

RETHINK BUSINESS RESULTS & CASES

midt
Central Denmark Region



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Circular Economy in practice, a case study collection

How do you perform a conversion from linear to circular economy? That is a question, which The Central Denmark Region is working with actively.

The Central Denmark Region is one of Denmark's five regions. As part of the business development strategy this region has been a frontrunner when it comes to circular economy. The case studies in this collection are from the region's first initiative called Rethink Business.

The initiative focuses on two main areas; how to support the companies during conversion and how to create demand.

Part of the company case studies are about SMEs. The case studies show how the companies have started the process and the effect of lending them a helping hand rather than a handbook.

There are also two case studies concerning municipalities. They provide us with various presentations of the results we will get from supporting the municipalities' visions and focusing on Circular Economy.

The initiative also focuses strongly on learning from our experience - also on a system level. That is why we also have a number of case studies showing how we have been working on a method level.

The region is now working on a number of other initiatives.



Enjoy reading,

Bent Hansen,
Chairman of Regional Council
Central Denmark Region

Introduction to the case study collection: What we learned from Rethink Business

Rethink Business. The project name alone bears witness to the fact that this is no ordinary project. This was designed to achieve something – to move, develop, change, inspire and learn. The project has also achieved some surprisingly good results over the last three years that enterprises and local authorities in Region Midtjylland (Central Denmark Region) have worked together to create growth through green conversion. And these are the results we relate in the case collection.

Rethink Business was launched by the Region in 2012 with financial support from the Danish Business Authority. The objective was to help local authorities and SMEs in the region who wanted to create green conversion or growth via efficient use and recycling of products, materials and residual flow, and by introducing new business models based on take-back, repair and service. The thinking behind green conversion includes Cradle to Cradle and circular economy, but never focusing solely on the enterprise's own production. Rethink Business looked at the entire value chain – including local authorities, because they are often important customers with regard to green solutions.

The project ended at the end of 2014, and the time has now come to talk about the wealth of results and the lessons learned by both enterprises and the local authorities involved. Because regular evaluation, gathering experience and learning have been the entire *raison d'être* of the project.

Our experience as inspiration for others

We want others to be inspired to make use of the unique know-how on green conversion processes that Rethink Business has generated amongst all its participants. That's why we've chosen to tell the story of Rethink Business through a collection of case studies.

These will be used to tell the individual stories of the enterprises, their personnel and managers concerning the developments their participation in Rethink Business caused. We will also relate the experiences from the five local authorities involved in Rethink Business, preparing them to enter into Public–Private Partnerships based on the concept of circular economy. Furthermore, we will use the collection of case studies to highlight the most important lessons learned and to present the tools the consultants used when working with the participating enterprises. Last but not least, we will give our own recommendations for how future programmes should be designed.

Project evaluation gave valuable insight

We introduce the collection with two cases based on evaluation of the project by LB Analyse on behalf of the Region. The first takes a sharp look at how to achieve effect in a growth-oriented business development project such as Rethink Business, whilst the second features lessons learned and recommendations for any other organisation working with enterprises in future business development projects.

Stefan Brendstrup is a partner at LB Analyse, and he wrote the evaluation of Rethink Business. He

believes that this evaluation stands out from many others because Region Midtjylland, the consultants from COWI and from Vugge til Vugge (Cradle to Cradle) were all so willing to learn from the project. That's why the evaluation has not just been used for retrospective rationalisation and documentation of result targets, but also as an instrument for learning, and that will be a stepping stone for future business development projects. "Because of the way we have designed the evaluation, we know a lot about why things went the way they did," says Brendstrup.

The important screening

Evaluation of enterprise involvement takes a sharp look at their progress through screening, innovation, testing and conversion – the four phases involved for enterprises. It shows that out of the 50 enterprises taking part, 20 reached testing and conversion, whilst another 16 are well on the way. On the other hand, 14 have not got very far to date. Overall, the result is very good, and better within several parameters than the project's early targets.

According to the evaluation, it's important that the screening process ensures that the enterprises taking part are able to convert. UMT was responsible for screening enterprises in Rethink Business, but was assisted especially late in the project by COWI and Vugge til Vugge with regard to finding suitable candidates. A first-pass list of almost 150 enterprises was thus reduced to 50 screened candidates.

The role of the consultants

Evaluation also showed that it is particularly important that an enterprise is used to development in consultation with external partners, and has the ability to convert external input to internal change. Just as critical to success is whether the project has backing at the executive levels of the organisation.

On the other hand, the actual ability to execute

"We could see that all the enterprises taking part went through change, and took a quantum leap in development regardless of their starting point. So everyone has learned something new and improved their chances of success when moving on to the next step in development."

Stefan Brendstrup, Partner, LB Analyse

the project was apparently less important. Brendstrup explains why: "We were actually surprised, but the explanation is apparently that the consultant team that advised enterprises on green conversion also undertook other, specific jobs within the enterprise. And that helped drive the process and create results for the enterprises. So an important lesson learned from the project is that you must always differentiate between aspects consultants can compensate for and those that cannot be changed by a consultant. The latter will determine which enterprises go furthest in the project."

Prior knowledge

Another clear tendency in the evaluation is that prior knowledge of a mind-set similar to Cradle to Cradle and circular economy strongly influences

how far an enterprise would go during the project period.

Rethink Business defined three different groups of enterprises: One without any prior knowledge of the circular approach, one that adopted the approach and one that simply already had it engrained in their make-up. According to Brendstrup, it was the latter group that went furthest through the four phases of screening, innovation, testing and conversion. "But we could see that all the enterprises taking part went through change, and took a quantum leap in development regardless of their starting point. So everyone has learned something new and improved their chances of success when moving on to the next step in development," states Brendstrup.

New business models

One of the results of Rethink Business was that the enterprises tested three main types of business models. The first concerns new design or a new form of production able to increase the degree of utilisation of waste flow, products and product components produced by the enterprise or others. The second focuses on return models (take-back systems) in which enterprises typically take back all or some of their own products for new production. A variant of this is when the enterprise retains ownership of its product. In other words, a leasing model in which the product is taken back at the end of the leasing term.

Finally, a number of enterprises worked with service models selling a service related to a product sold or produced by the enterprise or others.

Helping hand rather than handbook

Apart from the differences already described, there was a lot of variation in the size and focus

of the enterprises. Some only had one employee whilst others had up to 300. Some were manufacturing companies, others within the service industry. There was also a lot of difference in terms of degree of internationalisation, as some only wanted to focus on the Danish market, whilst others were interested in export.

The wide range of variations meant that the team of consultants from COWI and Vugge til Vugge tailored their consultancy to the circumstances of each enterprise. Dorte Glensvig from COWI led a team of consultants, and says that the project's high success rate on the enterprise side was closely related to this differentiated approach. She explains:

"As consultants, we are naturally trained to work with a range of methods for the implementation of innovation and conversion. But we do not go out to companies with a fixed concept for the way to lead them through a change process. We have listened and used our experience instead to understand the potential in each one, and then support them in the direction best suited to their circumstances. So the theme of our approach has been to provide a helping hand rather than just a handbook. Furthermore, we put together a team of highly experienced consultants, able to draw on a large network within business in general and specialists from COWI and elsewhere, able to provide a good insight into environmental aspects, engineering and economics, plus subsidies available. That meant that we could always offer the enterprises something extra in relation to their development of green products and services."

All were strengthened

In line with the results of evaluation, Glensvig says that the enterprises achieved very different results. Some have developed, tested and converted to totally new products or services.

Others decided to test or convert new business models, such as take-back schemes. One interesting result of Rethink Business was also that several of the participants joined forces to test a green business idea. Finally, a large number of enterprises gained experience and new know-how to the point where they now feel strengthened to be able to develop green ideas for testing and hopefully subsequent green conversion at a later date.

"The fact that most of the enterprises taking part in Rethink Business now consider sustainability as an integrated part of their business concept and a lever for green business development and growth is an admirable result," says Glensvig, who also notes that the circular approach can be adapted to all manufacturing and service businesses, regardless of sector and size.

Toolbox

In two of the case collection's common cases, we have described how the consultants helped their client enterprises through the innovation and testing phases, and which tools they deployed to match an enterprise's individual needs. We relate the experiences and results from 6 selected case studies, told in their own words and those of a consultant from COWI or Vugge til Vugge, who worked closest with the enterprise through Rethink Business.

"The case studies indicate that no two enterprises are alike. And no two ways from idea to testing and green conversion are alike! That's why customised help is all important," says Glensvig.

Change takes time

Another important experience gleaned from dialogue with the enterprises and local authorities is that change takes time. Management time and financial resources are

usually dedicated to other activities, meaning

"The case studies indicate that no two enterprises are alike. And no two ways from idea to testing and green conversion are alike. That's why customised help is all important."

Dorte Glensvig, Project Manager, COWI

that conscious effort was required to release them for Rethink Business. A significant result from evaluation is that all the nine enterprises that reached the conversion phase had the backing of their top executives.

In addition, developing new markets, products and services only requires time. "So we have to take care not to define short programmes with unrealistic expectations for effects such as degree of growth, improvements in resource use etc.," explains Brendstrup. Glensvig supplements: "Instead of designing programmes and guides, we put focus on supporting demand on the market and measuring changes in the innovation and execution competence that are necessary for green conversion and growth regardless of the rate of change.

One of the ways conversion can be speeded up is to apply for support in excess of the resources dedicated to a project. All the enterprises taking part in Rethink Business were informed of other green subsidy programmes, and five of them did receive a grant during the project.

Local authorities driving green conversion and growth

Rethink Business has also focused on strengthening the Region's local authorities to formulate a vision for circular conversion and act as the driver for green growth based on the circular economy approach. The objective was that at least two of the Region's 19 local authorities should enter into Public–Private Partnerships with enterprises, and that the partnership would result in business development, new green solutions and products. The local authorities could apply for grants from a fund of just under DKK 2.9 million to support their efforts.

This was another area in which Rethink Business achieved excellent results. No fewer than five local authorities successfully applied for funds, and at the end of the project, four were close to having completed their project idea. Two of those have described their journey in case studies.

The local authority side of the project was run by Development Centre UMT, with Svend Erik Nissen as the key person. He says:

"Our work consisted of helping the local authorities interested with advice and feedback designed to find a suitable area given the authority's own plans and strengths. We have held two one-day seminars and held meetings with several of the local authorities interested. We used our own network to matchmake between local authorities and enterprises where relevant. We have also held status meetings with each local authority every six months."

New partnerships

Partnership between departments, local authority and enterprises plus between local authority and its residents within the five participant authorities generated more and more value during the project. According to Nissen,

"All five local authority projects have scaling potential and some have already involved other authorities or organisations in their project to gain greater value and effect."

***Svend Erik Nissen, Project Manager,
Development Centre UMT***

that's because new tendering and procurement policies have given rise to new, different relationships requiring more involvement of various competences and interests.

Interest from the local authorities spread like wildfire: "All five local authority projects have scaling potential and some have already involved other authorities or organisations in their project to gain greater value and effect," says Nissen.

Use our experience

As mentioned above, we want other regions, local authorities and enterprises to be able to make use of the experience and know-how within business development and green conversion processes that Rethink Business has generated amongst the project members.

The results and case studies from the project are presented on the following pages to make it easy to delve into any subject that seems most interesting, along with a brief introduction to each case.

**Common cases based on evaluation by
LB Analyse:**

- › **The path to effectiveness for Rethink Business:** A case study that illustrates the criteria that influenced how things went for the enterprises taking part.
- › **Recommendations for programmes for conversion to CE:** Behind Rethink Business was a strong desire to pass on know-how and experience. The recommendations for other programmes are contained in this case study.

Common case studies on the screening process tools for innovation and testing

- › **The path through the innovation phase:** Focusing on how consultants with a differentiated approach and well-stocked tool box can help enterprises through the innovation process.
- › **Adapting the idea to fit:** The testing phase is the focus of this case study that looks at how enterprises can be helped to focus their ideas.

Enterprise-specific case studies

- › **Advance Nonwoven A/S:** Participation in Rethink Business resulted in a new business model and potential customers amongst other participating enterprises.
- › **Eurotag:** Rethink Business meant that roofing felt cut-offs were collected and recycled as a resource in the production of new felt.

- › **Fletco:** Participation in a Rethink Business workshop revitalised the dream of producing 100% recyclable carpets. Hard work is now turning the dream into reality.
- › **Rheinzink Danmark A/S:** The idea of taking used zinc back was not new to the company. But Rethink Business meant that the idea of a take-back solution was brought into focus and defined.
- › **Flexiket A/S:** Rethink Business motivated Flexiket to act as catalyst for refuse recycling by its customers.
- › **Troldtekt:** A manufacturer of acoustic panels made from natural materials joined Rethink Business to develop an idea for a take-back system. The business model can now be put to the test in reality.

Case studies from the local authority side

- › **Samsø:** For Samsø, a tendering and purchasing policy based on circular economy shall be the driver of a leasing model for pumps that will focus on cooperation with business and reuse of materials.
- › **Skive Municipality:** Rethink Business meant the start of recycling building waste and alternative forms of inviting tenders. Relationships with local businesses are expected to be strengthened.

What is Rethink Business?

Region Midtjylland launched the 'Rethink Business' project to create green innovation and growth in the region. Over 30 enterprises are taking an active part in the project. The project will run from October 2012 to December 2014. The project is subsidised by the EU. Read more at rethinkbusiness.dk

What can Rethink Business do for regional enterprises?

The Rethink Business project is designed to strengthen the resource efficiency and circular business models of regional enterprises.

The objective is to generate new and additional business by making use of refuse and eliminating the waste produced from manufacturing up to the finished product. The project focuses on procurement of materials, surplus production, product design, services and/or the use or re-use of the product or products sold by an enterprise.

Working with resource efficiency and circular business models is a way of increasing innovation and competitiveness in an enterprise, boosting its reputation and relationships to suppliers and customers. It also makes enterprises less vulnerable to price increases or problems with the supply of raw materials.

Who is behind Rethink Business?

Development Centre UMT is the project operator on behalf of Region Midtjylland, and UMT has signed agreements with COWI A/S and COWI's subcontractor Vugge til Vugge ApS. The Rethink Business consultants from COWI and Vugge til Vugge advise their client enterprises through three phases: innovation, testing and change. LB Analyse has evaluated the Rethink Business project on behalf of the Region.



General case study:

The path to effectiveness for Rethink Business

Some time can often pass from an enterprise thinking up a new product until it can be launched. So how have things gone for the enterprises in Rethink Business since the project started in 2012? And what aspects have influenced the way things have gone? We will take a close look in this case study.

What came out of Rethink Business?

