

# Evaluating two interventions for scaling up upcycling: Community event and upcycling plaza

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**Abstract.** Upcycling – creation or modification of a product from used or waste materials, components, and products for higher quality or value – incorporates multiple strategies for increasing material efficiency and provides other environmental, economic and social benefits. With a growing concern for the environment, the past few years have seen a growth of upcycling practitioners and businesses, yet despite such a growth, upcycling largely remains a niche and requires scaling-up to have a significant impact on the environment and society. For scaling up upcycling, several promising interventions have been suggested. This paper evaluates two of these: community event and upcycling plaza. Two case studies (on “Art with Upcycling” co-creation family event in Leicester, UK, and Seoul Upcycling Plaza in Seoul, South Korea) have been conducted using questionnaire, observation and interview studies. The results show that the community event made positive psychological impact on participants, and that many programmes run by the upcycling plaza were perceived as successful by stakeholders. Based on the aforementioned positive impact, these two interventions are recommended for prototyping, piloting and monitoring in other cities and countries for scaling up global upcycling.

## 1. Introduction

The United Nations’ Sustainable Development Goal (UN SDG) No. 12, Responsible Consumption and Production (i.e. Ensure sustainable consumption and production patterns), aims at “doing more and better with less” [1]. Material efficiency – providing material services with less material production and processing [2] – is well aligned with this UN SDG 12. There are four major strategies for increasing material efficiency: longer-lasting products, modular design, component reuse for remanufacturing, and products designed with less materials [2]. Upcycling – creation or modification of a product from used or waste materials, components and products which is of equal or higher quality or value than the compositional elements [3-4] – is an umbrella concept which incorporates multiple strategies for increasing material efficiency. Upcycling extends lifetimes of existing products (e.g. refurbished and redecorated furniture), reuses components (e.g. remanufactured electronics from reused components), or utilises waste materials (using less new virgin ones) for production of new products (e.g. clothing and fashion items from waste clothes and textiles). It is the amalgamation of a variety of ‘creative’ forms of repair, reuse, repurpose, refurbishment, upgrade, remanufacture and recycling, all of which are important part of the circular economy – the alternative to the linear economy of take-make-use-and-dispose which is restorative and regenerative by intention and design [5-6].

The benefits of upcycling are not limited to reducing environmental impact – extending lifetimes of materials, components and products [4,7], thereby increasing material efficiency and reducing waste and energy consumption [4,8]. Businesses based on upcycling can be financially sustainable and create new jobs [9-11]. Individuals who engage in upcycling in households could gain socio-cultural and

psychological benefits such as learning new skills, relaxing with mindful craft activities and being empowered by gaining control over products [12]. With a growing concern for the environment, resource scarcity, and increasing volumes of waste, the past few years have seen a growth of upcycling practitioners and businesses [13-15]. Despite such a growth, upcycling largely remains a niche activity and requires scaling-up – the dynamic process of transitioning from niche to mainstream (or regime) [16-17] – to have a significant impact on the environment and society. For scaling up upcycling, several promising interventions have been suggested such as community events, TV and inspirational media, government procurement change, upcycling centre/plaza, curriculum enrichment, and financial incentives for upcycling businesses and initiatives [4,8]. This paper evaluates two of these: community event and upcycling plaza.

## 2. Methods

Two case studies [18] were conducted between July 2018 and January 2019. The case studies were based on questionnaire, observation, and interview studies.

### 2.1. Case study one: A community event in Leicester, UK

A one-day family event, “Art with Upcycling,” was organised in November 2018 at New Walk Museum and Art Gallery in Leicester, UK [19]. The event was an art and craft co-creation workshop using upcycling. The event invited families with young children to contribute to making art pieces and create small upcycled artefacts. The practice of upcycling art and craft was demonstrated by the sustainable artist and sculptor, Michelle Reader [20], and assisted by volunteering students from De Montfort University (Figure 1). The event was part of Being Human Festival, a festival of the humanities led by the School of Advanced Study at the University of London in partnership with Arts and Humanities Research Council and The British Academy [21].



