

Chapter 6 Project Partner 6 CD2E

Part A: Plastics

1. Overview.....	1
2. Good Practices.....	8
3. Opportunities.....	10

“This document reflects the author's views only and the Interreg Europe programme authorities are not liable for any use that may be made of the information contained therein.”

1. Overview

1.1. Executive Summary

cd2e – fostering the eco-transition in Hauts-de-France

The cd2e is a committed partner in the CircE project. It is a regional cluster of excellence in the area of sustainable development in the Hauts-de-France region. It is co-funded by the regional council of Hauts-de-France to contribute to the sustainable transition (“eco-transition”) of the region.

The Hauts-de-France development model is unusual. Renowned for its coal mines, Hauts-de-France was the champion of the 1st industrial revolution, but has suffered from the 2nd industrial revolution. Today, instead of building up from scratch, the region is transforming its towns and cities by relying on the commitment of all stakeholders working together on the eco-transition.

Hauts-de-France region: From the Third Industrial Revolution to Rev3

In 2013, the Regional Council of Hauts-de-France launched the Third Industrial Revolution. The regional Third Industrial Revolution master plan was the result of a consultation process including public and private sector stakeholders (e.g. companies, citizens, universities, clusters, local authorities, etc.) under the guidance of the American economist Jeremy Rifkin.

Initially, the main goal of the regional Third Industrial Revolution master plan was to meet all energy needs with renewable energy by 2050 and thus to become one of the first regions in the world to enter the post-carbon era.

In the meanwhile, the Third Industrial Revolution has been renamed “Rev3”. The Regional Council and the Chamber of Commerce and Industry of the Hauts-de-France region are now supporting the initiative and it goes far beyond energy transition. Rev3 encompasses digital transformation with a connected and sustainable economy that affects all sectors, from transport to energy, through education, culture, health and nutrition.

Today, more than 700 examples of Rev3 projects – i.e. actions or business plans of companies, local authorities, universities, associations or individuals – are presented in a publication called “la vie Rev3 des Hauts-de-France”. “This is very real!” remarked Xavier Bertrand, the President of the Hauts-de-France region. Upon his election in 2015, he reaffirmed his desire to accelerate the Rev3 initiative.

Xavier Bertrand, the President of the Hauts-de-France region and Philippe Vasseur, President of the Rev3 orientation forum, are aware of the international recognition of the territory. “The Hauts-de-France region is a key region in Europe for energy transition, i.e. a ‘test’ region for the third industrial revolution”, explained Xavier Bertrand. “The Hauts-de-France region is a model”, confirmed Philippe Vasseur. “For example, the city of Rotterdam has been inspired by what is happening here.”

The Rev3 initiative is also creating jobs. Xavier Bertrand, who is very involved in this theme, wants to create a new concept of schools for the third industrial revolution. “In addition to antennas in secondary schools, I want to create a Rev3-certified school to provide training in new trades, such as maintenance of connected objects, digital coding or installing new insulators,” explained the President of the Hauts-de-France region.

On the energy side, the Region also wants to find a response. “At the beginning of 2017, we will propose a new energy policy even if it does not call upon the skills of the Region, announced Xavier Bertrand. We want to offer an energy mix with nuclear and zero-carbon energy such as hydrogen, biomass, marine power or solar panels. It’s not just about wind power!”

Circular economy

In the context of Rev3, circular economy is an important topic and the Hauts-de-France region is very keen to learn from policy experiences in other European Regions who share the same circular ambitions. Therefore, the CircE Interreg Europe project that started in January 2017 followed by a kick off meeting in Milan in the first week of February 2017 is an important project for the Hauts-de-France region.

The first meeting in Milan and the contributions made by the partners at the meeting gave a good overview of the circular economy situation in the different regions. At the same time, it became evident that the policy approaches are different from region to region. For example, some regions approach circular economy from an environmental and theoretical background. Other regions have very pragmatic, e.g. ‘learning by doing’, approaches. This is exactly what we are looking for: to see how different approaches can be implemented. This is in fact the benefit of the CircE project.

The mapping activity with the CircE tool

The cd2e used the CircE tool for a deeper analysis of the regional circular economy potential on the sectoral level. In fact, the CircE tool is very useful, but it requires many data that is difficult to get or that is not at all available. Therefore, cd2e is in touch with the regional innovation agency of Hauts-de-France, ARDI, to find out where and how the missing data can be assessed.

The stakeholders' support

On the 15th of May 2017, the Regional Council of Hauts-de-France organized a stakeholder meeting in order to start the discussions about the future regional waste management strategy. Waste management experts from the public and private sector were invited to this meeting in order to discuss the further steps to be taken on the way to the new regional waste management strategy. Further meetings followed to discuss specific details, e.g. the management of textile, plastics, construction, etc. waste

These meetings are of strategic character. Some details of the stakeholder meetings can be found on the following website: <http://sraddet.participons.net/dimension-dechets/> (information in French only). The most important conclusion that we can draw from these stakeholder meetings is that circular economy principles are now of major interest for the future regional waste management strategy in Hauts-de-France.