The Rethink Business project was all about creating growth for primarily small and medium-sized businesses in central Jutland. The project succeeded in generating growth directly and indirectly thanks to the cradle-to-cradle (C2C) and circular economy (CE) approaches. These focused on effective use and re-use of products, materials and refuse resources throughout each enterprise's value chain – and not just in its own production facilities.

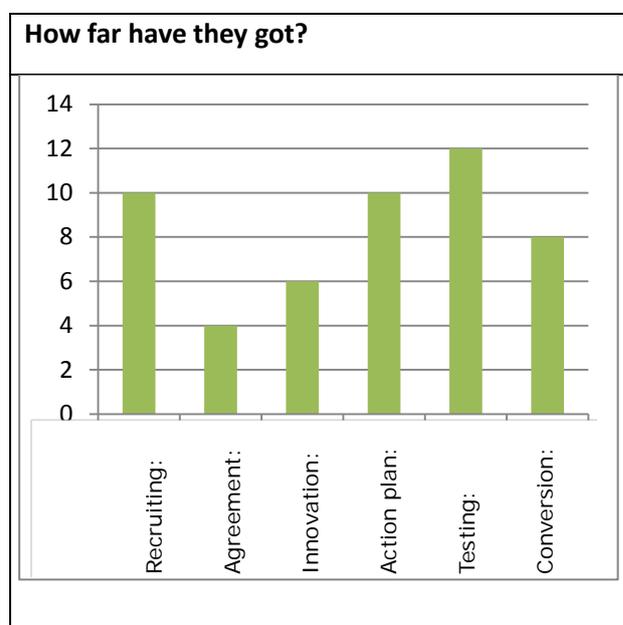
Direct and indirect effects are important

Direct effect can be described as the creation of new products or services that can be brought to market to generate sales and employment. 20 of the 50 enterprises that expressed interest in the project are already in the process of testing new products or services. Nine of them have reached the stage where their products or services are ready to be launched. But it is still too early to determine the turnover they may have generated.

If we look at indirect effect, the enterprises involved have used Rethink Business as a testing

ground to implement a change process designed to provide the basis for subsequent innovation processes. The C2C and CE approaches were sources of inspiration and provided lessons in innovation in this instance. What impact the effects have had can only be measured in the long term.

Consequently, as Rethink Business approaches its end in 2014, we can only measure how well the enterprises managed to complete the process.



We can see below that a total of 20 enterprises have reached the testing or reconfiguration phases in the project. Nine others have joined the innovation alliances and new collaboration schemes with other enterprises to realise new products or services based on C2C and CE.

Finally, the 20 enterprises that have reached the testing or change phase have begun to work strategically towards making their entire business more oriented towards the cradle-to-cradle and circular economy approaches.

What effect does change have?

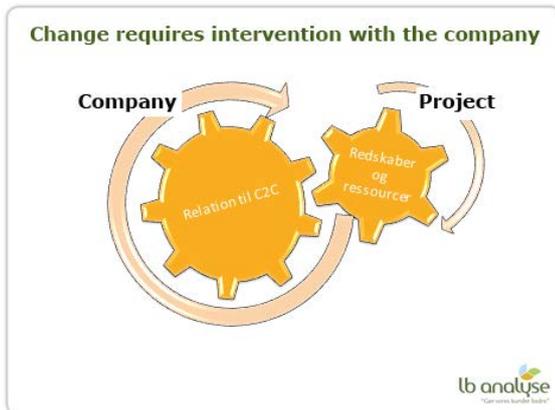
All in all, considerable effect was achieved in a number of enterprises with regard to starting to use C2C and CE and applying them to the development of new products or services.

On the other hand, there are also some that have not progressed far as yet. That makes it interesting to examine the factors that seem to influence how far the enterprises have got with switching to C2C and CE.

The following will include an overall introduction to how projects can create change and to what factors seem to have played a specific role for enterprises taking part in Rethink Business.

Engaging enterprises

To create change, the degree to which it is possible to engage with enterprises during the course of the project is decisive, according to the experience gained from a large number of business development projects. It also transpires that the more enterprises engage in a project, the more they get out of it.



Change is generated in the relationship between the enterprise and a project that brings know-how, tools and resources, e.g. in the form of consultants who can devote time to the business.

There are two key factors that determine how an enterprise can engage with a project overall. The first is the enterprise's own development policies

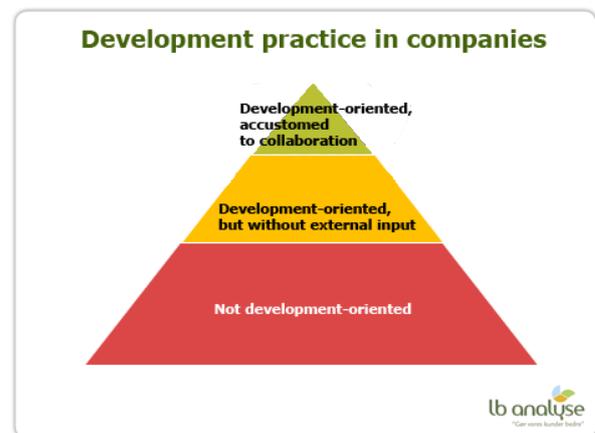
that indicate whether it is used to working with development.

The second is the reason why an enterprise is interested in taking part, i.e. its motives, resources, know-how, experience etc., the factors that combine to determine how much it will engage. Behind every enterprise signing up for a project is a track record that often determines its chances of engaging and thus what outcome can be expected.

We will examine these key factors in more depth.

Enterprise development policy

There are often three levels of a development policy. One group of enterprises is unused to working with development at all. The second is well used to development, but not to working with external partners. The third group is well used to development and to working with external partners.



The breakdown has been defined from literature on innovation differentiated between DUI – Doing Using Interacting – and STI – Science and Technology-driven Innovation¹. The yellow field represents enterprises with a development policy

¹ Jensen, Morten Berg, Björn Johnsom, Edward Lorenz & Bengt Åke Lundvall (2007): "Forms of knowledge and modes of innovation". Research Policy, Vol. 36 pp.680-693.

(corresponding to DUI) and the green field represents those that combine DUI and STI.

The key factor is that it cannot be presumed that enterprises are used familiar with – and therefore prepared for – the idea of entering into a project in which input from external consultants can be readily converted to internal change. Receiving that sort of input would be simply too radical for some enterprises, which is why many of them do not apply to take part in projects or respond to offers to do so.

Numerous surveys indicate that only 10-20 per cent of those enterprises in the upper green field are used to working with development with external input².

What do we know about change in enterprises?

Rethink Business is not the first project designed to create change in enterprises to enable them to meet the challenges they face, exploit new market opportunities and to address problems in the community.

We know that creating change from the outside is difficult, which is why we screen applicants to place them in the group that will have the will and can be expected to have the ability to make the necessary changes if given the support available in the project (see case study on screening).

As mentioned above, earlier experience indicates that the ability of many enterprises to take expert input from outside and convert it into internal change varies considerably from one business to the next (referred to as the “absorptive capacity”

of an enterprise³).

Some enterprises are used to working with development and involving external partners. They often take part in commercial development projects and therefore already feature in “the system”, often responding positively when a new project is launched. Others are not so experienced and are typically more difficult to get hold of, as they fail to believe that the project could be of interest to them.

Rethink Business was designed to take this into account by allowing external consultants longer to analyse and help enterprises to keep the process on the rails to avoid day-to-day essentials and all the other risks pertinent to any form of change from taking too much focus.

Nevertheless, how far the project enterprises have got with change varies considerably.

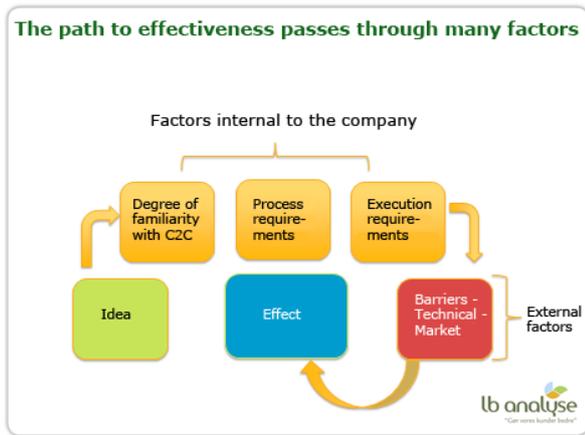
So what has working with those 50 enterprises taught us about the factors that can influence the rate of change? And are there any factors we could take into account in future projects?

From idea to implementation

The factors important during evaluation identified as being important for how an idea is translated into effect are summarised in the figure below.

² See, for example, https://www.linkedin.com/company/lb-analyse?trk=nmp_rec_act_company_name, where the development policies of 400 companies in the food industry were studied.

³ See, for example, Shaker A. Zahra and Gerard Georg (2002): "Absorptive Capacity: A Review, Reconceptualization, and Extension". The Academy of Management Review, Vol. 27, No. 2, pp. 185-203.



How extensive is the change process an enterprise has to go through? Will a minor change to an existing product be all that is required? Or will the product and its production process have to be rethought right from scratch? This is a factor that influences whether an enterprise can succeed in adapting its products or services to C2C/CE principles.

Before we as consultants get involved in complicated aspects of the enterprise, we therefore analyse the idea to determine how much a change will imply to realise it. Evaluation shows that enterprises already well down the road to change are also those with the most ambitious ideas and with the highest degree of circularity applied.

It then becomes relevant to look inside the enterprise to find out whether its circumstances suit the implementation of change.

Degree of awareness of C2C and CE

Inspired by knowledge of the different development policies in use, our evaluation looked at an enterprise's relationship to C2C/CE or a very similar approach. We believe that this could be very significant to how they perceive and interpret input on effective use and re-use of products, materials and refuse resources along their entire value chain.

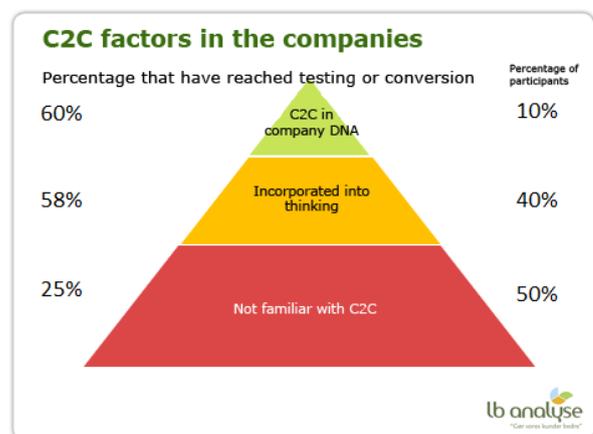
Some enterprises already have the principles of C2C/CE deeply engrained in their make-up.

Troldekt is an example of long-established business that has produced ceiling panels for decades made of wood fibre and cement that can be reused. Other, more recent businesses have been founded on an idea arising from C2C/CE-type thinking, but without the tools to fully apply the approach on their own. A total of five enterprises of this type have taken part in the project.

Others have heard of C2C/CE and similar approaches, and may have begun to investigate them, but lack the necessary knowledge and competence to implement them. A total of 19 enterprises of this type have taken part in the project.

And finally, there is a group for whom the approach is new, and for whom the process of development work has to be started from scratch. A total of 24 enterprises of this type have taken part in the project. Two enterprises stopped so early that there was no way they could be categorised.

The three groups are illustrated in the figure below. The figures to the right of the triangle indicate the percentage of the total number of enterprises involved in the project that belong to each group. The figures on the left indicate the percentage within each group that succeeded in reaching the testing or change phases.



A little surprisingly, the percentage of types 1 and

2 that reached the testing and change phases was the same. But the number of type-1 enterprises was so low, that this type of analysis can be inaccurate. One of the enterprises never got started and another is still too young to have started production or found its customers.

Nevertheless, we believe there is a clear trend that enterprises with no awareness of C2C/CE or of similar approaches will take a lot longer to implement change than those that have already adopted the approach, and that may only need a slight change of course to get them moving with the process.

This also means that the effort needed to create the desired effect will vary according to the type of enterprise. Alternatively, different goals may be needed for different types of enterprise.

To find out what different types of enterprise may need, our evaluation took a closer look at what internal factors within an enterprise could determine how far it will get with change. What does the road from idea to effect look like, and what is required to help an enterprise on its way?

Criteria for the process

Some enterprises are very good at generating new ideas, and want to put a lot of them into practice at the same time – although they do not always succeed. Others are good at running things efficiently but do not have as many new ideas.

Consequently, it's important to look at the criteria applied to enterprises for the creation of new ideas and working with development on one hand, and at the criteria needed to realise them on the other (execution).

With regard to the criteria applicable for processes, evaluation shows the following three factors can be significant:

1. Innovation capacity
2. Getting the project accepted within the

business

3. Prioritising the project

Innovation capacity broadly involved what we have described previously as the development policy of an enterprise. What capacity (defined as resources, competence and mindset) does an enterprise have in principle to be able to work with innovation. This has been defined in our evaluation as a question of whether an enterprise is used to working with stakeholders or consultants, or whether it engages its own resources in development work.

It is also important that a project such as Rethink Business is positioned within an enterprise. Many projects peter out because the people taking part in them on behalf of the enterprise do not have the mandate or resources to make the necessary internal changes. Our evaluation therefore differentiated between whether a project came under the managing director, the production manager or someone with an administrative function responsible for CSR, environmental aspects etc.

Finally, we looked at how high the enterprise prioritised its participation in the project. Were there long delays because no one found the time and capacity for development? Were there other development processes in progress that drew on the same resources within the enterprise? Or has the enterprise entered into the project in the hope that it will help it find a way out of a difficult financial situation? These are all factors that can be highly significant to how highly Rethink Business is prioritised, and thus how great a change can ultimately be expected.

Criteria for execution

Coming up with new ideas is one thing, but realising them is something else entirely. This may not be so critical to the ability to arrive at change,

but can influence the ability to move on from the change phase to commercialisation of new products and services.

Nevertheless, Rethink Business consultants noted that the ability of enterprises to test and change also seems to be affected by factors concerning their ability to execute things.

We therefore looked at their experience of project management in our evaluation as a possible explanatory factor related to how far they had got with change. Are they used to working with managing and controlling projects, or is it something new to them?

We then looked at their experience of working together with customers and suppliers respectively, because according to our consultants, this is important in relation to developing and bringing new C2C/CE-oriented products to market.

Our consultants had to specifically help a number of the enterprises participating to enter into this dialogue or to perform market analyses.

Barrier to market entry

Finally, it's important to bear in mind that there may be market, technological or regulatory barriers to new C2C/CE-oriented products coming onto the market.

These can result in the impact of change often being delayed. An example of a regulatory barrier can be that the desire to introduce a take-back scheme comes into conflict with a refuse regulation when refuse collection is a local authority responsibility.

