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**CIRCULAR ECONOMY COMPETENCES.
MAKING THE CASE FOR LIFELONG LEARNING**



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PEDAGOGICAL MODEL TO INCLUDE CIRCULAR ECONOMY COMPETENCES IN ADULT EDUCATION

Abbreviated version

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PEDAGOGICAL MODEL TO INCLUDE CIRCULAR ECONOMY COMPETENCES
IN ADULT EDUCATION

From space, we see a small and fragile ball dominated not by human activity and edifice but by a pattern of clouds, oceans, greenery, and soils.

Our Common Future, From One Earth to One World – Brundtland Report (UN – 1987)

Preface

The circular economy concept is a response to the aspiration for sustainable growth in the context of the growing pressure of production and consumption on the world's resources and environment. The greening of the European economy, as outlined in the EU 2020 strategy, will have profound effects on the labour market and the development of the skills of the European population.

Making the transition to a circular economy requires a pressing need for new skills, competences and approaches. Education, initial and continuous vocational training and non vocational adult learning (or "lifelong learning") have a critical role to play in delivering and updating relevant skills. The 'greening' dimension therefore needs to be integrated into each activity at national, regional and local levels: anticipation of competencies and qualification needs; recognition and validation of competencies and qualifications; information, support and guidance; and mobilising resources for lifelong learning.

As pointed out by the "Transforming Jobs and Skills for a Resource Efficient, Inclusive and Circular Economy: Recommendations and Summary of the Event" (2014): Green awareness needs to be built into the education system from an early age. The best approach may be to educate a versatile, ready-to-learn person rather than focusing on specific skills.

Furthermore, topping up and improving existing skills is at least as important as acquiring completely new skills. Complementing general skills with green skills can make a big difference.

Making the case for lifelong learning: Further support for lifelong learning initiatives could also be generated by creating a better evidence base on the positive impacts of lifelong learning activities to develop the skills needed in greening economies on long-term competitiveness and performance of enterprises and organisations.

Adult learning staff plays a key role in making lifelong learning a reality. Adult learning professionals help learners to develop knowledge, skills and attitudes throughout their lives. Indeed, the professional development of people working in education and training is one of the vital measures to improve quality of learning at all levels. And in here in where training on circular economy and developing green skills acquire a special relevance. Including these competences and skills in adult education enhances the active and more responsible citizenship and its compromise with a more sustainable community compromised with existing and future social, economic and environmental challenges. The role of adult trainers in providing transversally these competences in their training will enhance not only the training process, but a sustainable impact on the adults, able to deal in an effective way with these threats and contribute to the creation of a green socioeconomic environment.

1. Circular economy competences in adult education

Before presenting the CYCLE competence framework, we propose some basic information about the adult education systems of the project partner countries (Austria, Belgium, Spain, Italy, Poland and United Kingdom) to check how circular economy principles are taken into account.

1.1. Austria

Nowadays, the competences from circular economy are not integrated in the adult education offer. However, other personal and transversal competences, relevant to promote the transition to circular economy, are fully integrated in the adult education systems

1.2. Belgium

It is important to note that one of the themes of the programmes of social promotion centres are adult education courses to promote skills related to recycling and reuse.

For the introduction of circular economy into the education system, it is essential to analyse the PREC- Plan for the Circular Economy of the Brussels Region. One of the pillars of the PREC is based on innovation in the education and training system. The alliance between the Employment and Environment departments of the Brussels region has laid the first foundations for identifying the necessary training in certain sectors, developing their training contents and organisation. The evaluation posed by the actors in this context made it possible to identify 5 areas of work necessary to fully introduce the logic of circular economy.

- Identify and anticipate the skills that circular economy development demands today and those that are expected to become fundamental in the near future, both at an organisational/managerial level and at an operational/technical level;

- Training of trainers and teachers;
- Training of company directors and managers in the new perspectives offered by the circular economy and the skills needed to
 - o anticipate and understand the new skills that the circular economy will need to ensure a smooth transition,
 - o develop new managerial skills
 - o correctly reallocate the new skills acquired by their employees within their company
- Training of middle managers and workers (via sector activity)
- Education and training of the younger generations to ensure that the younger generation will be able to find their way around in the labour market linked to the circular economy

By 2025, the Brussels Region will have a complete and well-tried package of training modules and tools in circular economy constantly updated and fed by feedback from the field (notably in terms of new skills required by managers, new business models linked to the economy of functionality, etc.). These tools will integrate the notion of professional careers and training.

Main actions in the pipeline for the Regional Plan are:

1. The Employment, Training, Education and Economy Task Force will work on identifying the skills and training needed for the circular economy, both qualitatively and quantitatively.
2. Francophone employers' organization and MAD Brussels (the Brussels platform for expertise in the Fashion and Design sectors) will ensure the transmission of eco-design and eco-functionality tools to teachers in universities, secondary schools, as well as to trainers of public qualifying training operators in order to enable them to integrate them into their course curricula.
3. Development of e-learning modules on ecodesign, sustainable business models, environmental communication.

