**Towards a Circular Economy:**

**Win-win-win for Climate, Income and Jobs**

Club of Rome Report Launch on 20 October 2015 - European Parliament

Presented by Anders Wijkman, Co-President of the Club of Rome

Summary[[1]](#footnote-1) by Nadine Gouzée, Full member, The Club of Rome EU-Chapter;

Honorary member, Federal Plan Bureau of Belgium.

**This paper brings together the key points of two reports presented at the meeting of October 20 on “circular economy” in Europe and around the world.**

Many business leaders embrace the circular economy as a path to increasing growth and profitability. At the same time, a lively debate is going on about circular economy as a potential way for our society to increase prosperity, while reducing dependence on primary materials and energy. Its attractiveness for different stakeholders and policy-makers and its implications for employment, growth, and the environment is also gaining increasing attention althoughin November 2014, the Juncker Commission decided to withdraw the proposal under the pretext of “deregulation”. **After a lot of critique the Commission has made a commitment to re-launch the proposal and its objective is now to propose a “circular economy package” in December 2015**. According to several statements by the Commission – and implicit on the public consultation on the topic – the aim now is a much broader scope aiming to “promote circular economy across the whole value chain”.

**Two reports presented at the meeting by Per-Anders Enkvist and by Anders Wijkman[[2]](#footnote-2) aim to contribute to a fact base to inform this debate, especially in Europe.** The reports suggest what a circular European economy could look like:

* The report **Growth Within:** **A circular economy vision for a competitive Europe**[[3]](#footnote-3)simulates what a circular European economy could look like and compares its potential impact (potential European economic and environmental outcomes) with the current development path. It examines how a more circular way of satisfying human needs could play out **in three of the largest and most resource intensive European value chains: mobility, food, and the built environment.** In aggregate, the circular scenarios suggest that the opportunity for Europe’s economy could be large.
* The report **The Circular Economy and Benefits for Society [[4]](#footnote-4)** is not focused primarily on the business case for enhanced resource efficiency but rather **focuses on the social benefits that a transformation from a linear to a circular economy would entail.** Its main purpose is to broadly explore the potential for a significant increase in resource efficiency and to specifically assess what the main benefits for society would be looking at carbon emissions and employment in particular. **It is using the Dutch, Finnish, French, Spanish and Swedish Economy as a test case.**
1. ***Growth Within******A circular economy vision for a competitive Europe,* Ellen Mac Arthur Foundation, McKinsey Center for Business and the Environment** presented by Per-Anders Enkvist, External Advisor McKinsey (100 pages)

*The report does not aim to provide full answers or projections for a circular economy—this would be impossible given the major uncertainties involved in the transition. Rather, the report tries to identify and describe* ***major differences that circularity could bring to the European economy*** *and offers directional quantification of the most important differences[[5]](#footnote-5).*The presentation of October 20 addressed the 12 following main points of the report:

