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**Sent:** Monday, February 23, 2015 12:25 PM

**To:** COSTELLO Patrick (CAB-VELLA)

**Cc:** [Henry.SAINTBRIS@suez-env.com](mailto:Henry.SAINTBRIS@suez-env.com)

**Subject:** circular economy > Input to the Commission's work

Dear Sir,

Further to your exchange last November with Henry Saint Bris regarding in particular the circular economy package, please find attached a document which might be useful in the current Commission's work on the revised package. This document is a short analysis of the existing literature on the positive outcomes of adopting a circular economy business model, in particular economic benefits. I also attach our general position paper on the topic.

We would be happy to discuss this further with you; do not hesitate to come back to us should you have any question;

Best regards

Caroline

**Caroline MAIRESSE**

Head of EU Public Affairs / Responsable Affaires Européennes

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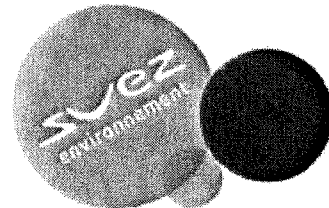
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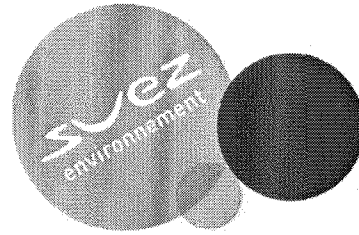
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**The Circular Economy Package  
Securing the EU's competitiveness while promoting jobs, growth and protecting the  
environment**

**A commentary by SUEZ ENVIRONNEMENT**

October 2014

Interest Representative Identification Number: 27799842497-69

SUEZ ENVIRONNEMENT welcomes the Circular Economy Package articulating the European Commission's vision for a circular economy as the framework for a re-industrialized Europe, merging environmental with economic gains in a coherent paradigm for sustainable growth and increased competitiveness of the European industry.

SUEZ ENVIRONNEMENT is the first international environmental services provider to have formally adopted the circular economy as the Group's core principle guiding our strategy and investment decisions. We will first be illustrating the benefits of such an economic model. Secondly, we invite the Commission to go from "push" measures to "pull" / demand side measures in the continuity of the important work already done. Finally we highlight specific points we support and those we believe need improvement to enhance the positive outcomes of this Package.

**The Circular Economy - a powerful paradigm shift to secure the EU's competitiveness and access to essential resources while promoting growth and employment<sup>1</sup>**

Adopting a Circular economy in the EU will bring benefits in 3 major directions:

**Resources and imports savings**

The European Commission emphasizes in its Communication the **limits of a linear economy** excessively reliant on a finite supply of resources and contrary to major trends:

- ✓ "Hockey stick effect" on the prices of raw materials is kicking-in (+150% increase of commodity prices between 2002 and 2010);
- ✓ EU high dependency on imports for raw materials and energy (EU trade deficit: 30.8 Billion € for raw materials in 2013, and 422.9 billion € in 2012 for energy<sup>2</sup>);
- ✓ Continual increasing consumption (82 billion tons of raw material to enter the European economic system in 2020, +24% compared to 2010);
- ✓ Export of recycled material due to lack of demand (50% of UK recycled plastic is exported due to lack of local demand<sup>3</sup>).

<sup>1</sup> Source of figures, except those with specific footnote : <http://www.ellenmacarthurfoundation.org/business/reports/ce2014>

<sup>2</sup> [http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Extra-EU\\_trade\\_in\\_primary\\_goods](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Extra-EU_trade_in_primary_goods)

As identified in the Resource Efficiency Agenda (EU 2020 strategy), adopting a circular economy will bring energy and resource savings, key challenges for the competitiveness of the EU economy:

- ✓ **Potential annual material savings of over \$1 trillion;**
- ✓ **Avoiding the generation of 100 million tons of waste;**
- ✓ **Increasing EU's resilience to external resource shocks.**
  - **Illustration: 10 kilograms of aluminum via recycling uses less than 10% of the energy needed for primary production<sup>4</sup>.**

### **Jobs creation and growth in the EU**

- ✓ Current EU unemployment rate above 10%, 27% in Greece (highest),
- ✓ 21.6% for young persons, 53.7% in Spain (highest);
- ✓ -0.4% growth of GDP in 2012, 0.1% in 2013<sup>5</sup>.

Circular Economy will boost EU GDP and jobs through new markets, products and value for business:

- ✓ **3.9%: potential boost to EU GDP<sup>6</sup>;**
  - ✓ **\$500 million: potential net benefits within 5 years\*;**
  - ✓ **100 000: potential jobs created within 5 years\*;**
  - ✓ **Recycling industry already provides 500 000 jobs, and job potential creation of over 1 million from remanufacturing globally and recycling in Europe.**
- \*: if the Ellen MacArthur Foundation's project to adopt collaborative approach across 4 to 5 materials flows is successful

### **CO2 emissions reduction to participate in the EU target**

Concomitant with these economic and social gains come environmental benefits such as a reduction in greenhouse gas emissions.

- ✓ **If the 2020 recycling targets are met, the waste management sector will contribute 1/5<sup>th</sup> of the EU 20% reduction of greenhouse gas emissions target<sup>7</sup>.**

### **The need for regulatory intervention: from push to pull measures**

**The economic signals are as yet not strong or visible enough for the majority of business to spontaneously change the way it does business** and incorporate environmental concerns. Moving from a linear to a circular economy requires:

- ✓ A top-down approach: regulatory levers that discourage linearity (such as recycling targets), and support circularity (such as incorporating more recycled materials into products);
- ✓ A bottom-up approach: companies recognise the financial benefits of resource-efficient business models, and work with the waste management sector to deliver these benefits.

**Some businesses have led the way towards circularity** – notably the large national and multinational producers and retailers, most of whom operate within the EU. However, important limits remain. A recent UN survey of 1 000 leading CEOs<sup>8</sup> found that the majority of CEOs had taken their

<sup>3</sup> Sita UK.