What did the evaluation reveal?

Rethink Business consultants working with individual enterprises have all given feedback on those they worked with on the above parameters, giving each a high, medium or low score. Whether there is a link between a high score for

the respective factors and those that went furthest towards change in the project was then analysed.

It transpired that the most important factor is the relationship the enterprise had with C2C and CE.

The enterprise's ability to run processes was the next most important factor, with the support of the Managing Director as the most important individual element. The project was backed by the Managing Directors of all nine enterprises that reached the change phase.

We believe this is due to the fact that there can be aspects which project consultants find it difficult to compensate for. This was also one aspect that it was impossible to screen in advance.

Execution actually seems to be a less important factor, for which there can be two possible reasons. The first is that execution only really becomes critical in the post-change phase, and the second is the aspects that the consultants were able to compensate for by acting as project managers for example, making how good the enterprise's preconditions were less important.

An important part of the thinking behind Rethink Business was that enterprises taking part should not only receive instructions on what to do themselves, but that the consultants should be able to help execute the project.

That's why factors which the consultants were unable to compensate for seem to be more prominent when looking at the difference between enterprises that went far and those that didn't in terms of achieving change.

Is C2C/CE anything special?

Achieving effect can take time in most commercial development and innovation projects. New know-how and competences have to be acquired and changes have to be made that

will improve the way the enterprise does business before any economic effect can occur.

A number of the factors dictating whether the project will be effective are general, and common to all initiatives. Others are specific to C2C initiatives.

And this is where an enterprise's awareness of C2C and CE naturally becomes important. The more familiar they are with the approach, the further they go with change.

But our evaluation has also shown a clear link between awareness of C2C/CE and the aspects they need help with.

Enterprises already familiar with and using C2C/CE ask for help to enter into dialogue with their suppliers and perhaps to become certified. Those that are familiar with the concept but have not put it into practice need specific help with analysing their resource flows. But those with no real awareness of C2C/CE need help with innovation and customer retention.

It may not seem surprising that those with strong awareness of C2C/CE are also the ones who go

furthest. But it is still worth bearing in mind as it can mean that the project can be split up and that there can be benefits from working with different goals for different groups. Perhaps those enterprises with no awareness should be ensured awareness that can inspire and motivate them, so that they can then consider whether there is anything they want to work on in a specific project.

Alternatively, more effort perhaps ought to be put into screening to identify the group that is less able, and for whom the criteria for achieving change are good, meaning good case histories and effects that can inspire other businesses to get started. Perhaps projects should also be differentiated between participant groups?

General case study:

Recommendations for programmes for conversion to CE

Over a three-year period the Rethink Business project has worked to steer companies in Central Denmark towards adopting the concept of circular economy. We have compiled these experiences and are offering them as recommendations for future initiatives in the area.

What initiatives are necessary?

The first question that comes up when a project is being carried out is whether any initiative is even called for, and if so what initiative is necessary for a given case.

The principles of resource efficiency, circular economy (CE) and Cradle to Cradle (C2C) are gaining increasing notice, and several programmes have arisen that can assist companies in adopting these ways of thinking, focusing on effective use and re-use of products, materials and waste resources throughout the entire value chain of the business. Examples include the “Grøn Omstillingsfond” [Fund for Green Business Development], “Grøn industrisymbiose” [Green Industrial Symbiosis] and the “Grønne Forretningsmodeller” [Green Business models].

In terms of these programmes, it is Rethink Business in particular that has had the broadest target group, including companies that have not previously worked with circular modalities. Rethink Business is therefore an ideal supplement to programmes for companies that know that they wish to change over to a circular economy.

There is also a need for initiatives to motivate and mature other companies to think along these lines.

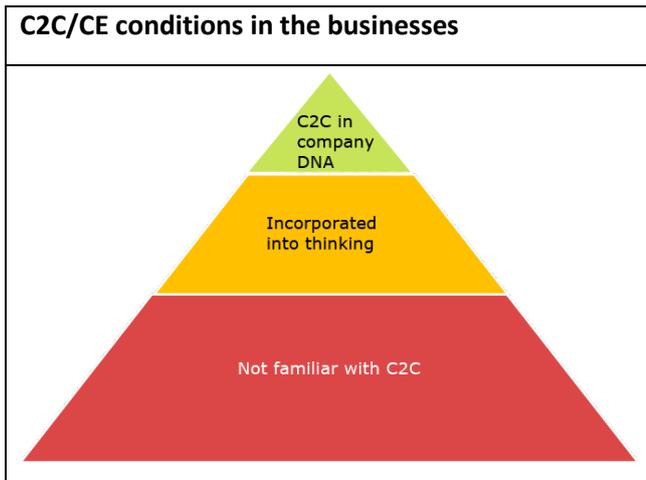
Evaluation of Rethink Business has shown that it is possible to distinguish between three groups of companies in terms of their relation to circular thinking (C2C/CE).

Some enterprises already have the principles of C2C/CE deeply engrained in their make-up. Troldekt, for example, is an older company that has been producing ceiling panels made from wood shavings and cement that can be reused after removal for decades. Other newer companies have arisen around an idea originating from C2C/CE-inspired thinking. A total of five enterprises of this type have taken part in the project.

Other companies have heard about C2C/CE and may have started working with the concept on their own, but do not have the necessary know-how or competence to implement it in practice. A total of 19 enterprises of this type have taken part in the project.

And finally there is a group of companies for which C2C/CE principles are new, and where development measures must therefore be started from scratch. A total of 24 enterprises of this type have taken part in the project.

The three groups are illustrated in the figure below.



The evaluation has shown – precisely as expected – that the further down in the triangle one goes, the more difficult it is to achieve conversion within the timeframe afforded by the project.

On this basis we have put forward two recommendations:

1. There must be sufficient time for the companies to get through concept formation and testing to changeover; experience has shown that it takes 2-3 years to implement changes in these companies. There also has to be sufficient time allocated to finding companies for the projects.
2. In similar future programmes and projects, there is a need for a differentiated initiative, operating with different target groups, and therefore also different goals and interventions. Some companies will move upwards in the triangle – others, working from the top of the triangle, will need assistance with concrete changeover.

Working from these fundamental assumptions, we have issued a series of more specific recommendations as to what elements should be included in a programme to convert companies to C2C/CE.

Recruiting and screening

The above has direct implications for how recruiting and screening are carried out.

The starting point in Rethink Business has been that all companies are suitable, and that C2C/CE can be applied to all of them, especially manufacturing companies. The idea has therefore been that each individual company will receive support that is adapted to its particular needs. This is unlike so many other projects, where companies must be selected to match the initiative.

The evaluation has meanwhile shown that the determining factor as to whether companies can meaningfully be included in a programme like Rethink Business is whether they are ready for change and possess the competence and resources needed for the changeover. Without these fundamental prerequisites, it is difficult to get anywhere with the companies. There is therefore a need to screen of suitable companies, even if the initial assumption has been that C2C/CE can be applied in all of them.

Screening the companies does not mean that only companies that can do everything in advance should be included, cf. recommendation no. 2 above. But a differentiation must be made between factors that consultants will be able to help advance, such as knowledge regarding C2C/CE and project management, and factors that external consultants cannot compensate for, such as anchoring of the project in the company or readiness to change internally in the company. And these basic conditions should already be known by those performing the screening and recruitment to the programme.

This brings us to the next two recommendations:

3. Recruiting shall ensure that only companies ready for change and with the competence and resources to allocate to

the project are included.

4. Within this group, a finer-level screening should also be carried out to determine what type of initiatives are needed and what concrete measures may be relevant.

It is on this very point that Rethink Business has delivered valuable insight regarding forward-looking measures. The evaluation documents in concrete terms that the various types of companies demand different initiatives. Those that have C2C/CE in their DNA need assistance with establishing dialogue with their suppliers and other business partners in order to accelerate and realise business development. Those that have adopted the concept need assistance with securing effective use of resources throughout the entire business. And those who are not familiar with C2C/CE need extra focus on innovation to secure customers and business development.

Company-tailored guidance

As mentioned, many different companies have participated in Rethink Business. Their initial relation to C2C/CE thinking has varied; participants have been large and small, new and well-established, and characterised by many other variations as well. Concrete assistance to the companies is based on a phase model and a toolbox has been adapted to each individual company and its specific situation.

Recommendations based on these conditions include:

5. Base the starting point for the innovation in the company's core business area and create a dialogue-based value chain analysis based on this.
6. Maintain focus on the companies' concrete needs and challenges. It is here that the force of change can be found.

7. Make guidelines concrete, non-academic and uncomplicated.

This places large demands on the consultants going to work with the companies to base their work specifically on the companies, of course, rather than on a definite service and skill that can be practised from home, so to speak. But there is no doubt that there is a clear connection between the skill sets of the consultants who are sent out to the companies and how far these companies get in their changeover.

Based on experience from Rethink Business, consultants must be both specialists and coaches. On this basis, the following recommendations can be made with respect to the consultants going out to work with the companies.

8. The consultants must be able to provide broad-spectrum support – both throughout the entire value chain of the company and in a cross-disciplinary sense.
9. Consultants must assist in conceptualising all the way out to customer use and removal of the products.
10. Consultants must be able to quickly involve area specialists, including for brief consultations or data collection.
11. The consultants must be ready to assume project management, set long-term goals, short-term milestones and to keep the companies on track towards these in order to ensure progress in the project and altitude for the business development ideas that are selected.
12. The consultants should also serve as interpreters for the various public subsidy options.

Organisation

Region Midtjylland is working with an operator

model in which a central actor assumes the overall task, though typically engages suppliers to perform some of the concrete services in the project. In Rethink Business, UMT has been the operator and itself delivered a number of services in the initiative for the municipalities, while COWI together with Vugge til Vugge Danmark has delivered the concrete services to the businesses.

This is a model intended for so-called results-based projects, where target groups and services are defined in advance and then executed in the most effective and cost-effective manner. Here a clear chain of command can be established, and deliveries can be clearly defined.

This can be done to a lesser extent in a development project where companies are tested to a greater degree, learn from experience, adjust the input, have new experiences etc. to then provide insight and knowledge as to how an initiative in any later results-oriented project can best be orchestrated. When such learning loops are required, long chains of command present a challenge.

It is here that Rethink Business enters as an intermediary between a development project and a result-oriented project, because this project entailed method development on the basis of ongoing experience as well as direction according to clear results-oriented milestones.

Based on these experiences, two recommendations can be made:

13. Collaboration saves time. Too much know-how ends up lost when it needs to pass back and forth along chains of command. Resources used to gather together all involved are best used for projects entailing a high degree of development.
14. Specify the operator role so that it matches the degree of development in the project. Development projects

demand a higher level of focus on facilitation of knowledge looks and learning requirements rather than on management, control and fulfilment of results.

Greater interplay

Companies that participated in Rethink Business have achieved great effect in relation to their changeover to C2C/CE-inspired products and services. But there is a need to think in terms of greater internal interplay in the project and between the project and outside world. Moving from linear to circular thinking is not something a business can do on its own.

We therefore make the following recommendation:

15. There is a need to connect businesses inside and outside a project to an even greater degree so they can achieve two types of effects: direct effects in the form of improved utilisation of resources; and indirect effects in the form of joint learning, inspiration, awareness and knowledge sharing.

At the same time, it is necessary to view the project in context with other initiatives. Is it possible to create market pull from the public sector when they are seeking goods and services? Can large companies and waste management companies get involved? Are there additional subsidy options that can help companies finance their development work? And after their changeover, can the companies obtain additional support with commercialisation, capital acquisition etc.?

16. There is a need to integrate initiatives and programmes so sporadic measures will more frequently coalesce into a whole.

Naturally, this is easier said than done. But it is important that new projects do not become so inwardly focused that they cannot meet the target results etc.

It is also important that they remain informed of what is happening around the project and how this can benefit participants. It is here that the operator in development projects can play an important role.

Initiative follow-up

Rethink Business has provided entirely new insight into what initiatives different types of companies have used in order to be able to effectuate changeover to C2C/CE principles. This has been possible because the evaluation has had a clear learning focus, and because the

consultants in the company-oriented teams have applied their knowledge and experience. This access to evaluation proves very useful when launching initiatives in new areas.

17. It is recommended to incorporate a means of follow-up of the initiative as early as possible so the business consultants can collect information on an ongoing basis. And it is recommended to maintain focus on learning evaluation and effect evaluation when initiatives are started in new areas such as C2C/CE.

General case study:

The path through the innovation phase

It takes an open mind and a multi-faceted toolbox to support businesses through the innovation phase. In this case we provide examples of some of the methods that the Rethink Business consultants have utilised to assist companies on the way towards new products and services that promote resource-effective re-use.

Resources under pressure

The world is experiencing increasing pressure on resources. Over the past 10 years, prices on nearly all raw materials have been on the rise and have now reached a historically high price level. This in turn exerts pressure on company revenue and supply chain security.

Population growth is also a concern for business. "I heard Ida Auken say that in 2050 there will be 2.5-3 billion more people on Earth than today. I am blown away by the thought of where all these people will live and where the resources will come from. One thing I am convinced of is that we need ideas today and not 30 years from now. We need to gain control of resources now – we are standing on a burning platform." So says Alexander Laning, Managing Director of Rheinzink, which has taken part in Rethink Business.

Development makes it natural to shift focus towards effective use of resources and materials, and this has also served to create new approaches to business development. Terms such

as circular economy, cradle to cradle, industrial symbiosis, eco-innovation and green business models have come up, and all of them present solutions as to how companies and customers can use resources more effectively.

"Our approach has been to provide the companies a helping hand rather than just a handbook."

***Dorte Glensvig, Project Manager,
COWI***

It starts with open eyes and ears

Rethink Business consultants make their knowledge of these terms and solution models square one for their advisory work. But the dialogue with the small and medium sized companies that have participated in the project did not start off with a bunch of academic terms.

"The Rethink Business consultants from COWI and Cradle to Cradle have been very intent on working from the basis of the individual company and the value chain of which the company is a part. We have an extensive series of tools that can ensure a good innovation process, and we came with an approach that has created growth and resource efficiency in other companies. On the other hand we did not bring a locked-in process or an inflexible concept. Our approach has been to provide the companies a helping hand rather than just a handbook. We have

listened and used our experience to understand what type of company we were dealing with," says Dorte Glensvig from COWI, who is the Rethink Business project manager for Vugge til Vugge (Cradle to Cradle) and COWI.

Value chain analysis gets thoughts moving

One of the tools the consultants used to assist the companies develop profitable green business ideas is value chain analysis.

