

Promoting Upcycling through an International Research Network

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Abstract

The current linear economic growth model detached from environmental challenges is flawed and has resulted in environmental challenges such as pollution, climate change and many others. Different organisations and countries have devised various interventions and policies to address environmental issues such as reuse, recycling, upcycling, sustainable waste management and circular economy. However, environmental depletion is continuing at an alarming rate. There is an urgent need to re-examine and change the environmental management strategies, consumption, and production patterns of extract-manufacture-consume-dispose to a sustainable model. This paper discusses upcycling innovation as one of the promising sustainability strategies. The authors observe the research in the area is isolated, e.g., country-specific and uncoordinated. Therefore, there is a need for joint research collaboration at a global level to promote upcycling. This may be achieved through an ongoing research project on the International Upcycling Research Network, which has networked upcycling actors on all continents. The International Upcycling Research Network aims to promote the upcycling practice and research to increase resource efficiency and encourage behavioural change toward sustainable lifestyles.

Keywords: *upcycling, sustainability, International Upcycling Research Network, collaboration, circular economy.*

Introduction

Humanity is facing an environmental crisis where infinite resources are extracted from the environment and discarded into the environment within a short span as waste. People have developed a throwaway culture at every step of the production stage (Bofylatos, 2022; Oladoja, Dare-Abel & Jayeoba, 2021). The waste has led to air and water pollution, climate change, rising temperatures and rising sea levels, prolonged droughts, floods, etc. Such environmental challenges have prompted the emergence of sustainability as a possible solution. There is a need to redefine and develop sustainable and creative environmental, social, and economic production and consumption models (Bofylatos, 2022). This approach demands a creative multidisciplinary approach to transition to a carbon neutral system or shift toward a circular economy. Focusing on sustainability can improve environmental conditions, increase resource efficiency, and foster behavioural change towards sustainable lifestyles. This paper presents upcycling as one of the promising niche strategies that can be used to transition toward sustainable systems. However, research in upcycling is still in the infant stage as it lacks multidisciplinary and international collaboration among the key actors. There is a need to develop upcycling theory and practice across industries and disciplines globally. The paper reports on an ongoing International Upcycling Research Network project that facilitates cross-industry, cross-discipline, and international research collaboration.

Upcycling and Sustainability

Upcycling provides novel strategies for waste management and resource efficiency and reduces solid waste and the industrial energy consumption involved in the processing of and manufacturing from virgin materials. Oladoja, Dare-Abel & Jayeoba (2021) also argue that

upcycling is a promising means to reduce material and energy use and engender sustainable production and consumption. Upcycling disrupts unsustainable production and consumption patterns because it offers a combination of upgrading and recycling (Wegener, 2016). Upgrading adds value to products, while recycling promotes reusing disposed of items. Upcycling refers to material processes and innovations using waste products, components, and materials to create products of higher quality or added value than compositional elements (Sung & Abuzeinab, 2022). Therefore, upcycling offers an alternative to sustainable consumption by taking disposed products into a new production and value-creation cycle. Upcycling counters the argument that an object has no value once disposed of or must be destroyed before it can re-enter a new circle of production and value creation (Wegener, 2016). Adopting upcycling innovation will play a significant role in the quest for a sustainable environment and circular economy (Oladoja, Dare-Abel & Jayeoba, 2021). The circular economy seeks to redefine waste not as trash but as a valuable resource with the potential for a new value creation chain in its lifecycle. Bofylatos (2022) argues that the circular economy advocates for minimising waste and pollution, keeping products and materials in use for a longer time, and regenerating natural systems.

Some barriers to upcycling projects include requiring specialist skills, equipment, tools, space, and time. At times, cleanliness and hygiene issues can be a barrier to many upcycling forms of waste or limit the application of the upcycled objects (Bridgens et al., 2018). Furthermore, Sung & Abuzeinab (2022) outline the following as possible challenge factors to upscaling upcycling: difficulty in sourcing materials, limitations from the materials, lack of facilities/equipment, time-consuming processes, limited knowledge and skills, limited good quality product, high sale price, complex and expensive promotion/marketing activities, limited, affordable space, financial constraints, limited legislations, standards, and warranty, consumers' negative perception of upcycled products, and consumers' lack of upcycling awareness. Other challenges include acceptance of upcycled products, difficulties accessing capital, certification and export issues, and intellectual property laws failing to protect upcycled products because they build on the works of others.

