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Dear *UCL Open: Environment* Editorial Team

Resubmission of a research article
'Widening community participation in preparing for climate-related disasters in Japan'

We wish to resubmit a manuscript entitled **'Widening community participation in preparing for climate-related disasters in Japan'** for consideration for the special series focusing on community responses to climate change of *UCL Open: Environment*. We confirm that this work is original and has not been published elsewhere nor is it currently under consideration for publication elsewhere. The **research article** is an innovative attempt to examine community participation in disaster preparedness action by applying the notion of 'widening participation', which was originally a higher education policy in the UK.

Thank you for reviewing our paper thoroughly. We have carefully looked at three reviewers' comments and re-organised the paper taking most of their points on board. The major areas of revision are: 1) addressing the shift 'from recovery to preparedness' following our empirical data, which was not about DRR and CCA; 2) focusing on 'widening participation' and expanding its literature review; 3) from 2), setting up the EAST framework which is widely utilised in widening participation policies as our conceptual framework to examine four recovery and preparedness projects; 4) strengthening the argumentation by focusing on the discussion on widening participation throughout the paper; 5) in doing so, decreasing or deleting some of the discussions, e.g. *machizukuri*. With these changes, we believe the revised version has improved having a clearer argument.

Please address all correspondence concerning this manuscript to k.kitagawa@ucl.ac.uk. We look forward to hearing from you.

Thank you for your consideration of this manuscript.

Sincerely yours

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Widening community participation in preparing for climate-related disasters in Japan

Abstract: This paper discusses community participation drawing on ongoing disaster recovery and preparedness projects in the communities affected by the Heavy Rain Event of 2018 in western Japan. Participatory approaches have become a mainstream methodology for community-based disaster risk reduction as advocated in the Sendai Framework for Disaster Risk Reduction 2015-30. The majority of participation research addresses either 'success' factors for participation or the types of participation. The paper proposes a notion of 'widening participation' in addressing the challenge of attracting people to participate in preparedness initiatives. Originally widening participation was a higher education policy in the UK aiming to broaden the demographic composition of the student base. Even the recovery and preparedness projects that are publicly recognised as 'good practices' struggle to recruit more people for the projects. Borrowing the notion of widening participation, the paper identifies how each project encourages non-participants to get involved in the project activities. The paper applies the EAST framework widely utilised in the policy making of widening participation and further public services. Rather than providing the public with information and guidance, 'easy', 'attractive', 'social' and 'timely' behavioural approaches tend to enable participation. Examining these four principles in the four cases of recovery and preparedness projects, the paper suggests that the EAST framework is feasible in strengthening the strategies for widening participation in preparedness action. The paper however recognises a need to address the difference between top-down public policies and bottom-up community projects in the application of the framework.

Keywords: participation, participatory approaches, widening participation, community-based DRR, climate-related disaster, EAST framework, behavioural insights

1. Introduction

This paper discusses community participation drawing on ongoing disaster recovery and preparedness projects (RPP) in the communities affected by the Heavy Rain Event of July 2018 Centered on West Japan. 'Preparedness' action is considered to be undertaken as part of disaster risk reduction (DRR) measures to build capacities for effective response and smooth recovery against all types of disasters (UNDRR, 2022). The empirical studies carried out in Okayama and Ehime Prefectures captured the transition from recovery to preparedness following the Heavy Rain Event. The paper depicts the situations of community participation in each RPP in the transition. For 'community', the paper refers to 'a community of interest' formed in a certain geographical location by local residents. There is a rich body of literature available on participation, most of which addresses either 'success' factors for participation or the types of participation. The paper proposes 'widening participation' is another dimension in considering participation, particularly for those ongoing initiatives that are working well. Originally 'widening participation' was a higher education (HE) policy in the UK introduced in the 1990s to broaden the demographic composition of the student base (Connell-Smith and Hubble, 2021). By removing barriers that disadvantaged groups of young people might face, widening participation policy aims to improve their access to education and progression in HE to raise their life chances. Hence, 'widening' addresses not only the increase in the number of students in HE but diversifies the composition of the student demographics. This paper explores an application of this notion in examining participatory approaches to building preparedness in communities.