<sup>4</sup> [http://ec.europa.eu/enterprise/policies/industrial-competitiveness/industrial-policy/communication-2014/index\\_en.htm](http://ec.europa.eu/enterprise/policies/industrial-competitiveness/industrial-policy/communication-2014/index_en.htm)

<sup>5</sup> Eurostat.

<sup>6</sup> Better use of resources is the means to growth, prosperity and welfare – but will the EU jump on the opportunity?, Annika Hedberg, EPC, 2014

<sup>7</sup> Resource savings and CO2 reduction potential in waste management in Europe and the possible contribution to the CO2 reduction target in 2020, Prognos, October 2008

<sup>8</sup> The UN Global Compact: Accenture CEO Study on Sustainability 2013, Accenture, September 2013

companies as far as they could, given the structures, incentives and demands of the market. The greatest problem was the lack of a link between sustainability and business value, giving companies with a linear business model a competitive edge.

This has a knock-on effect, because the recycling sector's own circular business models rely on secure markets into which it can place recycled and recovered products. The EU has hitherto concentrated almost exclusively on end-of-pipe "push" policies such as landfill diversion and recycling targets. The **lack of balancing "pull" levers**, aimed at creating and supporting viable markets for the materials diverted from landfill, has resulted in extremely soft markets in the EU for recycled streams, and hence the reliance on export markets. Equally, there is little development of co-conception at design phase, where 80% of the environmental impact of a product is decided.

84% of CEOs interviewed called for active intervention by governments and policymakers to align public policy with sustainability with a preference was for hard interventions such as regulations, standards and tax measures. **SUEZ ENVIRONNEMENT therefore supports the call from EU business to build the circular economy on a firm regulatory foundation.** Rather than being regarded as a burden on business, we believe that well-designed regulatory instruments are essential to pump-prime the internal markets needed to make the circular economy a reality. We encourage the EU to be a first mover in this direction, giving a competitive edge to its industry in incorporating more secondary raw materials. Without a viable and sustainable market for recycled and recovered outputs, investment in the new generation of facilities needed to divert waste from landfill will not occur and circular initiatives will stall.

#### Commentary on the Circular Economy Package

##### Circular Economy Package proposals that SUEZ ENVIRONNEMENT supports

In general SUEZ ENVIRONNEMENT regards the Circular Economy Package as ambitious yet fairly realistic in the targets it sets and the policy measures it contains. In particular **we support the following measures:**

- ✓ **SE supports the 70% target as a recycling and reuse ambition** for municipal waste. This remains subject to agreement on (a) the definition of municipal waste; (b) which waste streams would be eligible for inclusion within the target, and (c) the proposed recycling calculation method (see below). These 3 elements will require immediate close attention to eliminate the risk of putting in place an unrealistic target. National impact assessments will dictate the feasibility and cost implications for each Member State, along with ease of access to EU funds for new treatment infrastructure. We also advise flexibility on the waste management routes available to the remaining residual waste;
- ✓ Advisory target of **30% in resource efficiency** gains;
- ✓ Attention paid to the Member States that will need more time and financial support to catch up on the best (**Early warning System, eventual delay ...**);
- ✓ **Harmonized and clearer definitions;**
- ✓ A **unified reporting and calculation method** based on output based method aims for quality, better equity in piloting waste policy and increased visibility for company strategies;
- ✓ **Simplified reporting** (once a year, electronic ...) and clarification on export of waste and counting (recycling counted in country where collected when exported);
- ✓ Enforcement of EU-wide **Golden Rules for Extended Producer Responsibility (EPR)** Schemes (Annex VII of the WFD) is valuable for an efficient market.

## Circular Economy Package demand-side elements that require further elaboration

As we have indicated above, SUEZ ENVIRONNEMENT believes that **stimulating the demand side is central in creating an effective circular economy**. In our view, the Package will achieve its objective in the long term if, and only if, attention is paid to demand-side measures to stimulate a viable, stable market for the outputs of waste treatment and processing – materials as well as energy. These measures are **critical for the viability of the waste management sector and for creating growth and jobs within the EU**. The Package remains incomplete with regards to this aspect.

**Pushing material out of landfill when the material has either no or a low value or no market is counterproductive** and creates a sorting economy whilst not developing effective recycling. The Commission currently overly relies on “push” measures such as landfill bans and recycling targets.

The **first elements of a demand side policy are visible** through the Eco-design Directive, Green Public Procurement, and some of the recommendations to Member States (End-of-Waste ...), they will **need to be reinforced** and pursued through complementary wider measures like Eco-labels, tax reductions on Secondary Raw Material or products with a minimal content of SRM for example. “Pull” measures clearly need to be reinforced and **mainstreamed into the EU policy**.

A range of policy instruments are available for consideration, at both EU and Member State level. A selection of these levers is listed in the table below.

<b><u>Policy instruments at EU level</u></b>	<b><u>Policy instruments at Member State level</u></b>
Green public procurement for all EU tenders	Reduced VAT for secondary raw materials
Access to EU funds for circular economy projects	Tax or EPR contribution rebates to promote recycle use
Pushing eco-design further to include material, water and land	Green public procurement for national and local procurement
Minimum recycled content in products and support for the re-use sector	Economic incentives for municipalities to implement “pull” measures through EU funds
Orienting the Innovation framework (EIP, etc.)	Improve cost-efficiency of EPR schemes
End of waste on priority flows and EU Golden Rules for national flows	Respect of EU Golden rules for national end-of-waste status
Enhancing the Ecolabel to reflect circularity	Support to the re-use sector

## Specific waste legislation proposals in the Package that require further consideration

Based on our practical experience of operating in the widest range of business and regulatory settings SUEZ ENVIRONNEMENT wishes to highlight certain more precise or technical elements in the proposition of the European Commission that require adaptations. These points, however technical or detailed, remain of foremost importance to ensure that the Package achieves its objective.

These elements are presented in outline below, and in more detail in specific position papers or annex.

