



WP3: REPORT ON STAKEHOLDER WORKSHOP III

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UJI, PROSPEKTIKER

2019

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Co-funded by the
Erasmus+ Programme
of the European Union

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EXECUTIVE SUMMARY

The third of the planned three KATChE stakeholder workshops were held in all four countries in the period May 2019 – November 2019 with a total of 133 participants representing primarily the main KATChE project target groups: Higher education, Business community and Knowledge centres. This is well above the overall goals set for the project – 25 participants per workshop – especially in Portugal, while the number of participants in Austria was more modest.

The workshop served several purposes:

- Presentation and discussion of developed training materials, cases and results developed during the project.
- Discussion of how to further develop the cooperation between universities, companies and stakeholders

These purposes were covered in all the workshops, including also some additional, national topics. An overview of the focus and organization of the workshops is shown below.

	Austria	Denmark	Portugal	Spain
Date	29 th November 2019	9 th May 2019	19 th November 2019	14 th October, 2019
Duration	Half day	Half day	Half day	Half day
Location	Vienna	Aalborg	Lisbon	Barcelona
Host	VUT	Aalborg University	LNEG	UPC (Polytechnic University of Catalonia)
Organizer(s)	Vienna University of Technology (VUT), Austrian Institute of Ecology (AIE)	Aalborg University; The network for sustainable business development in Northern Denmark.	LNEG	ITC UJI Prospektiker
Total participants	16	29	60	28

Workshop themes	Introduction to CE and to KATCH_e. How to integrate CE in the furniture and construction sectors.	Introduction to CE and to KATCH_e. Discussions in groups based on KATCH_e tools. Presentation of and discussion on a new regional initiative on circular economy, including cooperation between Higher Education, Business, authorities and other stakeholders	Overview of the KATCH_e resources. Parallel sessions to disseminate and explore the KATCH_e tools. Gathering ideas to further develop cooperation between universities, companies and other stakeholders. Pitch presentations related to projects, initiatives and potential synergies	Introduction to KATCH_e and main results. Discussions in groups based on KATCH_e tools.
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Overview of time, place, organization and themes for the workshops.

In all the workshops, priority was given to present and discuss the KATCH_e tools as they have a broader appeal than the more theoretical background training materials. In Spain and Denmark the participants had the chance to try out the tools and discuss based on their experiences. In Portugal and Austria, selected tools were demonstrated to show how to use them, and examples on the outcomes were presented.

The participants in all the workshops showed a big interest in the tools, but also in looking more into the KATCH_e training materials. Some suggestions for further improvements came up, including a wish for versions in national languages.

In total, the workshops in all the countries were successful in disseminating the KATCH_e materials and in stimulating good discussions on circular economy challenges, ideas and potential solutions. Moreover, by November 2019, the number of participants in the national stakeholder network summed up to 543 people which is far beyond the 40 people foreseen in the application.

As for the second purpose, the further development of cooperation between universities, business and other stakeholders, it became clear through the discussions, that real life collaboration on developing solutions is an important step forward to take. The transition towards circular economy is complex, and we need to develop and combine competences and experiences from many different professional disciplines.

Among the proposals on how to do it in practice could be mentioned:

- Larger, eventually regional initiatives, that can create visibility and focus on circular economy, and stimulate collaboration on developing circular solutions
- Intensify the contacts between universities and business, for example more guest lectures, development of business cases for the students to work on, improvements on how internships at companies take place and feedback is given, etc.
- Let students and teachers create real prototypes of design solutions
- Development of common workshops to share knowledge and develop ideas
- Co-development of curricula to further integrate the business perspectives in academia
- Continue networking, for example in the established stakeholder network

The discussions at the workshops illustrated that there is a big interest in continuing the collaboration on circular economy between the stakeholders in the KATCH_e knowledge alliance. Moreover, the tools and training materials developed in the project can be integrated and implemented in many different single- or multi-user settings.

1 TIME, PLACE AND ORGANIZATION

The stakeholder workshops took place from May 2019 until November 2019 in all four countries. On the 29th November in Austria, the 9th May in Denmark, the 19th November in Portugal, and the 14th October in Spain. The workshops were promoted through a variety of channels, typically linked to the organizing organizations and the co-organizers, but also through other internet media and through personal invitation.

The Austrian workshop, a half-day event, was organised by Vienna University of Technology and the Austrian Institute of Ecology.

The Danish workshop, a half-day event, was organised by Aalborg University in collaboration with the network for sustainable business development in Northern Denmark, and most of the participants were members of the network.

In Portugal, the half-day workshop was organized by LNEG with the collaboration and participation of the project partners. The session was organized in the same day as the final conference of the project, and most of the participants from the conference had also the opportunity to participate in the workshop to explore the resources and the potential to apply them in the future.

The Spanish workshop was organised by the three Spanish partners of the KATCH_e project (ITC, Prospektiker and UJI) in collaboration with the UPC (Polytechnic University of Catalonia) who was organising an Event on Circular Design on the morning. It consisted of a half-day workshop and took place in connection with the European Roundtable on Sustainable Consumption and Production.

The half-day workshops were chosen from an assessment that it would be easier to attract participants, and the format was successful at the earlier KATCH_e stakeholder workshops.

2 PARTICIPANTS

All the workshops had the main KATCH_e categories as primary target groups, that is Business, Higher Education and Knowledge Centers, but the workshops were open to

other categories as well. The total number of participants were 133, with 16 in Austria, 29 in Denmark, 60 in Portugal and 28 in Spain. Due to the European GDPR requirements, not all participants informed about their organizational relations, and thus we cannot distribute the participants quantitatively on the different target groups.

In Austria, participants were representatives of the municipality of Vienna, the Chamber of Commerce, Competence Centre Wood, furniture and construction companies, Association of Construction Waste Recycling, Austrian Sustainable Building Council/AIE, consultancy companies (environmental law and selective dismantling) and professors and scientific staff of Vienna University of Technology.