* 1. **Growth within what ?**: *within an effective flow of materials, energy, and information using appropriate policy guidance and novel business models that are enabled by the information technology revolution…*
	2. **Transition/shift from and towards what ?:** *the aim of keeping products and materials at their highest value is part of a transition towards a restorative and regenerative economic cycle that moves us from wasteful resource use to a model that recognizes and enables added value contributed by human enterprise and application. This may be a very profound shift – it may be a change of era where the fundamentals of Europe’s economy are reworked*
	3. **Focus on three key European sectors:** *food, mobility, and the built environment offer numerous challenges in achieving rapid progress and examples of success and frameworks for what is possible. The average cost per car-kilometre could drop up to 75 percent, thanks to car-sharing schemes, autonomous and driver-less driving, electric vehicles, and better materials. In food, precision agriculture could improve input efficiency of water and fertilisers by at least 20–30 percent, and combined with no-tillage farming it could bring as much as 75 percent reduction in machinery and input costs. In buildings, industrial and modular processes could lower construction costs by 50 percent compared to on-site traditional construction; and passive houses could reduce energy consumption by 90 percent.*
	4. **Structural waste is prevalent in these large, mature sectors:*****Consider mobility, a century-old sector,*** *where very capable manufacturers have optimised products continuously. This sector captures 15 percent of the average European household’s spending. The European car is parked 92 percent of the time – often on valuable inner-city land (Figure 3). When the car is used, only 1.5 of its 5 seats are occupied. The deadweight ratio often reaches 12:1. Less than 20 percent of the total petroleum energy is translated into kinetic energy, and only 1/13 of that energy is used to transport people. As much as 50 percent of inner-city land is devoted to mobility (roads and parking spaces). But, even at rush hour, cars cover only 10 percent of the average European road. Yet, congestion cost approaches 2 percent of GDP in cities like Stuttgart and Paris*
	5. ***Structural waste also plagues the food value chain.*** *A full 31 percent of European food goes to waste along the value chain, according to research by the United Nation’s Food and Agriculture Organization (UN FAO). Categories like fruits and vegetables lose as much as 46 percent of their edible mass. Key resources for producing food are also wasted. Only 5 percent of fertiliser actually goes into nutrients absorbed by humans, not all of which improve health and well-being. Only 40 percent of irrigation water actually reaches the plants,and soil degradation affects 30–85 percent of European agricultural land (Figure 4). Finally, the average European consumes 40 percent more calories than recommended, and more than 50 percent of the European population is overweight or obese. Again, these numbers represent significant waste – and opportunity. In the built environment, the average European office is used only 35–40 percent of the time, even during working hours. This includes offices on expensive inner-city land. Retrofitting existing buildings can profitably reduce energy consumption by 20–40 percent. Passive and zero-net-energy houses are already making money in several market segments but remain a minority of new buildings. Modular construction techniques can reduce total construction costs 30–60 percent.*
	6. ***Key resources for producing food are also wasted.*** *Only 5 percent of fertiliser actually goes into nutrients absorbed by humans, not all of which improve health and well-being. Only 40 percent of irrigation water actually reaches the plants, and soil degradation affects 30–85 percent of European agricultural land. Finally, the average European consumes 40 percent more calories than recommended, and more than 50 percent of the European population is overweight or obese. Again, these numbers represent significant waste – and opportunity.*
	7. ***In the built environment, the average European office is used only 35–40 percent of the time,*** *even during working hours. This includes offices on expensive inner-city land. Retrofitting existing buildings can profitably reduce energy consumption by 20–40 percent. Passive and zero-net-energy houses are already making money in several market segments but remain a minority of new buildings. Modular construction techniques can reduce total construction costs 30–60 percent.*
	8. **These are thus surprisingly high waste numbers for sectors that are mature and managed professionally.** *Since mobility, food, and housing together consume 60 percent of the average European household budget, deploying new technologies and business models to reduce such waste offers Europe a tremendous opportunity to improve living standards and*

*increase wealth and consumer choices.* ***In short, today’s use of resources does not match***

***today’s possibilities.***

1.9 ***Circular economy principles as a guide to superior economic outcomes.*** *In recent years, the circular economy has figured prominently in political, economic, and business dialogues. But the concept remains eclectic and lacks a scientifically endorsed definition. For the purpose of this economic analysis, the circular economy is* **defined as an economy that provides multiple value-creation mechanisms which are decoupled from the**

**consumption of finite resources. This definition rests on three principles:**

* ***Preserve and enhance natural capital*** *by controlling finite stocks and balancing*

*renewable resource flows – for example, replacing fossil fuels with renewable energy or returning nutrients to ecosystems.*

* ***Optimise resource yields by circulating products, components, and materials*** *in use at the highest utility at all times in both technical and biological cycles – for example, sharing or looping products and extending product lifetimes.*
* ***Foster system effectiveness by revealing and designing out negative externalities****, such as water, air, soil, and noise pollution; climate change; toxins; congestion; and negative health effects related to resource use.*
	1. **Narrower notions of the circular economy, *limited to material reuse and sometimes regeneration, exist. But the modern economy requires applying all three principles to reintegrate the economy into our planet’s system, which is the ultimate ambition of circular thinking.*** *Thus, applying these principles means creating an economy that is restorative and regenerative, that preserves ecosystems and increases their return over time, that creates prosperity, and that fuels growth by capturing more value from existing infrastructure and products.System change is also crucial to the circular economy. In a circular economy, one system’s waste is the next system’s input, and the aim is to maximise total utility from the products and materials in use. This requires taking a system view of large value chains.*
	2. **The three principles of the circular economy can translate into *six business actions (or concrete criteria to be applied to business areas): Regenerate, Share, Optimise, Loop, Virtualise, and Exchange – together, the ReSOLVE framework. Each action represents a major circular business opportunity enabled by the technology revolution that looks quite different from what it would have 15 years ago or what it would look like in a framework for growth in the linear economy.*** *In different ways, these actions all increase the utilization of physical assets, prolong their life, and shift resource use from finite to renewable sources. Each action reinforces and accelerates the performance of the other actions, creating a strong compounding effect.*
* ***Regenerate:*** *Shift to renewable energy and materials; reclaim, retain, and regenerate*

*health of ecosystems; and return recovered biological resources to the biosphere. For example, the European power sector is moving rapidly into renewables. New investments totalled $650 billion over the 2004–2013 period.Likewise, Savory Institute’s promotion of holistic land management has influenced the regeneration of more than 2.5 million hectares of commercial land worldwide.*

* ***Share:*** *Keep product loop speed low and maximise utilisation of products by sharing*

*them among users (peer-to-peer sharing of privately owned products or public sharing of*