4. A database of existing initiatives on ecodesign will be developed, including contact points, trainers, designers, experimental sites for circularity in design, fashion, styling, and graphics
5. Inter-school and inter-university competitions will be set up to stimulate new ideas in circular economy in the design, fashion and styling sectors
6. The key players in training in the Brussels region will stimulate the provision of internships, company training and work-linked training activities in companies operating in circular economies.
7. The VET system will integrate the concepts of the Circular Economy in training courses for self-employed and entrepreneurs.
8. The regional agencies Impulse. Brussels and Brussels Environment will ensure that the tools developed within the framework of support for businesses are made available to universities and lifelong learning stakeholders
9. The Region will finance a diagnostic study on the integration of the circular economy into university education and the vocational training system.

1.3. Italy

There are projects and activities aiming at raising awareness on circular economy in primary and secondary school institutions. These projects are mainly sponsored by the Regions, the Municipalities and local non-profit organizations. There is no framework or relevant activities for the development of Circular Economy competences in Adult Education.

In 2017-2018, several seminars and workshops for professors and educators took place. Some teaching materials for high schools have been produced.

1.4. Poland

Circular economy competences in adult education have been recently promoted in Poland by various institutions with numerous initiatives and projects at national level.

Instytut Gospodarki o Obiegu Zamkniętym (The Circular Economy Institute) is a professional think tank prepared to address the problems arising with the implementation of Circular Economy principles in national economy, as well as to conduct talks and negotiations with decision-makers. The Institute is based on cooperation between NGOs, activists, academics and practitioners, both from Poland and other European countries.

Lodzkie House conducts the SCREEN “European Regions for Synergy in Circular Economy” project. According to its objectives, the SCREEN Project will contribute to: involvement of regional entities in joint undertakings aimed at the increase of synergy in the circular economy and the establishment of trans-national co-operation for the development and maximization of investments by supporting enterprising initiatives.

Since May 2017 the Ministry of the Environment has implemented the "Pilot priority programme of the Circular Economy", approved by the Board of the National Fund for Environmental Protection and Water Management. The purpose of the pilot study is to develop good practices in the field of the circular economy among chosen municipalities and then introduce them all over Poland.

In 2016-2017, the Association of Polish Cities participated in a project on ‘Increasing the competence of Polish self-government units in the field of circular economy and the use of RES (renewable energy sources) with the use of information technologies, based on Norwegian experience.

1.5. Spain

Up to now we can find in Spain no specific action to introduce the competences of circular economy in training, when we speak of adult

education, primary and secondary education or higher education. In recent years, some training actions have been carried out in this field, at a professional level, more with an informative character than with the aim of acquiring professional or personal competences and organised for the most part by private entities.

However, the Spanish strategy for the circular economy (draft February 2018) establishes among its objectives for 2030 training and employment the transition to the circular economy as one of its strategic objectives.

1.6. United Kingdom

In the specific field of the Circular Economy, the Emma MacArthur Foundation has been working with education providers in the UK to inspire “learners to re-think the future through the circular economy framework.”

The Foundation has created global teaching, learning and training platforms built around the circular economy framework, encompassing both formal and informal education. With an emphasis on online learning, the Foundation claims they provide cutting edge insights and content to support circular economy education, and the systems thinking required to accelerate a transition.

The Foundation has worked with Higher Education organisations both to redevelop curricula and to develop courses on the circular economy. Some of these are short courses, others are MOOCs and are free for adults to participate.

There are also a considerable number of courses run by sector and trade organisations, mostly based on particular courses. Some of these are free, but other charge a fee for participation.

The Green Skills Partnership brings together unions, employers, local councils, environmental organisations, education providers, community groups and state agencies in the UK to deliver green skills training in construction, retrofit, horticulture and waste management.

The partnership has evolved from initial experimentation in East London to successful piloting in South London to a broad based partnership for the whole city that is now extending in to the regions. Its original inspiration was the US west coast 'Apollo Alliance' model, of which the Institute for Public Policy Research and other organisations including the Trade Union Congress (TUC) were responsible for promoting awareness in the UK.

The partnership is co-ordinated by unionlearn (an organisation run by the Trade Union Council) and includes training providers, employers, trade unions, the voluntary sector and communities to deliver sustainability training and employment opportunities.

Unionlearn themselves provide two online courses for trade unionist members about the circular economy.

Leading organisations from across the further and higher education sector have joined forces to create the Sustainability Exchange. Combining resources and experience from top sustainable development and education bodies, the Sustainability Exchange is a resource for sustainability in tertiary education.

Delivered by the Environmental Association for Universities and Colleges (EAUC), the Sustainability Exchange provides sector professionals with up to date resources, insight, webinars, news, events and jobs connecting together sector professionals across the world, stimulating debate and the sharing of knowledge.

The Association has developed a knowledge bank of over 400 items, including approaches to integrating sustainability in the formal and informal curriculum.

2. Definition of circular economy competences – CYCLE MODEL

Competence frameworks are strategic instruments for further improving not only training environments but also the professional environment and employability. It is necessary to define an adapted and flexible framework of skills that responds to the cross-cutting nature of the economy, society and the environment.

