Introducing circular economy into higher-education design curricula

Overview of the training needs, state of the art

ERSCP 2017
Skiathos, 1st to 5th of Setember 2017
Some remind issues about KATCH-e.....
**KATCH_e** is a Knowledge Alliance between Higher Education, companies and research centers to build competences in the field of product-service development for the circular economy (CE) and sustainability in the construction and furniture sectors.
WP1 | Project management and consortium meetings

WP2 | Analysis of training needs, state of the art, trends and policies

WP3 | Stakeholders engagement

WP4 | Development of training materials

WP5 | Development of tools

WP6 | Testing of training materials and tools

WP7 | Evaluation of the project training outputs and impact

WP8 | Dissemination and exploitation

WP9 | Quality assurance

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

Knowledge Alliance on Product-Service Development towards Circular Economy and Sustainability in Higher Education
Analysis of training needs, state of the art, trends and policies

Objectives

Identification of the training needs of companies and educational offers and needs on CE and SD

Identification new model business and entrepreneurial skills required to promote transition to CE

To design an educational programme and higher education training material to encourage cross curricular learning connections (designers, engineers and other stakeholders)
Methodology to develop the Situation Analysis:

- Review policy trends
- Review training offer & literature
- Interviews and workshops
- Conclusions and Recommendations
Review policy trends
“CE ....opportunity to **reinvent our economy** ........**benefits** for European businesses, industries, and citizens .... **ambitious measures** to **cut resource use, reduce waste** and **boost recycling**.”


**EU Action Plan for the Circular Economy 2015**

**Key initiatives for 2017**

✓ Strategy for plastics
✓ Improved interface between chemicals, products and waste legislation,
✓ Legislative proposal on water reuse
✓ Monitoring framework on circular economy.

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

Knowledge Alliance on Product-Service Development towards Circular Economy and Sustainability in Higher Education
The Commission and the European Economic and Social Committee in 2017

**European Circular Economy Stakeholder Platform**

“Network of Networks” going beyond sectorial activities and highlighting cross-sector opportunities and challenges, gathering knowledge on CE and dialogue among stakeholders.

**Structure:**

- **Pillar I:** Policy dialogue gathering stakeholders’ input and views.

- **Pillar II:** Circular economy-related multistakeholders (networks/platforms; trade unions, networks of national, regional and local public authorities, research communities, universities…….

- **Pillar III:** Virtual venue for dissemination of circular economy-related content such as national strategies and good practices. Dynamic database with contacts, published studies and events relevant to circular economy.
Review training offers and literature
Review training offers & literature

University Training Offers

Books, Guides, Related projects, Databases, Software, Ecolabels, Tools,…..

In total…. KATCH_e has compiled around 200 references!!!!

KATCH-e Resource Center
Interviews and workshops
## Methodology

### Number of interviewees

<table>
<thead>
<tr>
<th>Role</th>
<th>Portugal</th>
<th>Austria</th>
<th>Denmark</th>
<th>Spain</th>
<th>TOTAL by target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Professors</td>
<td>1</td>
<td>7</td>
<td>2</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Researchers</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Business people</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Associations</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Public authorities</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>NGO’s</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL by country</td>
<td>11</td>
<td>13</td>
<td>8</td>
<td>17</td>
<td>49</td>
</tr>
</tbody>
</table>
Methodology

Workshops
<table>
<thead>
<tr>
<th>Country</th>
<th>Discussion about:</th>
</tr>
</thead>
</table>
| Portugal| - Priority challenges, products and services for design for the CE in the construction and furniture sectors  
- Needs in terms of skills and training for the design and development teams |
| Austria | - The current status of CE-related initiatives (research projects, business practices)  
- Potentials/barriers for implementing CE in KATCH-e sectors  
- Need for competences. |
| Denmark | - Circular business models in the furniture sector, and the related need for competences  
- Challenges related to design, business development and sustainability. |
| Spain   | - Potentials and barriers for the transition towards circularity in Spanish companies  
- Need for competences |
Results
Understanding and perceptions of CE

**What three words would you say best describes "Circular Economy"?**

**Familiars with the concept:**
- Reuse
- Recycling
- Resource cascading
- Efficiency
- Durability

**PROFESSORS**
- Social innovation
- Business models
- Cradle to cradle design
- Sustainable design
- Resource efficiency

**RESEARCHERS**
- Enlarging lifespan
- Closing the loops
- New business model

**ASSOCIATIONS**
- Resource efficiency
- Sustainability
- Innovation
- Profitability

**PUBLIC AUTHORITIES**
- Economy and employment growth
- Collaboration of different business

**BUSINESS PEOPLE**
- New business model
- Rational production system
- Design and product-service systems
- Social fairness
- New relation

**NGO’s**
- Optimization of finite resources
- Social design
- Holistic thinking
- Closing the loop

**Not familiar with the concept:**
- Something related to recycling
- Difficulties in seeing the innovations compared to related topics
CE implementation

In Higher education

CE topics are included in subjects related to sustainability

_Students_: CE training is insufficient considering its relevance and future projection

_Professors_: knowledge is low, the introduction should be horizontal

In Companies

Similarities between countries

**Spain and Portugal:**
- Isolated strategies
- No systematic implementation

**Austria and Denmark:**
- Great focus on CE
- Strategies at business level
## CE promoting actions

<table>
<thead>
<tr>
<th><strong>Professors</strong></th>
<th>Participation in different projects, seminars, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Associations</strong></td>
<td>Participation in committees, networks, working groups, platforms, etc.</td>
</tr>
<tr>
<td><strong>Public Authorities</strong></td>
<td>Development of specific legislation, funding schemes, tax incentives, dissemination activities, etc.</td>
</tr>
</tbody>
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**Denmark**
Report with 27 recommendations
Demands and needs on CE

**Professors**
- Institutional support to:
  - Change curricula
  - Adapt learning approaches
  - Create new content
  - Test in industry

**Students**
- Business understanding
- Creative in problem solving
- Create solutions

**Researchers**
- Clear objectives from authorities
- Knowledge in: LCA, DfS, social aspects, indicators

**Business people**
- Knowledge in BM, markets, industrial symbiosis
- Cross disciplinary competences

**Public authorities**
- Adaptation of policies
- Concerted actions between departments

**NGO’s**
Integration of CE, its social benefits in all types of curricula
Drivers in present and future

- Legal requirements
- Market development
- Education of next generations
- Resource scarcity
- Social pressure
- Tax incentives
Barriers in implementing CE

From professors point of view:
- Lack of University commitment
- Lack of time and motivation to update contents
- Multidisciplinary requirements

From companies point of view:
- Lack of awareness
- Lack of knowledge, skills and capacities
- Legal barriers
- Stuck in daily business
- Low demand from market (low recognition, low acceptance)
Recommendations
Understanding CE with social developments and trends

KATCH-e should:

1. Contribute to a better understanding of the CE concept and related issues

2. Promote CE with clear information for the final user
Understanding CE with policies and trends

KATCH-e should:

1. Identify EU policies and regulations on CE that can be articulated with global competition

2. Address how to make companies more competitive and simultaneously make the economy more circular.
Combination of design and business models solutions

KATCH-e should:

1. Include case studies and practical examples

2. Include information about new business models

3. Introduce value chain analysis, rather than sectoral approach
Learning approach

KATCH-e should:

1. Promote a multidisciplinary approach to teach, implement and test
2. Stimulate the participation of stakeholders in the design process
3. Compile the relevant sources on CE for the target sector
4. Develop simple and easy tools and methods to perform
KATCH-e website: www.katche.eu
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