'Community-based' and 'participatory' approaches have become a mainstream methodology for 'all of society engagement' in DRR as advocated in the Sendai Framework for Disaster Risk Reduction 2015-2030 (UNISDR, 2015). In 1989, Maskery argued for the significance of community engagement in disaster mitigation schemes (Maskrey, 1989). Since, many donors and researchers have developed and implemented a range of innovative participatory programmes, together with local communities, organisations and authorities (e.g. Kitagawa, 2019; McNamara and Buggy, 2017; Samaddar et al., 2019; Shaw, 2016; Van Niekerk et al., 2018). Based on the perspective that 'CBDRM [community-based disaster risk management] is a participatory process' (Van Niekerk et al., 2017, p. 7), 'participatory DRR' has often been used as a synonym for community-based DRR. The paper focuses on 'participation' but uses 'community-based' in referring to the studied cases in differentiating them from top-down and authority-led projects.

Japan is one of the disaster-prone countries that has keenly promoted community-based DRR. The 2013 revised Disaster Countermeasures Basic Act introduced a new system of Community Disaster Management Plans (Cabinet Office, Government of Japan, 2021). Every community is encouraged to create a plan. Japan has a policy framework of public help [*kojo*], self-help [*jijo*] and collaborative help [*kyojo*], which emphasises the importance of balancing the three. Since the devastating experience of the 2011 Great East Japan Earthquake and Tsunami, policy-makers and experts have stressed the tripartite framework even more in preparing for forthcoming disasters (Kitagawa, 2016; Kitagawa et al., 2017). One of the key measures has been the system of Community Disaster Management Plans. Aiming for a collaborative model for DRR, the system enables community residents to participate in the process of developing a plan, together with the municipal government disaster management council. The government has offered subsidies and expertise to support communities in creating plans (Cabinet Office, Government of Japan, 2021). We also touch upon a relevant policy term in Japan: *machizukuri* [community development]. It is an overarching social policy integrating health, welfare, education and DRR, which was often mentioned in our empirical study. Participation is emphasised as a requisite of *machizukuri* in developing a resilient and sustainable community.

The paper argues that widening participation is one of the common challenges in participatory and community-based DRR, particularly in ongoing projects, and requires strategic planning. Involving more people in decision-making is critical in building a democratic society. The EAST principles have the potential as a guidance or evaluation framework for effective widening participation strategies in DRR. The paper first describes the Heavy Rain Event of 2018 and its major damages in the affected areas. This is followed by an explanation of the methodology of the study. The empirical investigation was conducted in October and November 2021. The next section reviews participation literature and discusses the background and discourse of widening participation. The paper then sets up the EAST framework as a conceptual framework for the subsequent analysis. The findings section describes the four RPPs identifying their widening participation strategies applying the EAST principles. The discussion and conclusion further consider the applicability and limitation of the EAST framework in participatory DRR.

2. The Heavy Rain Event of July 2018 in Western Japan and its impacts
On 5 July 2018, the rain front halted in western Japan, and the following three days, forming 15 line-shaped precipitation systems over western Japan. Coupled with Typhoon Prapiroon emerged around Okinawa Island on 2 July, the rain front brought record-breaking rains across Japan, particularly in western Japan. The total precipitation exceeded 1,800 mm from 28 June to 8 July in Shikoku Island

and 1,200 mm in the Tokai region – two to four times more than the average monthly precipitation in July. The largest 24-hour, 48-hour and 72-hour precipitations in recorded history were observed in the northern Kyushu, Shikoku, Chugoku, Kinki, Tokai and Hokkaido regions (Figure 1-4) (Cabinet Office, Government of Japan, 2019, pp. 2–5). The Japan Meteorological Agency Advisory Panel suggested the Heavy Rain Event could be linked to climate change, associated with a long-term trend of temperature increase and a similar increasing trend in the amount of water vapour in the air (Tokyo Climate Center, Japan Meteorological Agency, 2018).