*a pool of products), reusing them throughout their technical lifetime (second-hand), and*

*prolonging their life through maintenance, repair, and design for durability. For example,*

*the BlaBlaCar car-sharing scheme is growing 200 percent a year and has 20 million registered users in 19 countries.Airbnb has more than one million spaces for rent in more than 34,000 cities across more than 190 countries.*

* ***Optimise:*** *Increase performance/efficiency of a product; remove waste in production and the supply chain (from sourcing and logistics to production, use, and end-of-use collection); leverage big data, automation, remote sensing, and steering. None of these actions requires changing the product or technology, as exemplified by the lean philosophy made famous by Toyota.*
* ***Loop:*** *Keep components and materials in closed loops and prioritize inner loops. For finite materials, this means remanufacturing products or components and as a last resort*

*recycling materials, as Caterpillar, Michelin, Rolls Royce, and Renault are doing. For renewable materials, this means anaerobic digestion and extracting bio-chemicals from organic waste. In the UK, 66 percent of sewage sludge is treated in 146 anaerobic digestion plants, and another 175 plants produce bio-energy from solid waste, a number that is growing rapidly.*

* ***Virtualise.*** *Deliver utility virtually – books or music, online shopping, fleets of autonomous vehicles, and virtual offices. Google, Apple, and most OEMs plan to release driverless cars in the next decade.*
* ***Exchange.*** *Replace old materials with advanced non-renewable materials; apply new technologies (e.g. 3D printing and electric engines); choose new products and services (e.g. multi-modal transport). In 2014 Chinese company WinSun D-printed ten houses, each about 195 square meters, in 24 hours.*
	1. ***If Europe wanted to accelerate the shift******towards a circular economy, it could build******a strong foundation by launching four******efforts.*** *Shifting to the new model starts with acknowledging the systemic nature of the change. All sectors and policy domains will be affected and aligned action is required.* ***Such a shared agenda could contain four building blocks:***

*• Europe-wide quest for learning, research, and opportunity identification;
• Development of a value-preserving materials backbone—a core requirement for strengthening European industrial competitiveness;
• Initiatives at the European, national, and city levels to enable inherently profitable circular business opportunities to materialize at scale;
• Development of a new governance system[[6]](#footnote-6) (a new “cockpit”) to steer the economy towards greater resource productivity, employment, and competitiveness*

1. ***The Circular Economy and Benefits for Society – Jobs and Climate Clear Winners in an Economy based on Renewable Energy and Resource Efficiency[[7]](#footnote-7)*** *A study pertaining to Finland, France, The Netherlands, Spain and Sweden* Authors:Anders Wijkman and Kristian Skanberg (57 pages)

*The central theme of this report is how to greatly enhance resource efficiency. The proposition is that* ***a circular economy, where products are designed for ease of recycling, reuse, disassembly and remanufacturing should replace the traditional, linear ’take, make & dispose’ model*** *that has dominated the economy so far.*

The presentation on October 20 addressed the 15 following main points of the report:

* 1. **Replacing the traditional, linear ’take, make & dispose’ manufacturing model by a Circular economy is a major prerequisite to staying within the Planetary Boundaries.** It now takes the Earth almost one and a half year to regenerate what we use in a year *(Ecological Footprint)*. Both governments and businesses are beginning to realize that our linear systems of resource use expose both societies and businesses to a number of serious risks. Resource constraints as well as increasing volumes of waste and pollution are likely to impose increasing threats to welfare and wellbeing and, from a business point of view, to competitiveness, profits and business continuity.
	2. **Simply put: we are in urgent need of decoupling, or put in other words, of a transition to an inclusive and circular economy.** While *relative decoupling* of economic growth from resource use has been happening over the past decades[[8]](#footnote-8), the gains made so far have been rapidly eaten up by a combination of economic growth and the so-called rebound effect, i.e. that the resources freed up by increased efficiency are used up very soon through increased consumption. Here is where the circular economy as a powerful concept comes into play. The ’circular economy’ is an industrial system that is restorative by intention and design. The idea is that rather than discarding products before their value are fully utilized, we should use and re-use them (cf:*absolute decoupling*). Presently only a few percentage points of the original product value is recovered after use.
	3. **It seems from the countries this study has explored – Finland, France, The Netherlands, Spain and Sweden - that the circular economy as a concept will offer a number of societal benefits** for Europe, not least in terms of carbon emissions reductions and new jobs. The study is relevant not only from an academic but also from a political perspective, particularly in the EU context. This report can provide valuable input to the discussion on the Commission’s new proposal on Circular economy, as well as on national policies, particularly in terms of highlighting the opportunities it offers for the EU’s competitiveness and jobs agenda.
	4. **The main purpose of this study is to broadly explore the potential for a significant increase in resource efficiency and to specifically assess what the main benefits for society would be – looking at carbon emissions and employment in particular.** Dutch, Finnish, French, Spanish and Swedish economies are used as test cases.
* **In Finland**, a move towards a Circular Economy is likely to cut carbon emissions by almost 70 % by 2030.. The gains in terms of employment are estimated to be in the range of 75.000 additional jobs.
* **In France**, Co2 emissions would go down by 2/3 and employment gains would be in the range of half a million jobs.
* **In the Netherlands** the picture is very similar. A significant reduction in carbon emissions and employment gains in the range of 200,000 jobs.
* **In Spain**, carbon emissions would go down by 60-70 % and employment would be boosted with an estimated 400.000 additional jobs.
* **In Sweden**, a Circular Economy would cut carbon emissions by 2/3 and contribute to at least 100,000 new jobs – representing almost 3 % of the labor force
	1. **The report does not question economic growth per se. It questions *unsustainable growth* where growth of the economy is coupled to corresponding growth in energy and resource use (meeting source limits) and in environmental pressure (meeting sink limits).** It stresses the need of *absolute decoupling* so that the economy (economic activity) grows *sustainably* regarding this use and this pressure (so that these impacts are reduced). It recalls the IPAT equation to describe the impact by human society on the environment introduced in the 1970s (long before the ecological footprint) by a group of pioneers among environmental scientists individuals like Paul Ehrlich, John Holdren and Barry Commoner. The equation describes the interactions between population (P), affluence (A) and technology (T) and their multiplicative contribution to environmental impact as follows: **Impact (I) = Population (P) x Affluence (A) x Technology (T).**

