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Introduction to The Circular Economy

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Introduction

There is today a wide scientific consensus on the existence of global warming, driven by the increased Greenhouse Gas (GHG) emissions (due to historic human activities) and concentration in the atmosphere. The latest IPCC 1.5 °C Special report, released a couple of weeks ago in October 2018, made a clear statement that the world need to cut carbons emission as fast as possible and on the largest possible scale in the next 12 years before the global limit of 1.5°C is reached and climate change irreversible. Indeed, reaching the 1.5°C will significantly worsen the risks of sea level rise, drought, floods, change rainfall patterns, extreme heat and displacement (it is estimated that up to 700 million will move due to climate change worldwide) and poverty for hundreds of millions of people.

There is a need for a concerted effort by all actors, public and private, to reduce emissions and increase climate change adaptation action. As much as the public sector can act to help fight climate change via various policies, legislations and incentives for business to be more green and less polluting, there is still a need for a bigger and effective engagement of the private sector into mitigation and adaptation actions. This might stem from a certain lack of focus and understanding on how climate change will affect existing businesses and the opportunities for new profits that exist for the sector if they choose to adopt a more green and less carbon intensive business model¹ (development of new services, technology, research and innovation etc.). Furthermore, in the current years, the observed depletion of natural resources and increase of natural disasters (especially in countries such as Bangladesh, that are highly vulnerable to climate change), are posing a real threat for a firm viability and increased competitiveness for primary resources. Additionally, regulatory changes and cost from reducing the GHGs will impact the private sector and thus mitigation and adaptation actions constitute already central questions for the entrepreneurs. It is therefore important to think how the private sector can get ready and contribute to drive the necessary changes in the current economic models to help achieve the Paris Agreement goals of keeping the global warming under 1.5°C.

The question of what the private sector can do to change is still under debate and various institutions are already exploring different ideas and models. However, it is agreed that the engagement of the private sector will required a combined effort for adaptation and mitigation (through increasing energy efficiency, decarbonization of the energy systems, and changing the use of natural resources and land management). As such, the circular economy concept, by combining actions for adaptation and mitigation, has gained attention in the climate change negotiations (the circular economy was the focus of discussion at the UN Climate Change Intersession Conference in Bonn in May 2018), as a path to explore for an effective private sector engagement in the fight against climate change.

I-Linear economy and the link to the global warming

Our current economic model, called linear (take-make-use-dispose), was inherited from the industrial revolution and is centered on the use of energy to extract natural resources and their further transformation into products. In other terms, fossil energy use and natural resources extraction were and still are the driving forces behind

¹ Harvard Business School, "Climate Change in 2017: Implication for businesses", June 27, 2017.

most countries economic growth. This logic is directly reflected in the emissions by sectors, with electricity and heat production, and industry representing respectively 25% and 21% of the total global GHG emissions². Coupled with poor waste and natural resource capital management, the current model is also a driving force for important environmental degradation and global warming.

Moreover, it is estimated that resource consumption will triple in the period from 2020 to 2050, due to population growth and increase in prosperity, which will add new consumers to the markets, especially in developing countries. With the current business models, we will therefore observe an increase demand for energy and material consumption to satisfy the growing demand, which will continue to impact negatively the efforts to limit GHG emissions and environmental destruction. Indeed, the main disadvantage of the linear economy lays in the lack of idea for primary material shortage, pollution and response to the growing demands of citizens for more responsible products. Additionally, the question of availability of natural resources (due to finite resources of earth), will have a direct impact on the prices of raw materials (due to the growth of industries dependent on them and interconnection of products and transformation processes) and the prices paid by the final user³ and therefore creating a risk of a wider wealth gap among the populations.

Furthermore, we are already observing certain losses and damage due to climate change that will continue to increase if we are unable to take proper actions to limit GHG emissions and adapt to already existing climate induced natural disasters. Climate impacts, in terms of loss and damage, have a direct economic cost and are affecting all business and industries, from fisheries and agriculture to insurance and tourism sectors. According to the economist William Nordhaus, the best way to understand the economic cost of climate change is to express the damage as a percentage of the global economic output. Based on his prediction, with an increase in global temperature, the climate damages worldwide will amount to at least 4% of the global economy if no more, and will continue to growth with the increase of the global warming. In other terms, it is estimated that loss and damages amounting from climate change will cost 535 trillion dollars by the end of the century. However, there are also non economic loss and damage, resulting from loss of livelihood, health, cultural heritage among other things that are hard to quantify in terms of money and will affect indirectly all economic sectors as well.

