Circular Economy: Proposed Mechanism for Trading… path to 'Net Zero'

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For ages, industries have been practicing a linear economy model-make, use, dispose of-that is neither sustainable nor environmentally friendly and results in huge waste. On the other hand, a circular economy model uses the 3Rs (Reduce, Reuse, Recycle) concept and intends to replace the 'end-of-life' concept with restoration and regeneration.
This paper proposes a mechanism for trading 'waste' derived from conventional cap-and-trade mechanisms for carbon trading and a clean development mechanism (CDM). The proposed mechanism can be leveraged via policy making for a circular economy and organizations aiming to achieve Net Zero.

The Importance of a Circular Economy

A circular economy is an alternative to the traditional, linear economy of make, use, and dispose of. Based on the 3Rs, a circular economy closes the loop and eliminates the end-of-life for any product.

Using the waste generated when a product's life cycle ends, either as a raw material for some other industry or an upcycled product, promotes the concepts of regeneration and restoration.

Waste Trading in a Circular Economy

This paper proposes introducing waste trading into the conventional carbon trading mechanism and promotes that industries shift from a linear to a circular model.

Waste Trading

Using a trading mechanism to contribute a unit of waste (say, one unit = one tonne) to a circular economy

Aim

To reduce or manage the waste generated in a product's or service's lifecycle

Proposed Mechanism

The proposed mechanism takes into consideration the cap-and-trade mechanism for carbon trading. We propose to reduce carbon emissions by the below mentioned activities:

1. **Reducing Waste**: Redesign the product in a way that it produces less waste at its lifecycle end
2. **Managing Waste**: Use waste as a secondary raw material for another industry
3. **Consuming Waste**: Waste produced by one industry is used directly by another industry as a feed

Many examples of such symbiotic industrial relationships can be found in the Kalundborg Eco-Industrial Park; be it steam-waste of one industry being used to run turbines for another, or a refinery extracting pollutant gases and supplying them to a chemicals manufacturer.

Figure 1 depicts the basis on which we have derived the mechanism for waste trading.

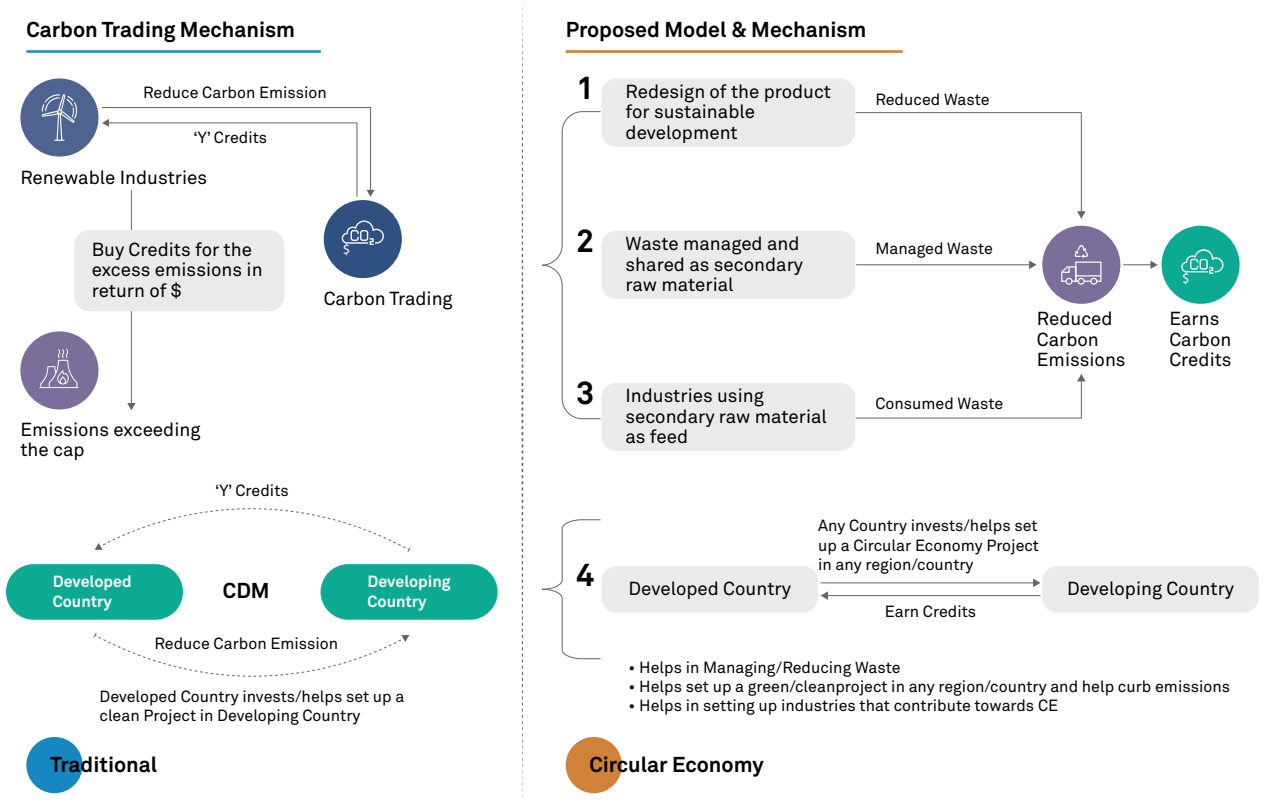
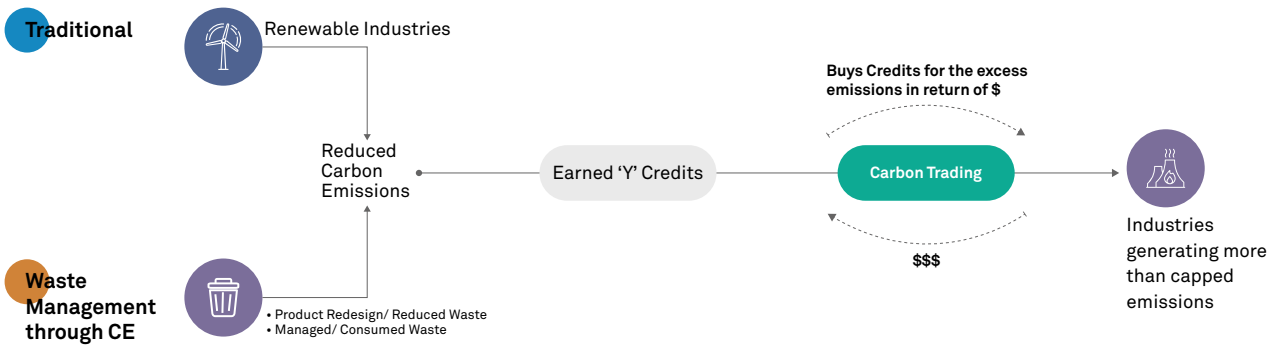