In Denmark, we know that the following stakeholder categories were represented at the workshop: Higher Education, Business community; Associations and knowledge centers, Public authorities.

In Portugal the session had representants from Higher Education (students and professors), companies, associations, NGO's, consultants, and public authorities.

In Spain, the participants were 9 design students, 9 researchers or professors from University, and 10 people belonging to the business community.

3 PURPOSE, AGENDA AND MAIN RESULTS

The stakeholder workshop III served the following purposes:

- Presentation and discussion of developed training materials, cases and results developed during the project.
- Discussion of how to further develop the cooperation between universities, companies and stakeholders

These purposes were covered in Denmark, Portugal and Spain. In Austria, four questions on how to integrate circularity aspects into the construction and furniture industry have also been discussed.

3.1 National focus on the workshops

Austria

The Austrian workshop was titled “More Circular Economy into the construction and furniture industry!”. The programme was organised around four elements:

1. Presentation of the concept of circular economy and drawing the link to global and national challenges regarding climate change and how to counteract.
2. Introduction of KATCH_e materials as a way to train and implement CE into planning and production. Presentation of the KATCH_e modules and tools, “The 10 Essentials of working with Circular Economy” and Knowledge Platform.
3. Demonstration of application results of the CE designer and the CE Strategist. Strengthening the potential of circular design and circular business models for companies.
4. Feedback and discussion on how to foster the integration of circularity aspects into higher education and existing assessment schemes in the construction sector. How to build up competences and create benefit for companies.

Ad 1) The workshop started with an overview on challenges regarding climate change and measures to be taken on national level. Robert Lechner, co-founder of the Austrian Sustainable Building Council, chief executive officer of AIE and one of the eight scientific climate counselors recently announced by the mayor of Vienna, draw the link from circular economy to taking measures for reaching CO₂ reduction targets.

Ad 2) Since the participants had different background knowledge on CE, the workshop continued with a short introduction to the concept, followed by a brief presentation of the KATCH_e modules and tools, the 10 Essentials of CE and the KATCH_e Knowledge Platform.

Ad 3) The demonstration of our developed tools showed potential use and benefit for companies and was build up around the “value hill concept”. The concept aims at keeping the high value of products and systems for as long as possible with least resource input and negative impacts possible. This concept was perceived quite tangible and practical as it can be transported quite easily to the respective stakeholder groups. The results of the application within the project and presentation of best-practice results on product and product service system level was very important and impressive for the audience.

Ad 4) As a wrap up we asked for feedback on our work and posed four questions regarding the implementation on different levels to the group:

- 1 . Which political framework conditions are needed?

2. How to build up competences on different levels? Where is need for educational support regarding training materials?
3. Which existing instruments could be used for the assessment of circularity?
4. How can companies draw benefit and generate value while implementing CE strategies into their business activities?

Photos from the workshop:



Denmark

The Danish workshop was titled “Hands-on: Tools for circular economy”. The programme was organised around four elements:

1. Presentation of the concept of circular economy, Presentation of the KATCH_e modules and tools, “The 10 Essentials of working with Circular Economy” and the Katch-up board game.
2. Hands-on - Using three KATCH_e tools – the KATCH UP! board game and adapted versions of the CE Strategist and the CE Designer, since at the time of the workshop, the final versions were not prepared yet.
3. Feedback and discussion of potentials for future cooperation
4. Presentation of a regional project on circular economy in Northern Jutland where Businesses, local authorities, universities and other stakeholders cooperate to develop circular solutions.

Ad 1) Since the participants had very different background knowledge on CE, the workshop started with a short introduction to the concept, followed by some discussion. Next element was a brief presentation of the KATCH_e modules and tools. Finally, the organizers presented the 10 Essentials of CE, (English version is in the box).

The Ten Essentials of Circular Economy

1. Think circularity already in the design phase of products and business models
2. Think in functionality instead of products
3. Analyse where value is created and destroyed, to understand how it can be captured
4. Any circular solution should also be sustainable
5. Assess the consequences and relevance of your solutions from a life cycle perspective to avoid moving problems, or creating new ones
6. Involve the stakeholders along the value chain in developing new solutions
7. Adopt a stewardship role and lead the transition to a circular economy by example
8. Understand which new, or changed, practices are needed to make your circular solution work
9. Make the circular solutions attractive for the users and be a part of the solution, not the problem
10. Consider if local social value can be applied as a part of reuse and refurbishment

Ad 2) The participants formed 6 groups. 3 of them played the KATCH UP! board game; 2 groups discussed circular business strategies related to the CE Strategist tool, and 1 group worked with a combination of The 10 Essentials of CE and CE design strategies. After the group work, the outcomes were briefly presented in plenum to share the experiences.

Ad 3)

The feedback from the participants was positive, and in all groups the participants engaged in deep discussions and were very motivated to learn more and discuss how the principles of circular economy could be applied in their companies - and how to nurture more collaboration between different stakeholders.

Ad 4)

The final presentation of the day was from the Network for Sustainable Business Development in Northern Denmark, who presented a new project on "The circular Northern Jutland". This is a project including the Northern Jutland region and the aim is to make it appealing for companies to apply a circular business model. Specifically the project aims to transform waste into a resource, reprocess these and thereby create local jobs. At the start of the project the focus is on the materials EPS (Expanded polystyrene), bricks, plastic and on getting the recycling stations to sort the waste in fraction that can be used by companies in Northern Jutland.

This new project provides the potential that the collaborations that started or were discussed in the Katch-e project could continue and with mentoring from the project team in "the circular Northern Jutland". At Aalborg University, a number of so-called MEGA-projects where students from different study programs join efforts in solving a given company challenge, are now running. The concept is expected to also cover the circular agenda.

Photos from the workshop:



Portugal

The Portuguese workshop was entitled "KATCH_e national workshop". Within the session, the project partners involved in the KATCH_e project presented the main results of the project and explored synergies and how to apply the resources developed in practice after the conclusion of the project in December 2019.