The transition towards a circular economy model requires (as we have seen in the previous sections) not only the commitment towards the development of the technical skills that support the basic concepts that define the concept (keeping added value in products for as long as possible and reducing/eliminating waste) but also the development of transversal skills that make persons/citizens more central to the challenge of transition. Sustainable social capital is a key concept for new socio-economic models. It is necessary to empower citizens in models that promote both environmental sustainability (in a broader sense) and integrated models of the circular economy.

Currently, some sectors and occupations have integrated the approach of the circular economy. But it is crucial to go one step further and include skills for the circular economy in general adult education. And due the wide nature of the adult education systems in the different countries, we should focus our interest in those transversal competences that could easily integrated in all the models.

The CYCLE Competence Framework is a first attempt to define a set of competences on the circular economy for adult education. Although our proposal of competencies is born from an approximation to the needs of some adult education system in Europe, it can nevertheless represent a starting point and reference point in the field of the circular economy.

2.1. Competence: concept and methodology

The term "Competence" means:

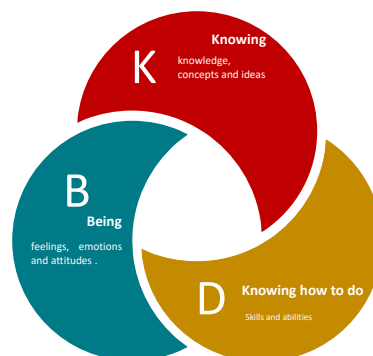
Mobilizing one's own resources (skills, attitudes, knowledge, experiences and values) and those of the environment to effectively and responsibly resolve situations and tasks in diverse contexts.

Competences refer to each of the three skills involved in the training process:

- **COGNITIVE:** Skills related to knowledge, concepts and ideas;
- **PSYCHOMOTOR:** Abilities related to the performance of actions, basic skills and abilities; and
- **AFFECTIVENESS:** Capacities related to feelings, emotions and attitudes.

This three-pronged approach provides a model for organizing and classifying the different learning contents and objectives. Thus, when defining a competency framework, we will distinguish between:

- Knowledge - KNOWING
- Skills - KNOW-HOW TO DO
- Attitudes – BEING



Knowledge, Skills and Values. Methodological approach

Competence is enhanced through practice, experience and reflection. Usually each situation to be resolved is different, so a key aspect is to

think and act strategically in situations and tasks: reflecting, planning, evaluating and rectifying.

In this way, attitudes acquire special relevance; that is, the form and predisposition to confront the situation and carry out the process. Positive attitudes bring quality to the performance of a task.

The EU places greater emphasis on the ability to innovate and on accepting innovations and the risks of action.

It is in life that people must be competent, and life-long learning must contribute to this: by providing appropriate tools and promoting reflective practice that facilitates later transfer to varied real contexts.

Once we have defined these competences in the field of education and training, we can:

- Promote them in general: prioritize certain types of activities that we know favour them and encourage them to put them into practice so that they emerge spontaneously.
- Teach them explicitly: not assuming that learners are competent but giving them tools and helping them to reflect on how they do it in order to improve.
- Accompany the acquisition process: through help, constant feedback, support and personalised guidance. It is important to follow the process of acquiring skills.

Monitor their development: check to what extent the learner is competent and whether it applies it to new contexts, areas, situations.

2.2. Competences for circular economy

Creating a circular economy for Europe is a key priority in the 2020 EU strategy and the same approach is included in the objectives of the European Union for world sustainability and its contribution to the 2030

Agenda for Sustainable Development¹ ‘Next steps for a sustainable European future: European Union action for sustainability’. As is stated in EU action plan for the Circular economy, *the transition to a more circular economy, where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimized, is an essential contribution to the EU's efforts to develop a sustainable, low carbon, resource efficient and competitive economy*².

The introduction of the circular economy strengthens the competitiveness of the European economy by responding to the challenge of scarce resources and unstable pricing policies. Furthermore, the promotion of this concept in Community policies will support the opening of new and more sustainable business opportunities, creating employment and increasing the opportunities for sustainable social development.

We can define **competencies for the circular economy** as those that *are key to a sustainable future and that range from a detailed knowledge of resources and raw materials to a rich understanding of social behaviours required to create a model that works for society, the economy and the environment.*

As we can observe, this concept covers the two areas of transformation of the circular economy: production and consumption. Both contain theoretical knowledge and social skills that need to be developed and updated. From this perspective, the following illustration gives an overview of the three main areas of competence that characterise the circular economy:

¹ SWD (2016) 390 final: *Key European action supporting the 2030 Agenda and the Sustainability Development Goals*. Accompanying the document “Next steps for a sustainable European future: European Union action for sustainability” COM(2016)739 final.