In the past, waste management strategies were mainly oriented to one objective, i.e. to getting rid of the waste, through incineration, through waste disposal in a landfill, etc. As a matter of fact, millions of tons of resources (e.g. gold, silver and other strategic metals) were simply buried or burned in the past. It is no longer possible to waste precious resources in this way.

Today, we have to take a closer look at the waste to find out if it can still be useful in the sense of a circular economy or if it can be disposed. However, this is not as easy as it might sound. In order to get there, one has to rethink the complete waste management strategy, and to redesign the related processes.

This is exactly what is happening in the Hauts-de-France region right now. At the stakeholder meetings, experts looked at the regional waste management situation of today and started thinking of the regional waste management strategy for tomorrow. For the time being, there are many uncertainties concerning the future regional waste management strategy. However, there is one thing that is for sure – the future waste management strategy shall be based on the principles of circular economy – because, for social, economic and environmental reasons, we cannot go on wasting our waste.

We are aware of the fact that the stakeholder meetings in the Hauts-de-France region are very particular. The stakeholder meetings were organized by the Regional Council of Hauts-de-France (top-down-approach). A few, selected and specifically invited experts provided their expertise to discuss the situation and to find solutions for the future regional waste management strategy. Moreover, the wider public was also invited to contribute to the ongoing discussions (bottom-up-approach) through an official website and public consultations: <http://sraddet.participons.net/dimension-dechets/> (information in French only).

Other sources of information

CircE has a relevant role to play in the context of the new regional waste management strategy in general and in particular because of the experiences and best practices that it can provide. The Regional Council of Hauts-de-France is aware of the partnership and of the interesting examples that can be found in the CircE project.

Therefore, the CircE project was mentioned in the discussions of the stakeholder meeting. By the way, other interesting Interreg projects were mentioned as well, e.g. RETEX on textile recycling and VALDEM on construction waste management. In this context, we have an exciting opportunity of making the link between the CircE project and a real policy making process. The circular economy related examples and experiences of the CircE partners will in fact be very useful for the development and implementation of the future regional waste management strategy and related policies in the Hauts-de-France region.

1.2. Strategic analysis – RIS3

First of all, it is important to mention that the Hauts-de-France region is the result of a merger between two regions, i.e. the region of Nord-Pas de Calais (4 million habitants) and the Picardie region (2 million habitants). This merger took place in January 2016 as the consequence of a territorial reorganization, reducing the number of French regions from 26 to 13. The newly created region of Hauts-de-France has 6 million inhabitants, is as big as Belgium and is the 4th economic region in France.

The Regional Smart Specialisation Strategy (RIS3) for the programming period 2014 to 2020 was written before the merger of the two regions. Therefore, today, when we look at the RIS3 of the Hauts-de-France region, we have to look at two smart specialization strategies, i.e. those of Picardie and Nord-Pas de Calais. The two smart specialization strategies are quite different which is due to the specific differences of the regions: Nord-Pas de Calais was highly industrialized with an important presence of heavy industry, coal mining, textile production, etc. Picardie has always been a predominantly rural region with a strong agro-industrial sector.

In order to simplify the analysis, cd2e decided to take into consideration the smart specialization strategy of the Nord-Pas de Calais region only. The reason for doing so is that this region is two times bigger than the Picardie region and it is much more important in terms of universities, research labs, clusters, companies, and other socio-economic assets.

The RIS3 of the Nord-Pas de Calais region was implemented under the Regional Plan for Economic Development (SRDE). The basis of the strategy is an analysis of the regional strengths and weaknesses:

Strengths

- Advantageous geographical location, at the heart of Europe's decision-making processes.
- EER accreditation (European Entrepreneurial Region) for its regional entrepreneurship and innovation strategy in 2013.
- France's 4th exporting and importing region.
- Significant education hub: 6 universities, 16 engineering schools, 8 business, management and journalism schools and one Institute of Political Studies.
- Implementation of the future-oriented and strategic higher education centre and the 'knowledge parliament' in 2013.
- Innovation potential: 5th in the country in the field of ICT (workforce and number of businesses) and 4th in terms of business services (5% of the French jobs).
- Increasing R&D expenditure, (+2 places in the GERD ranking in 5 years).
- High-level scientific production in a number of areas of excellence: biology, health, physics, mathematics, transport, chemistry of materials, catalysis, nanotechnologies and photonics, atmospheric chemistry and physics.
- 8th in the country in terms of public researchers.
- Renewed entrepreneurial dynamic as attested by the growing number of business creations.
- Innovation steering mechanism initiated in 2007 with Jinnove.com and intensified in 2011 via the establishment of a regional innovation steering committee.
- Dense innovation system: support, transfer and result exploitation structures (70 operators).
- 7 competitiveness clusters (Aquimer, MATIKEM, Retail industries, Nutrition health longevity, Up-Tex, I-Trans and Team²), 1 of which has global ambitions.
- 31 projects accredited under the PIA: Equipex (10), Labex (7), innovative training initiative projects, IRT (1), IEED (1).