**Figure 1.** “Art with Upcycling” co-creation family event in Leicester, UK

(photo of New Walk Museum and Art Gallery: [https://d3d00swyhr67nd.cloudfront.net/\\_source/LAMS\\_location\\_image\\_1.jpg](https://d3d00swyhr67nd.cloudfront.net/_source/LAMS_location_image_1.jpg); and photo of Michell Reader: <https://www.michelle-reader.co.uk/artist-profile.html>)

The researcher asked all the participants to complete a paper-based, one-page questionnaire when they were about to leave the event venue. There was no selection rule for respondents: some participants filled in the questionnaire whereas some did not when everyone was asked. Parents completed questionnaires for their children. The questions were about: a) whether the event increased participants’ awareness of upcycling (0 = not at all; 5 = to a very great extent); b) whether the event made participants

think that upcycling is un/pleasant, bad/good, worthless/worthwhile, harmful/beneficial, or un/enjoyable (0 = unpleasant, bad, worthless, harmful, unenjoyable; 5 = pleasant, good, worthwhile, beneficial, enjoyable); c) whether the event inspired participants to upcycle (0 = not at all; 5 = to a very great extent); d) whether the event gave participants confidence to upcycle (0 = not at all; 5 = to a very great extent); and e) if participants will try upcycling at home after the event (0 = very probably not; 5 = definitely). Forty-seven participants completed the questionnaire. The responses were analysed by employing descriptive statistics and bivariate correlational analysis (Spearman's Rank Order Correlation), using IBM SPSS (Statistical Package for the Social Sciences) Version 25.

## 2.2. Case study two: An upcycling plaza in Seoul, South Korea

An upcycling centre/plaza envisioned by a number of UK experts in upcycling was a halfway house between a recycling centre and a charity shop which is aligned with the existing waste collection and management system, and provides gatekeepers to check the state of the materials that are entered into the centre as well as fixers and upcyclers to offer quick, affordable services [8]. The existing centre/plaza closest to this vision was identified as Seoul Upcycling Plaza (SUP), the world's largest upcycling cultural complex space in Seoul, South Korea [22] (Figure 2). The plaza was visited by the researcher in July 2018 for observation, and subsequent email interviews were conducted between August 2018 and January 2019. The interview questions were about: a) whether the programmes (facilities and services) provided by the plaza were perceived as un/successful and why; and b) what efforts/actions by the plaza and other actors are required for improving the plaza therefore contributing ultimately to scaling up upcycling. Twenty-nine upcycling artists, designers, makers and entrepreneurs (identified from the brochure found at SUP reception), sixteen organisers and managers (identified from the SUP website), and six randomly selected visitors (asked in person) were contacted via email. Five of them responded to the email interviews. The results were synthesised and interpreted.



**Figure 2.** Seoul Upcycling Plaza in Seoul, South Korea

(photos: <https://korean.visitseoul.net/comm/getImage?srvcId=MEDIA&parentSn=17440&fileTy=MEDIA&fileNo=1&thumbTy=L>;  
<https://t1.daumcdn.net/thumb/R720x0/?fname=http://t1.daumcdn.net/brunch/service/user/2RB/image/x-N5v-Psnncipv93ni7NazQdAI.jpg>;  
[https://m.young.hyundai.com:444/upload/CMS\\_NEWS\\_IMAGE/2018/06/11/CMS\\_NEWS\\_IMAGE\\_FkFKbbadr5YQsITbKgsr.jpg](https://m.young.hyundai.com:444/upload/CMS_NEWS_IMAGE/2018/06/11/CMS_NEWS_IMAGE_FkFKbbadr5YQsITbKgsr.jpg);  
[http://newsroom.etomato.com/userfiles/180506\\_193.jpg](http://newsroom.etomato.com/userfiles/180506_193.jpg))

