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CIRCULAR ECONOMY: POTENTIAL AND CHALLENGES

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Abstract:
This paper argues that increasing resource efficiency through growth in circular economy can help address structural mismatch in European labour markets. A circular economy creates economic value with more labour and fewer resources, therefore growth in circular economy can potentially deliver economic benefits such as employment creation and lower structural unemployment by offering a good geographical spread of job opportunities. Higher unemployment regions can benefit from remanufacturing employment at or near to existing manufacturing industry. Growth in recycling, re-use, repair activities (and remanufacturing) also offer the potential to create jobs suitable for employees displaced from traditional manufacturing. Through expanding circular economy activity there's a reasonable potential to reduce regional and/or occupational mismatch and a strong chance that net jobs can be created with sustained reductions in unemployment.
Key words: circular economy, job, growth, resource efficiency.

1. Introduction

The circular economy is a fundamental change in the traditional economic model, and an important way to change economic growth pattern and achieve the balance among economy, resources and 467 environments. Circular economy through eco-design, waste prevention and increased reuse and recycling of products, provides that value of products, materials and resources is maintained in the economy for as long as possible.

The most used definition for circular economy is that *"it is an alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible, extracting the maximum value from them whilst in use, then recovering and reusing products and materials. Examples of circular business models include designing products to last longer, which can lead to greater reuse and greater ability to repair/refurbish and re-sell products to support growth in the remanufacturing industry; and*

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allow for easy recovery of materials when a product is eventually recycled. Service models, which could include product maintenance and take back schemes as well as rent/lease and peer-to-peer sharing models, also hold much potential" (Beasley et al.,2014).

Having in mind this definition, here are the reasons why a circular economy is important.

As well as creating new opportunities for growth, a more circular economy will enhance to (DEFRA, 2011):

- reduce the waste
- drive greater resource productivity
- deliver a more competitive national economy.
- position the host country to better address emerging resource security/scarcity issues in the future.
- help to reduce the environmental impacts of host production and consumption (in both - the host country and abroad).

2. Resource efficiency and circular economy: current strategies and efforts in EU

Europe 2020 strategy emphasises the policy objectives of sustainable development and is focused to resource efficiency and EU competitiveness. In end of 2015, the European Commission adopted a Circular Economy Package that seems to be a crucial turning point for further implementation of ecodesign concept into various economy sectors and will contribute to "closing the loop" of product life cycles through greater recycling and reuse. EU Action Plan for the Circular Economy establishes a concrete targets and measures for waste management and resource efficiency by 2030 (DEFRA , 2015). Therefore, circular economy development initiatives create new challenges and draw up the new perspectives. At the base of circular economy is life cycle thinking. Life cycle thinking means recognizing the various impacts that occur at all points along the life cycle of the product or material. It also means recognizing how certain choices – materials used, manufacturing process, energy sources, distribution channels, disposal possibilities – influence those impacts. In practice, life cycle thinking means evaluating the potential influences as part of the decision making process (UNEP, 2007). Life cycle thinking is a broad concept that facilitates an integrated assessment of the benefits and the burdens in terms of environmental, social, and economic aspects, for specific products and regions, etc. The application of life cycle thinking requires specific methodologies. Therefore, circular economy is a very complex issue, involving resource extraction, transportation, production, consumption, distribution, waste management, social norms, biological and technological cycles etc. For developing of circular economy is necessary to explore the theory of circular economy and possible practical implementation, but to drive broader changes it is critical to collect and share data, spread best practice, invest in innovation and encourage consumers with adequate green product information. The purpose of the each country is to investigate basic principles and nature of circular economy, problems for the transition to a circular economy and to propose relevant policies, possible solutions and constructive mechanism of promoting circular economy

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(EMF, 2015). The results of the research show that circular economy implementation milestones are: legal framework, administrative conditions, economic instruments and public education and awareness.

3. Circular economy in Europe: an economic approach

Growing circular economy offers substantial potential to create jobs through lowering structural mismatch in high unemployment regions in Europe. Development of a circular economy involves a major industrial transformation. Past industrial transitions and the focus on labour productivity have often involved using less labour, creating high unemployment in some regions and countries or for some categories of workers. By contrast, the growth of the circular economy can involve using more labour and fewer resources to increase the efficiency of economic activity (Fischer et al.,2011). Therefore, integrating the labour market impacts of a growing circular economy into the overall labour market is important as it also allows a distinction between net or additional job creation and gross jobs where vacancies are filled by people moving from existing posts. The report also discusses developing metrics that measure economic productivity relative to material inputs, rather than solely focussing on labour or energy, so that circular economy principles are more likely to become embedded in business thinking (Eurostat, 2018).

Europe faces substantial economic and environmental challenges in its use of labour and scarce natural resources. In 2014, unemployment had risen in every single European country apart from Germany compared to 2008 when the financial crisis began (Fischer et al.,2011). There are signs that employment is recovering and unemployment is starting to show signs of stabilisation (or is falling in some countries across Europe), but unemployment remains sharply higher in many countries, particularly for certain occupational types and age groups. Linking increasing resource efficiency and growth in circular economy offers a potential for the creation of net jobs that can reduce unemployment and offer long lasting benefits to the performance of labour markets in Europe.