- **Definitions:**

- *Municipal Waste* (Art.3 WF Directive) should be strictly defined as household waste and not enlarged to C&I or EPR Waste to ensure clear definition of roles and responsibilities;

- *Commercial and Industrial Waste*: should be defined as waste not considered as household waste and used in view of defining a separate recycling target;
- *Backfilling* should not be defined as always being a “recovery” operation, and this technique should be banned for hazardous waste and limited to C&D Waste (Art.3 WF Directive);
- **Statistics and targets**: an output based calculation method at the sorting plant would give best visibility for effective policy and business strategies. Increased flexibility and ambition are necessary (Art.11 WF Directive and Art.6 in Packaging and Packaging Waste Directive);
- **Early Warning System**: special attention for some MS is appreciated. However, national impact assessments taking into account the specific economic structure and initial state of recycling of the member states will be needed (Art.11bis WF Directive and Annex VIII);
- **Extended Producer Responsibility**: Definition (Art.8 WF directive) and Golden Rules (Annex VII) are most welcome; we suggest some adaptations on environmental ambition and market orientation of the schemes;
- **End-of-Waste**: need for clarity on the future of this powerful tool. Definition of EoW status for priority flows at EU level, and Golden Rules to ensure environmentally sound development of national EoW that won't distort the internal market are needed (Art.6 WF Directive);
- **Delegated and implementing acts**: some acts are of crucial importance for the waste industry and should not be detailed by delegated or implementing acts (Waste Framework, Landfill, and Packaging and Packaging Waste Directives);
- **Permit exemptions**: permit exemptions should in no way be accepted for hazardous waste, but are equally problematic for minor volumes of waste (Art.24 and 26 WF Directive).

#### Concluding remarks

**SUEZ ENVIRONNEMENT** encourages the European Commission to continue in the direction that is given with the Circular Economy Package released in July. We are going towards a shift in the way environmental legislation is being built. The benefits are numerous for the EU, environmental but also economic and social. They will position the EU as a leader on environmental issues and give a competitive edge to its industry.

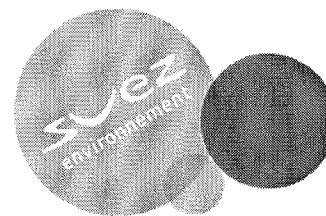
Increased resilience to external shocks and pressures will derive from the reduced dependency on imports of raw material or energy. Jobs will be created, in part thanks to a shift of taxation from labor to resources. EU industry will gain in competitiveness from these two elements, as well as being a first mover compared to its international competitors.

Policy will need to be ambitious and transversal to “push” and “pull” in the right direction. We suggest some complementary measures and adaptations, that we believe will ensure that the Package achieves its objective. There is a need for more structured and ambitious “pull” measures, ensuring effective uptake of Secondary Raw Materials and the development of new markets supporting the circular economy. The EU has a key role in implementing some of these measures itself, as well as encouraging Member States to do so.

Concerning the specific legislation for the Waste management industry, certain points need to be adapted to ensure that the objectives can be met in an economic and environmentally efficient manner.

#### SUEZ ENVIRONNEMENT in Europe:

SUEZ ENVIRONNEMENT is a leading environmental firm with a permanent presence in almost all EU countries, with 65,155 employees, a turnover of €10.5 billion, or 69% of the Group's total worldwide turnover. We supply waste collection services to 40 million European citizens, drinking water to 30.1 million and sanitation services to 30.3 million and waste & water services to over 1.2 million non-domestic customers. We operate waste facilities for 365.000 customers (local authorities and industry).



**DEPARTMENT OF MARKETING AND INSTITUTIONAL RELATIONS**

**The Circular Economy**  
**Economic and environmental benefits**  
January 2015

Interest Representative Identification Number: 27799842497-69

This document is a short analysis of the existing literature on the positive outcomes of adopting a circular economy business model, in particular economic benefits. We will be relying on the existing literature, most of it very recent as there is a growing case that the circular economy can help the European economy get out of the crisis it is in, since the so-called subprimes crisis.

Adopting a Circular economy in the EU will bring significant benefits in line with several of President Junckers' 10 priorities<sup>1</sup>:

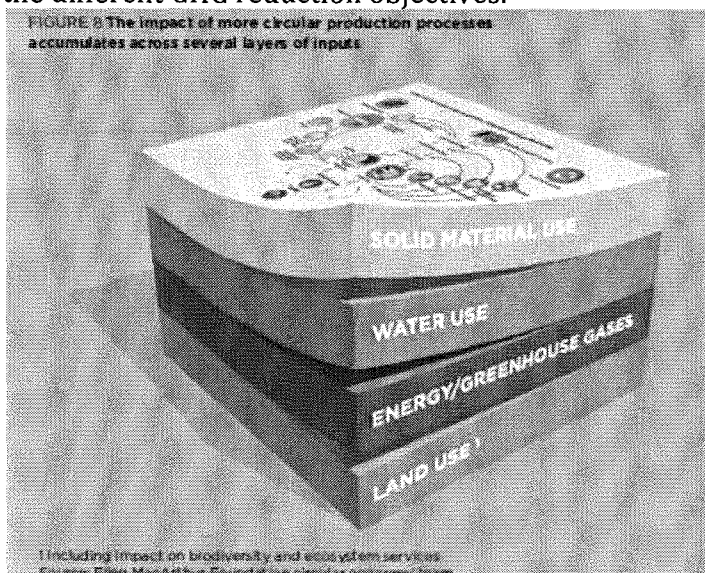
- A Circular Economy is *A new boost for Jobs, Growth and Investment* and will *Strengthen the EU Industrial Base* in various sectors of activities along the entire value-chain.
- It equally contributes to *A resilient Energy Union with a Forward-looking Climate Change Policy*.
- Finally, recycling, through the use of Secondary Raw Material, will lower the EUs dependancy on imported raw material, making it *A stronger, more independent global actor* and bringing cost savings for the EU Industry.

Benefits of the Circular economy can be seen in three main areas:

(1) resource savings help make the EU industry more competitive by reducing its costs, as well as keeping it one step ahead of the international competition, incentivizing companies to relocate in the EU. These elements in turn favor jobs and growth creation.

(2) For the EU, helping it answer its unemployment problem.

(3) Finally, there are environmental benefits attached to the model itself, especially contributions to the different GHG reduction objectives.