After a brief presentation of the resources developed which are available for free in the Knowledge Platform of the project, four parallel sessions were held to explore in sub-groups the seven KATCH_e circular economy tools in more detail.

Within each session, the partners explained each tool, its main features and potential application, and the audience had the opportunity to gain knowledge about this innovative toolkit to support the leaning and application of circularity projects in practice.

After the parallel session, the workshop ended with 10 pitch presentations of stakeholders and partners presenting projects in order to promote synergies with the KATCH_e.

Photos from the workshop:



Spain

During the Spanish workshop, the KATCH_e partners presented the project as a whole and then the results composed by the training modules, MOOC and tools developed to train for Circular Economy in the construction and furniture sectors.

The attending international academic scientists, researchers, enterprises, designers and students, had the opportunity to use and test the seven practical tools developed within the project.

The programme was organised around four elements:

1. Presentation of the KATCH_e project. The objectives of the project, the consortium, the state of the art and the Stakeholders' networks were first presented.
2. Overview of the results of the projects: there was a brief presentation of the situation analysis, KATCH_e modules, tools, MOOC, case studies, website and knowledge platform so that the participants were familiarised with the concepts before they started the work in groups.
3. Demonstration parallel sessions with Q&A around the 7 KATCH_e tools.

The participants formed 4 groups of around 6 people, each of which was focused on the 4 elements of the projects: basics, business, design and assessment. The first group worked with the KATCH UP! board game; the second group tested the CE Strategist and CE Value Chains, the third group worked with the CE Journey and CE Designer and the last group tested the CE Analyst and KATCHing Carbon tool. There were 4 rounds of 25 minutes each in order for all participants to have the opportunity to test all tools.

4. Evaluation in groups of the tools and continuation or roll out plan for the future.

The participants remained in their last groups and they evaluated individually and with colored stickers the last tools tested and how well they support or not the development of certain CE competences. There was a specific questionnaire for each of the tools and the participants scored the objectives/competences supported by the tools. The feedback from the participants was positive.

A group dynamics took then place to recover new ideas on how to further develop cooperation between universities, companies and stakeholders. Each person on the group wrote their answers on the sheet of paper and then handed the sheet to the person on their right in order to be inspired by the ideas of the partner or comment on the suggestions.

Photos from the workshop:



3.2 Evaluation of the developed learning approaches, training materials, type of circular economy solutions and relations developed during the project

Austria

For the participants, the practical tools for a systematic learning and implementation process was very appealing. In-house trainings and some support has been considered

as most preferable way of application within their field of action. They expressed their deep interest in best-practice-examples as with these the practical implementation of rather abstract e.g. business strategies and the benefit for companies can be demonstrated. Also, the reduction potential in resource use and CO₂ reduction should be quantified, assessed and communicated. A big issue was the need for adapted framework conditions as these have been considered crucial for a quicker transfer to a circular economy. Training materials should be adapted for different educational levels as well as the translation of the tools has been mentioned as a motor for a quicker dissemination and integration into initial and continuing training processes.

Basic knowledge and skills needed for the application of the tools as well as data management have been discussed.

Austria acts on a top-level regarding energy consumption in housing, efficiency measures in new built as well as renovated buildings are integrated to a high extend. Passive house standards or plus energy standards where buildings even produce energy are widespread. The focus lies on the equipment for energy systems but on component/product level, the construction sector still acts quite resource extensive, both on input and output level. Modularity and selective dismantling are not an issue yet and service design is not a big issue either. So, fostering CE concepts on resource level has been stated as a big motor for improvement also regarding achieving the 2°C goal. KATCH_e materials and tools could contribute on different levels, both on the educational - addressing universities and other training institutions- and on the implementation side (addressing companies). Especially in architecture, the materials and tools present support for interactive learning. An extra lecture on circular practices should be established, and the next step the faculty of architecture at VUT is focusing on is the integration of selective dismantling in planning.

Some players on the market are working on the development of new services – these should be addressed for the transfer to a more circular economy.

Drivers for CE on the market are visible, they should be addressed with more CE solutions: more end customers interested in sustainable consumption, resource scarcity in the construction sector e.g. of sand and gravel and the connected demand of secondary materials with competitive prices, shaping the market with legislative measures like the Austrian Construction Material Recycling ordinance.

Now, the economy and the environment are competing, and more environmental sound behaviour is not honoured, on the contrary. More harmful solutions are often more convenient to the users and competitive on the market.

The group agreed on presenting good solutions is better than forbidding certain linear practices.

Denmark

All participants were eager to try the KATCH_e materials and tools. Due to differing pre-knowledge of the tools, the point of departure in the six groups differed. Of the two groups working with the business model canvas, one group did not know the business model canvas in advance, and for them the discussions and outcome thereof was how to apply a systematic approach for integrating circular economy in a business model. For the other group working with the business model canvas, the participants knew the model in advance, and their discussion were focused on the challenges connected with a transition to a circular business model, both on a company level and system or society level. The group working with the “10 Essentials of Circular Economy” approached the discussion of the 10 Essentials broadly and discussed the challenges they had faced in their own companies when working with the principles of circular economy.

In common for all the discussion was that the participants were deeply engaged in the topic. They were eager to pose questions both during the presentations and during the workshop using the KATCH_e material and tools and they generally requested more knowledge. Key lessons learned from discussions at the workshop are:

- a) In the transformation towards a circular business model, a variety of different skills and competences are needed. In order to avoid a superficial solution, core – competences are needed on the topic in focus. For instance, if a company wants to move away from mainly producing and selling a product to offering the product as a service, it is key to include people with competences such as knowledge of financial models for leasing and knowledge on how to design product that can last for several leasing cycles including options for easy repair and maintenance. The vast variety of knowledge is also useful in the beginning of the projects, where the different competences can provide different aspects and viewpoint in a brainstorm, where the ideas for new circular business models are generated.
- b) Due to the many competences needed in the transformation to a circular economy, a key discussion is how to identify and obtain the needed competences. Here, partnerships and collaborations between different companies, but also between companies, knowledge institutions and other stakeholders are important.