### 3. Results

#### 3.1. Case study one: A community event in Leicester, UK

The respondents (part of the participants in the upcycling co-creation family event) were mostly residents in East Midlands, UK (n=41, 93%). The majority of them were females (n=33, 70%). The biggest age groups were 0-15 years (n=14, 30%) followed by 35-44 years (n=13, 28%), 45-54 years (n=7, 15%) and 25-34 years (n=6, 13%). Simply put, the majority consisted of mothers with their children in East Midlands. The descriptive statistics showed that the event increased the participants' awareness of upcycling to a moderate to great extent (M=3.41; SD=1.15). Throughout the event, the participants thought that upcycling was pleasant (M=4.40; SD=0.90), good (M=4.50; SD=0.83), worthwhile (M=4.45; SD=0.88), beneficial (M=4.44; SD=0.87), and enjoyable (M=4.56; SD=0.63). The event inspired the participants to upcycle in the future to a moderate to great extent (M=3.64; SD=0.87). The participants believed that the event gave them confidence to upcycle in the future to a moderate to great extent (M=3.64; SD=0.87). It is probable or very probable that the participants will try upcycling at home in the future (M=3.66; SD=0.96). See Table 1 for all results.

**Table 1.** Descriptive statistics.

	Max	Min	Mean	Std. Deviation	Skewness	Kurtosis
Awareness	5	1	3.41	1.15	-0.33	-0.50
Pleasant	5	1	4.40	0.90	-1.79	3.87
Good	5	1	4.50	0.83	-2.39	7.61
Worthwhile	5	1	4.45	0.88	-2.01	5.00
Beneficial	5	1	4.44	0.87	-1.98	4.97
Enjoyable	5	3	4.56	0.63	-1.13	0.28
Inspire	5	2	3.64	0.87	-0.03	-0.64
Confidence	5	2	3.64	0.87	-0.24	-0.50
Intention	5	1	3.66	0.96	-0.32	-0.07

The correlation analysis results showed that the perception of increased awareness is statistically significantly related to the perceived gain of inspiration and confidence. All attitude items (pleasant, good, worthwhile, beneficial, enjoyable) turned out to be correlated with each other. The perceived pleasantness, goodness, and enjoyability of upcycling were correlated to the perceived gain of inspiration. The perceived goodness, worth and enjoyability of upcycling were correlated to the perceived gain of confidence. The perceived gain of inspiration was correlated with the perceived gain of confidence. Perceived gain of inspiration and confidence was correlated with intention to upcycle in the future (Table 2). Simply put, increased awareness of and positive attitudes towards upcycling had statistically significant correlations with perceived gain of inspiration and confidence to upcycle. The perceived gain of inspiration and confidence to upcycle were then also correlated with intention to upcycle in the future.

**Table 2.** Correlation Coefficient (Spearman's Rank Order).

	Awareness	Pleasant	Good	Worthwhile	Beneficial	Enjoyable	Inspire	Confidence	Intention
Awareness	1.00	0.22	0.27	0.17	0.25	0.25	0.62**	0.35*	0.22
Pleasant	-	1.00	0.80**	0.77**	0.83**	0.63**	0.32*	0.25	0.11
Good	-	-	1.00	0.90**	0.94**	0.66**	0.37*	0.34*	0.10
Worthwhile	-	-	-	1.00	0.95**	0.67**	0.24	0.36*	0.17
Beneficial	-	-	-	-	1.00	0.62**	0.29	0.30	0.16
Enjoyable	-	-	-	-	-	1.00	0.37*	0.35*	0.26
Inspire	-	-	-	-	-	-	1.00	0.63**	0.59**
Confidence	-	-	-	-	-	-	-	1.00	0.49**
Intention	-	-	-	-	-	-	-	-	1.00

\*\* . Correlation is significant at the 0.01 level (2-tailed)

\* . Correlation is significant at the 0.05 level (2-tailed)

