Circular Economy – The Challenge We Must Face

R.Suomi[1]

[1]*University of Turku, Department of Management and Entrepreneurship*

Abstract

Circular economy is not just a new fresh hype, but a natural need for all societies. Natural and other resources must be saved and preserved, and at the same time economy will do better, and pollution decrease. There is a multitude of possibilities – some even rather easy – to forward circular economy. This article discusses the need for and basic concepts of circular economy, and introduces three projects currently under way by the researcher in the area.

Author Keywords

Circular Economy, Sustainable Development, Waste Management.

Introduction

We as humankind are already now overusing the resources earth can offer (Ciriacy-Wantrup and Bishop, 1975, Goenka et al., 2016), and our current level of consumption of natural resources cannot be sustained for a long time. Sustainable development necessitates that we cut down usage of fresh natural resources, and start circulating used recourses.

Key components of this new world attached with the keyword "circular economy" (Haas et al., 2016, Stahel, 2016) are energy saving and reuse of materials. High-level goals are stop of global warming (Cook et al., 2016) and end to pollution – actually even cleaning up the pollution harms we have so far done.

Energy consumption in total must be reduced. Especially harmful is usage of energy sources that are not renewable. Oil, gas and coal are in a central position, but even items such as uranium are not increasing any more. Burning wood and other bioenergy might be some kind of solution to local energy needs in some places, but burning of anything - often sadly especially bioenergy - burdens our atmosphere a lot.

In principle we might have enough of metals and minerals in the world, but finding, mining and purifying them is a hard energy-consuming and environment burdening task. Utilizing current available reservoirs more efficiently would be beneficial. Wasting of precious resources such as plastics made out of oil is a major sin.

Pollution takes many forms. Atmosphere, soil and waters are all risked. When they are polluted, the whole living ecosystem runs into trouble, not least human beings. Losing the richness of ecosystems and sacrifying species can have radical consequences that we might not even understand yet.

But circular economy is not just about technology or natural sciences. It is as well about human and group behavior, about sociology and economics. From the very beginning, we must educate children to the values of circular economy, and formulate our economic systems and incentives so that circular economy can be realized. The global challenge in this is huge, and might take generations to accomplish

Information systems play a key role even in the circular economy. Increased knowledge about circular economy can be spread through global information channels such as the Internet and social media. Thousands of different operational applications can assist in the daily activities of circular economy.

Current research made

In our research team we have so far had three major projects on circular economy. First is the project Material Value Flows ARVI, where we focus on municipal waste management, especially the business models and logistics. Special topics to work on are billing arrangements and logistics. First, how should billing for waste be organized to motivate people to not produce waste – billing based on weight of generated waste would be an answer, but this necessitates a lot of investment to waste management infrastructure. Another area of work is the optimization of waste collection: waste bins should themselves inform as they are full and order for emptying, saving driven kilometers of the truck collecting waste is a key goal. The second project is on the reuse of ash from burning wood in big heath and electricity generation plants – ash from wood would be a good fertilizer for forest, but logistics and business models are again a problem. Economically ash does not tolerate long transportation distances, and meaningful processing of ash often needs big plants, where ash should come from a big are – this is one of the problems to solve. A third project focuses on the minimizing of medicine waste in hospital context. Medicine waste is always very hazardous to environment, and medicines are often expensive. Here the key finding so far is that the more close to the patient we come, the higher the risk for medicine waste. Patients' unwillingness or incapacity to consume the prescribed medicines is a major source of medicine waste.

Conclusions

Circular economy is not a single project. It is a way of thinking and living, and is encountered in as many different contexts as life itself. The big problems circular economy is trying to solve are well known worldwide both in science and practical life, yet local awareness and immediacy of the problems varies a lot. This is not to say that all our environmental problems would be encountered already – new problems and solutions are sure to emerge even in the future – some of them we are not aware at all yet. There are no silver bullets to introduce circular economy, but the work begins with different projects – often small – solving practical problems at a local level. With several small steps, developments that make even a global change can be achieved.

References

CIRIACY-WANTRUP, S. V. & BISHOP, R. C. 1975. Common property as a concept in natural resources policy. *Nat. Resources J.,* 15**,** 713.

COOK, J., ORESKES, N., DORAN, P. T., ANDEREGG, W. R., VERHEGGEN, B., MAIBACH, E. W., CARLTON, J. S., LEWANDOWSKY, S., SKUCE, A. G. & GREEN, S. A. 2016. Consensus on consensus: a synthesis of consensus estimates on human-caused global warming. *Environmental Research Letters,* 11**,** 48-50.

GOENKA, A., DOGNE, N. & THAKUR, V. S. 2016. Towards Sustainability (Use of Mother Natural Resources) - An Overview. *Journal of Interior Designing and Regional Planning,* 1**,** 1-10.

HAAS, W., KRAUSMANN, F., WIEDENHOFER, D. & HEINZ, M. 2016. How Circular Is the Global Economy? A Sociometabolic Analysis. *Social Ecology.* Springer.

STAHEL, W. R. 2016. The circular economy. *Nature,* 531**,** 435.