"Value chain analysis facilitates the path for us and the company to understand and systematise potential areas of investment and to reveal where they can use the waste resources and waste stream occurring from the time the products are manufactured until the end of their life cycle," explains Henrik Sand, a Rethink Business consultant from COWI. He continues: "We ask questions focusing on purchasing, production, use and re-use that get people thinking that maybe they should do things a little differently."

The analysis starts with the purchasing phase. Here it makes sense to find out whether the company foresees any substantial increase or fluctuation in material prices, and whether the materials will be able to be replaced by others or bought somewhere where the potential for re-use is greater.

With respect to the production phase, consultants have directed the companies' focus towards considering whether their products can be designed more intentionally for re-use such as by making them easier to break down into parts. And whether the waste products could have value for the company itself or for others.

The latter proved to be the case for the company Eurotag, which sells roofing paper products. "Roofers cut off significant volumes of roofing felt when they are laying a new roof. The excess is sent for incineration. By asking Eurotag about the

process and challenging it, naturally, we were able to guide the company towards developing and concretising a solution that now means that Eurotag takes back all the off-cuts of roofing felt so it can be reused in the production of new roofing felt," says Sand. So today Eurotag returns excess roofing felt to the manufacturer in Belgium. The manufacturer covers all costs, because the excess material is a valuable resource for them.

Circularity with take-back arrangements

For many of the participating companies, the value chain analysis began in studies of what happens with the product once it has left the manufacturing facility. "Value chain analysis has inspired companies to consider what happens with their products once they are used and disposed of. This has opened the way to ideas as to how product functionality can be improved, for example, so the experienced value can at minimum be maintained over time or create new value for others. Several companies are now in the process of implementing business ideas that will serve to definitely make their value chain circular. Troldekt is a good example of this," says Henrik Sand.

Troldekt manufactures acoustic panels of natural and simple materials – essentially wood and cement. Before becoming involved in Rethink Business, some of the companies' products had already received cradle-to-cradle certification, and the idea of a take-back arrangement gradually began to sprout. "A take-back project is meanwhile a complicated task that involves collaboration with many external parties, and we therefore had difficulty meeting this task. But then we had the opportunity to take part in Rethink Business, and this provided exactly the support we needed," says Peer Leth, Managing Director of Troldekt.

Cradle to Cradle roadmaps

Cradle-to-cradle-roadmaps are another of the tools that the Rethink Business consultants have used in the innovation phase. They are very good at setting long-term, positive goals as to how a company can develop and setting annual milestones on the way to the goal. A roadmap is used to set goals in five areas: The material's health profile, re-usability, renewable energy, water management and social sustainability.

Rethink Business consultant Annette Hastrup from Vugge til Vugge says about roadmaps: "By speaking with companies about the goals they would like to reach within 10-15 years, we are given them access to a set of terms that spur innovative thinking. A roadmap also means that one will gain a clear idea of where one is today, and what measures are needed to achieve goals. The method thereby works as a lever for learning."

Because a roadmap is so short and precise, filling only one side of A4, it is an effective instrument for both internal and external communication of the company's ambitions in circular economy. Troldekt have also chosen to make their roadmap public on their website.

A simple action plan opens dialogue

A roadmap also functions as a good starting point to create an action plan. Action plans are another of the tools that the Rethink Business consultants have incorporated in the task. The action plan was typically developed in conjunction with project start, and it includes a rough list of project ideas and special points for attention. It also describes the company's goals, activities and output in each of the four phases in the Rethink Business project, namely start-up, innovation, testing and conversion.

"We have often used the action plan as a tool to open dialogue with companies," says Annette

Hastrup from Vugge til Vugge. "And so we have kept the template completely simple and with the greatest possible focus on action, because this is the best fit for the small and medium-sized companies that we have advised. And we have been able to see that just the act of getting something down on paper has had a powerful effect, as it makes it easier to maintain focus in the course of a busy day."

However, despite consulting support and effective tools, many companies still find that it can be difficult to prioritise resources to move from the idea stage to testing and conversion, and some companies have chosen to leave the project for these same reasons. "There are many considerations determining what ideas one can take further. We are a small company and thereby do not have extensive latitude in terms of resources or economy. But our idea on office storage was nonetheless so good that we couldn't stop sketching it out," says Lars Gøsta Rold from Workform.

Kristoffer Møller Vangsø, Raw Woods Manager at the sawmill Rold Skov Savværk, says: "Things take time. And things slow down other initiatives. This means that new initiatives should always be priorities over general operations."

The company not only needs to make time for new initiatives, it also needs to have the right employees in position. SUMOpix production manager Benny Jensen saw the process come to a halt when an employee resigned: "New ideas demand time and passionate people. Our participation in Rethink Business came to a halt when a key employee resigned. But we nonetheless came away with good, usable results, including from a sound test at the Institute of Technology. The test showed that the more environmentally correct panels have an equivalent soundproofing capacity to those we usually use."

Anchoring when the dialogue expands

For both Advance Nonwoven and Eurotag, it was in the introductory dialogue between an individual company representative and the Rethink Business consultant when good ideas came up. At other times, the development of ideas stretches over a longer period, as part of a dialogue involving many parties.

According to Dorte Glensvig there is no one method that is better than another. "The employee or employees who develop the idea together with the Rethink Business consultants can then go back and start completely different conversations with their colleagues, and thereby spread the new circular and more sustainable thinking throughout the company. It also happens that the company, with help from the consultant, was able to express the benefits of green thinking in relation to production and sales processes, for example. This strengthens the dialogue with customers and suppliers and thereby also the company's image, and at the same time generates ideas for new measures. And for many companies the new approach is so interesting that it becomes anchored in the company's development work and strategy."

"The workshop gave DanSolar a clearer image of the potential in Africa, and the company later went on to sell the container concept to the UN, which aims to use them to keep medications at controlled temperatures in hot climates."

Linda Høibye, consultant, COWI

Workshop provided insight into a new market

Idea generation in some companies was carried out as a collaboration involving more than a single person from the business. DanSolar, a manufacturer of solar panels, is one such example. The solar panels can be placed on containers, where they can generate current, cooling or heat. The company sees exports to Africa as its strategic goal, but needed a greater level of knowledge of African business practices, technical conditions, financing options and market conditions. DanSolar's Rethink Business consultant Linda Høibye comes from COWI, which as a company has been active on the African market for many years.

It therefore made sense to organise a workshop where representatives from DanSolar could meet COWI consultants with solid experience from their work in Africa.

The company came away from a 2-3 hour workshop with important information on political, infrastructural, technical and cultural factors and about financing options, such as through Danida. "DanSolar has told us that the workshop provided them a more nuanced image of the potential in Africa. And later the company actually presented the idea of containers with solar panels to the UN, which among other things wants to be able to use them to keep medications at controlled temperatures in hot climates," says Linda Høibye.

Fictional case to set creativity free

The value chain analysis, cradle-to-cradle roadmaps and action plans are all tools directly relating to the situation in the individual company. But sometimes it can be easier to review problems and business opportunities if your own situation is not in the picture. The Rethink Business consultants therefore developed a fictional case to serve as a tool to

teach the companies to explore new lines of thought.

The fictional case is about a small company from central Jutland called Tryk 16 that produces, among other things, cooling components for copying machines. The production process itself creates a considerable amount of excess heat. The cooling components are sold to independent servicing contractors who appreciate their high quality. Tryk 16 does its own buying from a global distributor that unfortunately does not always deliver the right volume at the budgeted price. This is a problem, since price competition is tough, particularly from manufacturers in Asia. At the same time, the Managing Director wishes to keep production in Denmark, so he is looking for new business opportunities in a very pressed

market. These are the business opportunities for which the Rethink Business consultants have asked the participating companies to generate ideas.

The fictional case was used in a workshop in which several Rethink Business companies took part. Henrik Sand from COWI says: "The wealth of ideas was impressive. As workshop facilitator, it was interesting to see how the case released a lot of creative energy. The solution proposals ranged from recommendations to join business associations with service contractors and sell cooling component services through leasing agreements to the sale of excess heat to the company's neighbours."

Value chain analysis

The value chain analysis can be used to identify areas where there is potential to develop profitable new business concepts. The focal point is to identify the waste and waste streams occurring from the time the product is manufactured until the finished product's end of life.

Fictional case

The fictional case is a good starting point for reviewing problems and business opportunities away from the context of the individual company's own situation. This can make it easier to step away from conventional thinking and perceived barriers.

Circuit

Circular economy breaks the assumption that materials can only be used once before they are sent for incineration or landfill. In this context, differentiation is made between whether materials are to be broken down and reused through the biological circuit (such as water) or the technological circuit (such as plastic). Dialogue with companies focuses partly on the cycle that can be created with their new products and services and partly on the economic and environmental reasoning, while also addressing the measures necessary to reach their goals.

C2C-roadmap

The format of a C2C roadmap is a single page on which the company's goals in circular economy are defined for a number of years into the future. It provides an overview that is both easy to use as a reminder and communication tool both internally and externally. A C2C road map is focused on the following five categories: The material's health profile, re-usability, renewable energy, water management and social sustainability.

Action plan

The action plan describes project ideas, activities and schedule. Its purpose is to provide a framework, set of goals and concrete terms as to how a business development project can be developed, tested and implemented.

Coaching and brainstorming

The managed process allows room for decision making processes based on both gut feeling and sound judgement. Experience that consultants and company employees have from other contexts is also brought into play.

Workshop

Effective for idea generation and knowledge sharing and ensuring anchoring internally in the organisation. Workshops with external parties are also an effective means towards rapid knowledge acquisition.

Structure and project management

Consultants bring solid experience in structured work in interdisciplinary projects to the benefit of companies that are more accustomed to having an operational focus that do not view their own initiatives as projects.

Matchmaking and networking

Consultants bring their broad industry knowledge and access to area specialists as an effective tool for matchmaking between companies that otherwise would not have known of each other's existence.

General case study: Adapting the idea to fit

During the testing phase, the enterprises taking part in the Rethink Business project add more detail to the idea they believe will have the most market potential.

Once the enterprises involved in Rethink Business reached the testing phase, many of them had an undefined list of exciting, innovative ideas for resource-efficient products and services. The first step in the testing phase was therefore to identify which idea on the list would have the greatest potential – commercially and on the market.

"The important thing during the testing phase is to be able to involve customers or business partners to adapt the idea to fit."

*Dorte Glensvig, Project Manager,
COWI*

This was the point at which the Rethink Business consultants sketched out business models, market surveys and set up templates for business cases and plans.

"Many of the participants needed help to hone their ideas into shape and to draft a plan for working on them during the testing phase. We usually used our own template business models for this purpose, as they give us the opportunity to discuss all the different aspects that have to be tackled at some point during the testing phase," explains Dorte Glensvig from COWI, the Rethink Business project manager for Vugge til Vugge and COWI.

Business idea on one page

A template business model provides a structured and simple framework in which to describe the main elements of an idea on a single sheet of paper. It takes the enterprise through the process of budgeting, as it has to state who the company will work with to realise its idea, what the main activities will be and what input is required. The budget will include income and costs, focusing in particular on sales platforms, customers and how to work closely with them.

The template can also be used to reach the conclusion that the idea may be good, but the timing is wrong. Rajijet is a good example:

"Using the template we have compiled a plan for the way we can work on business development. As a result, we are keen to take part in similar development projects," says Poul Lading, Managing Director at Rajijet.

"I've also found that the template makes it easier for us to put into words the value the idea will bring to customers. What's more, it's a great start to writing a business case that elaborates on the

data compiled for the template," adds Henrik Sand, a Rethink Business consultant from COWI.

Business case shows the cost

A business case is a qualitative and quantitative study of a company's expectations in terms of returns and costs from testing out a business idea. It also provides the basis for calculating the current value and ROI time for the idea, and to estimate the payment flow and risks using a budget detailing estimates costs and revenues.

In other words, a business case enables a company to make decisions on testing and realisation of a business idea, and to determine whether further calculations are needed.

One of the enterprises given help for a business case was Thors-Design, a vendor of specialist furniture made from azobé wood reclaimed from derelict Danish ferry ports. The company was considering expansion in terms of renting out pieces of furniture.

They therefore needed to calculate such items as deposit, rental term, ROI and depreciation to be able to determine a monthly price for rental, service and transport to enable them to negotiate with customers.

The business case indicated that rentals could indeed generate good business for Thors-Design, while the template used to formulate the business case was found to be so user-friendly and company-specific that Thors-Design will continue to use it to find the right price when renting out their products.

Halling Autoophug also use the Rethink Business consultants to produce a business case. The company's new business idea required investment in plant and the building of new production and warehouse facilities, making formal planning something of a necessity to be able to assess possible consequences to get

potential investors interested in the project. "Being able to describe the business model in detail and examine the case in detail was of great benefit, helping us to feel more confident. It gave the project structure, and I now have a plan for implementation," says Managing Director Gert Koustrup.

"Being able to describe the business model in detail and examine various scenarios was of great benefit, helping us to feel more confident."

Gert Koustrup, Managing Director, Halling Autoophug ApS

More in-depth market surveys

Not all enterprises can go direct from a business model template to a business case like Thors-Design and Halling Autoophug could. Some of them needed to go into more depth to analyse uncertainties. In such instances, they were offered help to perform more detailed market surveys.

"We used market surveys as a means of providing greater clarity for projects," says Anette Hastrup from Vugge til Vugge, acting as Rethink Business consultant for Rheinzink, one of the enterprises that had a market survey performed.

Pressalit also had a market survey performed for their new business idea, which was intended to find resource-efficient ways of recycling a substance used to manufacture toilet seats. Using recycled materials had always been impossible,

because the smooth surface necessary for hygienic reasons could never be reproduced.

That's why Pressalit were interested in finding out if the substance could be used for other purposes. The Rethink Business consultants performed online research, talked to specialists at COWI and found out that the substance is both flame-inhibiting, anti-bacterial, can be used as a binding agent and for de-icing.

Armed with this knowledge, the consultants started to call businesses deemed to have a need for such qualities in their products, and found three who responded positively, involved in manufacturing insulation materials and roofing felt.

"Pressalit then took over contact, and at this time all three are testing the substance in their products," reports Stine Skouby Asnæs from COWI, who worked as a Rethink Business consultant for Pressalit.

The market surveys were designed by Rethink Business consultants and consisted of a combination of quantitative and qualitative data. COWI's Henrik Sand was responsible for most of the surveys, and explains: "The quantitative data was related to a large degree to hard facts, making things more understandable. I think about things such as pricing, growth, market support and investment costs. But to be able to evaluate all such quantitative data, you need to know and understand the market, and that's why it has to be combined with qualitative data. We've been able to find that in trade magazines

and news media, but usually conduct interviews with people in the industry and professionals within certain trades. The fact that COWI employs specialists from a wide range of engineering and environmental disciplines has been a particular boon in this respect, as we can simply call a colleague to check the validity of quantitative data."