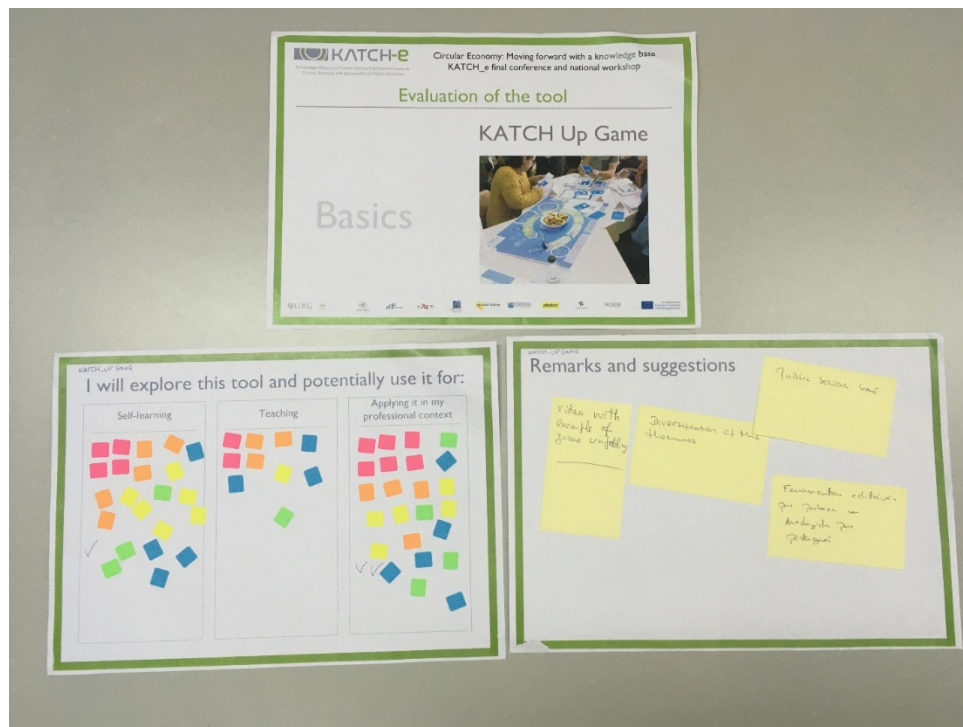
- c) Often it is a revelation for the participants how the circular economy can contribute to the social aspects of sustainability, for instance through the creation of local jobs, or the inclusion of socioeconomic jobs.
- d) The need for digitalization was another topic, which many of the participants discussed. In the circular economy, digitalisation provides an opportunity to follow product and material streams, and ensure that these are returned in loops order to continue in a circular economy.

Portugal

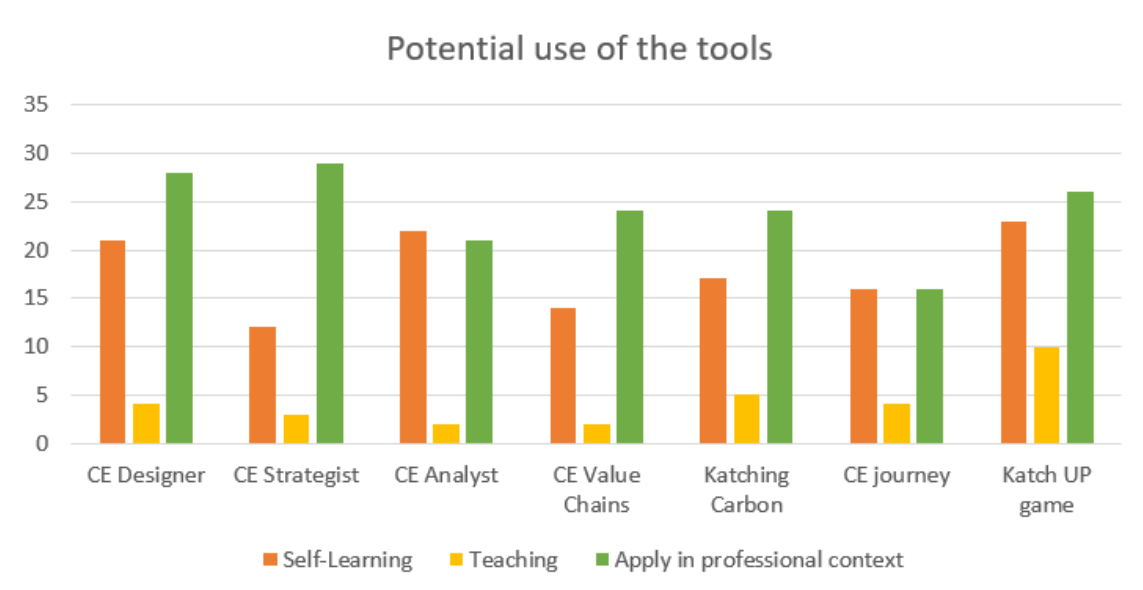
Debate and evaluation of KATCH_e results

After the introduction to the KATCH_e resources, participants participated in the four parallel sessions, where they had the opportunity to meet the partners responsible for the development of the tools, who explained and demonstrated the main features, structure and expected results of each tool. The participants were involved in the debate and had time to discuss and place questions about the tools and their applicability in several contexts.

In the workshop, after each parallel session the participants were invited to indicate if they are willing to use and apply the tools and give ideas and remarks using posters and stickers. In the following image, an example of the KATCH Up game evaluation posters is presented.



The potential use indicated by the participants is shown in the next chart.



