Carbon Currency for a Sustainable Economy

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Introduction
A balance between economic growth and environmental sustainability can solve major global challenges. This paper will address how to utilize the current economic system to catalyze the transition to a sustainable global economy that promotes a global sustainable development. The implementation of the "carbon currency" will provide an automatic carbon compensation for the total environmental impact of a product or service.

Theory
To secure a transition towards sustainability while the world population increases, we need to utilize the close network of our global economy. Our concept shapes a sustainable global economy with a system in parallel with the current economic model. Exploiting the strengths of the conventional economy, it is possible to gradually phase in a sustainable model where renewable energy is produced at competitive prices. A green economy will enable the production of goods and services that create human well-being and simultaneously contribute to a sustainable global development (Towards a green economy, UNEP 2011). By creating six divisions the global economy will be well structured to systematically facilitate sustainability. Renewable energy, clean transportation, green buildings, water management, waste management and land management. The standard green economy divisions will enable financing of new projects and is comparable across borders.

In order to standardize the global economy, we propose introducing a new currency. The "carbon currency" would be an environmental pillar of the national and international trade. A climate-related value is a measure that can be combined nicely with the current implementation of carbon credit, carbon credits and binding emissions limits. By changing the origin of the currency it receives a significant climate-related value in addition to the specific benefits derived from money within trading and social development. The concept of the carbon currency is that CO2 equivalents form the basis in the new economy. The price of goods and services is the price of the total social and environmental impact the product or service has caused. When the market is controlled by the lowest possible impact on the climate rather than the lowest possible price, consumption will automatically be steered towards a sustainable development, and prices for environmentally friendly solutions is reduced.

The green economy thus operates with transactions between individuals, organizations and nations, according to the normal per-capita adjustment. Transactions can take place between carbon exchange and ordinary money and vice-versa, with a gradual transition to only carbon currency. Such a system will control the economy so that the arrival of new transaction media such as digital currency bitcoins will contribute to future sustainable economy rather than to undermine the world economy and creating great uncertainty in the markets.

Conclusion
Globalization and new technology makes a new economic system available for major parts of the world’s population. By linking currency to the climate, developments follow known market models, but instead of over-consumption of resources, the development in the green economy only be operated by sustainable projects and environmentally friendly community solutions.

References

CO2 cooling at Roskilde Festival

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INTRODUCTION
Cooling takes a lot of energy. It’s particularly interesting at Roskilde Festival where all the cooling systems are spread across the festival site. It’s one of Roskilde Festival’s biggest energy consumers and therefore a huge CO2 emitter. There lies a great potential in creating a sustainable, climate-friendly cooling system to events like Roskilde Festival. The idea of creating a sustainable cooling system will not only reduce the emission of CO2 but hopefully also have a long-term effect on the new standards concerning sustainable and climate-friendly cooling at bigger and temporary events.

We want to set up a model of a cooling system with CO2 as refrigerant and compare it with the existing cooling containers/refrigerators based on other refrigerants. We want to use data from Mærsk Container Industries A/S and compare the energy efficiency of a regular cooling container and a cooling container running on CO2. With the research from Mærsk Container Industries A/S and our further studies, we want to analyse whether or not it would be a good idea, energetically speaking, to switch to cooling containers running on CO2.

APPROACH
More precisely, we want to set up detailed thermodynamic models for cooling systems based on the refrigerant R134a. These models include calculations of the energy consumption and waste heat. We want to estimate a detailed thermodynamic model when CO2 is the refrigerant, based on the result from R134a as refrigerant. The results would then be compared to Mærsk Container Industries A/S’s cooling containers that are based on CO2. We want to use the collected data about variations in temperature, waste heat and energy consumption from Mærsk Container Industries A/S and DTU, to make an assumption, whether or not it would be economically and environmentally profitable for Roskilde Festival to invest in CO2 cooling containers.

EXPECTATIONS
We expect that CO2-cooling have an advantage compared to normal cooling systems, environmentally speaking. We have no idea to what extend this advantage would be though. It’s proven to be both environmentally an economically sustainable to switch to CO2-cooling at the Netto corporation in Denmark. We could imagine ourselves using some of their experience in our work analysis.