Weaknesses

- Poor image of the economic fabric, social situation and quality of life.
- Unemployment rate higher than the national average.
- Significant education hub (7.3% of French engineers are educated in the region and only 3.3% work in the Nord-Pas de Calais region) with low impact on the territory.
- Economic fabric largely driven by SMEs in medium or low-technology sectors, with limited propensity to innovate.
- Attractive region for foreign investments, for production, assembly and logistics projects, but less so for R&D or "technology-intensive" projects.
- Limited R&D effort in large companies (with the exception of a few industrial "gems").

- 13th in the country in terms of scientific density and limited presence of EPSTs (Public Scientific and Technical Establishments, e.g. CNRS) and EPICs (Public Industrial and Commercial Establishment, e.g. CNES or CEA).
- Implementation of non-technological innovation funding mechanisms in its early stages.
- Poor coordination between businesses and researchers and deficiencies in innovation culture and management tools.

Following this analysis, the Regional Council decided to structure the regional ecosystem around six strategic sectors and several related sub-sectors:

Sectors	Sub-sectors
1. Transport and Ecomobility	<ul style="list-style-type: none"> - Railways - Automotive - Logistics - Green Transport - Smart Transport Systems - Transport Safety - Materials and Industrial Process Performance
2. Health and Nutrition	<ul style="list-style-type: none"> - Health Technology and Ageing - Medical Technology and Patient Caring - Sustainable food and nutrition systems - Future feeding and aquatic products - Improving Human health and pathologies prevention (obesity, diabetes, cardiovascular diseases)
3. Information and Communication Technologies (ICT) & Internet of Things	<ul style="list-style-type: none"> - Robotics - Security software - Internet of Things - Mobile applications - Man-Machinery Interface - Cloud Computing - Big data - Human-centered computing
4. Chemistry, Materials and Recycling	<ul style="list-style-type: none"> - Technical textiles - Materials (<i>including plastics</i>) - Green businesses - New materials and bio-sourced products (<i>including plastics</i>) - Resource efficiency and circular economy

	<ul style="list-style-type: none"> - Waste reduction & re-use of by-products - Recycling (<i>including plastics</i>)
5. Digital Picturing and creative industries	<ul style="list-style-type: none"> - Interactive design & creativity - Cultural and Educational Mediation contents - Transmedia works production
6. Energy	<ul style="list-style-type: none"> - Energy - Low Energy Consumption Technologies - Alternative and renewable Energies - Energy efficiency - High Speed - High Temperature Machinery - Storage Technologies

Out of the regional smart specialisation strategy (RIS3) of Hauts-de-France, cd2e choose to analyse the plastics and textile sectors. Both sectors are so-called sub-sectors of the “Chemistry, Materials and Recycling” sector of the RIS3. The plastics and textile sectors were chosen because they are the most relevant – in terms of quality and quantity of waste streams – for circular economy solutions.

1.3. The sectors analysis

The overall situation

With about 312 companies, nearly 14 720 jobs and an annual turnover of 3.2 billion EUR in the plastics producing industry, Hauts-de-France is the 3rd plastics region in France. Many huge multinational groups like Faurecia, Plastic Omnium or Mecaplast have industrial sites in the Hauts-de-France region. However, in average, the regional companies have 43 employees and a turnover of 10 million EUR. It is also important to note that 59% of the regional companies have less than 20 employees and only 1.7 million EUR of annual turnover.

The fields of activity of the regional plastics companies are very diverse. With 24.1 million EUR of annual turnover, the automotive industry is by far the most important client of the regional plastics industry. In this context, it is important to mention that only about one third of the regional plastics companies work for the automotive industry. Other important clients for the regional plastics companies are the agro-food industry (representing 15% of the orders) and the construction industry (representing 10% of the orders). The orders from the aeronautics industry are growing and will certainly become even more important in the future.

French clients, i.e. 18% of these clients being from the Hauts-de-France region, buy about the half of the annual production of the regional plastics companies. The other half of the annual production of the regional plastics companies is exported to 148 countries all over the world.

The relatively high export rate shows that the regional plastics companies are quite competitive: 20% of the companies say that they have less than 3 competitors, 43% of the companies have more than 10 competitors. In average, the main client of a regional plastics company represents 20% of the turnover.

Like many other sectors, the plastics sector is facing some structural changes. Therefore, the companies have to put in place actions to help them stay competitive, i.e.:

- Reduction on the demand side for certain products.
- Evolution of the materials (recycled plastics, biosourced plastics).
- New industrial sectors.
- New clients.
- New competitors.

In this situation, most of the regional companies are putting in place four main solutions, i.e. product development, diversification, cost reduction, business development. However, these solutions are internal. They show that the companies prefer to concentrate on themselves instead of opening themselves towards new forms of cooperation like strategic and commercial partnerships, etc.