The graph shows that:

- The use that was elected by most participants was “apply in professional context”, in which the CE strategist, the CE designer and the KATCH_UP game are in the top 3;
- “Self-learning” was the next preferred use, with the KATCH_UP game, the CE Analyst and the CE Designer in the top position;
- According to these results, the participants did not value the tools as teaching resources as much as they did for the other two options; but it must be noted that in the context of the modules and MOOC, the training potential of the tools is much clearer, and this is something that the participants did not experience in the session. Furthermore, many participants' professional background is outside education.


As for remarks and suggestions, some examples are:

- The tools should be available in Portuguese or in an editable format, so that they can be translated;
- The KATCH_UP game could be further developed into a version applicable to the public sector;
- More themes could be covered by the tools.

While these suggestions are interesting, the consortium believes they could be addressed in another project, as they fall outside the scope of KATCH_e.

How to further develop the cooperation between universities, companies and stakeholders

In order to gather feedback on this topic, the workshop attendees were invited to fill in the following form:



Knowledge Alliance on Product-Service Development towards
Circular Economy and Sustainability in Higher Education

Circular Economy: Moving forward with a knowledge base
KATCH_e final conference and national workshop














Ideas to further develop cooperation between universities, companies and other stakeholders


I represent

☐ A higher education institution
☐ A company
☐ A research centre
☐ Other, which? _____

My ideas _____

Contact (e-mail) optional _____



The main ideas expressed by participants can be organized around the following topics:

Training and education

- Develop a certification scheme to rank “sustainable higher education institutions” (similar to the A3ES scheme, but with improved auditing) to promote a healthy competition
- Teach the tools to secondary schools and high schools and focus on the training of local teachers
- Explore processes in the education of designers for circular economy

Business

- Explore and adapt the tools to other sectors
- Reinforce the relation between CE with social and co-design areas
- Create projects in technologies and process development

- Explore the KATCH_e resources in internships at companies
- Explore and develop projects on industrial symbiosis
- Develop a network to build a unique standard on sustainability and circular economy
- Maintain stakeholder networks in the future after the conclusion of the project

Government

- Involve public authorities in the CE projects
- Promote of CE by public authorities
- Address the legal issues and how to overcome legal barriers for circular economy

Communication

- Explore synergies with other countries and networks such as LENS-BR, Copernico, etc.
- Explore the results through forums, workshops and focus groups
- Communicate the outcomes of KATCH_e in the Annual Forum of the EU Commission
- Communicate the experiences of partners

Ongoing and upcoming initiatives in the field of CE

As a way to further explore the potential synergies with KATCH_e and stimulate new ideas in the field of CE, the following pitch presentations were made at the end of the day:

- Ponto Verde Lab – Elga Sequeira, Sociedade Ponto Verde (PT)
- Circular North Denmark – Network for sustainable Business Development – Mette Mosgaard, Aalborg University (DK)
- Promoting Green skills through Games – Penji Protects the Planet – Game – Oihana Hernaez, Prospektiker (ES)
- Project Circular Start into Business – Oihana Hernaez, Prospektiker (ES)
- Video presenting how Højer Møbler (DK) integrates sustainability and circular thinking in their business strategy
- Moving to Circular Economy – Susana Silva, Amorim Cork Composites (PT)
- SIMVAL project - Boost Circular Economy in the Valencian industry Industrial Symbiosis practices – Irina Celades, ITC (ES)
- DEGREEN – Design & Green Engineering – Carlos Domínguez, Fundecyt (ES)
- EduZWaCE project – Cristina Rocha, LNEG (PT)
- PLANETIERS World Gathering 2020 – António Vasconcelos, The Natural Step (PT)

Spain

After trying the different tools, participants were invited to voluntarily fill in an evaluation questionnaire. The number of responses received vary from one tool to another. Next, a summary of the comments of each tool is presented.

Katching Carbon Tool

The attendees stated that the tool fully supports students and industry professionals to estimate the CO₂ equivalent emissions associated with the life cycle of a typically linear product. Moreover, respondents were satisfied with the estimation of the equivalent CO₂ emissions for each stage of the life cycle of the target product that the tool provided, and the way the results were showed both quantitatively and graphically.

KATCH Up! board game

Participants agreed that the tool stimulated the users to generate valuable ideas from a business challenge. They all also stated that this game was a good guide to get a creative idea about a circular product-service or business model. Besides, they pointed out that the game was useful to apply circular design and circular business strategies to solve a creative problem.

CE Strategist

In general, participants believed that the tool helped the user to identify circular business opportunities, even though some of them thought that it was a very complex process to identify the circular business opportunities that users could actually apply in real life.

They agreed that this tool provided ideas and inspiration along the process of defining a circular business model, as well as it helped to get a description of the business model, based on the circular economy canvas template.

As a suggestion, it was proposed the need of including some examples to show how to enter the data. Some found the tool a bit theoretical, but a good start in any case.

On the whole, respondents believed that the tool was very useful once the data entry is understood by the user.

CE Journey

Respondents were able to see that the tool helps to visualize the various connections, allowing them to identify and analyse opportunities for improvement and product and present a more circular solution.

In terms of extrapolation to other sectors, some respondents were not sure about how to do this.

CE Analyst

The tool was considered adequate to quantify the potential improvements of the environmental profile of a given linear product according different scenarios throughout the application of different circular strategies.

CE Designer

It was agreed that the tool addressed, through 8 design strategies, the most relevant issues that a design team needs to consider to support the transition to a more circular society. It also helped to improve the ideas and opportunities through the reflection and assessment of each strategy and related criteria.

However, there were some concern about whether this tool may make things more complicated when the user already has an idea in mind. One of the attendees pointed out that a qualitative prioritization does not evaluate real inputs and this generated doubts regarding the calculation behind the percentages.

A positive remark received was about the different inclusion of sustainability performance, because it set a baseline on which to build on.

