federal public service
HEALTH, FOOD CHAIN SAFETY AND ENVIRONMENT

POTENTIAL OF CIRCULAR ECONOMY IN BELGIUM – EXECUTIVE SUMMARY

In accordance with the set of specifications published by the Federal Public Service Health, Food Chain Safety and Environment[1], **the study on the potential of circular economy in Belgium** which is led by PwC, in consortium with the *Institut de Conseils et d'Etudes en Développement Durable* (ICEDD) and OAKDENE HOLLINS, has **three main objectives**. These are:

1. **to compute the economic potential** of the development of a circular economy in Belgium,
2. **to specify the indicators which will be used to assess the proposed objectives**,
3. **to propose concrete, quantified and realistic objectives** for a federal policy.

The circular economy has been defined at multiple times in the literature. In order to ensure coherence between the propositions of measures for the development of the circular economy made at the federal level[2] on the one hand and the analysis relating to the economic potential of the present study on the other hand, the **definition** used by the workgroup that has established the federal measures has been chosen for the needs of this study. This definition takes into account the production, but also the supply of goods and services, the demand, the behaviour of the consumers as well as the waste management. Therefore, this definition has multiples components or facets:

i. The industrial symbiosis: It represents an industrial organisational method put into practice by different economic operators on a same territory and characterized by an optimized resources allocation through exchanges of flux or a mutualisation of goods and services;
ii. The second use: It allows, through the gift or the second hand sale, to extend the use of a product by offering it a new life;
iii. The repair: It consists to restore usage of a product, allowing it to extend the use of a product before or after the user get rid of it;
iv. The second use of components: It consists to extract from products some objects or pieces which are working (or which can be fixed) in order to sort them, to resale them and to give them a new life;
v. The recycling: It represents the whole bunch of techniques of transformation of wastes, after recovery, in order to reinsert all or a part of it in a production cycle;
vi. Eco-conception: It is the conception of a product, a good or a service, which takes into account, with the purpose to reduce them, its negative impacts on the environment during its lifecycle, without impacting its qualities or performances. Its goal is therefore to enhance the second use, the repair, the recycling, etc.;
vii. The Economy of Functionality: It consist to promote the use over the possession and to sell services linked to the product instead of the product itself.

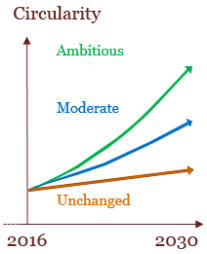
[1] Directorate-General for the Environment – Products Policy Service
[2] « *Vers une Belgique pionnière de l'économie circulaire* », published in June 2014, Joint Workgroup federal public service Health, Food Chain Safety and Environment and federal public service Economy, S.M.E.s, Self-employed and Energy, June 2014.

The **circular economy** is subject to an important attention due to the potential of economic development and growth that comes with it. Indeed, according to the experts and promoters of this new kind of activity, the transformation of our economy from a *linear* model [i.e. in which resources are exploited and consumed and are *in fine* transformed to waste] to a *circular* model which is more efficient in term of resources [i.e. which aims to maintain manufactured products, their components and the materials as long as possible within the system while ensuring the quality of their usage] **allows to realize some economies, to generate economic activity and employments, while preserving and reducing the environmental impact for the society**.

From the economic theory's point of view, **two mechanisms** can explain the creation of added value and of employment trough the circular economy. On the one hand, the circular economy can be a source of **cost reductions,** as is the case for the procurement of raw materials and other inputs linked to the production, but also for waste management, etc. On the other hand, the circular economy can **stimulate the development of new products, goods and services**, for example in the field of repair, recycling, economy of functionality, etc.

In this dynamic, different sources have put forward some first estimations regarding the economic potential of circular economy. Among others, The MacArthur Foundation evaluates the economies potential worldwide at no less than $1 billion per year! At European level, it would represent more than one million jobs that could be created by the circular economy!

In this context, the assets that Belgium can rely on – the quality of its workforce, its technical expertise, its capacity to innovate, its central position in Europe, etc. – should allow it to fully participate to the movement, and to create economic activity and jobs in the scope of this new paradigm that is the circular economy. The present study brings a **quantitative insight** about this matter and considers **three scenarios** for the development of circular economy, the first one (S0) considering a constant evolution in the continuity of the existing circular economy without the undertaking of any particular specific initiatives or initiatives complementary to existing ones in order to enhance its development (Business as usual), the second (S1) taking into consideration some – moderate - initiatives to enhance the development of circular economy, the third (S2) taking into consideration voluntarist initiatives destined to enhance the development of circular economy : Measures inserted in the roadmaps, action plans,... in the regions, at the federal level, in the neighbour countries and at European Union level.