The message is simple and useful when considering different ways of reducing the negative impact of human activities the footprint on the biosphere as well as the atmosphere. For example, to reduce the risk of an increasingly unstable climate we can improve technology, change lifestyles and consumption patterns and limit the size of the population.

* 1. **The report questions the focus placed historically almost entirely on promoting labor productivity, instead of focusing on the increase of material productivity or efficiency (= decrease of use and pressure).** Knowing that the *Sustainable Development Goals* (SDGs) were agreed in September 2015 and that the world population (likely to increase by two to three billion people in the coming decades) should experience an increase in their per capita income to meet all these goals, in a situation where several of the planetary boundaries have already been transgressed, or are close to being transgressed, **the only possible factors to push the IPAT equation back within the planetary boundaries will be technology and behavior change.** In particular, there is a need of significant push with regard to efficiency improvements and innovations, fuel choices and modes of transportation to enable a reduction of the environmental impact so as to meet the targets defined by science (exemplified by the IPCC 5thAssessment Report, the Planetary Boundaries Report,etc). **However the focus placed on labor productivity distracts attention from the types of decoupling that can be achieved by improved technology and behavior change.**
	2. **The report stresses that the dominating business model of today, implying fast turnover of most consumer products, means that a lot of things are discarded even if they are still fully functional[[9]](#footnote-9).** Instead of recycling/reusing the products and the components, the objective of a circular economy would rather be to add several cycles to a product and its main components. That ought to be made much easier through new technology developments such as more intelligent design and through the ”Internet of Things”, which, among other things, would help keep track of materials and components and make upgrading much easier. The circular economy as a concept implies recycling and reuse and would be strengthened by extending the use-life of products. **Hence the main business case to explore would be to preserve the embedded labour, energy and material value in finished products as long as possible.** **Businesses in fact spend significant financial resources to get rid of what could potentially be valuable resource.**
	3. **The report also underlines the lack of systems perspective (political vision).** To obtain “absolute decoupling” of economic growth from resource use (both energy and materials), specific policy measures will be needed. But policies to promote such actions are rare, and if they are put in place, politicians seem reluctant to really let them influence industrial metabolism or the relative prices of energy and materials to any significant extent. They only deal with *One issue at a time* and do not seem able to adopt *a systems perspective*. Different natural resources and their use are linked to each other in several ways. Energy and water is a case in point[[10]](#footnote-10) although a number of research reports have shown that both resource and environmental strategies have to be systemic in nature and not focus on individual resources alone. Still, there is a strong tendency among most governments today to deal with “one issue at a time”. Climate change is no exception.[[11]](#footnote-11)Even if attitudes are gradually changing, the fact is that **both environment protection and climate mitigation most often have been portrayed as costs or burdens for society and, indeed, for business.**
	4. According to the report, the main reason why progress in terms of environmental policy-making in many areas is slow, often painfully slow, is that **many businesses perceive environment taxes and regulation as a threat to competitiveness as well as to employment** (instead of potential instrument to reduce negative externalities associated with unemployment and overuse/misuse of natural capital)**.** Companies facing choices between becoming more capital or labourintensive will analyse carefully **the relative financial or market costs between labour and capital** (the actual costs and relative prices they face).
* **Labour costs are distorted from a societal point of view.** **Labour is usually heavily taxed and no account is taken of the positive externalities associated with employment. Under-usage of labour, i.e. unemployment, is actually a cost to society, as unemployment benefits will have to be paid out.** Moreover, the person in question would rather work; by not working he or she is losing competence, human capital,making both the person and society worse off. There is also usually a social cost involved as unemployment very often is related to health issues and social problems like exclusion, not only affecting the unemployed person, but his/her family and even the wider community.
* **The economic costs ie the costs for society of using natural capital are often undervalued. Furthermore, natural capital is also embedded in the usage of built capital (minerals, water, energy etc.), and that usage of natural resources and ecosystem services is most often underappreciated,** often resulting in both misuse and over-use. Lastly but not the least, natural capital is often undervalued through subsidies and the fact that no account is made for its depreciation.
	1. **In spite of the fact that numerous studies have shown the benefits of a tax shift – moving from taxing labour to resource use – modern tax systems in the EU apply high rates to employment while leaving the use of natural resources tax-free or even subsidized.** In such a distorted business environment it is little wonder that most firms find it financially attractive to overuse natural capital and underuse human capital. Compared to overall tax revenue, the share of environmental taxes in the EU is very low and actually decreasing, despite all the recommendations from think-tanks, international agencies and economists to apply higher tax rates to deal with negative externalities, as that is seen as the most cost-efficient measure to handle pollution problems and the driving forces behind.
	2. **The aim of this report is to primarily study the possible societal benefits of systematic decoupling, with a focus on carbon emissions and employment effects.** Multiple benefits are possible by moving society and companies in the direction of decoupling (i.e.in the direction of a circular economy) when resource efficiency is linked to, and primarily concerned with, providing jobs and other forms of societal welfare gains –including the reduction of pollution, not least carbon emissions.[[12]](#footnote-12)By making use of the Input/Output model[[13]](#footnote-13)for each country explored, the report assesses the likely welfare gains of **three pathways[[14]](#footnote-14) improving the technology factor in the previously mentioned IPAT-equation to mimic three scenarios (i.e. different kinds of decoupling)** :

