business park.
- Organise as much as possible locally: bringing businesses together in a so-called business resource board to develop and manage collective tendering of waste disposal. Creating circular business cases to prevent waste being generated or incinerated, rather materials being (re)used by businesses themselves or third parties.
- Ultimate goal for the project was to achieve 20% of local waste streams dedicated towards upcycling.

Q: What were the actual results?

- Starting late 2019, businesses were informed about the project and research was done into how to set up the local resource board.
- Individual waste scans were done by students of TU Delft between 2020-2021. This resulted in 81 detailed analyses of businesses' waste data. The conclusion was that residual waste separation could be improved and up to 20% in waste management savings were possible.
- However, theory does not always translate to practice: unfortunately, we are not close to achieving that 20% by the end of the project in March 2023. In short, our objectives were too ambitious and setting up sufficient (upcycling-based) business cases was too difficult. This is due to a number of factors that I will detail later. At this point, we are in talks with the ZKD board to renew engagement with a handful of companies to deliver more customised, hands-on advice in setting up circular chains.
- Although the quantitative results have been disappointing, this project has provided valuable input for our continued effort to improve material circularity in the city.

Q: What exactly did you learn from the pilot?

A: *Lessons learned*

- The waste scans and interaction with businesses contributed to the general project deliverables, but also provided valuable insights about the workings of ZKD waste disposal. The main takeaways were that many businesses do not know exactly what their residual waste stream looks like, and that contract prices for disposal of comparable volumes vary wildly between individual companies. There is a lot of room for improvement here, though that requires a very coordinated effort outside of the scope of this pilot.
- Implementing this pilot according to the original plan proved difficult for a number of reasons. Some of these we can improve on going forward, others are out of our hands.
- The most obvious obstacle is that when the project fully started in early 2020, the covid pandemic made involving businesses (least of all smaller SMEs) very difficult. This meant that engagement was low and results (e.g. the waste scans) were delayed, decreased in quality, or both. Unfortunately, the crises didn't stop at that, as currently most businesses are facing energy, materials and labour shortage crises as well. Although sustainable business practices

as a whole could remedy part of this, better separation of waste streams remains quite low on the agenda. We should expect this transition to take some more time, though we will do what we can to facilitate this process.

- As for things we can address more directly, we have learned the following:
 - The first and foremost conclusion is quite simple: the financial and legal conditions are not there yet to realise viable circular businesses cases on a large scale. In order to involve sufficient businesses and build a local circular economy, there has to be concrete and significant costs savings. Currently, this is impeded by, among others: 1) national/EU waste policy is either too broad or not strict enough, leading to residual waste not being separated as well as it could be, and 2) it is generally still cheaper to acquire new materials and not spend too much time on proper separation. These factors take away any incentive for most companies, for whom time is money, to put any extra effort into circularity.
 - Further to the point of policy and legislation: the way waste management has been legally organised in the Netherlands now, the city's competences are limited, restricted to monitoring and enforcing waste legislation. It is especially not allowed to actively interfere in the waste disposal services market. Internal legal research forced us to conclude that the city could not be as involved as planned with setting up the business resource board, as a result of laws prohibiting governments from interfering with regular market processes. Although we could facilitate in this matter, the initiative has to be driven by businesses themselves. This unfortunately has not happened in our focus area yet.

Q: How would you use these learnings practically going forward?

- Having done this project has given us better insight into the local landscape of waste streams and how circularity can play a part in that. Going forward, we know that we should:
- Know that given the limited role you have as a local government in waste management, you need your businesses more than they need you. This means that the approach should be explicitly bottom-up vs top-down.
- Set realistic goals. For example, the objective was “20% of waste streams in the area dedicated towards upcycling”.
 - Problem: No proper baseline, no further definition of these waste streams. Which raises the question: what are we measuring and where? We will need to be very specific to accurately measure our progress.
- Be able to propose a clear plan to businesses, but be flexible as well when things do not work out as intended. Working bottom-up means making sure your pilot is accessible and the results are achievable: disappointments can have a negative impact, so under-promise and over-deliver.
- We plan to collect these lessons into a document that we, together with other cities and/or stakeholders, can use as a lobbying instrument both internally and towards the national government. With this lobby, we'd specifically try to improve on the legal and financial conditions mentioned before, as it appears the market itself is currently not sufficiently equipped or incentivised to organise circular business cases by itself.

- On the businesses side, investing in long term contact and support gives companies a better sense of perspective. Gaining their trust, especially in these times of economic hardship, is vital to keep them engaged.
- At this point in the pilot, everything we are able to accomplish is considered a result and part of the long-term movement that is this material resource transition. For now, all we can do is small-scale actions and increasing awareness one business at a time. By helping to set a few examples, we hope engagement will grow among other companies in the business park.

Q: You chose to focus on one specific business park. Why is that? What were the benefits and shortcomings of that approach?

- This approach was chosen so as to have a clear focus for the pilot. Businesses are locally organised to some degree already and communication is more efficient and effective when directly addressing this group of companies.
- Secondly, there is a number of companies located on the park that have been there for a long time and have grown to be quite influential. Getting these involved means better visibility of your message and ideally gets others to follow.
- On the other hand, no business park is the same, and not all solutions are available locally. Material streams we identified at the ZKD area could find better use at different locations in the city or its surroundings. This is something worth looking into in the future.

Q: If your approach is going to be bottom-up, how do you intend to assist businesses in their effort towards circularity.

- If possible, individual support and advice helps the most.
- Example: as part of the project we produced a report on all relevant EU/national law, coupled with an FAQ by/for businesses owners. This was meant to make the project as accessible as possible. However, we found that this FAQ is a nice starting point, but businesses are most benefited by specific answers to their own questions regarding proper disposal and/or reuse. We have involved the ODH to offer their expertise in these matters.
- How much of this support can and should be offered by the city is a question of scope and capacity, of course. The government has set certain goals, but is not the only actor in working towards improved sustainability (e.g. consultancy companies can also offer advice).
- As for what could be changed internally, the City is organised into different departments, each with their own responsibilities (aka silos). It is not a given that businesses talk to the same city representative every time for questions regarding this topic. The departments themselves could do more to coordinate their work on these kinds of challenges.
- As we work towards growing local engagement, we hope neighbouring companies notice circular successes and copy/implement their own measures.