Figure 1: Daily Precipitation (1-km-mesh precipitation distribution obtained by analysing data from weather radars, AMeDAS, and other rain gauge systems)
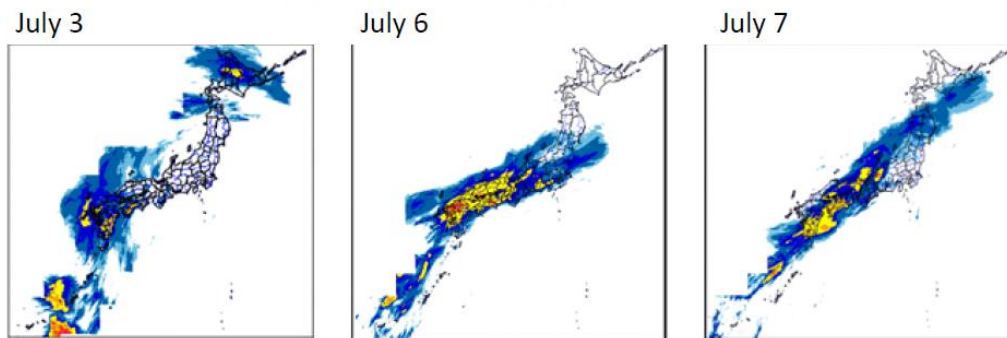
July 3   July 6   July 7

Figure 2: Precipitation distribution during the event (between 00:00 on June 28 and 24:00 on July 8)

Gifu Prefecture
ひるがの 1214.5mm

Okayama Prefecture
恩原 565.5mm

Kyoto Prefecture
板浦 594.5mm

Tottori Prefecture
菅間 537.0mm

Hiroshima Prefecture
内黒山 570.5mm

Fukuoka Prefecture
早良脇山 859.0mm

Saga Prefecture
北山 904.5mm

Hyogo Prefecture
後川 617.0mm

Nagasaki Prefecture
雲仙岳 697.5mm

Ehime Prefecture
成就社 965.5mm

Kochi Prefecture
魚梁瀬 1852.5mm

0   200   400   600   800   1000   (mm)
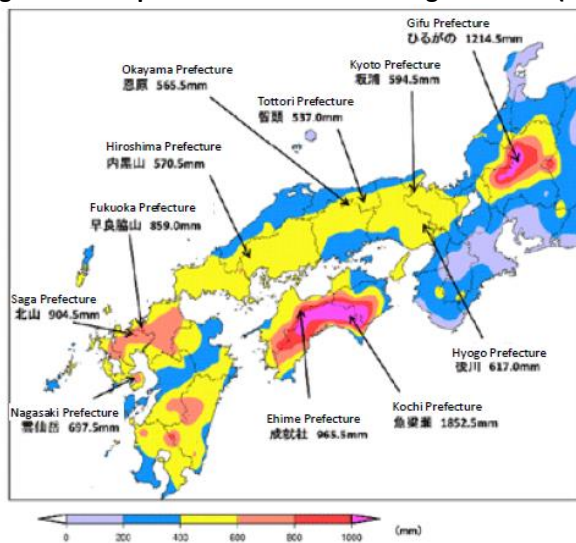
Figure 3: Distribution of the maximum 72-hour precipitation during the event

Maximum 72-hour precipitation during the event
Period: June 28 to July 8, 2018

Greatest precipitation ever recorded

Greatest July precipitation ever recorded

800
600
400
200
100
50
20
0.5
(mm)