<sup>1</sup> Source: [http://ec.europa.eu/about/juncker-commission/priorities/index\\_en.htm](http://ec.europa.eu/about/juncker-commission/priorities/index_en.htm)  
Circular Economy - Economic and environmental benefits

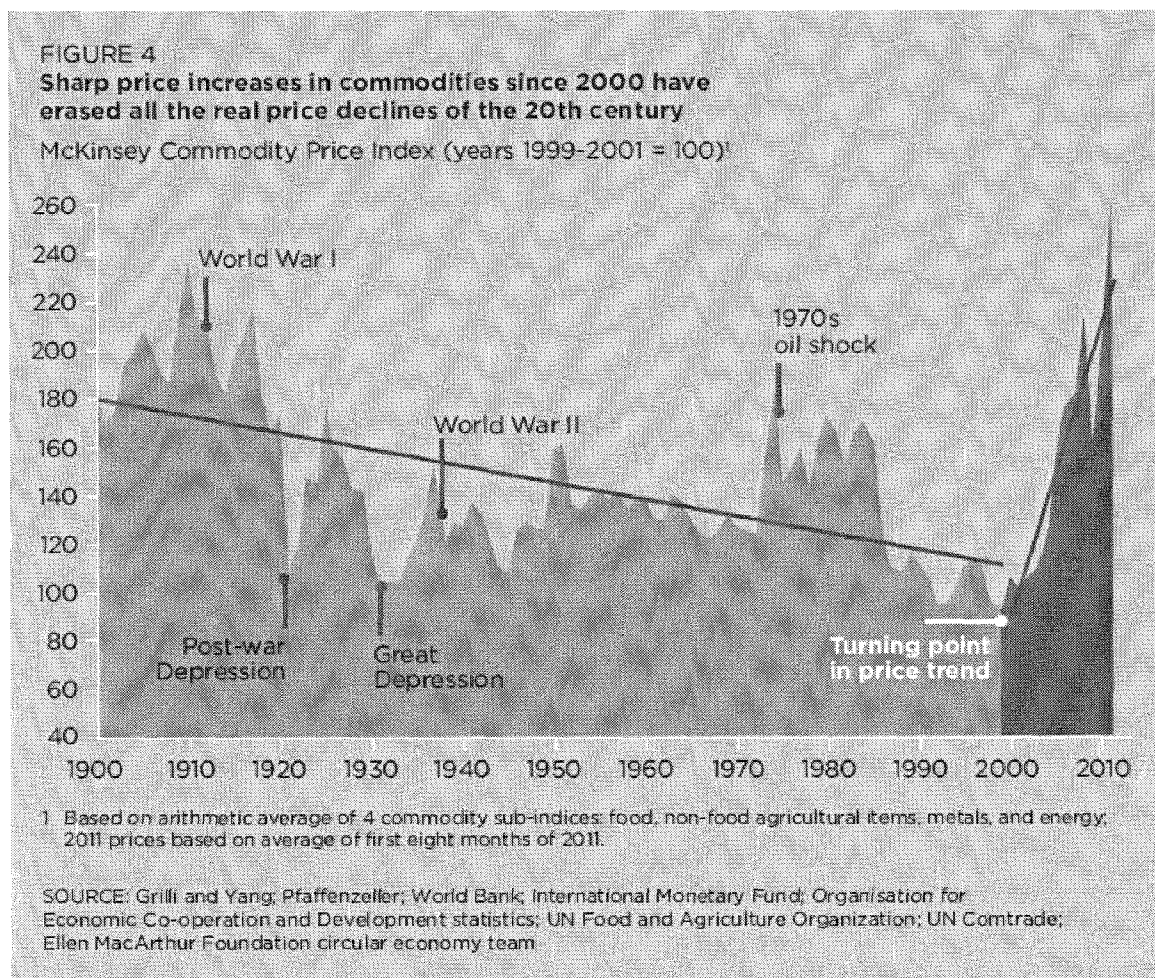


## 1. The limits of the current linear model

The current linear model is being pushed to its extreme, and faces major challenges in the coming years.

The consumption of raw material is fast increasing: "some 65 billion tonnes of raw materials entered the economic system in 2010, and this figure is expected to grow to about 82 billion tonnes in 2020"<sup>2</sup>. But prices are increasingly volatile and are increasing rapidly:

- "price volatility in the first decade of the 21st century were higher than in any single decade in the 20th century"
- Since 2000 price increase has erased "a century's worth of real price declines"<sup>3</sup>.



- Availability of resources is becoming scarce<sup>4</sup> and the trend shows no signs of changing, particularly in the context of "three billion new middle-class consumers expected to enter the market by 2030"

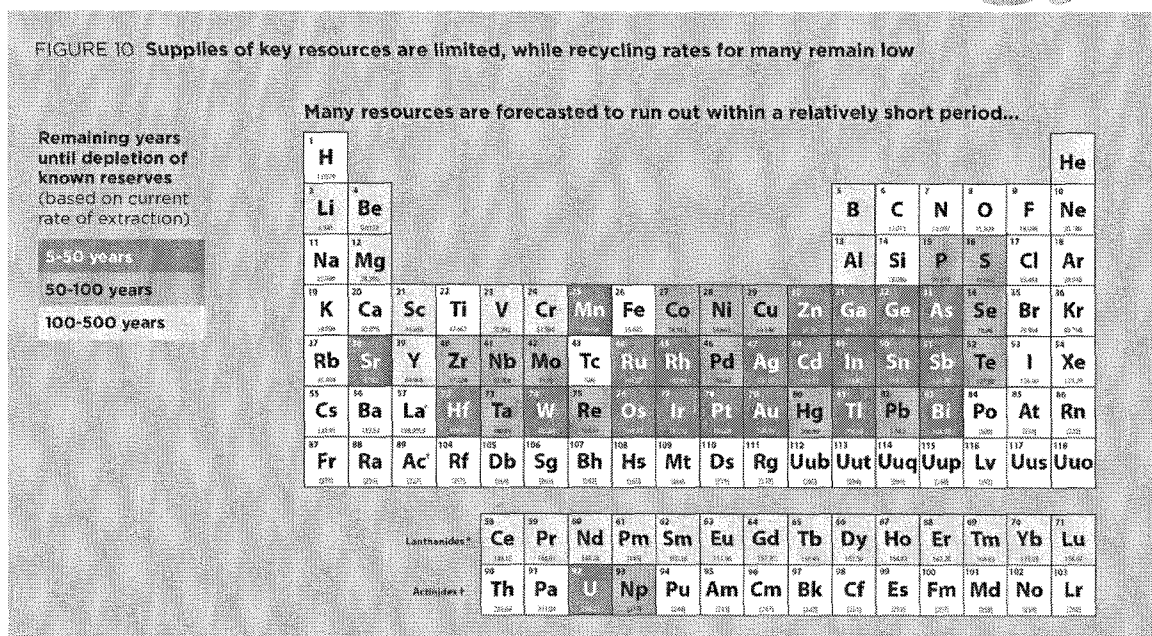
<sup>2</sup> Source: "Towards the Circular Economy: Economic and business rationale for an accelerated transition", Ellen MacArthur Foundation (2012)