Business plan as the final step before change

A business plan brings together all the ideas that have been formulated in the business model, business case and market survey (if conducted). The initial work by an enterprise to test and implement its business idea also forms part of the business plan.

Its main elements are a summary of the business idea that describes the objective and background, content and value proposition, development perspectives, a budget and appraisal of potential earnings. There is also a description of the business model and a business case – the latter element is a plan for developing the business idea and putting it into practice.

Four enterprises in the Rethink Business project reached the stage of formulating a business plan. They are: Halling Autoophug, Advance Nonwoven, Troldekt and Gardin-Lis. Others are planning to do so before making the final decision on moving forward to the change phase.

Business model template

A business model template provides a structured and simple framework in which to describe the main elements of an idea. It can be used to define costs, earnings, activities and the value the business idea should generate for customers.

Business case

A business case is a qualitative and quantitative study of a company's expectations in terms of returns and costs. It allows a company to make decision on testing and implementing a business idea and shows whether any more in-depth calculations are needed.

Market survey

Where more certainty is needed on the potential of a business idea, market surveys are very valuable for revealing the composition of a value chain, processes and market conditions in general.

Business plan

A business plan describes how a new business idea will be developed and run. It also summarises the business model and case, and can be used for presentations to potential partners and investors.

Advance Nonwoven A/S: From concept to factory

For the company Advance Nonwoven A/S, participation in the Rethink Business project has led to the development of an entirely new business model and contact with several potential customers.

On having a bright idea

The company Advance Nonwoven A/S on the peninsula of Djursland has developed machinery that uses a new patented Carding Airlaid Fusion Technology (CAFT) to form endless non-woven mats of recirculated fibres or granulate materials, thereby making the materials usable for other purposes. The mats can vary in thickness and density and can be used in applications such as insulation, mattresses, upholstery and as planting fabric in nurseries.

When Advance Nonwoven registered for the Rethink Business project, it was with the aim of finding more customers for a turnkey machine system that can produce items such as insulation batting from various types of fibre material.

The project meanwhile shifted focus the very first time the company was visited by the business-oriented team from Rethink Business. In this case, the Rethink Business consultant essentially suggested that Managing Director Stig Gamborg instead establish a "multi-source facility" that could work on a contracting basis for other companies without sufficient volumes of waste or raw materials to warrant investment in their own system. "I could definitely see the potential in this idea," says Gamborg. "This would essentially

make it possible for even smaller companies with relatively low volumes of waste to utilise our technology. And this also serves to make it possible to recycle many more different types of material."

"Our technology can convert companies' waste and residual materials into customised products that they themselves can either use or resell. We can thereby provide the platform companies need to get started with take-back arrangements or the like."

***Stig Gamborg, Managing Director,
Advance Nonwoven A/S***

Moving from idea to testing

Once the idea of a "multi-source facility" had taken shape, the next step became clear. It was a matter of identifying a suitable number of potential customers who would be able to deliver enough material for operation of the facility in two team shifts. A business plan and a business case would then be developed to serve as a basis for decision making. The Rethink Business consultant was also able to assist here by

initiating contact with companies, including some of the other participants in Rethink Business who wanted to reuse production waste or worn-out products that they had accumulated, such as through take-back arrangements, for example.

Introductory meetings were held with interested companies to review wishes and opportunities for "waste conversion" and the potential in the services that the forthcoming "multi-source facility" would be able to offer. Some of the companies immediately underwent testing to determine whether their waste materials could be converted into usable products in Advance Nonwoven's full-scale trial facility. "The trials looked promising, and we then selected three potential client companies as a basis for the business plan and calculation of the business case," explains Gamborg.

The now completed business model intends to establish a completely new company, Convert A/S. It will be able to offer customers a complete package solution that also includes warehouse space for storage of the customers' waste materials, a pre-processing unit for shredding material and a post-processing unit for bundling of fibre and granulate, forming etc.

"Convert A/S's offer for a package solution in which materials are received, processed and then delivered as custom products from one and the same location is an innovation, and this model significantly differs from the solutions that the traditional re-use processes and waste management companies can deliver," says Gamborg.

Shifting business towards new concepts

With a well thought-out business plan, a robust business case and a clear implementation plan in place, Advance Nonwoven started to realise the new business model, ultimately leading to the establishment of the company Convert A/S.

The plan is for Convert A/S so be ready for production before the close of 2015. A number of challenges remain to be solved before that time. The facility will be scaled up to match the facilities Advance Nonwoven has built until now, there will be several "secure" customers, and the necessary capital for facility construction and establishment of the new corporate entity will be obtained.

Stig Gamborg is nonetheless optimistic: "There will naturally be a need for further product development and test production, and the challenge of specifying and adapting new facilities to meet customer wishes remains. But the business case looks sensible from both the customer perspective and that of the new company, and it has given us faith in the project," says Stig Gamborg.

"Once the business model was created, the project quickly took shape. But without concrete help and persistence on the part of the Rethink Business consultant, we hardly would have made it to real testing and implementation."

***Stig Gamborg, Managing Director,
Advance Nonwoven A/S***

On strategy, leadership and employees

With only six employees, the project is a handful for Advance Nonwoven, and there was a clear need to bring in the resources and competence necessary to turn the business idea into a reality. The consultant from Rethink Business therefore recommended that Advance Nonwoven apply for a financial subsidy from the accelerator programme "Nye Grønne Forretningsmodeller" [New Green Business Models], in which the Erhvervsstyrelsen [Danish Business Authority], together with the regions, was looking to promote exactly this type of project. "It was exactly the extra steam we needed to go further," says Gamborg, pointing out: "If we had not received support to hire in project management and assistance in developing the business plan, we would hardly have been able to get it done – and definitely not in such a short time."

Convert A/S is expected to create around 15-20 new jobs over the next five years. Already in the company's first year, seven new employees were hired to help run the company.

Market size, market access and branding

Participating in Rethink Business has been instrumental in opening new doors for Advance Nonwoven. "Since our involvement in Rethink Business, we have generally experienced increasing interest in our business and the possibilities inherent in our unique technologies," says Stig Gamborg, continuing: "In addition to the Rethink Business companies mentioned, we have also been contacted by other companies and municipalities that have heard about our project. We were also interviewed about the project and discussed in several media channels, and so Rethink Business has also helped increase our visibility."

Word of mouth has thus paved the way for new partners and new development projects who can strengthen Advance Nonwoven's position as a

central actor and business partner in circular business models.

"Rethink Business has given us access to an entirely new customer segment, and we now see ourselves as a focal point for companies changing over to circular economy."

***Stig Gamborg, Managing Director,
Advance Nonwoven A/S***

The business advantages of working with the principles in Rethink Business

Convert A/S's customers will typically be companies assuming a Cradle-to-Cradle or circular economy approach that wish to have full control over their own materials and at the same time ensure traceability in the products in which these materials can be reused.

Stig Gamborg explains: "We anticipate getting enough customers and materials for a production facility with a capacity of 3,000-9,000 tonnes of material per year, depending on the product and material."

The company will be located in Jutland, central to customers and their waste streams. And if the business model is a success, Gamborg expects that in two to five years it will be possible to open another Convert A/S, possibly on Zealand.

Finally, Stig Gamborg expects that the new green business model will mean that Advance Nonwoven, with Convert as a reference, will be able to export environmental technology of

turnkey facilities that make green conversion possible for other companies.

The environmental benefits of working with the principles in Rethink Business

The environmental effect of waste conversion in tomorrow's new company Convert A/S are achieved in client businesses, because they are able to reuse production waste and worn-out products rather than having the material go to incineration or a landfill, resulting into CO₂ emissions and pollution.

Customers will generally be able to save new raw materials and energy in the manufacturing process by recycling their waste with Convert A/S, where energy consumption (and thereby also CO₂emissions) from the process are markedly lower.

The manufactured products must as a general rule be able to be recirculated again and again, so that waste in line with the Cradle to Cradle principles become a resource that creates added value for the businesses in a circular economy.

Guidance from the business-oriented teams during the process:

When asked about the guidance offered by the business-oriented team during the project, Stig Gamborg says: "As mentioned, Advance Nonwoven has only a few employees, and it has therefore been highly significant for me to be able to receive concrete help and support from our Rethink Business consultant, who of course brings broad experience from manufacturing companies and practical implementation of Cradle to Cradle. In addition to contributing business ideas and company contacts, she was able to maintain progress and oversight throughout the entire project period. It was also the consultant who helped us get into the business subsidy programme so that we could

execute the extensive project after Rethink Business," concludes Gamborg. This is in reference to the financial subsidy that Advance Nonwoven received for the implementation of the project from Region Midtjylland through the Nye Grønne Forretningsmodeller programme. The region is thus a part of ensuring that what started as an idea in Rethink Business will hopefully end with making it possible for an entirely new company – Convert A/S – to see the light of day.



Company name

Advance Nonwoven A/S

Company executive interviewed

Managing Director, Stig Gamborg

Primary product

Turnkey facility for production of non-woven products

Number of employees

6

Turnover

DKK 22 million in 2013

Focus area(s) in the project

Establishment of an entirely new company that, on a contractual basis, will serve manufacturing companies wishing to convert their waste and remainder materials to custom products that they can use themselves or resell.

Eurotag: Cut-offs of roofing felt used to be burned. Now it's used to produce new felt

Eurotag's participation in Rethink Business means that up to 60 tonnes of cut-off roofing felt will now be collected and used as a resource in the production of new rolls of felt.

Getting a good idea

Eurotag has always focused on solutions that are kind to the environment and energy-saving. But the Rethink Business project was the occasion on which these two aspects came into even more focus.

Dialogue with a Rethink Business consultant helped Eurotag to identify and discuss the waste and material flow arising from when the product is sold until it is replaced.

What happens to the felt cut off by roofing contractors when laying and repairing roofs was of particular interest. Up to 60 tonnes of felt is scrapped every year and previously this has always been collected for incineration.

It is now considered a valuable resource that can be incorporated into the production of new felt.

From idea to testing

Eurotag involved its roofing felt manufacturer to discover whether it was worth trying out an idea. The manufacturer said that off-cuts were a valuable resource that it was willing to pay for, as it was a financially and environmentally attractive alternative to buying in new raw materials, especially bitumen with its high oil content,

which is normally used in a number of its products.

"The Derbigum factory in Belgium covers most of our costs, as being able to reduce their purchases of ever more expensive bitumen for a roll of roofing felt is a bonus for them."

Peter Kranz, Managing Director, Eurotag

Adjusting business to new concepts

Eurotag entered into an agreement with the Derbigum factory in Belgium to get the costs of collecting off-cuts covered.

Eurotag big bags were then bought in and distributed to Danish roofing contractors to fill with their off-cuts. When they are full, Eurotag collects them.

Once a total of up to 15 tonnes has been gathered, it is transported to the Derbigum factory in Belgium on the same trucks that deliver new products to Eurotag.

Collection and recycling of roofing felt means that resources that used to be incinerated are now recycled and reused.

Strategy, management and staff

Eco-friendly and low-energy solutions have always been part of Eurotag's strategy and management. Rethink Business brought more focus and room to manoeuvre to the implementation of the company's strategy.

"Being able to make money from recycling our off-cuts makes good sense and gives us a feeling of satisfaction."

Peter Kranz, Managing Director, Eurotag

Market size, access and branding

Working with the project and the Cradle to Cradle concept meant that Eurotag actively promotes its climate-friendly solutions.

Eurotag's Managing Director, Peter Krantz, believes that eco-friendly, low-energy solutions are becoming ever-more important to the construction industry, where growing demand from the customer for sustainable solutions and green accounts have become big business. "The same applies to roofing, where Cradle to Cradle has proven to make a lot of sense with regard to the environment and budgets," says Kranz.

Eurotag therefore arranged two Cradle to Cradle conferences in 2013 – one in Copenhagen and one in Aarhus.

Commercial benefits gained from working with the principles of Rethink Business

The collection of off-cuts has proved that there

are commercial gains to be made from recycling scrap roofing felt as a resource – and not just from a marketing perspective, but because there are buyers for these leftovers.

Environmental benefits from working with the principles of Rethink Business

There are major environmental benefits from avoiding incinerating resources. Firstly, there are massive savings in terms of CO2 emitted to the atmosphere from incinerators. Secondly, the environmental impact from returning off-cuts to Belgium by road are outweighed by reductions in having to buy in new raw materials made from oil.

Moving forward

The next step is to test the concept, document the environmental and particularly the economic gains and then look at ways of expanding the concept to other countries selling Derbigum products.

Company name

Eurotag

Employees interviewed

Managing Director Peter Kranz, 70 15 15 17

Primary product or service

Roofing felt products

Number of employees

6

Turnover 2013

DKK 40 million. Broken down into: Derbigum products DKK 30 million, others DKK 10 million.

Focus area(s) ref. Rethink Business

Returning off-cuts of roofing felt to be used in new production.

From water bottles to 100% recyclable carpet

Danish carpet manufacturer, Fletco Tæpper, took part in a Rethink Business project workshop on ideas for business development. Fletco is launching a new carpet primarily made of used PET bottles that can be melted down to become new plastic products.

Getting a good idea

Fletco Tæpper has been working on increasing sustainability for its products aimed at the home and contract markets for some years. But carpets consist of a range of different materials, including the backing, the woven mat, glue and wool – making recycling a complicated affair.

Fletco Tæpper developed a 100% polypropylene carpet some years ago – a material best known as sports clothing – which is fully recyclable as it can be melted down. This was a new product that weighed less than other carpets, making it cheaper in the eyes of consumers, who preferred more conventional carpets. Consequently, Fletco decided to halt development.

But the idea of a high-quality recyclable carpet lived on and was eventually the reason why Fletco decided to take part in Rethink Business, when a workshop shed new light on the idea.

The challenge of producing and selling a 100% recyclable carpet was taken up again, and after the workshop, Fletco launched an ambitious development programme.

"As a result of the project, we started up a development programme to produce a 100% PET carpet that consisted mainly of recycled materials."

Bent Jensen, Technical Director, Fletco

From idea to testing

Developing a 100% recyclable carpet is easier said than done. Especially when the carpet has to live up to consumer expectations of price and quality whilst being produced primarily of recyclable materials.

After the Rethink Business workshop, Fletco's Technical Director Bent Jensen was on a business trip in the USA. He noticed how polyethylene terephthalate (PET), used to make such products as water bottles, was being increasingly used within the American carpet industry. However, American carpets were made of new PET and not recycled materials.

The trip to the USA indicated that PET could be a good material for carpets, but did not solve the riddle of how a 100% recyclable carpet could be developed for Fletco.