*•enhancing energy efficiency*

*•increasing the percentage of renewable energy in the energy mix*

*•organizing manufacturing along the lines of a materially efficient circular economy, i.e.by extending wealth (the life-time of durable products), minimizing waste and maximizing the reuse and recycling of materials*

**As the three decoupling scenarios support and enforce each other in virtuous circles[[15]](#footnote-15), the combined scenario will be far easier to pursue than any of the scenarios alone.**

* 1. **One of the very important assessments/preconditions in the study is that a significant part of the investments needed for the transition to a more circular economy will depend on public policy and public investments.** This is particularly true for infrastructure, i.e. the energy system, the transport infrastructure and the development of more sustainable cities. A lot of investments will be needed to realise the different decoupling alternatives: rail, mass transit vehicles, new infrastructure for electric vehicles, wind turbines, solar panels, biofuel refineries, smart-grids, retrofitting of buildings, recycling facilities and so on. The modelling exercise–based on structural changes as a result of supply chains becoming more renewable and resource-efficient – gave the following overall results, holding the production value constant to simplify comparison:

*•The carbon emissions were significantly reduced – albeit to a different degree, depending on the decoupling pathways chosen.*

*•The effects on employment were also significant, i e the number of jobs in the economies studied increased, but also here to a different degree, depending on the decoupling pathways chosen.*

*•The trade balances were mostly positively affected, more in some scenarios than others, though.*

* 1. **If all the three decoupling strategies would be pursued together the results would be substantial.** It should be noted, however, that there would be no trade balance gains globally. Some countries, especially fossil fuel and virgin material exporters, would tend to lose. Moving in the direction of enhanced resource efficiency, especially the attempts to enhance reuse and recycling of materials and extending wealth (product-life extension), will result in a change in the goods-to-services ratio of any given economy. This, no doubt, is a major reason behind the gains in employment**[[16]](#footnote-16)**.
	2. **Is this perspective of greatly enhanced energy and material efficiency and the phasing out of fossil fuels – *realistic* ? They have long be considered as unrealistic and, not least, outrageously expensive (in the short run). However, since the turn of the century, energy markets have undergone somewhat of a revolution.** The learning rates for solar and wind sources are extraordinary –far larger than for different fossil fuel plants, not to speak of **nuclear, where learning rates presently seem to be negative from a cost-perspective, partly due to increased security requirements.** Due to current trends, material efficiency in all its aspects will no doubt be more attractive to the business community than before. This study and several others will hopefully make it abundantly clear that the policy scope must be widened and that the dual approach of both energy and material efficiency would lead to larger reductions in carbon emissions than conventional strategies. What role may consumers play in the necessary transition? Is increased consumer awareness likely to be of any help in the move towards a more circular economy? Old habits die hard, and the structure of the linear economy is what consumers usually meet when they go shopping. However, a few generations back material efficiency was a necessity-and still is in many rural areas and, indeed, in many parts of the mega-cities in the developing countries. **A positive sign is that many young people in industrialized countries seem to be ready for a major shift in consumer behavior. They seem to be less interested in ownership of various things; rather benefitting from renting and high-quality services.**