2. Good Practices

Different technical stakeholder meetings took place to discuss the new waste treatment strategy of the Hauts-de-France region. The discussions were attentively followed by the members of the consultative commission for the elaboration and the follow-up (CCES) of the Regional Plan for the Prevention and Management of Waste (PRPGD). On the 9th of November 2017, in the afternoon, the stakeholders of the working group on plastics met in Lille at the regional council for a presentation of their recommendations.

The working group explained that France produces 3.5 million tons of plastics waste every year. Only 1.1 million tons of this plastic waste are collected for recycling purposes. In the Hauts-de-France region, 105 000 tons of plastics waste are collected every year for recycling purposes. The plastics recycling sector in the Haut-de-France region is quite important with 81 companies generating an annual turnover of 24 million EUR (e.g. 12 % of the annual turnover of the national plastics recycling sector).

The working group carried out an analysis of the strengths, weaknesses, opportunities and threats of the plastics recycling sector in the Hauts-de-France region. The results are the following:

Strengths

- Dynamic companies collecting, recycling and producing plastics.
- Existence of specialised companies all along the value chain.
- Strong presence of plastics producers in the Hauts-de-France region.
- Strong presence of industries using plastics in the Hauts-de-France region (automotive industry, agro-food industry, etc.).
- Strong presence of huge retail companies (Auchan, Amazon, etc.).
- Strong presence of regional researchers and research labs dealing with plastics and plastics recycling.
- Existence of a competitiveness cluster dealing with plastics recycling (TEAM²).
- Existence of related clusters (plastics cluster, transport cluster, retail cluster, energy cluster) and presence of a life cycle platform (avniR).
- Geographic position of the Hauts-de-France region at the heart of Europe is a real advantage.

Weaknesses

- Many companies of the plastics sector in the Hauts-de-France region are part of multinational groups. The headquarters of these groups are not in the region. This means that important decisions (e.g. concerning innovation, R&D, etc.) are taken somewhere else.
- There are not enough industrial research centres in the Hauts-de-France region.
- Sorting of plastics waste is not well developed.
- The proximity of Belgium is problematic, because the Belgian regulation are more flexible for companies.
- Many SMEs (under 250 employees), but not enough midsize companies (250 to 5000 employees).
- Solid fuel recovery is not well developed in the region (except for solid fuel recovery in cement plants).

Opportunities

- China is no longer accepting European waste.
- The circular economy package, the EU plastics strategy, the French Energy Transition Law for Green Growth (LTECV), etc.
- Further development of plastics sorting requirements (and related calls for proposals).
- Development of alternative and complementary ways of recovery (plastic to monomer, plastic to fuel, pyrogasification, solid fuel recovery).

- The Third Industrial Revolution in the Hauts-de-France region.
- Legal obligation to sort five materials: paper, metal, plastics, glass, wood.

Threats

- Destabilisation of the recovery chain due to the Chinese decision to refuse European recycling waste.
- Competition with European neighbours in the area of energetic recovery (i.e. they take all kind of waste to their incinerators).
- Resources containing dangerous substances (Bromine).
- New plastics (e.g. biosourced) and their integration in the recovery chain.

3. Opportunities

The analysis of the working group shows that there are many interesting opportunities that can be seized to improve the overall situation. Concretely, the working group on plastics presented a regional action plan based on these opportunities. The regional action plan contains the following proposals:

Experimentations

- Put in place separated circuits for plastics (separation at the source).
- Put in place public procurement that gives priority to the use of recycled plastics.
- Development of energetic recovery (except for the cement industry) as a territorial economic development tool in line with the expectation of having a higher number of collected plastics.
- Put in place economic incentive mechanisms to develop the recycling of regional plastics waste (e.g. to the benefit of environmental and social projects).

Information, creation of awareness, training

- Create awareness and incite consumers as well as producers to further develop the sorting of plastics waste.
- Training for employees of waste treatment plants to improve the sorting quality.
- Inform and train the plastics companies to overcome psychological barriers concerning the use of recycled plastics.
- Foster eco-design (integration of recycled material and increased recyclability of the products).

Foster cooperation

- Organise regular meetings between regional stakeholders.
- Make sure that stakeholders communicate in between the 'official' meetings.
- Create spaces where demand and offer related to recycled plastics can meet.
- Open up meetings to all kind of different stakeholders (other sectors, software engineers, social organisations, etc.).

Support voluntary stakeholders

- Put in place the sorting of 5 materials (paper, metal, glass, plastics and wood).
- Give support to regional plastics companies in order to help them using recycled plastics.

Foster R&D and innovation

- Support collaborative projects to foster the use of recycled plastics.
- Integration of ICT to make progress at every moment of the value chain.
- Understand the psychological barriers related to the use of recycled plastics.