² COM(2015) 614 final

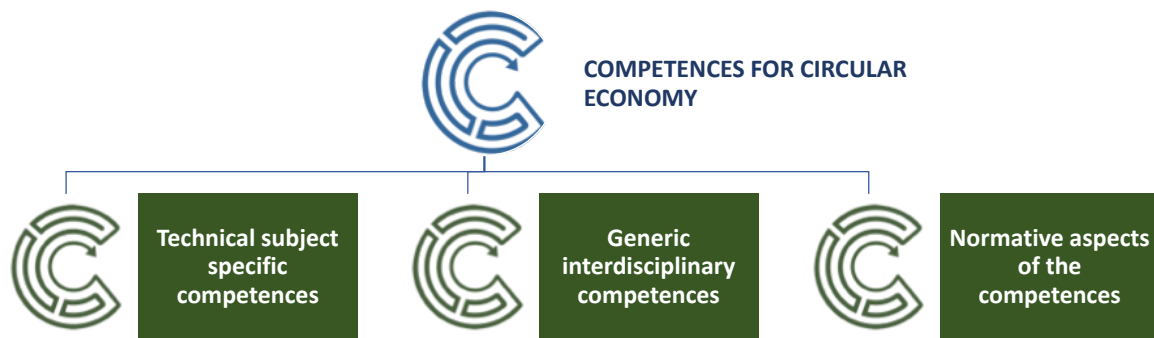


Figure 1. Fields of circular economy competences.

The picture above presents the different types of competences that contribute to the development of competences for circular economy. Thus, we can find three different fields when we talk about green skills:

1. Technical competences, that is those competences related to specific tasks in each occupation.
2. Generic interdisciplinary competences, that is those related to transversal areas of knowledge needed to support any occupation; and
3. Normative competences, that is, those (also) transversal skills related to the vision and values needed to support the transition to a circular economy model.

This distribution should be seen as the starting point for the development of the CYCLE competence framework for the circular economy. While technical competencies are a key part of the transition to the circular economy, the need to create a model that serves as a cross-cutting theme in any adult education system means that our model will focus exclusively on those cross-cutting competencies related to social behaviours that are aimed not only at gaining greater knowledge of the circular economy, but also at generating fundamental ways of acting and thinking in the transition process.

2.3. CYCLE competence framework

We have seen in the previous sections the concept of competence and the different approaches on competences for circular economy. Now it is time to define the CYCLE competences framework.

Most of the definitions of circular economy, highlight its main key features, such as:

- Value materials, products and resources for as long as possible;
- Optimize the use of materials and reuse them giving them another type of value; and
- Finally, recycle these materials and products and create others from them, thus closing their life circle.

These three ideas are the first base of the approach that helped us to determine three large groups of competences.

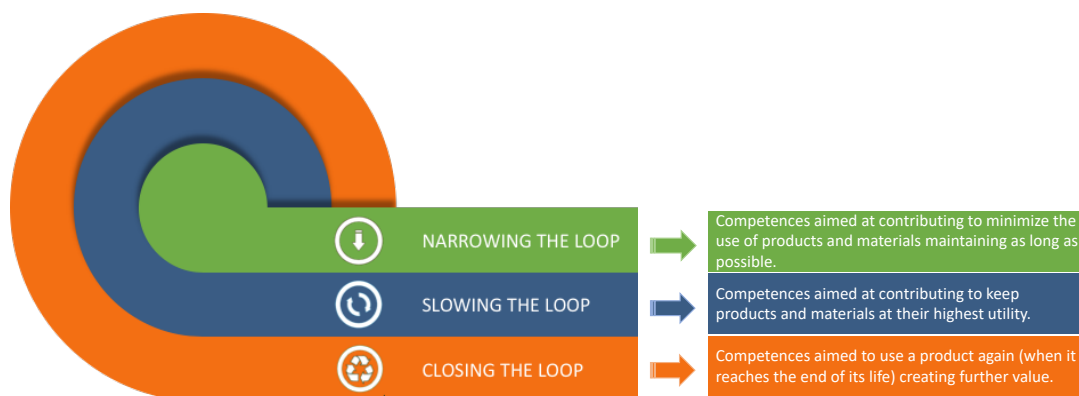


Figure 2. CYCLE competence framework structure

Based on a circular approach, there are three types of competence:

1. Competences aimed at contributing to minimize the use of products and materials maintaining value as long as possible (preserving) – **NARROWING THE LOOP.**

2. Competences aimed at contributing to maintaining products and materials at their highest utility (optimising) – **SLOWING THE LOOP.**
3. Competences aiming to use a product again (when it reaches the end of its life), creating further value (fostering effectiveness) – **CLOSING THE LOOP.**

We included in each of these categories transversal and personal competences that support those main concepts.

Furthermore, the CYCLE competence framework, which is aimed at identifying a set of transversal skills to support the transition to circular economy model, finds many similarities with the Entrecomp framework. The EntreComp Framework (EC-JRS, 2016) relies on a broad definition of entrepreneurship, characterized by the ability to “act upon opportunities and ideas and transform them into value for others. The value that is created can be financial, cultural, or social”. The flexible approach of the model struggle to embrace different kind of entrepreneurship, but further investigations are needed to understand concrete implications and connections between skills, social and green entrepreneurship.