* 1. **Policy measures suggested by the report to promote the move towards a circular economy include measures which are already being implemented, such as subsidies to promote investments in renewables, emissions trading, ETS to curb CO2 emissions from power production and energy-intensive industries, energy efficiency standards, improving waste management, stricter standards for recycling and reuse, ban on landfilling, reducing food waste etc. *All these proposals merit support. But they fall far short of what would be required to pursue decoupling at its full potential and achieve the EU 2050 vision of living well within the limits of the planet.*** *Unless complemented by more thorough measures they will not be able to fundamentally change directionfrom linear to circular material flows. Policy interventions needed to move towards a circular economy include everything from the introduction of principles for product design and changes in the eco-design directive to the greening of public procurement and the introduction of economic incentives to help enhance resource efficiency*[[17]](#footnote-17)
1. **Concluding remarks**

**These reports are both helpful to view and organize the move of society towards sustainability–both socially and ecologically.** They recall that unsustainable economic growth leads to less development (including less growth) in the long run since the very preconditions for growth and development (the sources and sinks) are being diminished. They promote concepts of *circular economy* and *decoupling* to clarify the crucial interdependency between the economy and the life-supporting systems provided by the Planet Earth.

**The Club of Rome report hopes to *help decision-makers to realize the multiple benefits of serious decoupling – both for climate change mitigation, reduced pressure on the natural systems and job creation.*** It deplores that policies to promote such actions are rare, and that politicians seem reluctant to let them influence industrial metabolism or the relative prices of energy and materials to any significant extent. It denounces the political attitude which only deal with *One issue at a time* and does not seem able to adopt *a systems perspective*.

**A key measure discussed at the meeting is, for instance, *the tax shift****, lowering taxes on work and increasing taxes on the consumption of non-renewable resources in the form of materials and fossil fuels. Such a tax shift would accelerate the transition to a circular economy, which is low-carbon and resource-efficient in nature.* *The system of VAT should be carefully analyzed. Goods produced by secondary materials – where VAT has already been paid once – should be exempted from VAT*. *Such a reform would promote the use of secondary materials and help correct a situation where it is often less expensive to use virgin materials than recycled ones.*

**These reports will thus be useful to build bridges between decision-makers (usually influenced by neoclassical economists) and natural scientists, as well as social scientists and ordinary people.** The Club of Rome report stresses (page 14) that the interdependency between the economy and life-supporting system is *well understood by most natural scientists* but that *the relationship seems to be less clear for most social scientists, economists and ordinary people.* The discussion on October 20 showed that this compliment regarding “who understands what” could be returned (with a smile): the interdependency between the economy and the quality of life supporting system provided by social protection and fiscal policy, and the need of a *just transition[[18]](#footnote-18)* do not seem to be as crucial to natural scientists and ecological economists as the ecological types of interdependencies.

**A participant to the conference also stressed that the European Union should now integrate all these issues at the center of its economic agenda** (and not only in the environmental margin of its agenda) and should thus *take the lead* in international negotiations to promote the same approach for all the Earth. In this regard, **Janez Potočnik**[[19]](#footnote-19) underlined that circular economy has a crucial role to play in the implementation of the 12th *Sustainable Development Goal (SDG[[20]](#footnote-20))* between now and the year 2030. He also said that the 12th SDG (*Ensure Sustainable Consumption and Production Patterns)* is driving the implementation of half of the 16 other SDGs.

# Finally, a representative of the cabinet of First Vice-President Frans Timmermans of the European Commission also called the attention of the meeting on the new emphases included in his speech on the UN Post-2015 Development Summit about The 2030 Agenda for Sustainable Development[[21]](#footnote-21) of and the key place of circular economy in this context.

New York, 27 September 2015

*“ It's astonishing just how much has happened since the Millennium summit. We all know the figures, but if you actually picture the people behind them, they become more than just numbers.*

*Just think about it: a quarter of the world's population was born* after *that Summit.*

*Today they are 15 years old or younger. Of all these kids, 9 out of 10 now get to go to school.*

*Those who are babies or toddlers are half as likely to die compared to 1990, and their mothers, half as likely to die in childbirth.*

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*And for the girls among them, well, their chances of having* real *opportunities (even if by no means* equal *opportunities yet) have greatly improved – at school, at work, in life.*

*In short: many millions have come into a much better world than the generation before them.*