Preview on barriers

Related to the regional action plan, some barriers are to be expected. These barriers concern mainly the following issues:

- Political support is needed to drive forward the action plan. Barriers will appear if the political agenda changes.
- Leadership has to be provided by working group that brings together the stakeholders, sets the agenda and coordinates the activities. Barriers will appear if the leadership is not clear.
- Financial support will be required to carry out certain activities (e.g. writing of a study report on a specific issue). Barriers will appear if no financial support is provided.
- Regulations might have to be created or adapted on the regional, national and European levels. Barrier will appear if negotiations take too long and do not bring the expected results.

Open issues

So far, there are no open issues.

For further information:

- <http://www.cd2e.com/>
- <http://www.hautsdefrance.fr/>
- <http://rev3.fr/>
- <https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/policy-document/regional-smart-specialisation-strategy-nord-pas-de-calais-ris3>
- <http://sraddet.participons.net/dimension-dechets/>

Part B: Textile

1. Overview	144
2. Good practices	21
3. Opportunities.....	22

1. Overview

1.1. Executive summary

cd2e – fostering the eco-transition in Hauts-de-France

The cd2e is a committed partner in the CircE project. It is a regional cluster of excellence in the area of sustainable development in the Hauts-de-France region. It is co-funded by the regional council of Hauts-de-France to contribute to the sustainable transition (“eco-transition”) of the region.

The Hauts-de-France development model is unusual. Renowned for its coal mines, Hauts-de-France was the champion of the 1st industrial revolution, but has suffered from the 2nd industrial revolution. Today, instead of building up from scratch, the region is transforming its towns and cities by relying on the commitment of all stakeholders working together on the eco-transition.

From the Third Industrial Revolution to Rev3

In 2013, the Regional Council of Hauts-de-France launched the Third Industrial Revolution. The regional Third Industrial Revolution master plan was the result of a consultation process including public and private sector stakeholders (e.g. companies, citizens, universities, clusters, local authorities, etc.) under the guidance of the American economist Jeremy Rifkin.

Initially, the main goal of the regional Third Industrial Revolution master plan was to meet all energy needs with renewable energy by 2050 and thus to become one of the first regions in the world to enter the post-carbon era.

In the meanwhile, the Third Industrial Revolution has been renamed “Rev3”. The Regional Council and the Chamber of Commerce and Industry of the Hauts-de-France region are now supporting the initiative and it goes far beyond energy transition. Rev3 encompasses digital transformation with a connected and sustainable economy that affects all sectors, from transport to energy, through education, culture, health and nutrition.

Today, more than 700 examples of Rev3 projects – i.e. actions or business plans of companies, local authorities, universities, associations or individuals – are presented in a publication called “la vie Rev3 des Hauts-de-France”. “This is very real!” remarked Xavier Bertrand, the President of the Hauts-de-France region. Upon his election in 2015, he reaffirmed his desire to accelerate the Rev3 initiative.

Xavier Bertrand, the President of the Hauts-de-France region and Philippe Vasseur, President of the Rev3 orientation forum, are aware of the international recognition of the territory. “The Hauts-de-France region is a key region in Europe for energy transition, i.e. a ‘test’ region for the third industrial revolution”, explained Xavier Bertrand. “The Hauts-de-France region is a model”, confirmed Philippe Vasseur. “For example, the city of Rotterdam has been inspired by what is happening here.”

The Rev3 initiative is also creating jobs. Xavier Bertrand, who is very involved in this theme, wants to create a new concept of schools for the third industrial revolution. “In addition to antennas in secondary schools, I want to create a Rev3-certified school to provide training in new trades, such as maintenance of connected objects, digital coding or installing new insulators,” explained the President of the Hauts-de-France region.

On the energy side, the Region also wants to find a response. “At the beginning of 2017, we will propose a new energy policy even if it does not call upon the skills of the Region, announced Xavier Bertrand. We want to offer an energy mix with nuclear and zero-carbon energy such as hydrogen, biomass, marine power or solar panels. It’s not just about wind power!”

Circular economy

In the context of Rev3, circular economy is an important topic and the Hauts-de-France region is very keen to learn from policy experiences in other European Regions who share the same circular ambitions. Therefore, the CircE Interreg Europe project that started in January 2017 followed by a kick off meeting in Milan in the first week of February 2017 is an important project for the Hauts-de-France region.

The first meeting in Milan and the contributions made by the partners at the meeting gave a good overview of the circular economy situation in the different regions. At the same time, it became evident that the policy approaches are different from region to region. For example, some regions approach circular economy from an environmental and theoretical background. Other regions have very pragmatic, e.g. ‘learning by doing’, approaches. This is exactly what we are looking for: to see how different approaches can be implemented. This is in fact the benefit of the CircE project.

The mapping activity with the CircE tool

The cd2e used the CircE tool for a deeper analysis of the regional circular economy potential on the sectoral level. In fact, the CircE tool is very useful, but it requires many data that is difficult to get or that is not at all available. Therefore, cd2e is in touch with the regional innovation agency of Hauts-de-France, ARI, to find out where and how the missing data can be assessed.