<sup>3</sup> Source: "Towards the Circular Economy: Economic and business rationale for an accelerated transition", Ellen MacArthur Foundation (2012) (see graph below)

<sup>4</sup> Source: Professor James Clark, Green Chemistry, The University of York (see chart below)



FIGURE 10: Supplies of key resources are limited, while recycling rates for many remain low



The Circular economy concept can help answer the new challenges that are affecting the world economy (increased costs, instability, lack of visibility, unemployment, environmental damages ...). But there is still a long way to go:

- the recycling rate of municipal waste is only of 42% at EU level<sup>5</sup> and for Packaging the rate is at 64,6% (2012)<sup>6</sup>;
- total material value of fast-moving consumer goods at USD 3.2 trillion with a current recovery of an estimated 20% worldwide, largely through decomposition<sup>7</sup>,
- "apart from the automotive industry, few industries currently achieve a collection rate of 25%"<sup>8</sup>.

## 2. Resources savings for the industry and economy at large

Natural resources represent 40 to 50% of total manufacturing costs. Raw materials (30-45%) represent the largest cost for manufacturing companies, while energy accounts for 8-15%; meaning the competitiveness in the global context will be determined by the capacity to use resources as efficiently as possible, especially in an international context of increased labor costs in developing countries<sup>9</sup>.

<sup>5</sup> Recycled or composted; Source: Eurostat (2012). Number probably overestimated due to calculation disparities across the EU.

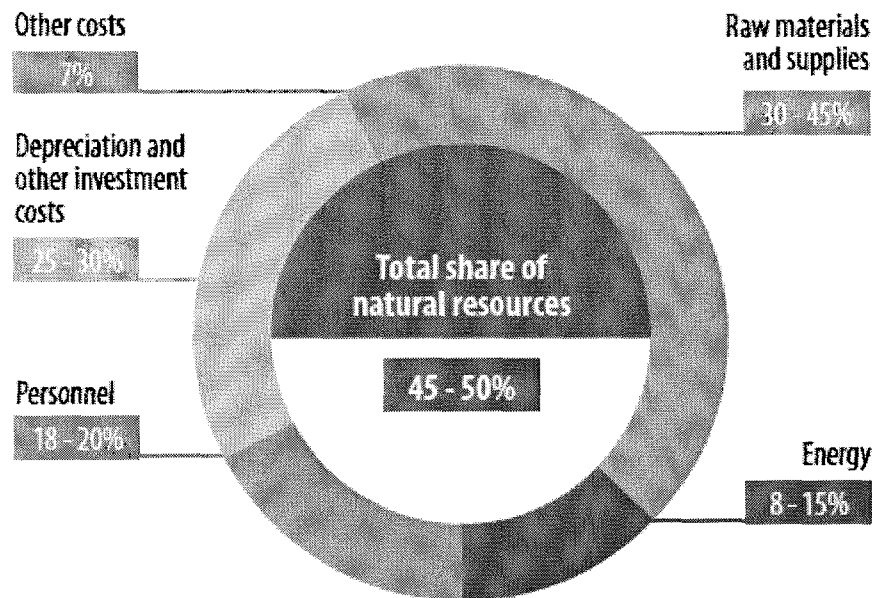
<sup>6</sup> Source: Eurostat

<sup>7</sup> Source: "Towards the Circular Economy: opportunities for the consumer goods sector :", Ellen MacArthur Foundation (2013)

<sup>8</sup> Source: "Towards the Circular Economy: Economic and business rationale for an accelerated transition", Ellen MacArthur Foundation (2012)

<sup>9</sup> Source: "Guide to resource efficiency in manufacturing: Experiences from improving resource efficiency in manufacturing companies", Europe INNOVA (2012)

## Cost structure Manufacturing Sector in Germany<sup>10</sup>



According to the Ellen Mc Arthur Foundation, “Economies will benefit from substantial net material savings, mitigation of volatility and supply risks, positive multipliers, reduced externalities, and long-term resilience of the economy.<sup>11</sup>”, helping solve problems identified in the EC COM(2011) 25: Tackling the challenges in commodity markets and on raw materials<sup>12</sup>:

- In Europe, “520 - 630 billion USD p.a. for an ‘advanced scenario’ of circular economy uptake. The latter would equate to 19 to 23% of current total input costs or a recurrent 3 to 3.9% of 2010 EU GDP. This only covers ‘sweet spot’ sectors that represent a little less than half of GDP contribution of EU manufacturing sectors. They also assume the addition of only one product cycle with today’s technologies. Yet many cycles would be possible and technological innovation could likely lead to rapid improvements and additional cost savings<sup>13</sup>”. 630 billion USD can be put in front of the important trade deficit of the EU, mainly due to materials (429.4 billion € p.a.<sup>14</sup>).
- The resulting net material savings would result in a shift down the cost curve for various raw materials. For steel, the global net material savings could add up to more than 100 million tonnes of iron ore in 2025, if applied to a sizeable part of the material flows<sup>15</sup>.
- A total of €100 billion p.a. increased profit before tax expected from materials efficiency, energy efficiency and renewable energy – at a capex cost of €66 billion.