Circular economy overwhelmingly demands a systemic approach, using skills, knowledge and experience from many disciplines. Whilst the EntreComp Framework does not have a taxonomic rigor, its visual representation calls for a slight polarization between mobilizing resources and sustainable thinking skills areas. Taking inspiration from EntreComp, CYCLE competence framework promotes a stronger link between systemic view on resources and value generation, incorporating the concept of waste as poor management that limits entrepreneurial potential, generates costs and damages profits.

The CYCLE competence model has been developed with the aim of identifying the areas of interrelation between, on the one hand, the main definitions of circular economy and, on the other hand, the models of definition of entrepreneurial competences. In the following tables we present a summary definition of the competences that compose it.



In the following tables we will define all the competences of the CYCLE competence framework for the circular economy.

COMPETENCE	SUSTAINABILITY MOTIVATION	
	Acting and behaving according to a set of reasons and/or facts in order to preserve materials, resources and products for the circular economy.	
SKILLS	KNOWLEDGE	ATTITUDES
<ul style="list-style-type: none"> ○ Be able to identify the facts and reasons to contribute to the circular economy strategy; ○ Be able to analyse the facts and reasons and determinate the most relevant for the circular economy; ○ Be able to integrate facts and reasons in regular life activity to act towards the circular economy; ○ Be able to be motivated by the acts and reasons to contribute to the main principles of the circular economy. 	<ul style="list-style-type: none"> ⇒ Knowing the general strategy and ideas about circular economy; ⇒ Knowing the models to preserve materials and resources; ⇒ Knowing the programmes to promote preservation in the framework of the circular economy; ⇒ Knowing local initiatives and tools towards the circular economy. 	<ul style="list-style-type: none"> • Careful observation of the environment; • Social commitment; • Focus on new generations; • Multidisciplinary approach; • Determination; • Responsibility.

COMPETENCE	<p>SELF-AWARENESS (EFFICACY)</p> <p><i>Knowing, evaluating and comparing one's own behaviours, thoughts, values and emotions in the preservation of materials and resources to contribute to the circular economy.</i></p>	
SKILLS	KNOWLEDGE	ATTITUDES
<ul style="list-style-type: none"> ○ Be able to accurately recognize one's own emotions, thoughts, and values and how they influence behaviour towards the preservation of resources; ○ Be able to successfully regulate one's emotions and thoughts to deal with circular economy issues; ○ Be able to make constructive choices about personal behaviour and social interactions based on environmental standards. 	<ul style="list-style-type: none"> ⇒ Knowing the environmental value of resources and preservation of material; ⇒ Knowing methods to manage emotions and ethical and environmental values to integrate them in a personal approach to the circular economy; ⇒ Knowing methods and tools to support the building of constructive choices integrating elements of the circular economy. 	<ul style="list-style-type: none"> • Critical thinking; • Careful observation of the environment; • Social commitment; • Summarising and assessing facts and reasons; • Self-determination; • Ethical thinking; • Responsibility.

COMPETENCE	TAKING SUSTAINABLE INITIATIVE <i>Showing initiative and encouraging others in dealing with environmental behaviours to promote the principles of the circular economy.</i>	
SKILLS	KNOWLEDGE	ATTITUDES
<ul style="list-style-type: none"> ○ Be able to encourage others to take responsibility in activities aimed at the conscious and sustainable use of natural resources; ○ Be able to show initiative in dealing with environmental issues that affect the community; ○ Be able to value and encourage others taking the initiative in solving environmental problems and creating value; ○ Be able to face unprecedented challenges and seize new opportunities. 	<ul style="list-style-type: none"> ⇒ Knowing techniques and tools to effectively communicate sustainable value ideas to others; ⇒ Knowing new working methods and incentives that enable community members to work together; ⇒ Knowing methods to face challenges and define actions to create environmental awareness towards the limited nature of natural resources; ⇒ Knowing tools to involve community in the preservation of resources and materials. 	<ul style="list-style-type: none"> • Careful observation of the environment; • Social commitment; • Focus on new generations; • Effective communication with peers; • Ethical thinking; • Multicultural management; • Care for others; • Responsibility.

COMPETENCE	VALUING SUSTAINABLE IDEAS <i>Identification, analysis, measuring and consideration of ideas to face the challenge of resource preservation in the field of the circular economy.</i>	
SKILLS	KNOWLEDGE	ATTITUDES
<ul style="list-style-type: none"> ○ Be able to identify, analyse and consider ideas to approach natural resources sustainability issues. ○ Be able to measure and determine the value of ideas to deal with the threat of resource conscious and sustainable use; ○ Be able to connect ideas to avoid duplication and increase their value. ○ Be able to rank in an orderly manner and by category one or more ideas according to their impact on natural resource consumption. 	<ul style="list-style-type: none"> ⇒ Knowing the methods and tools to conceive sustainable ideas and assess the impact of ideas on natural resources; ⇒ Knowing the tools to create a relation of ideas according to their environmental weight and impact criteria; ⇒ Knowing the methods to critically analysis and review ideas to avoid duplication; ⇒ Knowing the tools to create a ranking of ideas according to their impact on use of natural resources and environment restoration. 	<ul style="list-style-type: none"> • Ethical thinking; • Summarising and assessing data; • Planning and reasoning; • Apply criteria for environmental sustainability.