The stakeholders' support

On the 15th of May 2017, the Regional Council of Hauts-de-France organized a stakeholder meeting in order to start the discussions about the future regional waste management strategy. Waste management experts from the public and private sector were invited to this meeting in order to discuss the further steps to be taken on the way to the new regional waste management strategy. Further meetings followed to discuss specific details, e.g. the management of textile, plastics, construction, etc. waste

These meetings are of strategic character. Some details of the stakeholder meetings can be found on the following website: <http://sraddet.participons.net/dimension-dechets/> (information in French only). The most important conclusion that we can draw from these stakeholder meetings is that circular economy principles are now of major interest for the future regional waste management strategy in Hauts-de-France.

In the past, waste management strategies were mainly oriented to one objective, i.e. to getting rid of the waste, through incineration, through waste disposal in a landfill, etc. As a matter of fact, millions of tons of resources (e.g. gold, silver and other strategic metals) were simply buried or burned in the past. It is no longer possible to waste precious resources in this way.

Today, we have to take a closer look at the waste to find out if it can still be useful in the sense of a circular economy or if it can be disposed. However, this is not as easy as it might sound. In order to get there, one has to rethink the complete waste management strategy, and to redesign the related processes.

This is exactly what is happening in the Hauts-de-France region right now. At the stakeholder meetings, experts looked at the regional waste management situation of today and started thinking of the regional waste management strategy for tomorrow. For the time being, there are many uncertainties concerning the future regional waste management strategy. However, there is one thing that is for sure – the future waste management strategy shall be based on the principles of circular economy – because, for social, economic and environmental reasons, we cannot go on wasting our waste.

We are aware of the fact that the stakeholder meetings in the Hauts-de-France region are very particular. The stakeholder meetings were organized by the Regional Council of Hauts-de-France (top-down-approach). A few, selected and specifically invited experts provided their expertise to discuss the situation and to find solutions for the future regional waste management strategy. Moreover, the wider public was also invited to contribute to the ongoing discussions (bottom-up-approach) through an official website and public consultations: <http://sraddet.participons.net/dimension-dechets/> (information in French only).

Other sources of information

CircE has a relevant role to play in the context of the new regional waste management strategy in general and in particular because of the experiences and best practices that it can provide. The Regional Council of Hauts-de-France is aware of the partnership and of the interesting examples that can be found in the CircE project.

Therefore, the CircE project was mentioned in the discussions of the stakeholder meeting. By the way, other interesting Interreg projects were mentioned as well, e.g. RETEX on textile recycling and VALDEM on construction waste management. In this context, we have an exciting opportunity of making the link between the CircE project and a real policy making process. The circular economy related examples and experiences of the CircE partners will in fact be very useful for the development and implementation of the future regional waste management strategy and related policies in the Hauts-de-France region.

1.2. Strategic analysis – RIS3

First of all, it is important to mention that today's Hauts-de-France region is the result of a merger between two regions, i.e. the region of Nord-Pas de Calais (4 million habitants) and the Picardie region (2 million habitants). This merger took place in January 2016 as the consequence of a territorial reorganization, reducing the number of French regions from 26 to 13. The newly created region of Hauts-de-France has 6 million inhabitants, is as big as Belgium and is the 4th economic region in France.

The Regional Smart Specialisation Strategy (RIS3) for the programming period 2014 to 2020 was written before the merger of the two regions. Therefore, today, when we look at the RIS3 of the Hauts-de-France region, we have to look at two smart specialization strategies, i.e. those of Picardie and Nord-Pas de Calais. The two smart specialization strategies are quite different which is due to the specific differences of the regions: Nord-Pas de Calais was highly industrialized with an important presence of heavy industry, coal mining, textile production, etc. Picardie has always been a predominantly rural region with a strong agro-industrial sector.

In order to simplify the analysis, cd2e decided to take into consideration the smart specialization strategy of the Nord-Pas de Calais region only. The reason for doing so is that this region is two times bigger than the Picardie region and it is much more important in terms of universities, research labs, clusters, companies, and other socio-economic assets.

The RIS3 of the Nord-Pas de Calais region was implemented under the Regional Plan for Economic Development (SRDE). The basis of the strategy is an analysis of the regional strengths and weaknesses:

Strengths

- Advantageous geographical location, at the heart of Europe's decision-making processes
- EER accreditation (European Entrepreneurial Region) for its regional entrepreneurship and innovation strategy in 2013
- France's 4th exporting and importing region
- Significant education hub: 6 universities, 16 engineering schools, 8 business, management and journalism schools and one Institute of Political Studies
- Implementation of the future-oriented and strategic higher education centre and the 'knowledge parliament' in 2013
- Innovation potential: 5th in the country in the field of ICT (workforce and number of businesses) and 4th in terms of business services (5% of the French jobs)
- Increasing R&D expenditure, (+2 places in the GERD ranking in 5 years)
- High-level scientific production in a number of areas of excellence: biology, health, physics, mathematics, transport, chemistry of materials, catalysis, nanotechnologies and photonics, atmospheric chemistry and physics
- 8th in the country in terms of public researchers
- Renewed entrepreneurial dynamic as attested by the growing number of business creations
- Innovation steering mechanism initiated in 2007 with Jinnove.com and intensified in 2011 via the establishment of a regional innovation steering committee
- Dense innovation system: support, transfer and result exploitation structures (70 operators)
- 7 competitiveness clusters (Aquimer, MATIKEM, Retail industries, Nutrition health longevity, Up-TEX, I-Trans and Team²), 1 of which has global ambitions
- 31 projects accredited under the PIA: Equipex (10), Labex (7), innovative training initiative projects, IRT (1), IEED (1)