<sup>10</sup> Source: “Information and Consultancy for Resource Efficiency at Enterprises”, The Association of German Engineers Resources Efficiency Center

<sup>11</sup> Source: “Towards the Circular Economy: Economic and business rationale for an accelerated transition”, Ellen MacArthur Foundation (2012)

<sup>12</sup> Source: “Guide to resource efficiency in manufacturing: Experiences from improving resource efficiency in manufacturing companies”. Europe INNOVA (2012)

<sup>13</sup> Source: “Towards the Circular Economy: Economic and business rationale for an accelerated transition”, Ellen MacArthur Foundation (2012)

<sup>14</sup> Source: International trade and Foreign direct investment, Eurostat (2013)

<sup>15</sup> Source: “Towards the Circular Economy: Economic and business rationale for an accelerated transition”, Ellen MacArthur Foundation (2012)



This represents an average 9% increase in profit for the European manufacturing sector<sup>16</sup>.

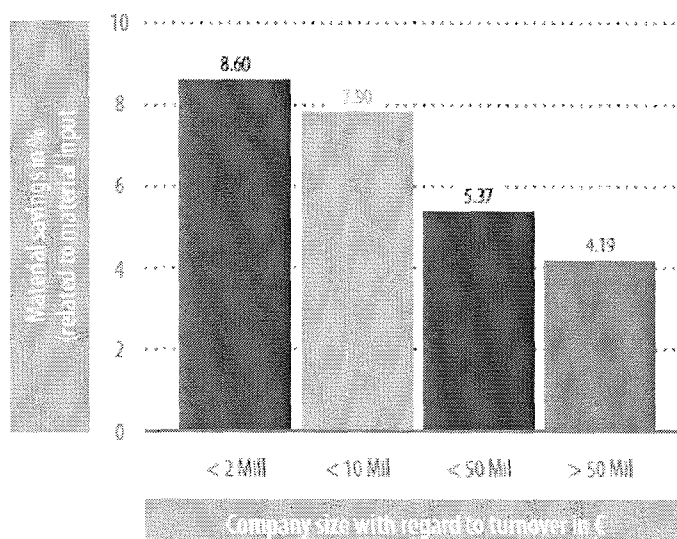
- **World-wide:** The full potential of the circular economy is estimated to be as much as USD 700 billion in global consumer goods materials savings alone (80% of total consumer goods market by value)<sup>17</sup>. Scope is only on fast-moving consumer goods (mainly food, beverages, textiles, and packaging), which represent “only” about 60% of total consumer spending, 35% of material inputs into the economy, and 75% of municipal waste.

### Operational examples:

- **Textiles.** A revenue of USD 1,975 per tonne of clothing collected could be generated in the U.K. if the garments were sold at current prices, with the gross profit of USD 1,295 comfortably outweighing the cost of USD 680 required to collect and sort each tonne
- **Glass** produced from recycled glass consumes 5 times less energy than from raw material (sand).
- *“The cost of remanufacturing mobile phones could be reduced by 50% per device—if the industry made phones easier to take apart, improved the reverse cycle, and offered incentives to return phones<sup>18</sup>.”*

These savings existing for all companies, regardless of their size, but SMEs should benefit more (see graph below)<sup>19</sup>.

**Fig.2** Material savings in dependency of company size



<sup>16</sup> Source: Lavery/Penell – “The New Industrial Model: Greater profits, more jobs and reduced environmental impact” (2014)

<sup>17</sup> Source: “Towards the Circular Economy: opportunities for the consumer goods sector :”, Ellen MacArthur Foundation (2013)

<sup>18</sup> Source: “Towards the Circular Economy: Economic and business rationale for an accelerated transition”, Ellen MacArthur Foundation (2012)

<sup>19</sup> Source: “Guide to resource efficiency in manufacturing: Experiences from improving resource efficiency in manufacturing companies”. Europe INNOVA (2012)



### 3. Jobs and growth creation

The material savings detailed above bring extra growth: resources savings in the EU manufacturing industry taken as example (only 50% of value of the manufacturing market) would represent a recurrent 3 to 3.9% of 2010 EU GDP<sup>20</sup>.

These economies, growth and the new business models bring jobs as well.

- *"500 000 jobs have been created in the recycling industry in the EU alone"*<sup>21</sup>

Different studies have outlined the potential of circular economy for job creation in Europe:

- 580 000 additional jobs could be created by implementing the waste legislation part of the Circular economy package of the EU, meeting the 2030 recycling target included<sup>22</sup>, meaning a potential for more jobs in all the other sectors.
- *"Over 1 million: job creation potential of remanufacturing globally and recycling in Europe"*<sup>23</sup>,
- *"Resource productivity in the EU grew by 20 % in 2000-2011, but this may be in part due to the effects of the recession. Maintaining this rate would lead to a further 30% increase by 2030 and could boost GDP by nearly 1%, while creating over two million jobs more than under a business-as-usual scenario"*<sup>24</sup>
- *"The collaborative waves across four to five materials flows has potential to trigger net benefits of at least US\$500 million and 100,000 new jobs, as well as to avoid/ valorise 100 million tonnes of materials waste within 5 years"*<sup>25</sup>
- *"314,000 new manufacturing jobs in UK alone, equivalent to a 12% increase in UK manufacturing employment" if a circular economy model is introduced*<sup>26</sup>
- *"Potential for 50 000 new jobs in the UK in the waste / resource management industry(recycling, reuse, energy from waste, organic treatment ...)"*<sup>27</sup>
- *"Potential for 54 000 new jobs in the Netherlands if there is widespread adoption of a Circular economy"*<sup>28</sup>

Figures vary importantly and rely on the current framework. Benefits could be more important and seen faster if taxation is shifted from labor to resources, the regulatory framework is improved and business adopts circular economy models rapidly.

