



**THIRD WORLD SYMPOSIUM
ON SUSTAINABILITY
SCIENCE AND RESEARCH**

Sustainability Futures: Challenges and
Opportunities Towards a More
Sustainable World

April 8, 2021

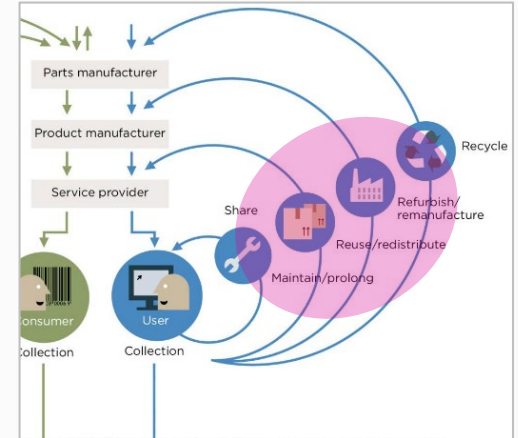
Challenges and opportunities for scaling up global upcycling towards sustainable production and consumption: Literature review

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INTRODUCTION: Upcycling

- Creation/modification of a product utilising used/waste materials, components and products for equal/higher quality or value than the compositional elements
- Umbrella concept: 'creative' or 'advanced' repair, reuse, repurpose, refurbishment, upgrade, redesign, remake, remanufacture, recycling, ...
- Increasing resource efficiency + reducing solid waste and industrial energy consumption in processing and manufacturing with virgin materials + creating new job opportunities + encouraging sustainable behaviour + money-saving + psychological well-being

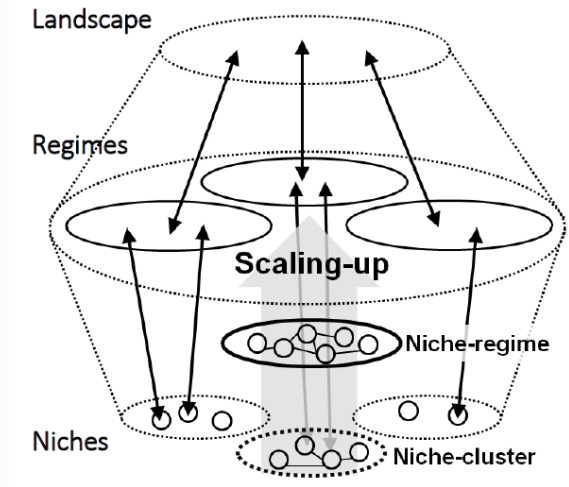


12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION



INTRODUCTION: Scaling-up of upcycling

- Upcycling as a niche practice at the current time
- Scaling-up of upcycling: moving from a niche to a mainstream practice > realise the full potential
- Rising academic and industrial interests
- Upcycling research at the embryonic stage lacking multiple-industry, multidisciplinary and international results
- Development of upcycling theory and practices across industries, disciplines and countries required for growth (scaling-up)



INTRODUCTION: Aim of the research

- Understanding challenges and opportunities in the global upcycling value chain > an invaluable first step for significant development in practices
- Existing studies: often industry- and country-specific
- Knowledge gap: whether these factors are common across industries and countries

- Aim: critically review existing literature on challenges and opportunities in global upcycling in order to provide cross-industry and cross-country common factors, and offer meaningful insights on how these factors could be reflected on scaling up upcycling

METHODS: Theoretical narrative review

- Keyword-based search on Google Scholar (as a sole bibliographic database providing sufficient coverage and publishers' contents)
- Search keywords combinations: ["upcycling" AND "challenges"] and ["upcycling" AND "opportunities"]
- 1st Screening inclusion criteria: (i) English publication; and (ii) type of publication (journal article, conference proceeding, academic book and book chapter, PhD thesis, and research institute report)
- 2nd screening content check: title and abstract for relevance
- Total reviewed publications: fifteen (15)
- Search, screening and review: February – March 2021