CE Value Chains

In general terms, respondents agreed that this tool certainly gave an understanding on the current value chain of the company. However, some of them thought that value chain is very complex to analyse in detail. To be able to do that, a more dedicated tool may be needed. As a starting point, there was no doubt about the utility of the tool to analyse the current value chain of the company by designers and professionals. It identified the external and internal stakeholders that should be prioritized and involved to implement the circular economy strategies. There may appear possible difficulties to identify how suppliers can improve the current business, though.

Some participants believed that they need more guidance about how to use the tool to decide which stakeholder should be prioritized to develop the CE strategies and to decide the steps to engage the stakeholders. Maybe a pilot example would be useful.

It has been described as a really interesting method, even though some visual resources would be desirable.

3.3 Discussion of how to further develop the cooperation between universities, companies and stakeholders

Austria

The different actors in the value chain and their level for action has been reflected on. Current and future challenges must be considered and how to tackle them in a cooperative manner. Especially cooperation and networks should be fostered, new ways of acting within the current value chain or in future networks.

Stuart Brands message “All buildings are predictions and all predictions are wrong” stresses the fact that buildings with their complex structure and very long lifetime present an extra challenge.

In the furniture sector some best-practise like modular furniture concepts are already existing but not widespread or have been tested but not been successful on the market. Maybe now the time is right to establish or re-establish more circular solutions.

Existing developments should be bundled, benefit for companies demonstrated and the vertical as well as horizontal integration of circularity aspects into existing study programs or development of news ones should be targeted by the Universities offering education in business and technology. Universities of applied sciences are much more flexible in adding new content or establishing new study programs.

KATCH_e content could be integrated in existing interdisciplinary lectures where lecturers from different disciplines are giving input e.g. sustainable building.

For the business sector a governmental support for the consultancy and guidance on the integration of CE aspects into business activities was suggested.

KATCH_e materials should also be used in other industrial sectors. This is already the case, as one tool is going to be adapted for the packaging industry.

The integration of circularity aspects into a national voluntary assessment and awarding scheme on sustainable building (klima:aktiv) is currently under redevelopment by the Austrian Ministry for Sustainability and Tourism, where circularity criteria in regard to the input materials as well as connection techniques will be integrated. The KATCH_e content and tools could assist that approach in delivering predefined options and answers to support the documentation for the fulfilment of the new criteria and subsequent assessment process.

Denmark

Most of the groups discussed the challenges of implementing circular economy including which competences are needed. During this discussion, possible collaborations between the companies were also discussed. The new project on “the Circular Northern Jutland”, presented and discussed in plenum, is one way to further nurture these discussed collaborations.

Portugal

The participants demonstrated and stated their interest in further use of the materials in several contexts. In the discussion some indicated that their plan to implement the KATCH_e materials and during the workshop, several meetings with stakeholders were scheduled in order to further discuss how to implement the resources in practice.

Spain

The ideas that emerged on how to further develop cooperation between universities, companies and stakeholders are summarized below:

From the higher education point of view:

- To make regular visits to companies by university staff and students in order to understand their work reality, to see how the knowledge/technology is implemented, and how companies work in practice.
- To create challenges for the companies which imply use of the tools.
- To identify key points in the curricula to satisfy the company and attract their attention.
- Creating win-win schemes. Some approaches: Service learning/ challenge driven Education, Project based education. So, taking the students out of the classroom and invite companies to the classroom. Reform the curriculum to allow that.
- To disseminate results from academia in business language.
- Universities could prepare workshops to expose possible areas to work together, identifying similar, common challenge areas.
- To bring games/tools to industry trade shows and conferences not only focused on CE / sustainability.
- Link those learning activities to curriculum learning activities so university community (Faculty and students) get recognition of their work.

From business point of view:

- To make regular visits to universities by representatives of companies in order to know students opinions and ideas.
- Create challenges for the universities that imply use of the tools.
- To create a network of projects to participate with students.
- Internship programmes, workshops, challenges, visits,...
- Companies, instead of looking for more interns, may try to develop short efficient and very specific workshops.
- A structure for circular design internship, including set workshops with specific teams. Company would benefit from getting to know the student, and the student would benefit from getting more skills.
- To create a platform to mix and match business cases and research; make competences and needs more visible: 'What companies need and what academia can offer' in order to support companies on their way to a more circular economy.

From boths points of view:

- Link companies with teachers and students by letting them create real prototypes of designs.
- During and after internships in companies, generate feedback loops with company, student and university. Competence feedback.
- Co-development of curricula: Integrate real business cases and necessities into educational programmes.
- Co-creation of workshops with 3 stakeholder groups for real-world problems.
- Arranging speed dates which includes local industry partners and educators to quickly introduce themselves, their interests and ideas that they want to work on. Communication/collaboration is probably the way to increase productivity

Regarding funding schemes:

- EU funding of pre-study. That could help companies, consultants and stakeholders to meet and develop ideas. The involvement of bigger stakeholders like the EU can speed up the process of collaboration between universities, SME and others.
- Reaching economic treats.

- Industry-funded university consortia on circular design.
- Embrace complexity and communicate it. This also refers to trade-offs. Maybe give options: simple version to start, and then an advanced level, or ways to dive in deeper.

4 STAKEHOLDER NETWORK

COMPOSITION OF THE STAKEHOLDERS NETWORKS (NOVEMBER 2019)

	Austria	Denmark	Portugal	Spain	Total
Higher education	46	52	41	78	217
Business community	56	31	33	33	153
Knowledge centres	36	22	19	7	84
Others	24	25	37	3	89
Total	162	130	130	121	543

During and after the Danish workshop, some participants offered to give more specific comments, especially to the KATCH UP! game. More people are also willing to test the MOOC.

In Spain, many of the participants registered to the Knowledge Platform during and after the workshop, in order to gain access to the tools that were being tested and also the rest of the materials that were shown. A few of the participants also became members of the Knowledge Hub in LinkedIn.