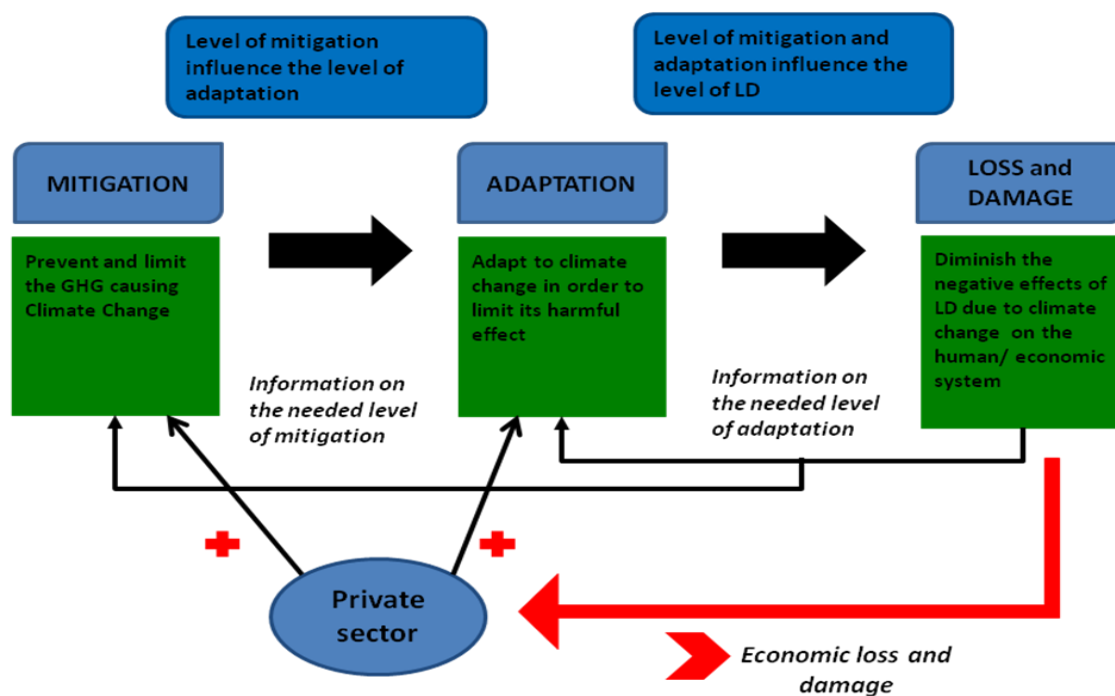


Figure 1: The private sector in the climate change framework context

² United States Environmental Protection Agency, "GHG emissions data", 2010.

³ Lee, Preston, Kooroshy, Bailey and Lahn, "Resources Futures", Chatham house report, 2012.

Therefore understanding the risk that continuing with our current linear economic model represents, needs to bring a deeper reflection on how to reduce the dependence on primary materials and energy.

As much as the current linear model did help to produce wealth in developed countries, the output in terms of GHG and environment loss, put the already vulnerable countries towards climate change at an increased risk economical loss and damage. Efforts need to be taken by both the private and public sectors in both developed and developing countries, to limit GHG emissions, since even the smallest amount of GHG have the same effect in the atmosphere regardless of which country is the emitter. Thus, Bangladesh can use already available knowledge in terms of new business model that circular economy represent and customize it to its own context and needs, instead of following a linear model for its further development.

II-Circular economy as a climate friendly economic model

Despite, the growing international focus on circular economy and publication, there is not a real definition yet. However, the most widely accepted definition was formulated by the Ellen MacArthur Foundation, which defines circular economy as a **“restorative and regenerative model that keeps materials, resources and components as long as possible in the system to maintain their highest value”**⁴. In other terms, the concept of circular economy was developed based on the idea of a closing loop where energy and material are constantly circulating. This is also known as value retention, and this encompasses the idea of using to its maximum products and material that already exist in the market. The value retention idea, within the circular economy is achieved thanks to the 3Rs: reducing the material and waste, reusing products or part of it, recycling materials and see them as secondary raw materials.

Adopting the circular economy means aiming for a change within the economical and business model functioning and thinking. Thinking about making products last longer, easier to recycle and reuse etc. Thinking about creating an economical model that is not based on the consumption idea but that puts a greater importance on common well being and help creating a new balance between the humans and environment. We are also observing an increase demand from the populations for cleaner water access, soil, air and healthier food which means that business will have to comply more with those demands if they want to keep attracting new consumers.