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<sup>20</sup> Source: "Towards the Circular Economy: Economic and business rationale for an accelerated transition", Ellen MacArthur Foundation (2012)

<sup>21</sup> Source: "Towards the Circular Economy: Accelerating the scale-up across global supply chains", Ellen MacArthur Foundation (2014)

<sup>22</sup> Source: "Towards a circular economy: a zero-waste programme for Europe" The European Commission Communication (2014)

<sup>23</sup> Source: EC COM/2014/0398 and "Towards the Circular Economy", Ellen MacArthur Foundation, McKinsey, World Economic Forum (2014)

<sup>24</sup> Source: The European Commission Communication – "Towards a circular economy: a zero-waste programme for Europe" (2014)

<sup>25</sup> Source: "Towards a circular economy: a zero-waste programme for Europe" The European Commission Communication (2014)

<sup>26</sup> Source: "The New Industrial Model: Greater profits, more jobs and reduced environmental impact" Lavery/Penell (2014)

<sup>27</sup> Source: "Going for Growth: A practical route to a circular economy", The Environmental Services Association (2013)

<sup>28</sup> Source: "Opportunities for a Circular Economy in the Netherlands", The Netherlands Organization for Applied Scientific Research (NTO) (2013)

#### 4. Environmental benefits / GHG emissions reduction

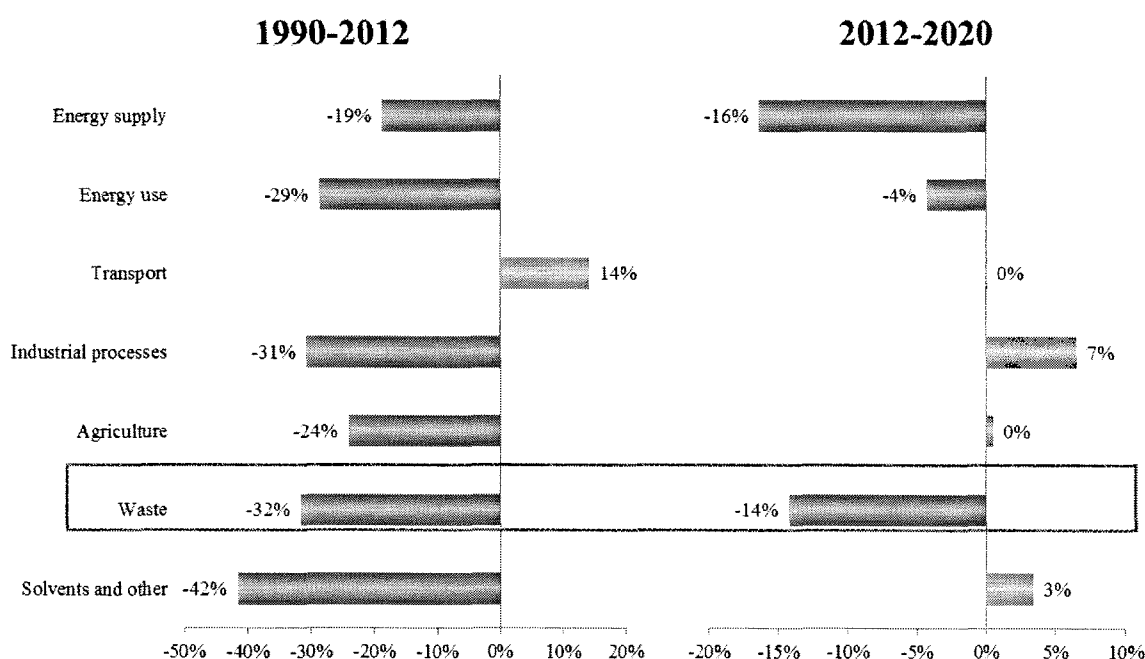
Circular economy brings environmental benefits as well, particularly in terms of Green House Gas (GHG) emissions reduction.

Increased recovery through recycling and efficient Energy-from-Waste can help achieve climate targets established in Kyoto. For example, in Europe, increased recovery will contribute to *“transforming Europe into a highly energy-efficient, low carbon economy”*<sup>29</sup>. If the 2020 EU recycling targets<sup>30</sup> are met and efficiency of energy recovery operations increased (R1 status), this will bring a contribution of 20% to the European climate reduction target, agreed upon in Kyoto, of 20% GHG reduction between 1990 and 2020<sup>31</sup>.

The waste sector is also bound to further reduce its own emissions by 2020. The Waste sector was the 5<sup>th</sup> biggest emitter of Green House Gases in 1990 (3.7% of total EU emissions), but, as shown in the chart below and thanks to increased recycling, energy recovery and methanisation, it is the sector with the largest decrease in % over the 1990-2020 period (-31.5%)<sup>32</sup>. These results will contribute to achieving the EU *“unilateral commitment to reduce overall greenhouse gas emissions from its 28 Member States by 20% compared to 1990 levels”* (EU 20-20-20 climate and energy 2020 targets established in the framework of the EU 2020 Climate and Energy Package).

With ambitious policies (increased recycling targets, efficient energy from waste plants) reduction of emissions can be obtained at a lower cost than through financing renewable energies; while at the same time helping the EU industry to develop a competitive advantage over its competitors (see parts 2 and 3 of this document).

**Change in EU-28 GHG emissions by sector in total GHG emissions<sup>33</sup>**



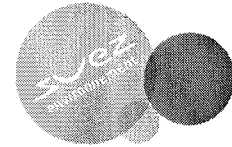
<sup>29</sup> Source: [http://ec.europa.eu/clima/policies/brief/eu/index\\_en.htm](http://ec.europa.eu/clima/policies/brief/eu/index_en.htm)

<sup>30</sup> 50% of Municipal Solid Waste and various targets for Packaging Waste and Construction and Demolition Waste

<sup>31</sup> Source: “Resource savings and CO2 reduction potential in waste management in Europe and the possible contribution to the CO2 reduction target in 2020”, Prognos (2008) – (EU-27 scope)

<sup>32</sup> Source: “Progress towards achieving the Kyoto and EU 2020 objectives”, European Commission (2014)

<sup>33</sup> Source: “Progress towards achieving the Kyoto and EU 2020 objectives”, European Commission (2014) AND 2012 national inventories, EEA



Furthermore, the European Commission estimated that, if the proposed review of the Waste legislation included in the Circular Economy Package was adopted (including a 70% recycling target), *"around 62 million tons of [Green House Gas emissions] could be avoided annually in 2030 (443 million between 2014 and 2030)"*<sup>34</sup>. This figure is to be put in front of the EU 40% GHG reduction target for 2030 (2030 framework for climate and energy) of 2 254 million tons compared to 1990 levels<sup>35</sup>, meaning recycling and increased energy-from-waste efficiency would contribute more than 20% to the 40% reduction target when the post-2014 contribution of the waste sector is added.