Weaknesses

- Poor image of the economic fabric, social situation and quality of life
- Unemployment rate higher than the national average
- Significant education hub (7.3% of French engineers are educated in the region and only 3.3% work in the Nord-Pas de Calais region) with low impact on the territory
- Economic fabric largely driven by SMEs in medium or low-technology sectors, with limited propensity to innovate
- Attractive region for foreign investments, for production, assembly and logistics projects, but less so for R&D or "technology-intensive" projects
- Limited R&D effort in large companies (with the exception of a few industrial "gems")
- 13th in the country in terms of scientific density and limited presence of EPSTs (Public Scientific and Technical Establishments, e.g. CNRS) and EPICs (Public Industrial and Commercial Establishment, e.g. CNES or CEA)
- Implementation of non-technological innovation funding mechanisms in its early stages

- Poor coordination between businesses and researchers and deficiencies in innovation culture and management tools

Following this analysis, the Regional Council decided to structure the regional ecosystem around six strategic sectors and several related sub-sectors:

Sectors	Sub-sectors
7. Transport and Ecomobility	<ul style="list-style-type: none"> - Railways - Automotive - Logistics - Green Transport - Smart Transport Systems - Transport Safety - Materials and Industrial Process Performance
8. Health and Nutrition	<ul style="list-style-type: none"> - Health Technology and Ageing - Medical Technology and Patient Caring - Sustainable food and nutrition systems - Future feeding and aquatic products - Improving Human health and pathologies prevention (obesity, diabetes, cardiovascular diseases)
9. Information and Communication Technologies (ICT) & Internet of Things	<ul style="list-style-type: none"> - Robotics - Security software - Internet of Things - Mobile applications - Man-Machinery Interface - Cloud Computing - Big data - Human-centered computing
10. Chemistry, Materials and Recycling	<ul style="list-style-type: none"> - Technical textiles - Materials (<i>including plastics</i>) - Green businesses - New materials and bio-sourced products (<i>including plastics</i>) - Resource efficiency and circular economy - Waste reduction & re-use of by-products - Recycling (<i>including plastics</i>)
11. Digital Picturing and creative industries	<ul style="list-style-type: none"> - Interactive design & creativity - Cultural and Educational Mediation contents

	- Transmedia works production
12. Energy	<ul style="list-style-type: none"> - Energy - Low Energy Consumption Technologies - Alternative and renewable Energies - Energy efficiency - High Speed - High Temperature Machinery - Storage Technologies

Out of the regional smart specialisation strategy (RIS3) of Hauts-de-France, cd2e choose to analyse the plastics and textile sectors. Both sectors are so-called sub-sectors of the “Chemistry, Materials and Recycling” sector of the RIS3. The plastics and textile sectors were chosen because they are the most relevant – in terms of quality and quantity of waste streams – for circular economy solutions.

1.3. The sectors analysis

The overall situation

The textile industry in the Hauts-de-France region has a long tradition. Initially, the regional textile industry was mainly producing garments for local clients and for export as well. In 1954, the regional textiles industry counted 171 000 employees. Still, the textile sector in the Hauts-de-France region is an important industrial sector. However, today it only represents 9 500 jobs in 350 enterprises. Nevertheless, Hauts-de-France is in fact the third textile region in France (after the Lyon and Paris areas).

Due to the strong international competition, the production of garments became less interesting in the Hauts-de-France region. Many companies closed down their factories in the region and relocated to countries with lower production costs (e.g. in Asia). Other companies diversified their products and invested in R&D and innovation. As a result, technical textiles have become very important in the Hauts-de-France region.

The technical textiles represent 15 to 20% of the overall textiles market. Today, there are about 150 companies in the Hauts-de-France region (as compared to 140 companies in the Lyon area) working in the technical textiles sector. Their main clients are from the medical (i.e. 25% of the technical textiles market) and transportation (i.e. 26% of the technical textiles market) industries. The technical textiles market is growing very fast with 4% of growth per year.

One of the reasons for the competitiveness of the Hauts-de-France region in the textiles sector is related to its important number of higher education and professional training institutions for the textile industry. For example, there are about 21 laboratories with 120 researchers working on textile related R&D in the region. CETI, the European Centre for Innovative Textiles is an international reference for innovation in the non-woven textiles area. ENSAIT, is training about 70% of the French and 15% of the European textile engineers.