### 3.2. Case study two: An upcycling plaza in Seoul, South Korea

The five stakeholders who responded to the email interview were one manager in Seoul Upcycling Plaza (SUP), two upcycling entrepreneurs, one upcycling artist, and one visitor. The stakeholders were asked to evaluate seven programmes provided by SUP: a) dream factory – a fabrication laboratory for citizens providing design-and-make equipment including CNC (Computer Numerical Control) routers, laser cutters, 3D (3-Dimensional) printers, and carpentry equipment; b) material library – a permanent exhibition on waste and sustainable materials; c) upcycling academy – upcycling educational programmes for all age groups; d) upcycling flea market – a cultural space to experience upcycling and share upcycled goods; e) upcycling gallery – a space for special exhibitions; f) upcycling stores – stores to promote and sell upcycled products; and g) upcycling studios – space for upcycling entrepreneurs and artists.

According to the stakeholders, material library and upcycling gallery are the most successful programmes (regarded successful by four stakeholders). The material library was considered as an “informative, educational space with sufficient interesting resources” including “daily recycling wastes and new environmentally-friendly materials” (one said don’t know). Upcycling gallery was viewed as a “good exhibition space where upcycling-based artists and small companies could communicate and showcase their art pieces and products to citizens”. One stakeholder however believed that it was not very successful as “the space was often empty without any exhibitions”.

Upcycling stores, academy and studios were considered successful by three stakeholders. Regarding upcycling stores, three stakeholders believed that “the stores showcase and sell upcycled products well”, whereas two others had “doubts about actual sales volume, profits and how lucrative each store and all the upcycling businesses involved have been”. Upcycling academy was considered successful as “the room, environment and facilities are great”, and “families with children and groups of varied people have been participating” (two said they don’t know). Upcycling studios were seen as successful since they “promote the concept and practice of upcycling and raise awareness” and “the upcycling artists and small businesses in the studios are passionate about what they do”. One however pointed out, “proper management is not in place” and another stated, “most studios were shut during weekends”.

Dream factory and upcycling flea market were considered least successful. Two stakeholders thought dream factory was successful as citizens could use all the equipment for varied activities yet one stated “It has high-tech facilities and equipment which I don’t believe are suitable for scaling up or expanding upcycling businesses” (two answered that they don’t know). Two stakeholders considered upcycling

flea market successful as “it is a good place where citizens could easily engage in upcycling” whereas other two stakeholders thought it was unsuccessful since “there is a lack of things to do, see or play with regarding upcycling.” One thought it was very unsuccessful as “there seemed to be no expert in planning, developing and delivering upcycling-related activities. They [Seoul Design Foundation] seemed to care more about the number of participants rather than the quality or activities. I believe they need proactive communication with and engagement of citizens in order to plan and deliver better activities”.

When the stakeholders were asked about what efforts/actions by SUP and other actors are required for improving SUP and therefore contributing ultimately to scaling up upcycling, the most important action turned out to be making meaningful partnerships with relevant businesses (four out of five answered). One particularly mentioned, “I would like the plaza to communicate closely with the upcycling artists and entrepreneurs in the studios more often in order to recreate the plaza as the true citizen’s cultural complex without having to use a large budget. The city council invested 50 billion Korean won [approximately £34 million] to build and launch the plaza but due to the lack of abilities of planners, organisers and contractors, the budget has been wasted to some extent and the majority of the operations seemed to be just for show.” Two stakeholders suggested improvement of the current programmes provided by SUP: one stated “they [SUP] need to put more effort into creating a variety of programmes for different experiences and increasing overall citizen’s engagement and participation.” and another said “they need to focus more on the programmes that could make actual changes in the society. The changes to influence people’s behaviours and impact businesses’ performances”. One suggested “more support from the city council”.