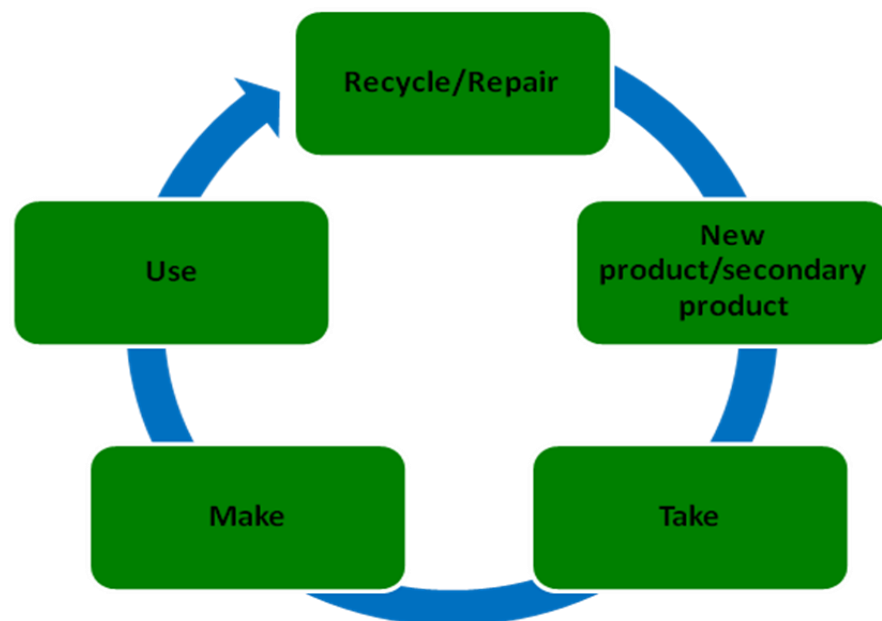


Figure 2: Circular Economy cycle

⁴ <https://www.ellenmacarthurfoundation.org/circular-economy/concept>

In terms of fight against climate change, circular economy can help in the mitigation aspects by helping diminishing the energy needed for extraction of raw material and diminishing the numbers of transformative steps of those materials by using already existing goods and simply giving them a second life, and thus contributing to energy efficiency efforts (reducing the demand for new energy inputs). Another mitigation action that circular economy helps in implementing is the use of renewable energy and thus moving towards the decarbonization of the production chain. Indeed, renewable energy, especially solar and wind, starts to be more competitive than fossil-based fuel. With the continuous efforts to develop more renewable energy technologies, clean sources of energy will be cheaper and more competitive than current fossil fuel in the long run. Businesses which will be able to make the switch, will therefore, gain in market competitiveness. Overall, circular economy, if implemented correctly, could help to reduce up to 33% the GHG emissions from products manufacturing and reduce up to halve the existing emissions⁵.

Circular economy embodies as well adaptation actions (material savings) for business but also for consumers. Firms can reduce the use of new materials but improving the design of products, making them easier to recycle and repair, using better lasting materials (smart materials), replace products with services when possible etc. This on the other hand, means that consumers will also have to change their habits of consumption and have a new approach to goods, to use them and repair them as much and as long it is possible. All those efforts combined, could save up to 630 billion United states dollars for the sectors related to the consumers goods for average longevity products (ex: bicycles), according to the Ellen MacArthur Foundation report from 2016⁶.

As such, circular economy opens new possibility for a sustainable value creation, green jobs and green growth, alongside a better natural resource management and taking into account the ecosystem balance.

Circular Economy can help in implementing both the mitigation and adaptation pillar of the international climate change regime. As such, under the right policies and legislation, circular economy can help in making a switch towards a more sustainable economic model, improve the renewable energy mix of countries, create new jobs opportunity and help give a second life to industries.

III-Way forward

Transitioning towards the circular economy will include some cost (investments in research and development, subsidy payment to promote new products etc.) and it is a legitimate question to ask how much and what will be the gain in the long term. It is difficult to be able to fully give a price tag on the transition that has to occur as it is hard to find an example of a similar change in the recent history. We can however, have some idea of the involved cost. For example, the British government estimated that to create a fully efficient reuse and recycling system, will cost around 14 billion Euros and 108 billion Euros to scale it up to the European level. However, according to a report from the European Environment Agency, natural disasters induced by climate change between 1980 and 2013, have already cost Europe more than 393 billion Euros⁷. Comparing the cost of having an effective recycling system and the cost induced by climate change induced natural disaster; the choice can be easily done as the numbers speaks for themselves.

Other advantages of adopting the circular economy for business, is increased security of supply, greater chain collaboration (designer-manufacturer), increased brand trust from consumers, development of new markets

⁵ Institute for European Environmental Policy, "What role can circular economy play in delivering the Paris Agreement?", December 11, 2017.

⁶ Ellen MacArthur Foundation, "Intelligent Assets: unlocking the circular economy potential", 2016.

⁷ EEA, "Climate change poses increasingly severe risks for ecosystems, human health and the economy in Europe", January 25, 2017.

(ex: services such as preparing and redistributing of products), and increase in overall resilience of companies to sudden changes (such as prices of fossil fuel, climate events etc.).

To be able to put into practice the concept of circular economy, there is an increase need of concrete research to action focus and collaboration of the research world with the private sector. Indeed, we need to be able to translate the ground ideas of circular economy into concrete public and private sectors policies, if we want to fully benefit from the projected benefit of this proposed new model. Indeed, there is still a need for clarification of terminology, integration of the concept within the UNFCCC text, understanding the existing challenges and financial risk that needs to be addressed for each particular sectors of a given economy.

Contributors

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Acronyms and Abbreviations

GHG: Greenhouse Gas
IPCC: Intergovernmental Panel on Climate Change
3Rs: Reduce, Reuse and Recycle
UNFCCC: United Nations Framework Convention on Climate Change

If you wish to participate in the following study on circular economy and links to climate change loss and damage, please get in touch with the Authors.