Even if the economic crisis *"contributed to less than half of the reduction observed during the 2008-2012 period"* future growth could come with a slower reduction in emissions<sup>36</sup>, meaning the input from increased recycling (and thus increased activity and resources for Europe) will be very useful and translate into an increase in the decoupling of growth and GHG emissions.

The 20% GHG emissions reduction objective is coupled with a 20% share of renewable energies and a 20% reduction in energy consumption for 2020. Thanks to energy savings linked to recycling, a 4% reduction of energy consumption in the EU will be obtained if the 2020 recycling targets are met<sup>37</sup>. Finally, about 50% of energy output from Energy from Waste plants comes from biomass, the *"biodegradable fraction of municipal and industrial waste"*<sup>38</sup> also contributing to the 20% renewable energy target.

Other environmental benefits are clear, but harder to give figures to. For example, the benefits of keeping raw material in the earth instead of extracting it thanks to replacement by Secondary Raw Material. These benefits include the transport of those goods towards the EU which is resource scarce.

Moreover, new consumption and production models such as leasing versus buy business models, shared use/access or remanufacturing, could significantly increase climate benefits.

While their implied CO2 reduction benefits have generally not been quantified, some examples can already give an idea of their substantial potential:

- **Leasing**

Michelin has developed a tire leasing service (*Michelin Fleet Solutions*) and built its business model around 4Rs: Reducing, Reusing, Recycling and Renewing. Leasing enables Michelin to directly manage CO2 emissions of its products, given that 95% of CO2 emissions for tires comes from the driving phase, while at the same time producing more value for its customers (pay for use) and for itself (optimizing costs).

- **Maintenance / Extended product life duration**

AS Lease (an IT services company) offers solutions that optimize IT costs and reduces CO2 emissions. For example, with its CO2 Lease service that analyses the

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<sup>34</sup> Source: "Towards a circular economy: a zero-waste programme for Europe" The European Commission Communication (2014)

<sup>35</sup> Source: <http://www.eea.europa.eu/>

<sup>36</sup> Source: "7th Environment Action Programme – Annex 3" The European Commission Communication (2014) AND : "Why did GHG emissions decrease in the EU in 2012", EEA (2014): "GDP was one of the main factors underpinning lower and higher emissions in 2009 and 2010 for the EU"

<sup>37</sup> Source: "Resource savings and CO2 reduction potential in waste management in Europe and the possible contribution to the CO2 reduction target in 2020", Prognos (2008)

<sup>38</sup> Source: Directive 2001/77/EC on promotion of electricity produced from renewable energy sources in the internal electricity market.



CO2 Life Cycle of IT equipment, the company delivers adapted maintenance and controls the end-of-life and recycling of the Electronic Waste (a major environmental issue at EU level), resulting in the doubling of material lifetime and a 50% reduction of the carbon footprint.

- **Remanufacturing / refurbishing**

The Centre for Remanufacturing and Reuse found in a study that emissions from the manufacturing of a retread tire resurfaced an average of 1.3 times produces 30% less CO2 emissions (86.9 kg compared to 60.5 kg CO2)<sup>39</sup>.

- **Shared use / access / ownership to maximize utilization rate of products**

Blabla Car (created in 2004) is the European leader in carpooling services. The company developed platforms to ease exchanges and favor ride-sharing after analyzing that 80% of seats in individual cars are empty. This service can contribute substantially to reducing CO2 emissions as transport contributes 20% of EU GHG emissions.

- **Collaborative buying**

Tesco developed a Buying Club for its +700 Tesco suppliers in which information, experiences and best practices were shared. This Club also issued a common tender on energy efficient lighting equipment that delivered savings of up to 25% on the cost of equipment, and potential savings of up to 80% on energy bills.

- **Responsible procurement**

British Telecom applied a carbon footprint Life Cycle Analysis to all its services and goods to favor purchasing low-carbon solutions. This translated into:

- -44% in operational GHG emissions and -15% in supply chain GHG emissions,
- -40% in waste to landfill since 2011,
- -14% in operating costs and boost to EBITDA of 6%<sup>40</sup>.

## 5. *Limits of the current literature*

These figures have a certain number of limits and will need to be reinforced through new studies. Indeed:

- the geographical scope is not always the same (worldwide, EU, UK, Netherlands ..., making numbers on a EU scale less relevant or un-existing);
- lack of common definitions in what is meant by Circular economy;
- restrictions in business sectors, analysis being based on a limited number of manufacturing sectors for example<sup>41</sup> (limiting estimates of benefits)
- insufficient number of studies, making comparisons complicated (a lot of the studies go back to the same source: Ellen MacArthur Foundation documents);
- differences in the calculation methods and economic hypothesis taken in the different studies that need to be better analysed;

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<sup>39</sup> The carbon footprint of retreaded versus new light commercial vehicle tyres, Centre for Remanufacturing & Reuse

<sup>40</sup> Opportunities in a resource constrained world, How business is rising to the challenge, The carbon trust

<sup>41</sup> Source: "Guide to resource efficiency in manufacturing: Experiences from improving resource efficiency in manufacturing companies". Europe INNOVA (2012) OR Source: "Towards the Circular Economy: Economic and business rationale for an accelerated transition", Ellen MacArthur Foundation (2012); covers only the sweet spots that represent 50% of the EU GDP in the manufacturing sector.





- “softer” benefits (in case of new business models such as lease vs buy) less explored: reduced warranty costs, improved customer relationships, choice and convenience for customers etc.;
- Complexity of translating externalities (positive and negative) into financial terms.