*The Millennium Development Goals* have *made a difference. And as importantly: they helped us unite against* indifference*. The European Union helped to drive this agenda – because we believe this is in essence what the United Nations were set up to achieve: social progress and a fairer future. We are ready for the next chapter.*

*The MDGs showed us that* lack of development *of some countries is a threat to all. But so is* unsustainable development *on a global scale. This is the challenge that today we commit to overcome* together*. That makes the 2030 Agenda even more universal than the previous one.*

***The SDGs are not just for some countries, but for all countries – rich and poor alike.***

***Yes, the list is long. But these goals are comprehensive because they reflect the reality of today's world – and the way today's problems are daunting, complex, interlinked.***

*For the very first time in the history of mankind, the boundaries of the planet are actually within sight. Inequalities are increasing, social cohesion is eroding. Global competition for resources is at an all-time high.*

*The models that worked for so many of us in the past are* not *ones that will work for all of us in the future. We have to redefine our societies, our relationship with nature. Of course this feels threatening. But fear can be a powerful engine. We have to be creative. Because fundamentally this is about rethinking everything we do. All of us – people, companies, governments, international organisations.*

*Ladies and gentlemen,*

*In countries like ours, there is no excuse for not meeting our 0.7% target for official development assistance. It's more urgent than ever.*

*But this time under the SDGs it's not about just footing the bill: those countries fortunate enough to have a developed or emerging economy are committed to play a different role. This is not just about development aid. It's just as much about change at home.*

***My main message, Europe's message to all these countries is: it's also* our *turn now to step out of our comfort zone. It's about very concrete questions. How we have to turn around our economies to make them circular – leaving behind our “take-make-consume and dispose” growth pattern.***

*How we must mend our societies' social fabric, and how we integrate newcomers – all the more when they come as refugees fleeing war persecution. It's about clean air, water and oceans. More resilient cities, that are healthy, inclusive and safe.*

*About tackling food waste – a third of the food worldwide is thrown away which is frankly shocking beyond belief. And it's about our collective action to keep the global temperature rise below 2 degrees Celsius.*

*These are not impossible goals. We have innovation on our side to find solutions – if we have the will to act. In Europe we are determined to do this jointly, and we want to fully engage with the UN in experience sharing, capacity building, and progress monitoring. We want to do this together.*

*The SDGs will shape our development policy, and infuse our policies abroad and at home.*

*Ultimately, this is all about* governance*. About inclusiveness: societies will only accept transformation if people feel their voices have been heard. And it's about breaking out of silos. Sustainable development is not just an economic or social challenge, or an environmental problem: it's all three – and our efforts on each need to* reinforce *rather than* undermine *one another.*

*The Agenda is about eradicating poverty and putting sustainability at the heart of everything we do. And this is not just the right thing to do, it's the smart thing to do: for our economy, for our environment, for our society, for our children and grandchildren.*