International Upcycling Research Network

The International Upcycling Research Network is a two-year research project that started in June 2022. It seeks to move upcycling from a niche area to the mainstream practice in the circular economy. Therefore, vital upcycling actors must develop theories and practices globally across industries and disciplines. The project aims to develop the world's first long-term platform to facilitate cross-industry, multidisciplinary and international collaborative research. The project aims to create positive synergies between various international actors for collaborative endeavours to understand and promote upcycling.

The short-term objectives of the project are to (i) expand our understanding of current upcycling research and practices through seminars; and (ii) collaborate and investigate global challenges to scale up upcycling through interpretive structural modelling workshops. The medium-to-long-term objectives include: (i) developing new cross-industry, multidisciplinary, and international collaborative research projects and initiatives; and (ii) creating the network website as a long-term collaborative platform.

The Network has members in five continents (Africa, Asia, Australia, Europe, and North and South America). The members are found in 17 countries. To achieve the project objectives, the Network will conduct the following activities:

- (a) Online meetings will discuss the project progress and development of joint research projects.
- (b) Interpretive structural modelling workshops will aim to understand interrelated and self-reinforcing challenges in the upcycling value chain for scaling up globally. Interpretive structural modelling is a qualitative method used to structure various factors into a hierarchy and visualise the interaction between the factors to help decision-makers in tackling these factors in order of priority (Awuzie & Abuzeinab, 2019).
- (c) Blended/online seminar series on upcycling in each continent to share experiences and build research collaborations. The seminars will enable members to understand current upcycling research and practices across industries and academia globally. Upcycling actors will expand their knowledge and understanding in the area by sharing best practices.
- (d) The blended International Upcycling Festival will showcase the Network's activities and outcomes, expand the Network, and engage businesses and consumers for direct impact. The first day of the two-day event comprises academic conference presentations and discussions. The second day will engage businesses and consumers for awareness raising, knowledge transfer, new data collection and networking through public lecture series, stakeholder workshops, family-friendly activities, etc.
- (e) Developing an International Upcycling Research Network website offers a platform for collaborative investigation and discussion on global challenges affecting the scaling-up of upcycling. The website will enable members to collaborate on joint research projects and funding applications and share ideas, experiences and other initiatives for the global scaling-up of upcycling as a promising alternative to transition towards the circular economy.

The output from the project will include an edited book from the seminar series and the International Upcycling Festival, conference proceedings publication and journal articles from the interpretive structural modelling workshops. There will also be a report documenting the processes and outcomes of the network activities focusing on new joint research/initiatives and an online website which is a long-term platform for sustainable collaboration and networking as well as effective public awareness-raising and education.

The beneficiaries of the International Upcycling Research Network include (i) researchers, teachers, and students; (ii) upcycling practitioners and other stakeholders; (iii) environmental charities and activists; and (iv) policymakers and advisors. The envisaged impact of the project comprises (i) gaining new knowledge and insights; (ii) identifying potential collaborators and partners; (iii) applying lessons learned and new information to members' research, practice, teaching, etc.

Conclusion

Upcycling system is one of the strategies that aim to contribute to the transition towards a circular economy. It exists within more comprehensive interdisciplinary research that aims to create a more meaningful and resource-effective production, consumption, and behaviour change model. Upcycling challenges humanity to reconsider what they perceive to be waste to be wealth. Therefore, there is a need for a cultural paradigm shift and perception to accelerate the change to a sustainable and resource-efficient economy. Otherwise, the adverse effects of our consumption and production patterns have catastrophic effects on the environment.

It is envisaged that the International Upcycling Research Network will develop as per Wheatley & Frieze's (2012) model of the lifecycle of emergence. The first stage is the formation of networks (discovering shared meaning and purpose); the second stage involves forming communities of practice (developing new practices together) and, finally, systems of influence (new practices become the norm). This is the sudden emergence of a system with absolute power and influence. Marginal practices become the mainstream and accepted standard. The pioneers become the leaders in the field. Though the project is at an embryonic stage, the expectation is that it will enable actors in upcycling to discuss challenges, learn from each other and forge collaborative research projects across different disciplines. The Network should sustain itself through alternative funding models, e.g., joint grant applications, as it develops to be a system of influence of an upcycling culture.

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