#### **4. Discussion and conclusions**

The art and craft co-creation family event using upcycling in Leicester, UK was successful in the sense that it increased the participants’ awareness, made the participants think that upcycling is pleasant, good, worthwhile, beneficial and enjoyable, inspired them and gave them confidence to upcycle, and that the participants expressed their high intention to upcycle at home in the future. Community events have been used and proven to promote sustainable behaviours/practices such as cycling [23], recycling [24] and sustainable food consumption [25]. The first case study showed that upcycling is not an exception. It confirms the suspected potential positive impact of community events for scaling up upcycling [8,26]. The correlation between intention and perceived gain of inspiration and confidence implies that the emphasis of upcycling community events should be on providing inspiration and increasing confidence. Throughout indirect correlations (e.g. increased awareness correlated with perceived gain of inspiration which is correlated with intention), all tested variables except for one attitude item, harmful-beneficial, appear to have potential impact on increasing intention. It suggests that future research could use the same questions and items (maybe removing harmful-beneficial item if one wishes) to measure the impact of upcycling events.

The upcycling plaza in Seoul, South Korea could be considered successful in that it has been providing some useful and meaningful programmes such as material library, upcycling gallery, stores, academy and studios which have contributed to awareness-raising and skills training for citizens as well as promotion and commercialisation of upcycled art, craft, and products. Such programmes could be replicated in other cities and countries as interventions to scale up upcycling. If the plaza takes appropriate actions on building partnerships with relevant businesses, improving their current programmes focusing on increasing citizen’s participation and making changes in the society (e.g. change consumer behaviour, help small upcycling businesses to grow), and getting more support from the city council, their success and impact could become more significant. Especially regarding partnerships, meaningful partnerships between governments, businesses, NGOs (Non-Governmental Organisations), experts and general public have been regarded important for sustainable development [27] and transition to low-carbon future [28]. As the second case study revealed only how successful each intervention programme has been perceived and why, and how to improve it, future studies could measure the impact of these interventions on consumer behaviour and/or upcycling-based businesses.

According to the recent study on developing interventions for scaling up upcycling [8], community events are one of the prioritised interventions for scaling up upcycling in consumption domain where buying new products is the current regime (i.e. mainstream practice). The Leicester upcycling event case study clearly showed that the event affected consumers' awareness, attitude, confidence, and intention for upcycling. Such effect on consumers, when scaled up in multiple locations, could impact on creating a niche-cluster (e.g. local networks of passionate hobbyists and activists for upcycling) which could develop into a niche-regime (e.g. regional or national network and social movement). Upcycling centre or plaza is one of the prioritised interventions for scaling up upcycling in production domain where mass production based on virgin materials is the current regime [8]. The Seoul Upcycling Plaza case study showed that the plaza has potential for impacting on scaling up upcycling in both consumption (e.g. by consumer education) and production (e.g. by upcycling gallery and stores) domains. This plaza could become a niche-regime – a regional, national or international network of companies, academic institutions, NGOs, and citizens for industrial symbiosis, knowledge transfer and marketing. These two interventions with proven positive impact are therefore recommended for prototyping, piloting and monitoring in other cities and countries for scaling up global upcycling.

The results from the first case study may not be generalisable to the overall UK population, and those from the second case study to other cities and countries due to the limited sample size sought in the restricted geographical areas. Since Seoul Upcycling Plaza opened in September 2017 and its development is still an ongoing process, the findings in this paper may turn out to be different in the future, which calls for follow-up studies. Despite the limitations, this paper presented the first two case studies on evaluating community event and upcycling plaza as interventions for scaling up upcycling. It extends our understanding of how a community event affects participants' awareness, attitudes, inspiration, confidence, and intention, and to what extent each intervention programme as part of an upcycling plaza has been perceived un/successful for what reason and how the plaza as a whole could be improved. The paper therefore contributes to the development of upcycling theory, which could lead to practical development on upcycling (i.e. scaling-up). It is the author's hope that the findings from these two case studies will inform academic researchers for further studies, and motivate and enable relevant stakeholders to contribute to scaling up upcycling in the UK, South Korea, and many more countries.

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