5 EVALUATION OF WORKSHOP FORMAT

Austria

In general, the participants were happy with the workshop concept. The presentations and the KATCH_e tools gave rise to many good questions, reflections and discussions. New contacts for possible further cooperation could be established and existing enforced. However, the need for adapting national legal or guiding frameworks and providing incentives for companies have been stated as challenges for the wide spread implementation of Circular Economy in these two sectors.

Denmark

In general, the participants were happy with the workshop concept. The presentations and the KATCH_e tools gave rise to many good questions, reflections and discussions, and the participants appeared motivated and interested throughout the day.

Portugal

The feedback received during the session and afterwards was very good. The participants highlighted the dynamics of the session and the results of the project presented and discussed with partners. The use of case studies to illustrate the application of the tools was considered by all as a good way to show the potential of the application of the resources.

The interest stated by several stakeholders to organize training sessions, workshops, and other events based on the KATCH_e resources is a good indicator for the evaluation of the session.

Spain

Even though the participants had attended the Circular Design Conference in the morning and therefore were a little tired, our workshop proved to be a very successful one. They particularly enjoyed having initially a plenum where they were informed about our developments and then the break-out in groups where they could be more relaxed and could test the tools themselves either with the print-outs or in their computers and tablets.

By the end of the workshop the participants were quite weary and perhaps carrying out the 4 rounds was a little too long. Some of the participants had to leave and didn't attend the last round but, in general, people thought the effort was worth it so that they could see all the tools.

6 CONCLUSIONS

The third of the planned three KATCH_e stakeholder workshops were held in all four countries in the period May 2019 – November 2019 with a total of 133 participants representing primarily the main KATCH_e project target groups: Higher education, Business community and Knowledge centres. This is well above the overall goals set for the project – 25 participants per workshop – especially in Portugal, while the number of participants in Austria was more modest.

The workshop served two main purposes:

- Presentation and discussion of developed training materials, cases and results developed during the project.
- Discussion of how to further develop the cooperation between universities, companies and stakeholders

These purposes were covered in all the workshops, including also some additional, national topics.

In all the workshops, priority was given to present and discuss the KATCH_e tools as they have a broader appeal than the more theoretical background training materials. In Spain and Denmark the participants had the chance to try out the tools and discuss based on their experiences. In Portugal and Austria, selected tools were demonstrated to show how to use the tools, and examples on the outcomes were presented.

The workshops in Austria, Portugal and Spain took place during October-November where nearly finished materials could be presented and discussed. In Denmark, the workshop took place in May since we had the chance to combine the workshop with the launch of a new, regional initiative on circular economy fostering continued cooperation between many stakeholders. Therefore, the versions of the presented tools were still not the final ones. However, they still stimulated fruitful ideas and discussions.

In all the workshops, the participants showed a big interest in the tools, but also in looking more into the KATCH_e training materials. Some suggestions for further improvements came up, including a wish for versions in national languages.

In total, the workshops in all the countries were successful in disseminating the KATCH_e materials and in stimulating good discussions on circular economy challenges, ideas and potential solutions.

As for the second purpose, the further development of cooperation between universities, business and other stakeholders, it became clear through the discussions, that real life collaboration on developing solutions is an important step forward to take. The transition towards circular economy is complex, and we need to develop and combine competences and experiences from many different professional disciplines.

Among the proposals on how to do it in practice could be mentioned:

- Larger, eventually regional initiatives, that can create visibility and focus on circular economy, and stimulate collaboration on developing circular solutions

- Intensify the contacts between universities and business, for example more guest lectures, development of business cases for the students to work on, improvements on how internships at companies take place and feedback is given, etc.
- Let students and teachers create real prototypes of design solutions
- Development of common workshops to share knowledge and develop ideas
- Co-development of curricula to further integrate the business perspectives in academia
- Continue networking, for example in the established stakeholder network

The discussions at the workshops illustrated that there is a big interest in continuing the collaboration on circular economy between the stakeholders in the KATCH_e knowledge alliance. Moreover, the tools and training materials developed in the project can be integrated and implemented in many different single- or multi-user settings.

ANNEX A: WORKSHOP PROGRAMS

Invitation/program for the Austrian workshop:

Einladung zum Austausch

**Mehr Kreislaufwirtschaft
in die
Bau- und Möbelindustrie!**

Fr, 29. Nov 2019, 9:00 -13:00

Vortragsraum Bibliothek
TU Wien
5. Stock
Resselgasse 4, 1040 Wien

Infos unter

<https://www.katche.eu/de/>

www.ecology.at/katche.htm

www.linkedin.com/groups/8597178



Was erwartet Sie? Was erwartet uns?

- Lösungsansätze und Best Practice zu Kreislauffähigkeit im Bau- und Möbelbereich.
- ExpertInnen aus Planung, Architektur, Produktgestaltung, Wirtschaft und Ressourcenmanagement.
- Austausch, Kooperations- und Netzwerkaufbau.

Programm

9:00-9:30 – Einstieg

Begrüßung Circular Economy und Klimaschutz	<i>Robert Lechner</i> Österr. Ökologie-Institut
Kreislaufwirtschaft – ein neuer Zugang? Alt bewährte und neu entwickelte Lösungsansätze	<i>Maria Kalleitner-Huber</i> Österr. Ökologie-Institut

9:30-10:30 – Transfer zu einer kreislauffähigen Umsetzung

Kreislauffähiges Design - Lebenszyklusdenken und Strategien für den Werterhalt entlang des Lebenszyklus	<i>Rainer Pammeringer</i> TU Wien, ECODESIGN
Innovative Geschäftsmodelle – Wertschöpfung anders denken	<i>Stephan Schmidt</i>
Anpassung des Geschäftsmodells – CE Strategist & Beispiele	TU Wien, ECODESIGN
Diskussion	

10:30- 10:45 Pause

10:45-12:00 – Austausch und Diskurs: Wie kann es funktionieren? Was braucht es zum Gelingen?