COMPETENCE	MOBILISING RESOURCES <i>Identifying tangible and intangible resources (included human resources) to transform an idea into action in the field of the circular economy.</i>	
SKILLS	KNOWLEDGE	ATTITUDES
<ul style="list-style-type: none"> ○ Be able to identify tangible and intangible resources needed to transform a linear idea into circular action; ○ Be able to determine realistic needs for additional resources to advance a mission; ○ Be able to understand the main functional interactions between stakeholders; ○ Be able to distinguish the resources needed at every stage of the mission life cycle; ○ Be able to analyse the existing context and the ecosystem of stakeholders. 	<ul style="list-style-type: none"> ⇒ Knowing the tools to identify available resources; ⇒ Knowing methods to analyse and assess existing resources and make a critical analysis; ⇒ Knowing the methodologies to evaluate and define the availability of resources to optimise their use; ⇒ Knowing the methods to identify your community stakeholders; ⇒ Knowing the theories to communicate with the stakeholders and involve them in the process for the circular economy. 	<ul style="list-style-type: none"> • Planning and reasoning; • Summarising and assessing data; • Apply criteria for environmental sustainability; • Multidisciplinary approach; • Ethical thinking; • Social commitment; • Critical information management.

COMPETENCE	WORKING WITH OTHERS <i>Combining different contributions and find ideas (also from outside of the environment) to create environmental value to reuse and optimise resources and products.</i>	
SKILLS	KNOWLEDGE	ATTITUDES
<ul style="list-style-type: none"> ○ Be able to show empathy towards others; listen actively; recognise the role of emotions, attitudes and behaviours in shaping other people's attitudes and behaviours; ○ Be able deal with non-assertive behaviour that hinders my value-creating activities; ○ Be able to show respect for people's differences, their background and situations; value diversity as a possible source of ideas and opportunities. 	<ul style="list-style-type: none"> ⇒ Knowing active listening methodologies and techniques; ⇒ Knowing methodologies to assess others regarding their emotions and behaviours; ⇒ Knowing methods and tools to promote the continuous collaboration in optimization of the resources; ⇒ Knowing techniques for multicultural management; ⇒ Knowing tools for on-line collaboration on environmental issues. 	<ul style="list-style-type: none"> • Commitment to others • Apply criteria for environmental sustainability; • Careful observation of the environment; • Effective communication with peers; • Ethical thinking; • Social commitment; • Critical information management.

PEDAGOGICAL MODEL TO INCLUDE CIRCULAR ECONOMY COMPETENCES
IN ADULT EDUCATION

COMPETENCE	CREATIVITY <i>Responding in a circular economy approach to a complex situation to optimize resources and products in a new and original way</i>	
SKILLS	KNOWLEDGE	ATTITUDES
<ul style="list-style-type: none"> ○ Be able to identify problems and creating new solutions that consume fewer natural resources; ○ Be able to seek different points of view: asking questions, exploring options, soliciting feedback; ○ Be able to approach challenges creatively; ○ Be able to encourage individuals and teams to bring forward new ideas; ○ Be able to make it easier for groups of people to collaborate and deliver new solutions. 	<ul style="list-style-type: none"> ⇒ Knowing concepts and tools to enhance creative processes; ⇒ Knowing the tools and methodologies to promote new and original ways to respond to promote concisions and sustainable use of resources 	<ul style="list-style-type: none"> • Critical and ethical thinking; • Critical information management; • Multidisciplinary approach; • Learning from experience; • Think on the future; • Communicate effectively with peers; • Learn from others.

COMPETENCE	SUSTAINABLE VISION <i>Communicating clearly to others a compelling and inspired vision or a core environmental purpose towards sustainability to optimise.</i>	
SKILLS	KNOWLEDGE	ATTITUDES
<ul style="list-style-type: none"> ○ Be able to anticipate future environmental trends and strategically develop a broad vision that incorporates many groups and organizations ○ Be able to have a systemic view of innovation, taking into consideration advantages connected with resources efficiency; ○ Be able to discern what drives and directs the audience toward a common goal of the circular economy. 	<ul style="list-style-type: none"> ⇒ Knowing the environmental strategies and policies, and policies for transition to circular economy; ⇒ Knowing methodologies and tools to analyse critically the trends in the usage of natural resources; ⇒ Knowing techniques to measure the different impact of actions plans to optimise the use of natural resources; ⇒ Knowing tools and techniques to communicate with peers. 	<ul style="list-style-type: none"> • Critical and ethical thinking; • Critical information management; • Multidisciplinary approach; • Apply criteria for environmental management; • Ethical thinking; • Think about the future; • Focus on new generations; • Social commitment; • Care for others; • Determination.