Figure 1: Proposed integrated mechanism for waste trading

If new and existing products are designed and redesigned in a way that they either produce less waste at the end of their lifecycle or can be used as a secondary raw material by other industries, the amount of waste reduced, managed, or consumed would lead to a reduction in carbon emissions.

The emissions produced can be measured, and the difference between the emissions and the capped limit can be traded in the form of carbon credits (see Figure 2). This would lead to the development of sustainable products.



- **Carbon Credits generated by redesigning the product:** This can be measured by the amount of carbon emissions generated by measuring the amount of waste generated with the traditionally designed product. Say 'x' ton of waste is produced which results in 'y' units of carbon emissions => Redesigned Product has 'y' units of credits generated
- **Carbon Credits generated by managing waste:** This can be measured by the amount of carbon emissions generated by that amount of waste. Say 'x' ton of waste is produced which results in 'y' units of carbon emissions => Managed Waste has 'y' units of credits generated

Figure 2: A proposed integrated mechanism for a circular economy and carbon trading

In the clean development mechanism, developed countries earn credits by investing or helping developing countries set up clean projects. Similarly, we propose that developed countries help developing countries set up:

Green/clean projects to curb emissions

Industries contributing to a circular economy

Projects for managing and reducing waste

Conclusion

The integration of a waste trading mechanism with the carbon trading mechanism will further help reduce the carbon footprint and introduce circularity in the ways of working. Industries must transition toward a circular economy to achieve a sustainable and more profitable economic model. Technology will have a major role to play in shifting the linear economy to a circular one. Technological advancements and shift towards a circular and more sustainable world would generate more employment opportunities as the industries would undergo a complete redesign & revamp. The proposed integrated mechanism is scalable to various industries aiming to help them achieve circularity, make them more sustainable, and thereby reduce their carbon footprint to Net Zero

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Kapil has 20+ years of extensive global experience, complemented by sharp business acumen, a hands-on management style and a strong foundation in on-time, on-budget delivery within the ETRM ecosystem. He has built large, culturally diverse teams, globally. At Wipro, as Global Head of the Energy & Commodities Business, Kapil is responsible for growing the Energy & Commodities business globally. He is also responsible for building the global consulting organization and value-added services for industry, both in traditional as well as transformational solutions with a deep focus on getting clients ahead in their Digital journey. Kapil is passionate about how businesses can reduce their carbon footprint and focus on renewables, keeping a close tab on Circular Economy principles and eventually helping businesses to reach Net Zero by changing how traditional businesses are being operated. Kapil has a Master's in Business Information Technology from Middlesex University, London, and a post-graduate diploma in Business Administration from the University of West London.

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Upasana Singh is a Consultant at Wipro currently working with the ETRM Practice. She is a Management Graduate in the field of Energy Trading from the University of Petroleum & Energy Studies, Dehradun. Prior to doing her MBA, she has done her M.Sc. in Industrial Chemistry from Amity, Noida & was associated with the Council of Scientific & Industrial Research – AMPRI, Bhopal wherein she worked on extracting & synthesising the Nano particles from red mud and the synthesis of geo polymers using fly ash. It's been a decade that she has been associated with the idea of reducing the carbon footprint, focus on renewables, the concept and the means of implementing circular economy. She graduated with an Honors in Chemistry from Dayalbagh Educational Institute, Agra. Right from the days of graduation, she was introduced to the idea of a symbiotic ecosystem where and how inhabitants can lead an active, disciplined and co-operative life in a self-sustained community. With this innovative idea of integrating waste trading with carbon trading & clean development mechanism, she aspires to embark on an active journey towards a sustainable & circular world.

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