During 18-month development programme, Fletco gradually discovered how not just half, but the entire carpet could be produced from PET, which would then be recyclable.

"It seemed to be a constant process of two steps forward, one step back," says Jensen, adding "We had to develop materials that did not exist in the form and for the purpose we wanted."

"We thought that it was possible – we just didn't know how!"

Bent Jensen, Technical Director, Fletco

Jensen discussed the idea with his colleagues and with the Rethink Business consultant. Fletco particularly involved its German partner and its suppliers in the development programme to jointly analyse, assess and try out possible approaches and solutions.

"The development programme has been no more expensive than for other products, because we consistently sought to use our existing production machines. But an innovative approach to the use and composition of materials represented a challenge," states Jensen.

They were therefore delighted when tests showed that PET and rPET (as PET recycled from other products is called), was of higher quality than Fletco expected. Colour retention in particular proved to be better than comparable carpets.

The first 4,000 m² of 100% recyclable carpet was produced in January 2015 at Fletco's factory in Bording near Ikast, within Region Midtjylland.

The carpet is made of 80% rPET and 20% new PET, and overall is 100% recyclable because it can

be melted down and transformed into new plastic products, including new recyclable carpets.

Production of sustainable quality carpets

To begin with, the carpet will be introduced to private customers on the German housing market.

But test results are so promising that Fletco has already started development of a similar recyclable product for the contract market.

The carpet is no more expensive than other carpets, and consumers will not have to pay any extra for a recyclable, quality product.

"We had hoped that recycled plastic would be cheaper to source, but the process of shredding old plastic bottles to prepare them for new production is not free," explains Jensen.

Meanwhile, Fletco has been able to use its existing sales channels to market the carpet, which has kept costs down and helped the company to successfully introduce it at a competitive price.

The big question now is whether the market is ready for a 100% recyclable carpet. "The first customer feedback has been good, which is promising!" says Jensen.

Strategy, management and staff

"A 100% recyclable carpet has never been developed and launched before, so it needed a lot of work and testing before we were satisfied," states Jensen.

The process required a high degree of innovation from the management, and involvement of the right people to ensure the development project moved in the right direction at the right speed.

Fletco has run a number of successful development projects, and is familiar with the

often large number of tests and problems that can arise. "But all that's needed is good input from the right partners to work around the main problems, and teamwork to find the right solutions," concludes Jensen.

Market size, access and branding

As the price level for and quality of a recyclable carpet is around the same as conventional carpets, there is significant market potential for an rPET product. All that's needed to sell the product is to persuade the consumer to buy "green".

That's why Fletco buys in rPET materials from certified suppliers and sells the carpets with a special stamp on the back to explain that this is a product made of recycled materials that can be recycled once more after use.

Applying the Rethink Business principles

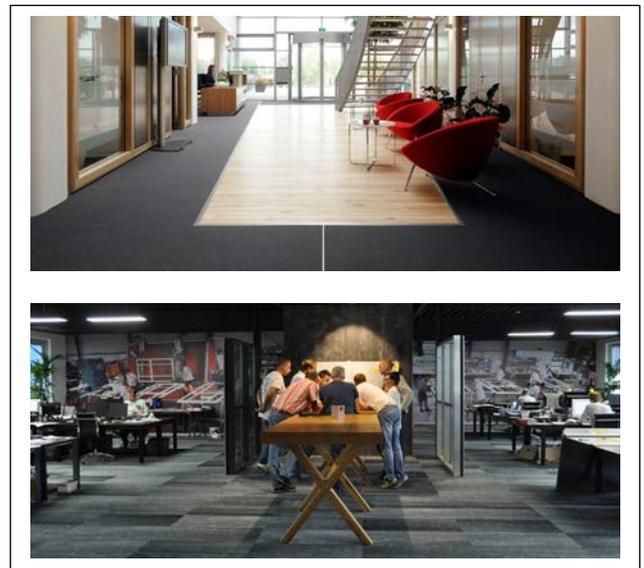
Fletco used the principles of circular economy as inspiration for development of its new product.

"Just having a minor part of the product that was recyclable was not enough for us," says Jensen, and adds: "It may well have been a good start, but because we believed that we could produce a 100% recyclable carpet made of recycled materials, that was what we decided to go for."

Environmental benefits from working with the principles of Rethink Business

A 100% recyclable carpet made of 80% recycled plastic has significant environmental benefits.

Refuse is converted to a resource, and the demand for recycled rather than new PET is increased. Those two factors can potentially set an even higher environmental standard for the production of carpets when the degree of recyclability becomes a competitive parameter.



About the business

Company name

Fletco Carpet

Company executive interviewed

Bent Jensen, Technical Director

Primary product

Carpets and carpet tiles

Number of employees

45

Turnover

-

Focus area(s) with regard to the project

Recyclable carpets made of recycled materials

Troldtekt: Take-back scheme ensures optimum use of resources and reduced CO2 footprint

Participation in Rethink Business gave Troldtekt the chance to set up a return system to make better use of resources and improve business performance

Getting a good idea

Troldtekt produces acoustic panels of natural, simple wood and cement. The company has devised a Cradle to Cradle strategy (C2C) for sustainable product and business development, and had already achieved its first Cradle to Cradle certificate for certain products when the chance came to take part in Rethink Business. The project's focus on resource-efficient and circular business models was perfect, as Troldtekt wanted to set up a returns scheme for old acoustic panels.

"We had decided to work with sustainability according to the C2C principles in which high-quality materials, sound economic principles and positive social aspects go hand in hand. Recycling resources was key, which is why we thought that participation in Rethink Business was ideal for us. The timing was also perfect, as we were just about to launch our take-back project, a complicated job involving collaborating with a wide range of organisations, which is why it was going to be difficult to undertake alone," says Managing Director Peer Leth.

"We are seeing growing demand from architects, the authorities and other stakeholders for the recycling of building materials. By setting up a returns system and making efficient use of building and demolition refuse, we will be able to satisfy such demands and generate more turnover."

Tina Snedker Kristensen, Marketing and Communications Manager, Troldtekt A/S

Marketing and Communications Manager Tina Snedker Kristensen adds: "Traditionally, we have only focused on our production waste that we send for composting allowing it to return to nature as a soil improvement agent, which counts in our favour in our environmental product declaration and C2C certification. Taking back used products turned out to be quite a challenge because we can't use them all in our own production, and because our product has a long service life. Our take-back project therefore required partnering with other members of the

industry. Recycling materials means that we could achieve a higher C2C certification level and our CO2 footprint becomes smaller in our environmental product declaration. That means it also gives points for building certifications such as LEED, BREEAM and DGNB." Troldekt's new green business model is therefore to the benefit of the customer, the environment and Troldekt's own business.

In addition to Peer Leth and Tina Snedker Kristensen, Troldekt's Factory Manager, responsible for product development, is also involved in the Rethink Business project, which requires closely cooperation with a number of external parties.

Going from idea to testing

Throughout the innovation phase, Troldekt developed the idea, identified possible solutions and partners, and performed simple tests at experimental level. The business model has now taken sufficient form to be tested in the real world.

The collection of building and demolition waste is performed in partnership with municipal recycling stations and major reclaimers such as Genbrug Midt and RenoSyd. A number of local authorities will set criteria for contractors in future tenders involving sorting building and demolition waste at source.

"We've established a good working relationship with four local authorities – Aarhus, Skanderborg, Silkeborg and Favrskov – that we hope will mean safe, correct collection and recycling of old acoustic panels. And in collaboration with RenoSyd we will test collection methods, costs, volumes etc. over the next few months to compile usable data," says Leth.

Troldekt are working on two different solutions for reclaiming waste from recycling stations.

Peer Leth explains: "We're looking at two alternatives: one is highly innovative with a lot of potential for the environment and our business but involves new technology, and we are therefore also looking at an alternative in which Troldekt's own refuse can be used as a biofuel substitute for fossil fuels, with the by-product from incineration being used in the production of new cement. That means that recycled products will also be included in the production of new acoustic panels.

The challenge lies in finding a solution that is technologically, practically and financially feasible. We are therefore putting a lot of effort into developing a usable business plan and case before going ahead with implementation," states Leth.

Acoustic panels from Troldekt



On strategy, management and personnel
When asked what was required of Troldekt's

management to start up the process, Leth answers: "What's important when entering into a change process towards new business models as we are is that the management engage and lead by example. But the whole organisation has to be behind them, otherwise it loses credibility. That's why we've also put a lot of effort into communicating the Cradle to Cradle strategy internally and externally."

"It would have been difficult for us to set up a take-back scheme alone, as it involves a large number of bodies. We've structured the job and picked up a lot of new and highly useful contacts inside and external to the project."

Peer Leth, Managing Director, Troldekt A/S

Working closely with a Rethink Business consultant, Troldekt drew up a Cradle to Cradle roadmap with targets for where the business wanted to be by 2022. Setting up the take-back system for old products in 2014 was one of the milestones, and an important criterion to be able to meet a series of the other targets in the plan.

According to Marketing and Communications Manager Tina Snedker Kristensen, the key is to promote the concept of sustainability as widely as possible, and she has often been invited to talk about Troldekt's C2C programme since the start of the Rethink Business project.

"Sustainability is not just about saving energy, but should be incorporated into every process and product a company produces if it is really to make an impact. Our C2C roadmap thus became an efficient communications tool with broad appeal thanks to its clear targets and positive message. And communication implies action, meaning that our C2C roadmap is also an excellent tool internally."

Commercial gains from working with the principles of Rethink Business

By using resources better, Troldekt can prove the sustainability of their products and how they live up to the growing demands of architects, the authorities and other stakeholders for building materials to be able contribute to the environment classification systems – and not just in Denmark, but also on the European markets.

Environmental benefits from working with the principles of Rethink Business

Troldekt's products often end up inappropriately at landfill sites or municipal incineration plants, which is a waste of resources. Basically, the product can be composted and returned to nature, but as recycling stations are often not aware of whether it has had some form of surface treatment when in use, they opt for incineration or landfill instead. Once the take-back scheme for building and demolition refuse is set up, the panels will be collected from recycling stations around the country and reused.

Moving forward

Troldekt is currently focusing on implementing the take-back scheme in Denmark, but according to Managing Director Peer Leth, they do not intend to stop there: "Our plan is to expand the scheme to the European market by 2016. We want to be re-using 90% of used products in

Denmark by 2022 and 70% on the other European markets."

Troldtekt is also working on process and product development and social aspects in line with the principles of C2C. "We aim to get all our products C2C certified by 2022, with the first ones achieving the Gold certificate by 2018," says Marketing and Communications Manager Tina Snedker Kristensen.

"Rethink Business has given us the opportunity to realise a take-back scheme much faster and more efficiently than if we had to go it alone. It also lets us include the effect in our environmental product declaration much earlier than expected."

Tina Snedker Kristensen, Marketing and Communications Manager, Troldtekt A/S

About project guidance along the way

Rethink Business consultants that Troldtekt had already worked with on C2C certification gave the company guidance and feedback. Tina Snedker Kristensen says: "Being able to carry on working with the consultants from Rethink Business made it easier for us to get started with the project, and to move it up a gear in line with our C2C strategy. The project required a lot of thinking outside the box and inter-organisational teamwork, new ways of working together and the involvement of a number of different parties. And this was where the Rethink Business consultants were great at giving us feedback along the way. We gained new business ideas and suggestions for new solutions and partners for example, and they helped manage the project allowing us to direct our energies where most needed."

Company name

Troldtekt A/S, Sletvej 2A, 8310 Tranbjerg , Tel. +45 87 47 81 24

Employees interviewed

Managing Director, Peer Leth

Marketing and Communications Manager, Tina Snedker Kristensen

Primary product or service

Acoustic wood/cement panels

Number of employees

65

Turnover 2013

-

Focus area(s) ref. Rethink Business

Take-back scheme for Troldtekt building and demolition refuse to recover the highest possible value and reuse production waste for the production of new, redesigned products.

Rheinzink Danmark A/S:

Closer to a take-back system

By taking part in Rethink Business, Rheinzink Danmark became convinced that there was money to be made from taking used zinc back. The next step is to get the technology and logistics in place and realise a pilot project.

Getting a good idea

Rheinzink Danmark is a sales subsidiary of a German parent company that produces sheets and coils in titanium zinc. The company supplies roofing systems, gutters and facades,

and its product was Cradle to Cradle certified in 2010, giving a green profile on the product side. Rheinzink is the only manufacturer in the zinc industry to become Cradle to Cradle certified.

Rheinzink Danmark had many good reasons for taking part in Rethink Business, but quickly decided to focus on developing an idea to take used zinc back and use it for the manufacture of new products.

"Our high-end product is currently exported as scrap and down-cycled to lower-grade products, such as galvanising lamp posts. That's a shame, because it could be up-cycled to give it a much higher value," says Alexander Laning, Managing Director of Rheinzink Danmark.

The idea has been under consideration at the company for some time in recognition of the fact that zinc is a limited and expensive resource. The project is also so big that it was deemed to be

necessary to concentrate on a single idea to get the best out the help available from Rethink Business.

"The idea is not new as such, but Rethink Business has been a massive help in getting things done and moving further along to doing something practical. It's gone from being a slightly exotic idea to real opportunities and processes," says Laning.

"Our high-end product is currently exported as scrap and down-cycled to lower-grade products. That's a shame, because it could be up-cycled."

Alexander Laning, Managing Director of Rheinzink Danmark A/S

From idea to testing

The first hurdle in realising the idea was the fact that the company is German-owned and all production is performed in Germany. The parent company did not fully understand the concept, but is good at listening to its subsidiaries.

When Rheinzink decided to become Cradle to Cradle certified, the idea came from the Dutch subsidiary. Rheinzink Danmark was inspired to devise a business model for take-back in

Denmark and then to “sell” the idea to its parent company.

The plan is also to contact the Dutch subsidiary to recruit an ally.

Rheinzink Danmark's original idea for take-back was a leasing model or take-back guarantee. Their Rethink Business consultant looked at the opportunities, and came up with a less complicated solution called “urban mining” – offering to buy scrap zinc back from the customers in what would be called a take-back scheme.

“In actual fact, this was the last solution we looked at, but had to admit it was the right one by the end of the project period,” states Laning.

It also became apparent how the model could be used to market new products.

“It will give us and our customers a green profile and image that will be exceptional in our niche.”

Alexander Laning, Managing Director of Rheinzink Danmark A/S

“If we can say to a tradesman ‘if you come back with the old product you can have a new one for half price’, we know that they are going to jump at the chance,” says Laning, adding, “It will give us and our customers a green profile and image that will be exceptional in our niche.”

Laning is now firmly set on implementing the idea.