KEY RESULTS: Descriptive analysis

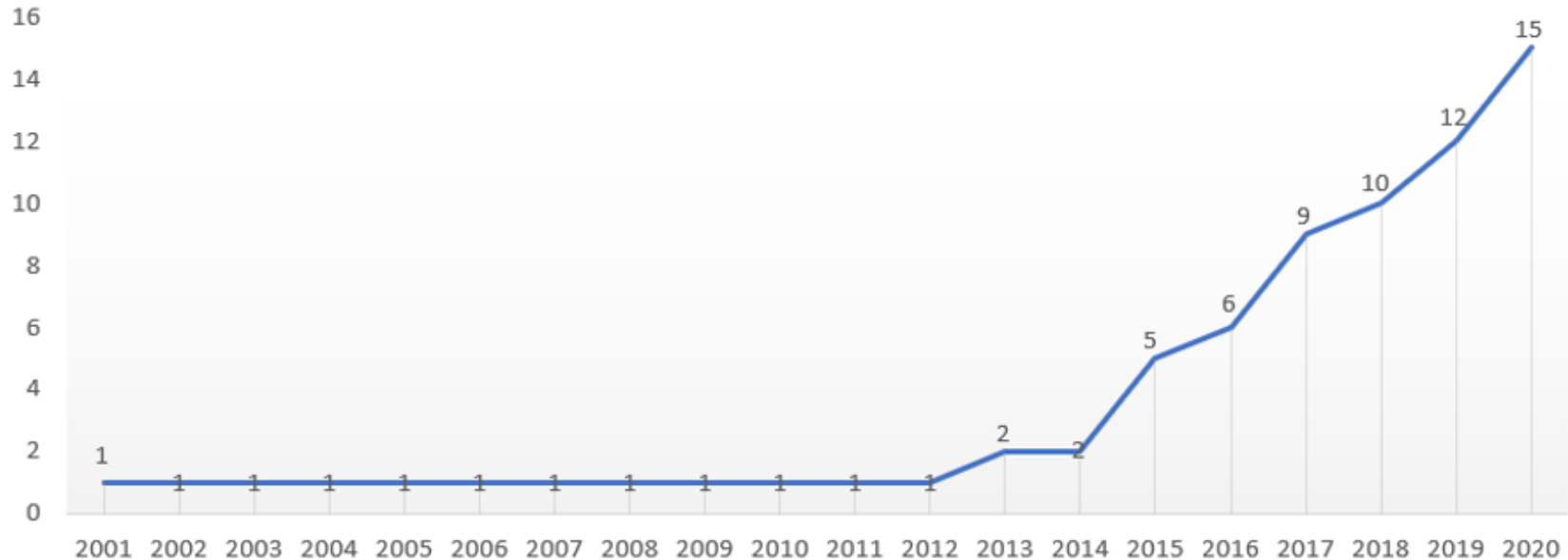


Figure 1 Cumulative number of reviewed publications focusing on challenges and opportunities

KEY RESULTS: Descriptive analysis

- 9 journal articles, 4 conference papers, 1 book chapter, 1 report
- 5 in fashion and textiles, 2 in furniture and interiors, 2 in both fashion and furniture, 1 electronics, 1 construction, 1 multiple industries, 3 for any industry
- 6 in the UK, 2 in Sweden, others (Australia, Ghana, Germany, Ireland, Malaysia, New Zealand, Romania, Sri Lanka)
- Focus: fashion & textiles and furniture & interiors
- Authors: UK and other European academics