COMPETENCE	COPING WITH RISKS <i>Assuming the challenges, to accept the risk and to succeed in a situation of risk and doubt.</i>	
SKILLS	KNOWLEDGE	ATTITUDES
<ul style="list-style-type: none"> ○ Be able to make a decision on basis of the information received and collected; ○ Be able to be willing and open to change and anticipate the impact of change and direct self and other in smoothly shifting; ○ Be able to engage other people (cross functional collaborators) and perspectives in the solution and obtain advice before making any decision; ○ Be able to assume the challenge, to accept risk and uncertainty with a view on sustainable use of resources. 	<ul style="list-style-type: none"> ⇒ Knowing the methodologies to implement a critical analysis on a specific situation; ⇒ Knowing the methods to identify, analyse and measure the risks; ⇒ Knowing the theoretical approach to define risks mitigation measures; ⇒ Knowing the methodologies and tools to identify, accept and manage the change and promote the change in society. 	<ul style="list-style-type: none"> • Critical information management; • Summarising and assessing data; • Applying criteria for environmental sustainability; • Careful observation of the environment; • Reasoning; • Ethical thinking; • Social commitment; • Responsibility.

COMPETENCE	SPOTTING OPPORTUNITIES <i>Making connections between ideas and concepts from different fields, linking different disciplines and ideas with a circular economy approach.</i>	
SKILLS	KNOWLEDGE	ATTITUDES
<ul style="list-style-type: none"> ○ Be able to analyse the existing context and the ecosystem of stakeholders and to understand the main functional interactions between stakeholders, ○ Be able to distinguish the resources needed at every stage of the mission life cycle; ○ Be able to identify and to create synergies with other local actors to deal with the challenges of resources, products and materials disposal and recycling; ○ Be able to make connections between ideas, concepts and approaches regarding to circular economy. 	<ul style="list-style-type: none"> ⇒ Knowing the methods and tools to undertake a critical analysis in the local community regarding the sustainability of the territory; ⇒ Knowing the methods to identify the opportunities and risks of circular economy issues; ⇒ Knowing different techniques to identify concepts and ideas and connect with others; ⇒ Knowing techniques to identify actors and create synergies to find common solutions and action plans regarding to circular economy issues; ⇒ Knowing the environmental plan and facts on the circular economy in the community. 	<ul style="list-style-type: none"> • Critical thinking; • Communication with others; • Careful observation of the environment; • Learning from experience; • Determination; • Multicultural management; • Multidisciplinary approach; • Learn from others; • Think about the future.

COMPETENCE	WORK SUSTAINABLY <i>Applying the most appropriate environmental management in a given scenario.</i>	
SKILLS	KNOWLEDGE	ATTITUDES
<ul style="list-style-type: none"> ○ Be able to apply environmental workplace regulation, including reporting channels and procedures. ○ Be able to create working guideline,s balanced with sustainability criteria and ensure long-term objectives; ○ Be able to identify the challenges in the field of work and collaboration with other environmental challenges and for the circular economy, to answer them within sustainability criteria; ○ Be able to create a work environment that takes into account environmental policies and criteria for the transition to the circular economy. 	<ul style="list-style-type: none"> ⇒ Knowing the different environmental programmes and regulations in the work environment; ⇒ Knowing the policies about circular economy (resources management, recycling and waste disposal); ⇒ Knowing the methodologies to analyse from an environmental approach working and living environments; ⇒ Knowing the pathways to apply environmental criteria in the personal and professional life. 	<ul style="list-style-type: none"> • Careful observation of the environment; • Apply criteria for environmental sustainability; • Ethical thinking; • Critical information management; • Social commitment; • Care for others; • Focus on new generations; • Think about the future.

COMPETENCE	LEARNING BY EXPERIENCE <i>Applying formal learning to practices and related learning from experience to promote and share knowledge in the field of the circular economy and beyond towards the sustainability.</i>	
SKILLS	KNOWLEDGE	ATTITUDES
<ul style="list-style-type: none"> ○ Be able to apply formal learning on circular economy issues to practice and to relate learning from experience to formal knowledge; ○ Be able to reflect on experiences as a self organised process and tool for learning; ○ Be aware of own learning needs on the circular economy and environmental issues; ○ The identification of opportunities for learning from experience to meet learning needs; ○ Be able to transfer learning from one situation to other new situations. 	<ul style="list-style-type: none"> ⇒ Knowing the basic principles on circular economy theory; ⇒ Knowing the tools to self-assess your knowledge about the circular economy and identify your learning needs; ⇒ Knowing the methodologies to transmit previously acquired knowledge on the circular economy to others through non formal learning activities; ⇒ Knowing the information sources about the circular economy to learn new concepts and theories to deal with learning needs. 	<ul style="list-style-type: none"> • Learning form experience; • Careful observation of the environment; • Communicate with others; • Communicate effectively with peers; • Multidisciplinary approach; • Critical information managements; • Learn from others; Social commitment; • Care for others.