“This is such a strong idea that it simply cannot go wrong. It's a bit funny, as you get more and more

focused on it. We've been thinking about it now for some time, and if we can succeed, it will be here to stay. Construction is accelerating throughout the world whilst resources are getting more and more expensive – we *have* to find a solution,” he emphasises.

Adjusting the business to new concepts

Rheinzink Danmark expects that considerable resources will have to be used to prepare the business for take-back. One of the things that will have to be done is an active campaign to engage customers and suppliers.

“The hard part is getting an excellent idea onto the market. But there is such a lot of money in this scrap that it can pay for developing the logistics,” reassures Laning.

The optimal take-back scheme entails getting the zinc back into the company's own production line. That will not be possible during the testing phase, because the parent company is not involved. But Rheinzink Danmark has found a partner able to handle re-smelting, all that is needed are solutions for the logistics and technical aspects before it can be tried out in practice.

Strategy, management and personnel

A core of three or four Rheinzink Danmark personnel are involved in the project, something that makes an impression. Laning is convinced that their dedication helps retain the interest of the personnel.

“A good story adds drive and positive energy to the business side. We believe that this could be made into something exceptionally fantastic, which will create massive engagement,” he says.

The personnel are generally positive towards green change, but the development process also creates engagement.

“We all agree on the green aspect, because we already have a very green product, but getting into a strong development process has given a massive boost to our personnel,” states Laning.

Market size, access and branding

If Rheinzink succeeds in its take-back scheme, as the pioneer for the zinc industry it will have a clear competitive edge.

“I may be wrong, but if tradesmen don't buy our product at half price and become part of a good story, then I'll eat my hat,” concludes Laning.

Commercial benefits gained from working with the principles of Rethink Business

Rheinzink Danmark expects to be able to increase turnover on the Danish market by 60-70% over 5-6 years, once the take-back system is up and running.

That will be reflected in the number of employees, expected to rise by 30-40%.

“And that's just in our company – not counting the logistics system that will have to be built,” points out Laning. He also expects that the scheme will mean good business for the company's partners.

“We may be able to run this as a common value chain and it will be exciting to see which of our dealers will run with it. They will feel the benefit of a good story in the same way that we do,” he says, and adds that it certainly will not be worth missing out on.

“The wave of returned materials will rise over the next 10 years, which means there is enormous potential in building a case for it now so that we can convince our parent company that we need to move now to be ready for the future.”

Laning believes that the company will be ready to test the Danish market at some time in 2016.

Environmental benefits from working with the principles of Rethink Business

Rheinzink Danmark will gain no immediate environmental benefits from a take-back scheme, its primary interest is ensuring access to raw materials – including in the future as they become scarce. And that will be an environmental benefit for society as a whole.

“That's great, because we can make money and still show that we care for the environment. We can be a part of the solution and a good example to other enterprises that it really CAN be done,” says Laning.

“That's great, because we can make money and still show that we care for the environment.”

Alexander Laning, Managing Director of Rheinzink Danmark A/S

VRT's guidance along the way

Rheinzink's Rethink Business consultant undertook a lot of research and project management, and acted as a sparring partner – a major factor for developing an idea into a project that can be realised.

“Having a project manager was a great help. It brought another pair of eyes and a systematic approach, taking a critical look at where we are at and what we can do – i.e. where the low-hanging fruit is to be found,” concludes Laning.





About the business

Company name

Rheinzink Danmark A/S

Senior personnel interviewed

Managing Director, Alexander Laning

Primary product

Titanium zinc sheets and coils for e.g. roofing systems, gutters and facades

Number of employees

10

Focus area(s) with regard to the project

To study opportunities for setting up a take-back scheme for zinc

Flexiket A/S: Catalyst for recycling refuse

The *Rethink Business* project inspired Flexiket A/S to advise its customers on their resource strategies, with news on how to manage, minimise and recycle refuse.

Getting a good idea

Flexiket is a label manufacturer with no real control over its value chain or use of its end product. Its labels are sold to customers who stick them on their own packaging or the end product itself. "Naturally, that shouldn't stop us from working more with sustainability and we therefore decided to look at where waste and refuse are generated in our own production process," explains Charlotte Jensen, Quality and Environment Manager at Flexiket.

The company's Rethink Business project started with an analysis of its main refuse constituents and procedures for refuse sorting.

One of the biggest constituents turned out to be the backing paper from label production which was actually sent to be incinerated in all sorts of sizes and quantities, from a single sheet to giant rolls. When this backing paper is incinerated, it can emit very high levels of energy.

The Rethink Business consultant and Flexiket therefore began to brainstorm ways of recycling the silicon-coated backing paper, using the consultant's experience from other projects involving recycling paper into cardboard and egg boxes that do not need the same level of purity as normal recycled paper. Consequently, Flexiket contacted one of its material suppliers.

"It turned out that our material supplier already recycled paper from other customers, which suddenly created the opportunity to recycle 'liner' – the backing paper on our labels," says Jensen,

"It turned out that our material supplier already recycled paper from other customers, which suddenly created the opportunity to recycle 'liner' – the backing paper on our labels."

Charlotte Jensen, Quality and Environment Manager, Flexiket

who is also responsible for environmental management at Flexiket. She teamed up with the Sales Manager, Production Team Leader and the material supplier to discuss options. At a subsequent meeting, the material supplier brought along a partner company able to recycle the backing paper into corrugated cardboard. The next step was to involve the company's refuse removal contractor to discuss ways of collecting the paper at Flexiket and from Flexiket's customers.

From idea to testing

"I have to admit that everyone involved in the project took a very positive approach towards testing and getting the idea established. And everyone also had an interest in doing so. The refuse contractor could make extra money from collecting the material and delivering to the company that recycled and sold it on as corrugated cardboard. And at Flexiket, we were of course delighted to be able to help our customers to minimise their refuse, which would otherwise just be burnt," says Jensen.

"I have to admit that everyone involved in the project took a very positive approach towards testing and getting the idea established. And everyone also had an interest in doing so."

Charlotte Jensen, Quality and Environment Manager, Flexiket

The project went well with Flexiket's own environmental target of being able to at least transform one refuse constituent to recycling and developing a greener business model. Recycling the backing paper only needed a new setup involving partners able to handle the various roles and functions in the new value chain. And this is where it transpired that Flexiket's existing partners were able to take on the job, making it unnecessary to spend time on finding new suppliers.

Adjusting business to new concepts

The project has not meant any changes to production or to the company as such. In fact, Flexiket acted as the catalyst for refuse management and recycling by telling its customers about the option of recycling backing paper to corrugated cardboard. That fitted in well with many of the customers' strategies for zero or minimising refuse.

Flexiket's experience from taking part in Rethink Business meant that the company will seek to find ways of recycling other refuse constituents and is already well down the road.

Strategy, management and staff

In Flexiket's case, it was the management that took the initiative to join the Rethink Business project, which meant that it always benefited from high priority in terms of time and resources for idea generation, meetings and tests. A team was quickly set up consisting of representatives from the Quality, Sales and Production departments and this was the group that primarily worked with the Rethink Business consultant.

Market size, access and branding

By informing customers of the opportunity to recycle the backing paper, Flexiket was able to provide input to their resource strategies. And by choosing Flexiket as supplier, customers gain information on the option of being able to recycle backing paper in a sustainable manner.

Commercial benefits gained from working with the principles of Rethink Business

Flexiket completed the project by actively involving the value chain instead of merely focusing on optimisation and green transformation within the company.

New ideas on recycling took shape via dialogue with the Rethink Business consultant, and Flexiket launched initiatives with its existing suppliers, enabling the company to go to its customers to inform them of a new way to make their own businesses greener. Consequently, Flexiket achieved status as a caring, responsible supplier itself.

Environmental benefits from working with the principles of Rethink Business

Because the test results did not reveal large-scale recycling options for Flexiket's backing paper, the company itself has not directly achieved environmental benefits. But its customers have gained not only an environmental benefit, but also financial savings by avoiding sending their refuse to incineration.

Guidance from Rethink Business along the way

According to Charlotte Jensen, working with the Rethink Business consultant revealed new options for various refuse constituents.

"If I were to put into words what Flexiket learned from Rethink Business, it's got to be the necessity of working with your suppliers if a project involving circular economy and recycling is to succeed. In future, we will definitely work with more efficient use of resources and the like in our environmental targets, and look at recycling options for our refuse constituents," concludes Jensen.

"If I were to put into words what Flexiket learned, it's got to be the necessity of working with your suppliers if a project involving circular economy and recycling is to succeed."

Charlotte Jensen, Quality and Environment Manager, Flexiket

with their environmental targets



About the business

Company name

Flexiket A/S

Senior executive interviewed

Environmental Manager, Charlotte Jensen

Primary product

Labels

Number of employees

80

Turnover

DKK 100 million p.a.

Focus area with regard to the project

Refuse and recycling label backing paper

Skive Municipality wants to reuse constructions materials and create a new business cluster

For Skive Municipality, the Genbyg Skive [Rebuild Skive] project, which is supported by Central Denmark Region's project *Rethink Business*, has proved the starting signal for the re-use of construction waste and for thinking about alternative invitations to tender that could potentially strengthen collaboration with local businesses.

Having that one good idea

The aim of the Genbyg Skive project is to create new business opportunities in the re-use of construction materials. This will be done by adopting various measures, including setting out new requirements in tender documents for recycling in the demolition, renovation or construction of municipal buildings. At the same time, new business models will be developed that can form the basis for a new business cluster in the municipality.

Motivation for the Genbyg Skive project is provided by the fact that each year more than 150 buildings are demolished in the municipality. There is considerable potential here for recycling construction materials, while at the same time it can save the municipality a substantial amount of CO₂. The project represents a realisation of the municipality's ambitious strategy to become carbon-neutral by 2019 and to create an independent, self-sufficient, sustainable community.

Trying out the concept – working together

In the course of the project, three buildings were demolished and the material flows were charted

"Each year more than 150 buildings are demolished in Skive municipality. There is considerable potential here to recycle construction materials."

***Birte Wind-Larsen, Project Director,
Technical Administration – Environment,***

as part of a collaboration with students from the

Production Technology course at the Dania Academy of Higher Education in Skive. The students were tasked with developing concepts and business models for demolition and for re-using the construction materials.

This was done in a process that included negotiating with the three companies involved in the project: Gamle Mursten ApS, Troldekt A/S and Tom Probansky, whose job it is to remove, process and recycle some of the materials from the demolished buildings.

According to Birte Wind-Larsen, who is the project director for Genbyg Skive, the transition from concept to actual implementation of the project has gone well. Much of the reason for this is that the project group for Genbyg Skive is made up of people who are keenly enthusiastic about

their work. Positive comments amongst the general public and in the press have also helped to ensure that the project had a good start.

The next step is to investigate the potential for reusing the materials from the demolished buildings, which may provide the basis for a change in the municipality's tendering rules for demolition.

Can circular economy pay for itself?

Work on climate and energy has been ongoing at Skive municipality for some years, and it has been decided that circular economy should be included as a new area in the municipality's strategy.

According to Birte Wind-Larsen, it is still too early to be able to say whether re-using construction materials is commercially viable, but a number of interesting things have already emerged. Most importantly, using recovered bricks in construction has resulted in a reduction in CO₂. Looking at the potential for recycling, a calculation from the Danish Environmental Protection Agency shows that around 100 kg of CO₂ can be saved per tonne of bricks.

Demolishing a typical 1950s residential building with a floorspace of 80 m² releases approx. 160 tonnes of materials.

New business potentials and ideas

As part of Genbyg Skive, the demolition company Salling Entreprenørfirma A/S was used for all three demolitions, and as the traditionally cautious locals would put, things are looking "interesting". The demolition company says that it will probably expand its business activities in the field of demolishing houses and buildings.

There is similarly an interest within the project in establishing a socio-economic business based on using construction materials and fittings from old buildings. Another aim of the project is the hope and expectation at a commercial level that

reusing construction materials will create new jobs in the municipality. Even now there is an interest in creating a business cluster based on demolition and processing reused construction materials.

Working with circular economy in a politically-led organisation

Genbyg Skive is a project run by Energibygen Skive [Eco City Skive], which is the municipality's developmental department for projects relating to energy and sustainability. The department does not have any regulatory functions and can therefore work across administrations and political committees.

Success for a project of this kind is dependent on support from several levels within the organisation. In order to secure political support, there has to be an overall municipal strategy defining which types of projects are to be implemented.

The project must be anchored in the internal organisation in the same way as it is in the external organisation. Support at official level is also required, and according to Birte Wind it is advisable to keep the politicians updated on what is going on in the project.

Sustainable projects require time and resources

The group behind the project have learned from experience to date that it can be helpful to adjust the organisation's administrative structure. Administrations are not geared to being involved in interdepartmental projects that require the time and resources of the employees involved to be freed up. This may ultimately result in negative consequences for a project of this kind. Another challenge that has been encountered is that the project does not quite fit in with the municipality's current purchasing strategy, which involves the municipality itself buying recycled

construction materials for its own housing and building projects. It is necessary therefore to define new requirements for tendering for the demolition of buildings for which the municipality has responsibility. The tender material should, for example, set out requirements concerning the re-use of certain structural components following demolition.

All experiences from the project are continuously documented in a project handbook, with recommendations that interested parties will be able to find on Energiby Skive's website at energibyenskive.dk

Working with external players

According to Birte Wind-Larsen, many of the provisional results can be ascribed to excellent collaboration with many of the external players involved in the project. She emphasises the collaboration with companies, Dania Academy of Higher Education and Professor Peter Lindgren of Aarhus University, who taught the students approaches to developing business models.

Skiveegnens Erhvervs- and Turistcenter [*Greater Skive Business and Tourism Centre*] has also proved to be a valuable collaboration partner. They have been in contact with businesses and have been responsible for developing business cases, and also analysing and valuing materials from the demolitions.

The companies Salling Entreprenørfirma A/S and Gamle Mursten also contributed by offering valuable inspiration and help with developing ideas and networks.

To sum up, it has been of considerable significance that the ideas presented by the project management team have been accepted favourably and with interest in demolition and re-using construction materials.

The collaboration with UMT, Rethink Business

and Central Region Denmark

From the start, the collaboration with the project's co-ordinator, Central Region Denmark, and the project management team in Rethink Business under Development Centre UMT, has been decisive in terms of the project having come into being.

It has been a positive experience, and one that has provided inspiration for new contacts and networks. It will undoubtedly continue for the remainder of the project period. More projects of this kind should be started and overall coordination of this could usefully be provided by a common regional function. This is something that Rethink Business or Central Region Denmark could facilitate.

New project ideas

Genbyg Skive is just the first of a long series of new projects in Skive, and at least two new initiatives will be ready when the project comes to an end. Work has started with several collaboration partners, and there are ideas for new projects and business areas in the pipeline. There is general agreement within the project team that the lessons that have been learned so far in respect of collaboration between the various players and companies should be put to good use.