*We have a world to transform, this common Agenda shows the way how. “*

1. **Many sentences of this summary are extracted from the 157 pages of the two reports presented at the meetings;** [↑](#footnote-ref-1)
2. Anders Wijkman is vice President of [Club of Rome](https://en.wikipedia.org/wiki/Club_of_Rome) and a [Swedish](https://en.wikipedia.org/wiki/Sweden) [politician](https://en.wikipedia.org/wiki/Politician). As [Member of the European Parliament](https://en.wikipedia.org/wiki/Member_of_the_European_Parliament) from 1999 to 2009, he focused on issues related to climate change, environment, development cooperation and humanitarian affairs. He is a member of the [Christian Democrats](https://en.wikipedia.org/wiki/Christian_Democrats_%28Sweden%29), part of the [European People's Party - European Democrats](https://en.wikipedia.org/wiki/European_People%27s_Party_-_European_Democrats) group. [↑](#footnote-ref-2)
3. http://www.ellenmacarthurfoundation.org/assets/downloads/publications/EllenMacArthurFoundation\_Growth-Within\_July15.pdf [↑](#footnote-ref-3)
4. http://www.clubofrome.org/index.php/the-circular-economy-and-benefits-for-society-2/ [↑](#footnote-ref-4)
5. *In doing so, the report builds on previous circular economy research, including work by the Ellen MacArthur Foundation and the McKinsey Center for Business and Environment. This report is the product of a knowledge partnership between the Ellen MacArthur Foundation, Stiftungsfonds für Umweltökonomie und Nachhaltigkeit (SUN), the new environmental economics branch of the Deutsche Post Foundation, and the McKinsey Center for Business and Environment.* [↑](#footnote-ref-5)
6. Policy-makers inspired by the vision presented in this report are encouraged to read the Ellen MacArthur Foundation’s new and complementary report, **Delivering the circular economy: A toolkit for policymakers.** The toolkit offers an actionable, step-by-step methodology to help transition towards a circular economy. [↑](#footnote-ref-6)
7. http://www.clubofrome.org/index.php/the-circular-economy-and-benefits-for-society-2/ [↑](#footnote-ref-7)
8. The European Commission took several important initiatives in the area of resource efficiency during the years 2011-2014. [↑](#footnote-ref-8)
9. *In their most recent study “Growth Within”, the EMF and McKinsey (see point 1) suggest that resource productivity is a hugely underexploited source of possible future wealth, competiveness and business revival. Their calculations show that only about five percent of the remaining value of most material goods is captured and made use of when the products are disposed of.* [↑](#footnote-ref-9)
10. *Securing energy supplies and production accounts today for more than 30% of total water withdrawals globally. The current quest for shale oil and gas and exploitation of tar sands are the latest examples, not only using massive amounts of water, but also polluting water and the surrounding areas heavily.*  [↑](#footnote-ref-10)
11. *Most climate change mitigation strategies are sector based, with a primary focus on energy use. The general level of material use in society is seldom taken into account in spite of the fact that the climate benefits from using products longer and from enhanced rates of recycling and reuse of materials ought to be obvious. The energy saved when recycling metals, for instance, is significant. According to a study by UNEP (2011), less than one third of some 60 metals studied have an end of life recycling rate above 50 per cent and 34 elements are below one per cent recycling. In theory, metals can be used over and over again, minimizing the need to mine and process virgin materials and thus saving substantial amounts of energy and water, while minimizing environmental degradation and CO2 emissions. In spite of all this, recycling and reuse rates remain very far from optimal for most metals.* [↑](#footnote-ref-11)
12. The report considers that *This area has received relatively little attention in academic studies and policy reviews thus far.* [↑](#footnote-ref-12)
13. The main analytical tool used is a model developed from a traditional Input/Output model, which accounts for the interdependencies of different branches of a national economy. The model is extended to make it possible to simulate structural changes within the supply chains of the national economies studied. [↑](#footnote-ref-13)
14. This is done by modifying the traditional Input-Output modelslightly. Thereby, we will be able to study employment, energy use and carbon emissions from different sector activities in the economy - and, in particular, to study how these variables would be affected by policies promoting a circular economy, as defined by the three pathways above. [↑](#footnote-ref-14)
15. Improved resource efficiency having energy efficiency effects, and enhanced energy efficiency making it much easier to increase the share of renewable energy (cut the use of fossil fuels)*.*  [↑](#footnote-ref-15)
16. Carbon emissions are likely to be cut by two thirds, and almost 70% in Spain, structurally. The number of additional jobs would exceed 75,000 in Finland, 100,000 in Sweden, 200,000 in the Netherlands, 400,000 in Spain and half a million in France. This means that unemployment rates – compared to today -- could be cut by a third in Sweden and the Netherlands, and possibly more, maybe even cutting unemployment in half -provided that some of the likely trade surplus gains would be used for investments domestically. In Spain the unemployment rate is likely to be reduced from the current over 20% to somewhere close to 15%, in Finland unemployment would be cut by a third, and in France by almost a third, provided that some of the likely trade surplus gains would be used for investments domestically. The improvement in the trade balance would be around 1,5% of GDP in all of the European countries – representing a few billion Euros a year in Finland, more than five billion euros a year in Sweden, about 15 billion eurosa year in the Netherlands, around 20 billion euros in Spain and about 50 billion euros in France. [↑](#footnote-ref-16)
17. As recognized in the EEA report from March 2015 *The European Environment – State and Outlook 2015* [↑](#footnote-ref-17)
18. **Just Transition** is a framework for a fair and sustainable shift to a low carbon economy, proposed by trade unions and supported by environmental NGOs. It has come to wider prominence through inclusion in negotiating texts for the 2009 UN Climate Change Conference. Just Transition holds that a shift to a lower carbon economy is vital to avoid dangerous climate change. Tough targets to cut CO2 emissions, supported by new environmental regulations and carbon markets, will transform economies over the next decade. These shifts will have major implications for working people in energy supply, industry and transport, and for everyone as consumers. Just Transition recognizes that support for environmental policies are conditional on a fair distribution of the costs and benefits of those policies across the economy, and on the creation of opportunities for active engagement by those affected in determining the future wellbeing of themselves and their families. [↑](#footnote-ref-18)
19. Forrmer European Commissioner for the Environment in the last Barroso commission after having been Commissioner for science and research. Ph D in Economics, Liberal Democracy of Slovenia (LDS) [↑](#footnote-ref-19)
20. <https://sustainabledevelopment.un.org/?menu=1300>

http://www.un.org/ga/search/view\_doc.asp?symbol=A/RES/70/1&Lang=F [↑](#footnote-ref-20)
21. Speech 'A World to Transform' http://europa.eu/rapid/press-release\_SPEECH-15-5726\_en.htm [↑](#footnote-ref-21)