2. Good practices

Different technical stakeholder meetings took place to discuss the new waste treatment strategy of the Hauts-de-France region. The discussions were attentively followed by the members of the consultative commission for the elaboration and the follow-up (CCES) of the Regional Plan for the Prevention and Management of Waste (PRPGD). On the 9th of November 2017, in the afternoon, the stakeholders of the working group on textiles met in Lille at the regional council for a presentation of their recommendations.

The working group explained that every year, the French textile industry brings to the market 600 000 tonnes of garments, including 215 000 tonnes of furniture textiles (however, only beds and chairs are being recovered). Today, in the Hauts-de-France region, 23 000 tons of used textiles are collected per year. This corresponds to 3.8 kilos of used textiles per citizen and per year. However, this is only 75% of the objective.

The working group carried out an analysis of the strengths, weaknesses, opportunities and threats of the textiles recycling sector in the Hauts-de-France region. The results are the following:

Strengths

- The Textile Recycling Valley (created in 2013 by cd2e, UP-TEX and eco-TLC).
- The European Interreg project RETEX launched in 2016 between partners in Hauts-de-France, Wallonia and Flanders.
- Regional textile testing centres are equipped with mechanical recycling tools.
- Important R&D capacity with a high focus on products and processes for recycling.
- Capacity to do eco-design and life cycle analysis.
- Training and research capacities (ENSAIT, GEMTEX, ...).
- 50% of the national resources of eco-TLC are sorted in the Hauts-de-France region.
- 30 sites of textile recycling stakeholders in the Hauts-de-France region.
- Some leaders in the fields of design and distribution are based in Lille Métropole (DECATHLON, HAPPYCHIC, ...).
- Presence of the most important textile treatment site in France and the only one treating used textiles.

Weaknesses

- More capacities are required for the treatment of used textiles in the Hauts-de-France region.
- More capacities are needed for the transformation and recycling of textiles with regard to the regulatory objectives for 2020/2025.
- It is necessary to create more awareness among citizens to put used (but clean) textiles in the containers.

Opportunities

- Increase the objectives for collecting, sorting and recovering textiles.
- Evolution of the regulation related to textile recycling.
- European textile eco-label.
- Annual calls for proposals from eco organisations, like for example eco-TLC (since 2012), provide opportunities to develop innovative projects.

Threats

- Competition about the reuse of textiles with low-cost countries.
- Give incentives to producers to adapt the circular economy mode.
- Put in place an environmental footprint label for textiles.
- Increase the cost of materials, especially those materials being made out of oil.

3. Opportunities

The analysis of the working group shows that there are many interesting opportunities that can be seized to improve the overall situation. Concretely, the working group on textiles presented a regional action plan based on these opportunities. The regional action plan contains the following proposals:

Create awareness

- Create awareness among people to encourage them to put their used and clean textiles in the containers.
- Prevention: Strong communication about used textiles, reparation, etc.
- Action: Create coherence between the different owners of the containers.

- Communication/creating awareness: Municipalities should communicate more and more precisely about textile recycling.

Information of the consumers

- Create awareness: Use labels giving information about the ecological impact of the products.
- Information: Buy less textiles coming from the other end of the world.
- Communication: Change the behaviour of people. Do I need it? What are the consequences?

Social and solidarity economy

- Social and solidarity economy stakeholders can help to structure the sales of used textiles in the Hauts-de-France region.
- Sorting activities are very interesting for people in professional integration schemes.
- Make sure that regional recycling companies can benefit, at no cost, from the help of the stakeholders from the social and solidarity economy.
- Textile that cannot be reused should be recoverable at no cost (except for energetic recovery).
- Increase the eco-taxes to help the stakeholders of the social and solidarity economy so that they can stay competitive.

Training and R&D

- In cooperation with business organisations: develop new recycling related professions.
- Follow and amplify the development of diversification for recycled textiles, namely for the construction sector.

Preview on barriers

Related to the regional action plan, some barriers are to be expected. These barriers concern mainly the following issues:

- Political support is needed to drive forward the action plan. Barriers will appear if the political agenda changes.
- Leadership has to be provided by a working group that brings together the stakeholders, sets the agenda and coordinates the activities. Barriers will appear if the leadership is not clear.
- Financial support will be required to carry out certain activities (e.g. writing of a study report on a specific issue). Barriers will appear if no financial support is provided.

- Regulations might have to be created or adapted on the regional, national and European levels. Barrier will appear if negotiations take too long and do not bring the expected results.

Open issues

So far, there are no open issues.

For further information:

- <http://www.cd2e.com/>
- <http://www.hautsdefrance.fr/>
- <http://rev3.fr/>
- <https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/policy-document/regional-smart-specialisation-strategy-nord-pas-de-calais-ris3>
- <http://sraddet.participons.net/dimension-dechets/>
- <http://www.ceti.com/>
- <http://www.valleerecyclagetextile.com/>
- <https://www.doheretex.eu/>