A circular economy create economic value with more labour and fewer resources, therefore growth in circular economy can potentially deliver economic benefits such as (Melece, 2016):

- employment creation,
- lower structural unemployment and
- increased materials productivity.

Growing circular economies create economic value using more labour and fewer resources thereby increasing the efficiency of resource use and economic activity. Integrating the labour requirements of a growing circular economy into the overall labour market is important; it also allows a distinction to be made between net or additional job creation and gross jobs creation where vacancies are filled by people moving from existing posts. Current employment in Europe in circular economy activities (in the repair, waste and recycling, rental & leasing sectors) is estimated to be at

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least 3.4 million (Eurostat, 2018). Of this total 1.2 million jobs are in repair of machinery & equipment, 400,000 jobs are in repair of computers, personal and other household goods, 700,000 jobs are in waste collection, treatment & disposal activities, 300,000 are employed in the recovery of sorted materials and the wholesale of waste and scrap, 100,000 jobs are in in-store retail of second hand goods and 600,000 people are employed in rental & leasing activities. An expansion in circular economy activity appears to offer the potential to create jobs across Europe through reducing cross country differences in unemployment: indicators of current employment in circular economy activities are broadly in line with the distribution of total employment across Europe and other measures of the propensity for countries to specialise in "circular economy" activities together with patterns in the geographical distribution of these activities illustrate a reasonable potential for European countries to benefit from expansion in circular economy (Hobson, 2016). And, there is a strong potential for an expansion in circular economy in Europe to offer jobs in mid-level occupations where there has been a decline in the number of posts offered (EC, 2018). As an illustration of this potential, an indicative quantification from the analysis in this report, which envisages a continuation of the current development path towards circular economy in Europe, shows that the potential labour market impact in Europe by 2030 is to create 1.2 million jobs with a reduction in unemployment in Europe by around 250,000 (Figure 1). Inevitably there are considerable uncertainties around such estimates; in particular future advancements in technology could substantially change this picture (WRAP, 2018).

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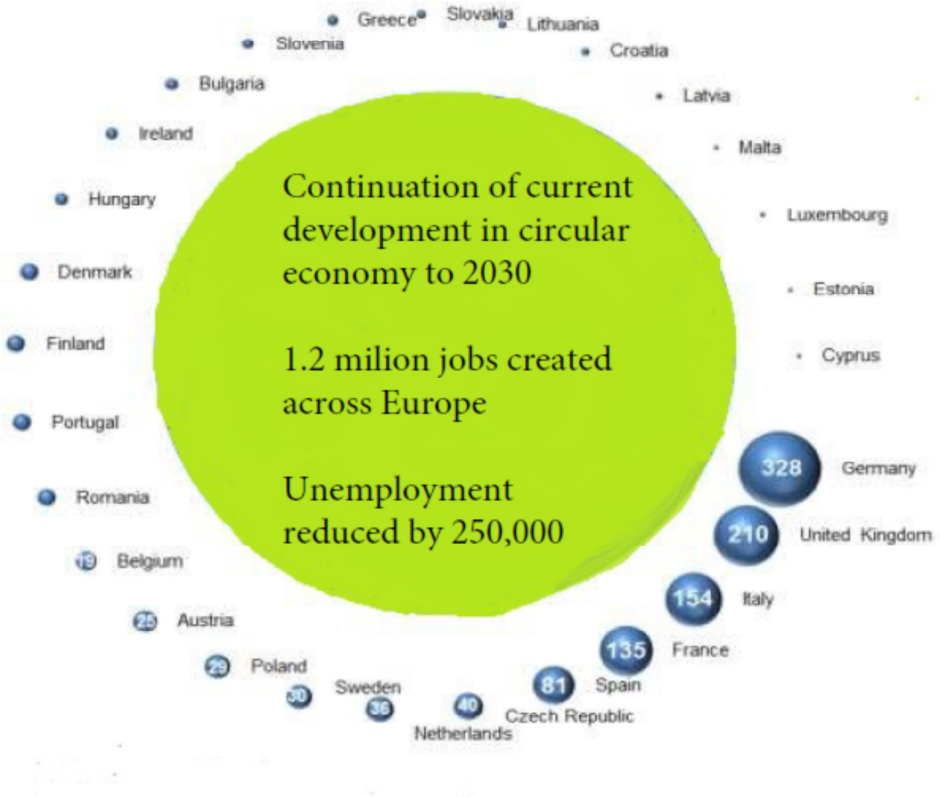
Figure 1. Potential jobs created in Europe through expansion in circular economy activity to 2030



Source: WRAP, 2018.