Welche politischen Rahmenbedingungen braucht es?

Wo besteht Ausbildungsbedarf in der beruflichen Aus- und Weiterbildung? Wie Kompetenzen aufbauen?

Welche bestehenden Instrumente können zur Abbildung der Kreislauffähigkeit genutzt werden?

Wie können Unternehmen Wertschöpfung generieren bei reduziertem Ressourcenverbrauch?

Wrap-up und Abschluss

Ab 12:00 Netzwerken und Buffet



Invitation/program for the Danish workshop:

9. maj 2019: Hands-on: værktøjer til cirkulær økonomi



Slides fra dagen

[Slides med Introduktion til udvalgte værktøjer og tilgange](#)

Arrangementsbeskrivelse

Er du nysgerrig på, hvordan man kan arbejde med cirkulær økonomi i praksis? Denne dag får du mulighed for at få hands-on erfaring, når vi afprøver forskellige værktøjer fra AAU. Du får en introduktion til tre forskellige værktøjer, som du efterfølgende får mulighed for at arbejde med i en workshop.

Derudover vil du blive introduceret til Det Cirkulære Nordjylland, og høre nærmere om dine muligheder for at samarbejde med andre Nordjyske virksomheder og kommuner i kampen om at få genbrugt og genanvendt flest mulige ressourcer i regionen.

Program

13.00: Velkomst og intro til workshoppen v/ Mette Mosgaard, AAU

13.10: KATCH_e projektet: introduktion til udvalgte værktøjer og tilgange v/ Kirsten Schmidt, AAU

13.30: Workshop: Prøv et af værktøjerne v/ Mette Mosgaard, Rikke Huulgaard og Kirsten Schmidt, AAU.

14.50: Pause

15.10: Diskussion af værktøjerne og forslag til videreudvikling v/ Mette, Rikke og Kirsten, AAU

15.25: Det Cirkulære Nordjylland v. Sebastien Bouchara, NBE

15.55: Afrunding på dagen v/ Mette Mosgaard, AAU

OBS: der er kun 50 pladser til dette arrangement.

Dato og tid

Torsdag d. 9. maj 2019 kl. 13:00 til 16:00

Tilmelding

[NemTilmeld](#)

Sted

Aalborg Kommune – lokale 159 på 1. sal
Stigsborg Brygge 5
9400 Nørresundby
Denmark

Arrangementet er for medlemmer af NBE + særligt indbudte

Invitation/program for the Portuguese workshop:



Knowledge Alliance on Product-Service Development towards
Circular Economy and Sustainability in Higher Education

Circular Economy: Moving forward with a knowledge base

KATCH_e final conference and national workshop

19th November 2019

IAPMEI campus, building L - Academia PME
Estrada do Paço do Lumiar 22, Lisboa

Programme

- 09:00 - Opening of the conference
Nuno Mangas, President of IAPMEI
- 09:15 - KATCH_e: a bird's eye view
Cristina Sousa Rocha, LNEG
- 09:30 - CE: Moving forward with a knowledge base - different perspectives (I)
National government – Representative of the Portuguese Ministry of Environment and Climate Action
Businesses – João Meneses, BCSD Portugal
Academia – Tomás Ramos, Faculty of Science and Technology, NOVA
- 10:30 - Coffee-break
- 11:00 - CE: Moving forward with a knowledge base - different perspectives (II)
NGO – Andreia Barbosa, Circular Economy Portugal
Regional level – Jorge Pulido Valente, CCDR-A
Funding agency – t.b.d., EACEA
- 12:00 - CE: Moving forward with a knowledge base
Panel discussion – The KATCH_e consortium is challenged by António Vasconcelos, The Natural Step Portugal
- 13:00 - Lunch break
- 14:30 - KATCH_e national workshop:
Introduction to 4 parallel sessions showing KATCH_e results by KATCH_e partners
- 15:00 - Parallel sessions:
 - (1) Basics of CE: KATCH Up board game
 - (2) Circular business models: CE Strategist and CE Value chains
 - (3) Circular design: CE Designer and CE Journey
 - (4) Assessment & communication: CE Analyst and KATCHing carbon
- 16:30 - What is going on and announcements related to CE – projects, events, funding schemes
at national and international levels – KATCH_e partners and stakeholders (3-5 minutes pitches)
- 17:45 - Closing of the conference
Teresa Ponce de Leão, President of LNEG

Free admission subject to prior registration and limited to the capacity of the room
Email for registration: david.camocho@lneg.pt

Project partners























Funding



Co-funded by the
Erasmus+ Programme
of the European Union

Collaboration in the event




Invitation/program for the Spanish workshop:



Co-funded by the
Erasmus+ Programme
of the European Union



KATCH_e National Workshop – BARCELONA

14th October 2019

Venue: Sala Agora Campus Nord, UPC- Barcelona, Spain

15:00	Welcome
15:20	<i>KATCH_e: a bird's eye view and new developments</i> [LNEG] <ul style="list-style-type: none"> • KATCH_e partners • Project Duration • Stakeholder Networks • Workshops • KATCH_e at ERSCP
15:30	<i>KATCH_e: overview of the results</i> [ITC+PKT] <ul style="list-style-type: none"> • Situation analysis • KATCH_e modules • KATCH_e tools • KATCH_ MOOC • KATCH_e case studies
16:05	<i>4 rounds(25 minutes each) of 4 parallel demonstration sessions with Q&A</i> Basics [ITC] <ul style="list-style-type: none"> • Katch_UP Board Game Business [PKT] <ul style="list-style-type: none"> • CE Strategist • CE Value Chains Design [LNEG+UA] <ul style="list-style-type: none"> • CE Journey • CE Designer Assessment and Communication [OOI+ITC] <ul style="list-style-type: none"> • KATCHing Carbon • CE Analyst
17:25	<i>Evaluation of the tools and discussion on future collaboration</i> [UJI]
18:00	<i>End</i>