KEY RESULTS: Cross-industry & -country challenges in upcycling

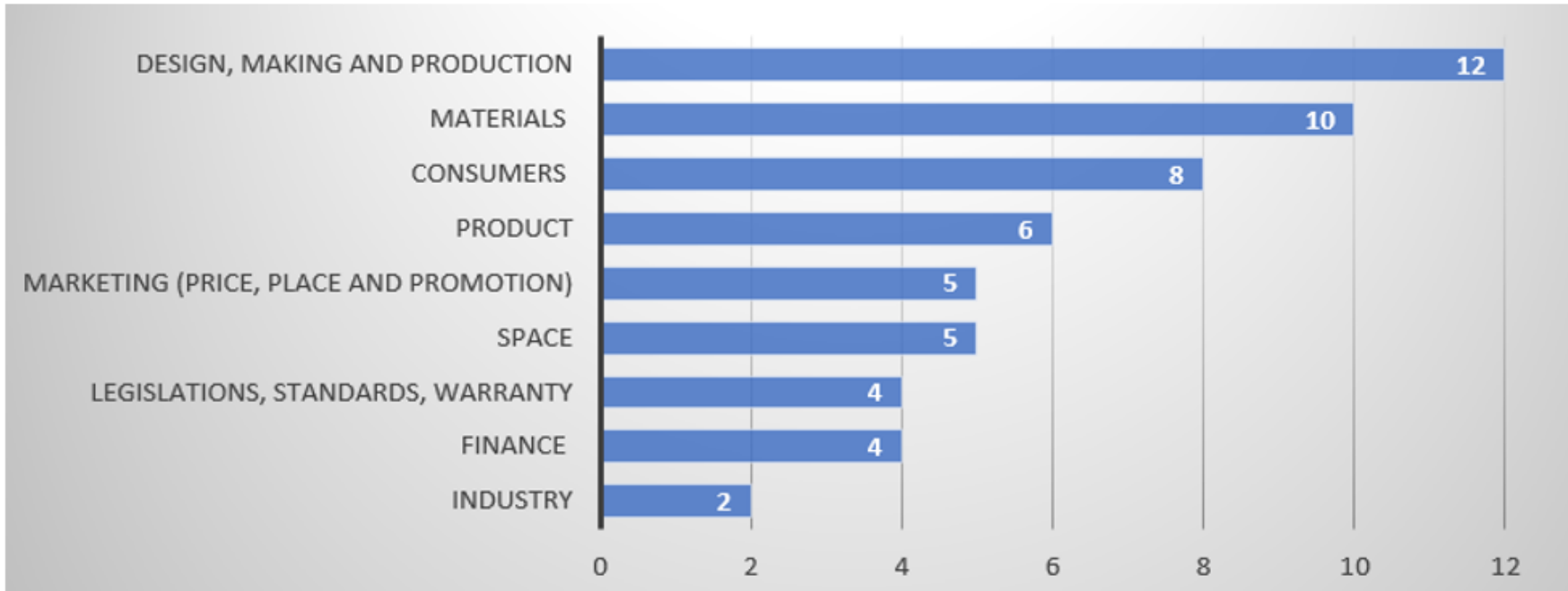


Figure 2 Common categories of cross-industry and cross-country challenges in upcycling from the review

KEY RESULTS: Common opportunities for successful upcycling

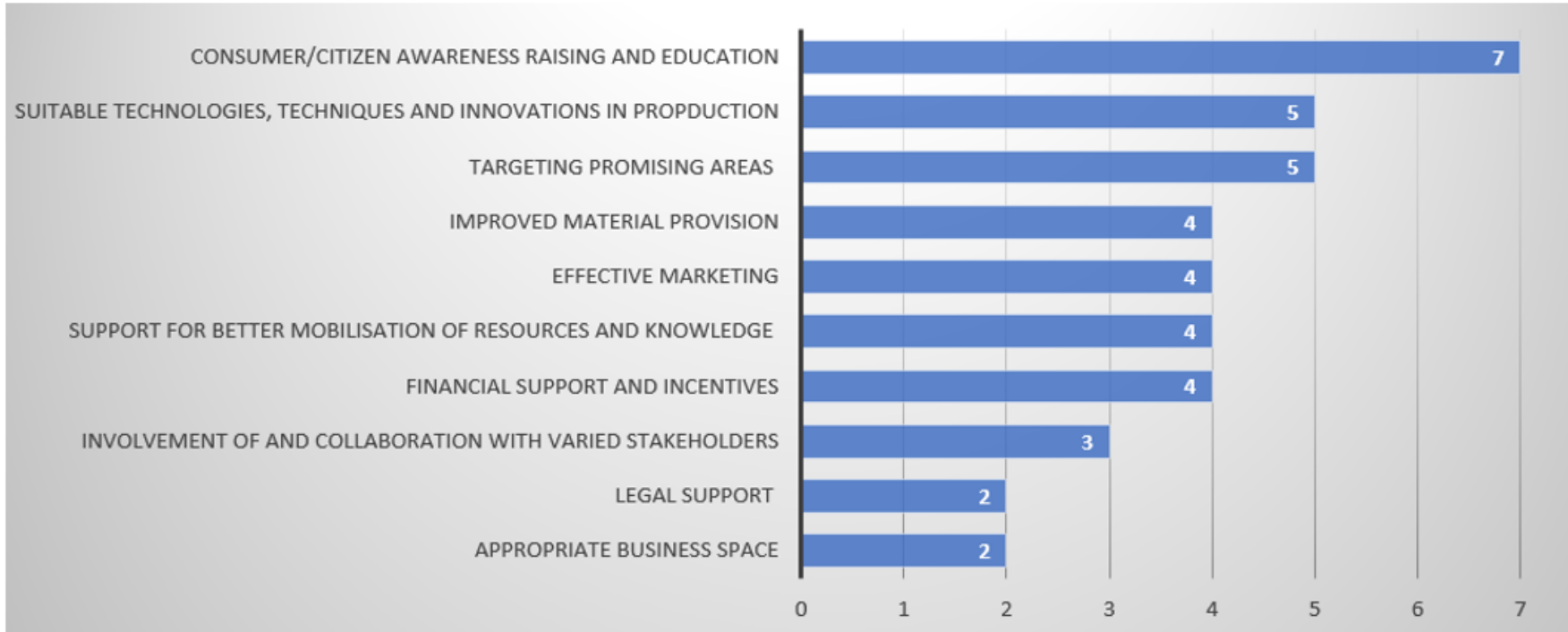


Figure 3 Common opportunities for successful upcycling across industries and countries from the review

MAIN CONCLUSIONS

- A good starting point to achieve comprehensive understanding of global challenges and opportunities in upcycling value chain across industries and countries
- Future research: further validation of the factors using Interpretive Structural Modelling (a qualitative and interpretive method for generating solutions for complex problems)
- Practical implications for the actors: main challenges to tackle first (in production, materials and consumers' perceptions) paying more attention to identifying suitable new technologies or existing techniques as well as innovating in the design and production processes and technologies, improving materials provision, and working on consumers' awareness raising and education

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