4. Evolution of resource efficiency

The proportion of recovered materials (biomass, metals & minerals but excluding fossil fuels) in use in the European economy has been increasing over time. Between 2004 and 2012 material consumption reduced by around 800 million tonnes (biomass, metals & minerals and excluding fossil fuels), the amount of material recycled increased by 163 million tonnes and net imports of materials reduced. Over the same period the economy expanded by 8% and the population grew by around 3% (OSCE, 2017). Figure 2 suggests that while domestic material consumption and net imports have fallen since 2008, the proportion of materials recovered from waste in total has increased. An indicator of circularity (the amount of materials recovered from all waste streams relative to the domestic consumption of materials) suggests that Europe is currently around 20% 'circular' in its materials use compared to 15% in 2004. A similar trend is also apparent in measures of raw material consumption (Eurostat ,2014).

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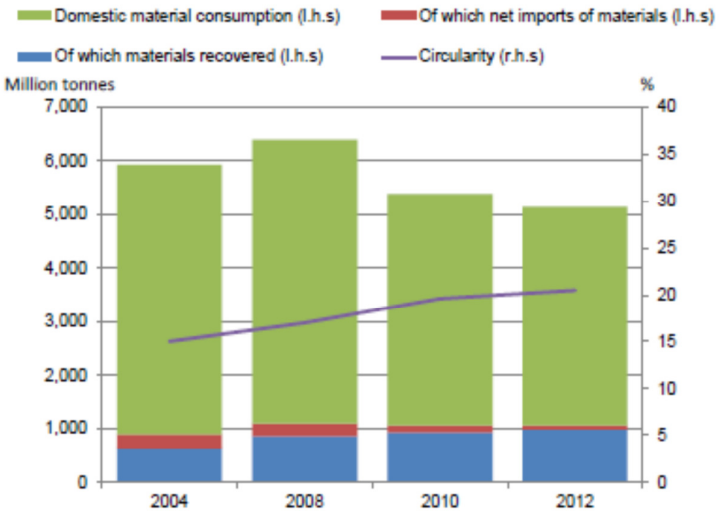
There's a growing evidence base documenting the evolution of resource efficiency and recycling in Europe and the associated expansion of jobs in the recycling sector as recycling rates have increased. The economy has become more circular as it has expanded, it is using fewer extracted or imported resources and more resources from materials recovered from its waste streams. Fischer et al (2011) discuss the extent to which the increase in recycling has led to the creation of permanent jobs across the European economy. In 2007 there were 301,000 people in Europe employed in the recycling sector compared with 177,000 in 2000 - an increase of 70% - and which equates to an annual increase of 8% with many of the jobs created being for people with relatively low skills (EEA, 2016).

Figure 2. Domestic material consumption and an indicator of circularity for the EU



Source: Eurostat, 2014.

5. Prospects for benefits from circular economy

As circular economy activity expands its labour needs are likely to be recruited from the existing stock of unemployed for occupations where unemployment is higher. In other words if you want to hire a low skilled worker, there is a greater chance that you could find someone who is currently unemployed than would be the case for hiring an experienced professional.

The key points arising from the mapping of current employment patterns in circular economy activities are as follows (EMF, 2015):

1. Employment in these circular economy activities is distributed across Europe and broadly in line with the distribution of total employent
2. The circular economy activities in scope for this analysis would appear to offer the potential to create jobs across Europe by reducing regional mismatches in unemployment
3. There are currently an estimated 3.4 million people employed in the repair, waste & recycling and rental & leasing sectors across Europe
4. Measures of the propensity to specialise in 'circular economy' activities and patterns in

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the geographical distribution of broad circular economy activities illustrate a reasonable potential for all countries in Europe to benefit from an expansion in circular economy.

Facts for using the opportunity of the potential for an expansion in circular economy are (Jackson, 2009):

- A growing circular economy can offer geographically dispersed employment a range of occupations.
- Reuse and open loop recycling activities are likely to be the least geographically concentrated, requiring activity at a local and regional level across countries with remanufacturing activity likely to be relatively more concentrated and located near existing OEM manufacturing facilities.
- For both open/closed loop recycling and reuse activities there's a strong potential to offer some lower skilled jobs with remanufacturing and recycling activities requiring a greater proportion of mid-level skilled jobs.

6. Conclusion

This analysis argues that increasing resource efficiency through growth in circular economy can help address structural mismatch in European labour markets. A circular economy creates economic value with more labour and fewer resources, therefore growth in circular economy can potentially deliver economic benefits such as employment creation and lower structural unemployment by offering a good geographical spread of job opportunities. Higher unemployment regions can benefit from remanufacturing employment at or near to existing manufacturing industry. Growth in recycling, re-use, repair activities (and remanufacturing) also offer the potential to create jobs suitable for employees displaced from traditional manufacturing. Through expanding circular economy activity there's a reasonable potential to reduce regional and/or occupational mismatch and a strong chance that net jobs can be created with sustained reductions in unemployment.

So there's a reasonable chance that a growing circular economy in Europe will offer opportunities for a range of occupations across regions and countries. The exploitation of the growth potential of a more circular economy requires use of indicators which will recognise its contribution. Focussing solely on labour productivity indicators and excluding other indicators of materials or resource productivity may not fully reflect the economic potential of moving towards a more circular economy. Indicators of material productivity alongside other indicators would better recognise the potential of a range of more circular business models which have the potential to make both significant contributions to economic growth, employment and social wellbeing.

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