Database of re-usable materials

One of the areas on which work has continued is the development of a business case for a database for used construction materials. It is the collaboration partner in the project, Skiveegnens Erhvervs- og Turistcenter, that has set this up. The idea is for the database to quality-assure reused construction materials and to function as a point of reference for developers, contractors, architects and any other party that is

professionally involved in construction. The business case illustrates not just the importance of having a broad overview of available construction materials, but also that there is a need for this – something that has also been supported throughout the project period by collaboration partners and interested parties.

Workshop for demolition and the use of construction materials

Early in 2015 Skive Genbyg organised a workshop that focused on demolition and the use of construction materials. The aim of the workshop was to gather together a broad spectrum of professional groups in the value chain in order to discuss ideas and to develop networks. There was found to be a high level of commitment from the participants at the workshop, and a number of good ideas and trends were collected together that could be used to create inspiration for new projects.

Some of the ideas and trends that were looked at were:

- Setting up a shared professional database for used demolition materials in order to create a demand.
- Creating more interdepartmental projects, focusing on knowledge-sharing.
- How the circular economy must permeate all involved industries and education.
- Handling hazardous substances, ensuring that traded materials are clean.
- How the circular economy can help to bring back a degree of craftsmanship in making materials reusable.
- New potential uses for used concrete components in older buildings. Local demolition firms in Skive are doing further work on the idea.

All the results from the workshop are being

collected in an electronic magazine, which will be available on Energibyens Skive's website from 5 February 2015.

Provisional experiences and recommendations

- Time will be taken to put the project organisation in place
- A master plan is to be drawn up, as well as a vision for what the initiative could potentially create for the local community
- It is important to ensure that the initiative is well anchored in the project participants' respective organisations, and this will take time.
- Marketing is important, and it will be well-received. It is something that speaks to everyone.
- Explore the subject together with other projects and draw lessons.
- There is a need to set requirements in terms of reusing surplus and used materials. Demolition companies can currently choose to send all bricks to landfill and to burn timber, if this is the easiest option.
- Involve residents, companies and municipalities in the project.

Skive municipality

Skive municipality has a workforce of about 4,500 and more than 100 places of employment throughout the municipality. Skive municipality covers an area of 283.45 km², with a population of about 47,291 residents

Employees interviewed

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Read more about Genbyg Skive at www.energibyenskive.dk

Pumps in circular economy – Samsø as a test site

On Samsø, a tendering and purchasing policy based on circular economy shall be the driver of a leasing model for pumps that will focus on cooperation with business and reuse of materials.

As part of their project in Rethink Business, Samsø Municipality has adopted a new tendering and purchasing policy focusing on circular economy. The purchasing policy is a catalyst for the project "Pumps in circular economy – Samsø as a test site", which will create a business model for leasing of pump systems together with a take-back arrangement for reuse of pumps for water, heat and wastewater. The project is one of the five municipal projects in Region Midtjylland that has received support from Rethink Business. The project is anchored in Samsø Municipality and involves partners Grundfos and the local HVAC installer Brdr. Stjerne.

The idea behind the project

Samsø is known for its investment in sustainable energy, and municipal strategy has adopted a resolution to become fossil free by 2030.

Circulation pumps and heat pumps have potential as part of energy optimisation. For example, there are approximately 600 oil-fired burners remaining on the island and replacing these with heat pumps will result in energy savings.

When pumps are replaced, the new ones are installed through a leasing model. At the same time, there is a take-back arrangement, by which the parts are reused. The HVAC installer earns money through subscriptions and service agreements rather than through direct sales. The manufacturer delivers the latest pump technology and the necessary spare parts. The municipality is ensured the most energy-efficient technology. The municipality also aims to promote sustainable economy to benefit society and a sound business economy for municipal business partners and suppliers.

Samsø Municipality's tendering and purchasing policy

Behind the development of a new tendering and purchasing policy, there is the vision that the municipality shall purchase products and services that match the needs of a changing world, provide the greatest possible effect on the bottom line and support sustainable development.

The policy described is not meant to be a

*Uffe Vinther Kristensen, Energy and
Climate Coordinator – Samsø
Municipality*

playbook, but more of a framework so that it is flexible and can be used for all types of procurements in the municipality and set requirements that can motivate municipal purchasers and tenderers alike. This entails both market testing and dialogue, because there is not yet significant awareness as to what it really means to purchase in accordance with a circular economy.

The tendering and purchasing policy is therefore divided up into set and optional criteria. An overview of these criteria is presented below.

Set criteria

Overall economy must be included as a competitive parameter.

- All tenderers must present a brief and precise qualitative description of how their product or service contributes to increased levels of reuse of materials and resource efficiency.
- Service agreements promoting local business rather than purchase of new products shall be included as parameters for competition where relevant.
- Products consuming electricity must fulfil the energy requirements set forth in the procurement guidelines of the Danish Energy Agency.
- All applicable legal requirements must be fulfilled.

Optional criteria

- Documented statement of CO₂ emissions resulting from production, transport, use and removal of the product. Where relevant, this is also expanded to include emissions resulting from production of the materials included in the product.
- Documented percentage of reused materials in the product.

- Documented percentage of reused materials in packaging, and percentage of packaging that can be reused.
- Documented percentage of a product designed for separation so that the materials can be re-used in clean fractions.
- Documented initiative to improve conditions in the natural and working environment.
- Documented statement that materials included on the Danish Environmental Protection Agency's list of harmful substances are not being used.

Business model for leasing of pump systems

As part of the adoption of the tendering and purchasing policy, the municipality intends to test the model as a business case which involves the heat pump leasing project.

"This is to make sure that the project is articulated and anchored in a concrete example. This case was chosen because it will be an area where there may be potential energy and resource savings; it can fulfil requirements according to the criteria and maintain the functional requirements of users," says Energy and Climate Coordinator Uffe Vinther Kristensen, continuing: "Furthermore, it is not only of interest to the municipality, but also to private homeowners and thereby also for the partners in this project."

Why are pumps an interesting business area for circular economy?

If you look at the pump as a technology, it plays an important role in private residences, businesses and utility supply, where it distributes water and heat around in systems. In this project, it is the *heat* and *water* services that are interesting, and not the actual *pump* itself as a technology.

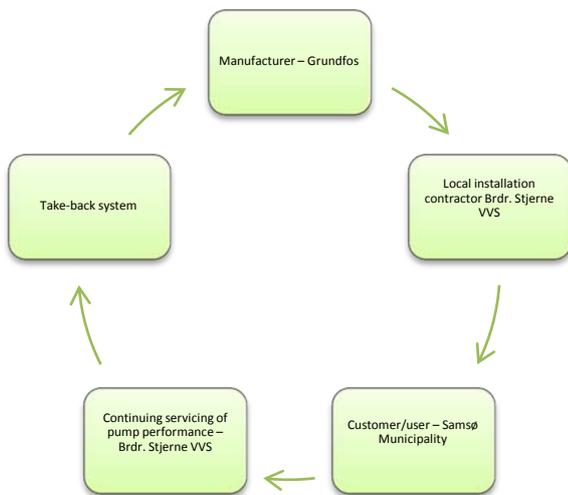


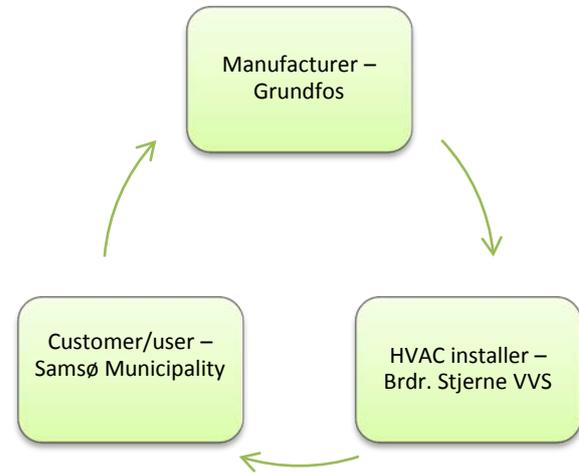
Fig. 1. The figure illustrates the circuit in which a circulation pump is included.

In the project, we hope to illustrate how we can maintain service as a parameter, while at the same time transferring the materials and technologies used over into a circular approach.

Value chain

If you look at the connection between the three sections of the value chain, the leasing model, according to Uffe Vinther Kristensen, will create value in the following ways. The value chain can be illustrated in the model in the following section:

Value for the customer



The leasing model must be able to offer the customer an instalment plan and a service agreement, like in the telecoms industry. Service agreements in the project will enable the customer to request other services, such as checking "hardware, pumps, continual replacement according to BAT – Best Available Technology", re-use percentages of materials and much more.

Value for the HVAC installer

The leasing model can create activity and revenue over the long term for the local HVAC installer, as the service agreement gets the contractor's "foot in the door" with the customer. Outdated technical solutions can thus be identified and replaced to the benefit of the customer, installation contractor and the environment.

One important issue, according to Uffe Vinther Kristensen, is that high initial investment often acts as a barrier to resource-effective solutions. A leasing agreement can help break this down and thereby create an expanded market. Additionally, a budget that is not so dependant on sales will

provide a more secure economic foundation for local trades.

Value for the manufacturer

As part of this project, we hope to bolster shared awareness between consumer and manufacturer as to how added value can be created for the manufacturer. "This will take place when we as a municipality demand products on the basis of our new purchasing policy. Turning products into concepts can generate added value for the manufacturer. A concept such as, for example, a subscription, can provide the flexibility to adapt to a changing world. It is still too early to determine whether this project can create added value for a manufacturer such as Grundfos," according to Uffe Vinther Kristensen.

Collaboration with Brdr. Stjerne and Grundfos

Brdr. Stjerne are very open to the adoption of the municipal purchasing policy, as it can serve their interests with respect to total economy and service agreements, for example, which supports a move away from the "throw away and buy new" mentality.

This can mean that products last longer and perform more effectively and that the company can more easily budget revenue by means of service hours. In addition, companies like Brdr. Stjerne have a better chance of winning a tender when their business is focused on sustainable initiatives. This means that knowledge that advances accountability can become a competitive parameter.

"We have been working with sustainable energy and energy savings on Samsø for a long time now, and in this context, it has been expanded to resources in general. It's actually just good common sense.

Now it will be articulated even further, and we think that it's an interesting moment for us all to boost our knowledge of sustainable initiatives,"

says Ole Hemmingsen from the HVAC installer Brdr. Stjerne

The manufacturer Grundfos is also interested in the purchasing policy. Director Claus Witt from Grundfos says: "Samsø Municipality's new purchasing policy makes the term circular economy more accessible for us as a supplier and a business. There is no doubt that the new purchasing policy will promote sustainable solutions that benefit the environment, local society and the manufacturers who are making a serious effort to move forward with sustainable products and business models.

For Grundfos, sustainability is one of our key values, and we are therefore very open to the new purchasing policy. As a global company, it will naturally also be a challenge to institute highly local measures, but just because something is difficult does not mean that it is not the right path to take."

Project status

Demonstration of the business model is well under way in Samsø Municipality, and efforts are being made to determine whether the purchasing policy supports the wishes of the project partners, citizens and municipality. There are also certain legal aspects of the leasing model that are expected to be decided in the near future.

After this point, the actual demonstration project will be carried out based on conversion of an oil burner to a heat pump and take-back arrangement. Finally, the entire process will be described and published on the municipal's website.

Grundfos is engaged in a dialogue and description as to how experiences from the demonstration project can be transferred to concrete products at Grundfos. Based on this knowledge, Grundfos

can identify which products can potentially be used in conjunction with leasing, and how the service agreement concept can be put together.

The tendering and purchasing policy now needs to be anchored

Now, the task before Samsø Municipality is to anchor the good intentions inherent in the municipal tendering and purchasing policy. According to Uffe Vinther Kristensen, this means, among other things, that all employees working in municipal procurement must be able to understand the purpose of the purchasing policy and seize the opportunities that it creates.

"It has been clear the whole time that we need to routinely reassess the tendering and purchasing policy, because our knowledge is in constant development. Implementation of the purchasing policy will therefore take place through ongoing dialogue with involved members of the municipality and the companies we do business with," says Uffe Vinther Kristensen.

A municipal purchasing policy that embraces all types of municipal purchases will not be able to incorporate all sustainable measures, at least not at first. The purchasing policy therefore includes both set and optional criteria.

Experiences of working with circular economy on a municipal basis

Samsø Municipality has seen a number of valuable experiences and lessons in projects involving circular economy.

"The central challenge for the project has been creating a leasing model for a circulation pump at a cost of DKK 2,500," says Uffe Vinther Kristensen. One can instead link some of the various requirements in the purchase agreement to such a circulation pump. Overall economy, for example, is of interest here.

A leasing model of a heat pump is therefore a

case that would support the purchasing policy. A heat pump has the economic volume necessary, while at the same time presenting potential for resource savings. "Striking a balance where the municipal purchasing policy does not have the effect of raising prices or cutting out attractive products, excluding local businesses or requiring a disproportionate level of knowledge of circular and sustainable economy has been an interesting task," says Uffe Vinther Kristensen.

Collaboration with external partners

When asked about collaboration with business partners and third parties, the attitude in the project is positive, and the importance of involvement is emphasised – both in connection with the completion of the tendering and purchasing policy and in the development of the leasing model for the pumps.

There has been sparring with the project's parties and key individuals from the municipality, and COWI has provided guidance in work with circular economy, so that the latest and more usable experiences are incorporated.

About cooperation with UMT, Rethink Business and Region Midtjylland

Samsø Municipality is pleased with the cooperation with Region Midtjylland and Rethink Business under Development Centre UMT, which has shown great interest in the project and been of assistance throughout so that usable results have been obtained.

Concrete lessons and results from the project

- Measures that support sustainable development are taken seriously, which is demonstrated when policies set mandatory requirements on purchasing.
- Interest, understanding and knowledge all centre around the fact that sustainable initiatives do not necessarily result in increased prices.
- Close contact with a large group such as Grundfos has provided understanding as to how such an organisation can accommodate the wishes of the purchasing municipality.
- The project has concretised an example of the wishes and reasonable

expectations of a municipality across departments and together with commercial actors with respect to a circular economy.

- Until now, Samsø Municipality has had a decentralised purchasing policy without actual purchasing criteria of any kind. The new purchasing policy has helped consolidate the municipality's competences towards a joint and effective purchasing organisation.
- Circular economy can be used as a framework to articulate and discuss sustainable economy in the context of the prevailing business paradigm.

About Samsø Municipality

Samsø Municipality has a population of 3,767 and an area of 114.71 km².

Project leadership

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