The evaluation focuses initially on **four sectors**: the **chemical industry**, the **food industry**, the **machinery and equipment industry** and the **automobile industry**. Only in these four sectors, the circular economy would allow to create between **€293 million and €1,2 billion of added value at the horizon 2030**. In addition, the circular economy could create – based on these scenarios - between 3.692 and 11.634 direct jobs in those same sectors.

The results obtained for these four sectors **extrapolated to the whole economy** presage a **total economic potential for Belgium which lays between €1 and €7 billion of value added at the horizon 2030**, whether we consider the scenario S0 or S2, respectively, and, according to the same scenarios, **between 15.000 and around 100.000 jobs at the horizon 2030.**

The obtained results should be **interpreted with caution**, due to, on the one hand, the methodological limits that are inherent to any mid-long term prospective exercise on an economic domain which is booming and structuring itself, but also and foremost, on the other hand, due to the **level of uncertainty that prevails at the moment on technological, cultural, and sociological developments, but also on regulatory and support measures that will be enforced by the governments** and that will influence the extent of

the development of a circular economy. However, the analysis shows that circular economy can have a significant impact on the wealth creation (value added) and on the job creation in a region or a country.

The importance of the potential of the circular economy in terms of value added and jobs for Belgium and in particular the results obtained in the scope of the "voluntarist" scenario (S2) suggests the development of a public policy which aims to enhance and promote its development.

With the goal to realize a precise follow-up of the development of the circular economy, some **specific indicators** have been identified in order to **measure the degree of "circularity" of the economy and its evolution under different facets**: Industrial symbiosis, second use, repair, second use of components, recycling, eco-conception and economy of functionality.

Finally, some **objectives are proposed** for a limited number of indicators among those identified as relevant and available, chosen for their encompassing and transversal character, and able to explain complex and multiple phenomenon which are enforced in the scope of the circular economy..

There are **six** of these objectives and all of them are destined to follow precisely the development of the circular economy in Belgium and in particular, the level of circularity of the economy as well as the level of decoupling of economic growth and the use of raw materials.

They are each determined based on the historical evolution observed and based on the performances reached in the last few years in Belgium and abroad. **In any case, they are set with the goal of maximizing the creation of value added and jobs which are expected from the development of the circular economy in Belgium** and aim respectively to:

1. An increase in the **resource productivity** (ratio between Gross Domestic Product (GDP) and Direct material Consumption (DMC); +30% between 2014 and 2030);
2. An increase in the **energy productivity** (ratio between Gross Domestic Product (GDP) and the final energy consumption; +50% entre 2013 et 2030);
3. A decrease of the **waste generated per capita** (ratio between the total quantity of waste produced and the number of residents; -30% between 2012 and 2030);
4. A decrease of the **waste management costs** on the total costs of intermediary consumptions (ratio between the waste management costs and the total costs of intermediary consumptions; -30% between 2010 and 2030);
5. An increase of **respect in the hierarchy of treatment of waste** (Lansink ladder limited to Recycling (R), Valorisation (V), and of Elimination (E); from 12,10 to 11,25 degree Lansink-RVE, or -0,85 degree Lansink-RVE on a scale of values from 10 to 20);
6. An increase in the part of activities of **recuperation and of repair** in the whole industry and market services (ratio between the value added in the sector of recuperation and repair, and the value added in the industry and market services; +30% between 2013 and 2030)

The following table gives a summary of the different proposed objectives:

Target	Indicator	Unit	Reference value	Year of reference	Target value (2030)	Relative evolution
#1	Resource productivity	EUR/kg , chained linked series (2010)	2,4	2014	3,1	30%
#2	Energy productivity	Purchasing Power Standard per kg ton-oil equivalent	6	2013	9	50%
#3	Waste generated per capita	kg/capita	6.077	2012	5.469	-10%
#4	Cost of waste management on total intermediate consumption costs	-	2,5%	2010	1,7%	-30%
#5	Respect of the waste management hierarchy	Lansink degree (Recycling-Valorisation-Elimination)	12,1	2012	11,25	-7%
#6	Part of recuperation and repair in total industry and market services	-	1,4%	2013	1,9%	30%

The present study brings factual and quantitative elements allowing to estimate the potential of the creation of value added and jobs coming from the development of the circular economy. It identifies indicators allowing the follow-up of the development of the circular economy and suggests ambitious but realistic objectives for six key indicators with the aim to maximize the creation of value added and jobs in Belgium in the scope of this development.