3. Pedagogical model to integrate competences in adult education

Once the CYCLE competence framework has been finalised, the next step is to ensure that we respond to the needs of our target group and also to ensure that these competences are acquired. In addition, we must evaluate the extent to which each formation is strengthened.

That is why we would like to offer a proposal of itineraries and resources in order to facilitate the useful incorporation of the competences in adult education offers. The following section show the general outline of the itinerary, which we have structured in three phases:

Phase 1: Awareness raising - focus more on trainers so that they are better aware of the competency model created.

Phase 2. General programming - in order to implement the curriculum in specific activities for the development of the circular economy.

Phase 3. Complementary programming - to implement complementary training activities to strengthen the model.

The model is based in two tools in charge to integrate the competences:

- CYCLE COMPETENCE FRAMEWORK
- CYCLE COMPETENCE CENTRE – On-line environment based on social learning methodology, created in the framework of CYCEL project.
www.cyclecc.eu

PEDAGOGICAL MODEL TO INCLUDE CIRCULAR ECONOMY COMPETENCES
IN ADULT EDUCATION

PHASE 1. AWARENESS RAISING			
ACTIVITIES	OBJECTIVE	TOOLS	WHO
Analysis and review of the CYCLE competence framework	Knowing the approach of the competence framework and adapt it to his/her needs	The CYCLE competence framework	Trainer

PHASE 2. GENERAL PROGRAMING			
ACTIVITIES	OBJECTIVE	TOOLS	WHO
Introduction to the schema	Trainer/Facilitator to understand the different parts of the training process	CYCLE competence framework CYCLE COMPETENCE CENTRE	Trainer Facilitator
Analysis of how contribute each competence to the learning process	Identify how each area promotes the competences and understand the transversal character of the proposed framework	CYCLE competence framework	Trainer Facilitator Expert

PHASE 2. GENERAL PROGRAMING			
ACTIVITIES	OBJECTIVE	TOOLS	WHO
Linking previous step to the evaluation criteria	Identify its importance and practical value as an area for programming and competence testing	CYCLE COMPETENCE CENTRE	Trainer Facilitator
Linking all the steps to the competence framework	Build a basic structure that allows the development of competences	CYCLE competence framework CYCLE COMPETENCE CENTRE	Trainer Facilitator
Review the training programme	Overview of training offers to facilitate consensus and coordination with other trainers, trainees and stakeholder	CYCLE competence framework CYCLE COMPETENCE CENTRE	Trainer Facilitator Stakeholders
Longitudinal and horizontal revision of the programming	Fostering coherence, coordination and complementarity in the teaching learning	CYCLE competence framework CYCLE COMPETENCE CENTRE	Trainer

PEDAGOGICAL MODEL TO INCLUDE CIRCULAR ECONOMY COMPETENCES
IN ADULT EDUCATION

PHASE 2. GENERAL PROGRAMING			
ACTIVITIES	OBJECTIVE	TOOLS	WHO
Include the competences in a complementary training	Fostering coherence, coordination and complementarity of the teaching – learning	CYCLE competence framework	Trainer
Evaluation of the training ; collecting evidence	Training in the systematic collection of evidence that makes it possible to assess the development of competences	Evaluation approaches	Trainer Trainee

PHASE 3. COMPLEMENTARY PROGRAMME	
METHODOLOGIES	TASKS
Introducing different training/learning methodologies and how they can contribute to the development of the CYCLE competence framework	Open horizons, showcase available methodological resources, help identify those where training is needed, find informal environments to learn
Training for integration of tasks	To become competent in the development of disciplinary or interdisciplinary activities that favour the development of competences in an integrated way

References

Cedefop (2017). Investing in skills pays off: the economic and social cost of low-skilled adults in the EU. Luxembourg: Publications Office. Cedefop research paper; No 60. <http://dx.doi.org/10.2801/23250>

ELLEN MACARTHUR FOUNDATION (2016): Delivering circular economy. A toolkit for policy makers.

ELLEN MACARTHUR FOUNDATION (2015): Towards a circular economy: Business rationale for accelerate transition. 2015.

EUROPEAN COMMISSION (2015): Closing the loop – An EU action plan for the Circular Economy. COM(2015)614 final

KRAAIJENHAGEN, C.; VAN OPPEN, C. and BOCKEN, N. (2016): Circular business. Collaborate and circulate.

KIRCHHERR, J; REIKE, D; and HEKKERT, M. (2017): *Conceptualizing the circular economy: An analysis of 114 definitions* in Resources, Conservation & Recycling, 127 (2017) 221-232. Available online 15 September 2017. <https://doi.org/10.1016/j.resconrec.2017.09.005>

MCCARTHY, A.; DELLINK, R. and BIBAS, R. (2018), "The Macroeconomics of the Circular Economy Transition: A Critical Review of Modelling Approaches", OECD Environment Working Papers, No. 130, OECD Publishing, Paris.

THIBAUT, W. (2018). The Concept of Circular Economy: its Origins and its Evolution. 10.13140/RG.2.2.17021.87523.

UN: Transforming our world: the 2030 Agenda for sustainable development. (A/70(L.1))
http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