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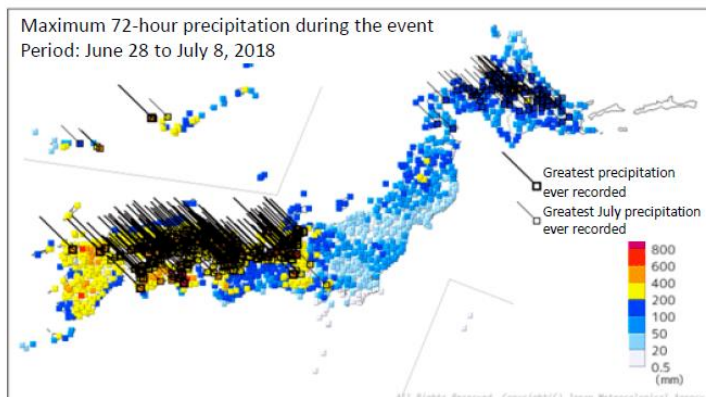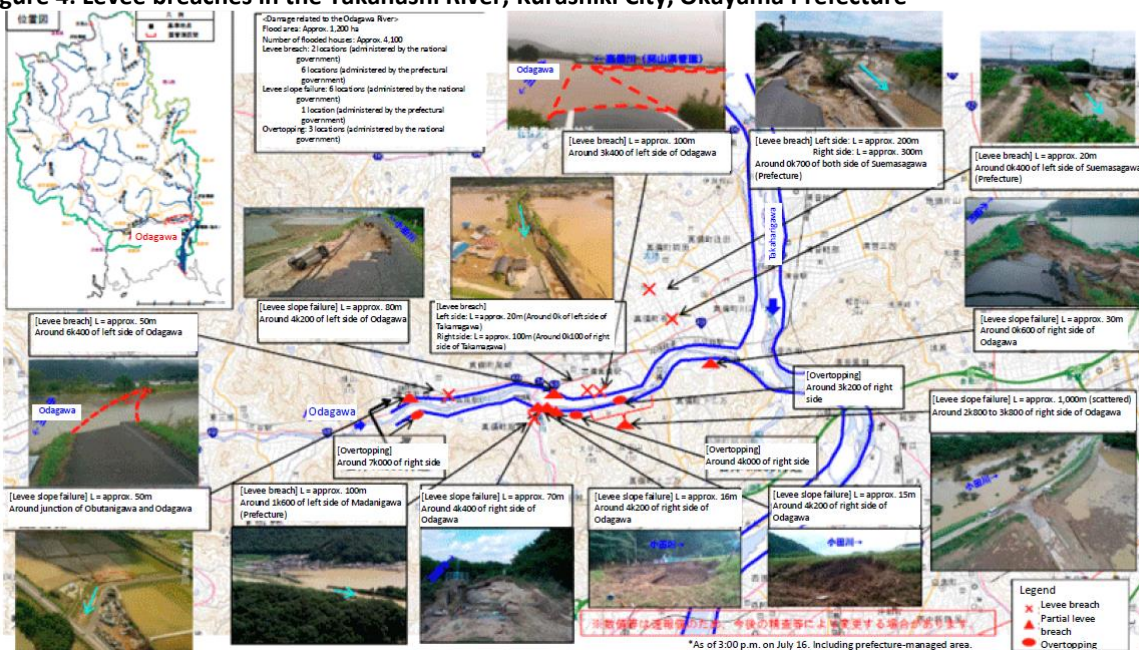**Figure 4: Levee breaches in the Takahashi River, Kurashiki City, Okayama Prefecture**

Causing river flooding, inundation and sediment, the Heavy Rain Event left serious damage in these regions. 237 persons dead, 8 missing and 432 injured as shown in Table 1. 6,767 houses completely destroyed, 15,234 half or partially damaged and 28,469 inundated as indicated in Table 2 (Cabinet Office, Government of Japan, 2019, pp. 2–6).

Table 1: Human Casualties (as of 9 January, 2019)

Prefecture	Fatality	Missing Persons	Seriously Injured	Lightly Injured
Okayama	66	3	9	152
Hiroshima	115	5	61	85
Ehime	31		33	2
Others	25		20	70
Total	**237**	**8**	**123**	**309**

Table 2: Houses damaged (as of 9 January, 2019)

Prefecture	Completely destroyed	Half-destroyed	Partially damaged	Above-floor flooding	Below-floor flooding
Okayama	4,828	3,302	1,131	1,666	5,446
Hiroshima	1,150	3,602	2,119	3,158	5,799
Ehime	625	3,108	207	187	2,492
Others	164	1,231	534	2,162	7,559
Total	**6,767**	**112,433**	**3,991**	**7,173**	**21,296**

In terms of infrastructure, power outages affected approximately 80,000 households, gas disruption affected approximately 290 households and water outages occurred in 80 municipalities in 18 prefectures, affecting approximately 260,000 households. Power and gas supplies were recovered

on 13 July and 8 July respectively, while water supply was not restored until August 13 (Cabinet Office, Government of Japan, 2019, p. 7).

Under these circumstances, 28,000 evacuees emerged (2,500 in Okayama Prefecture, 800 in Ehime Prefecture), most of whom stayed in shelters, of which the total number became 3,779 (436 in Okayama Prefecture, 462 in Ehime Prefecture). One month after the disaster, the evacuee number dropped to 3,500, and all shelters, except some welfare shelters, were closed in December (Cabinet Office, Government of Japan, 2019, p. 7).

The major damage in the four field sites is summarised as follows.

Table 3: Damage of the 2018 disaster in field sites

Damage	Kawabe Ward, Mabi Town, Kurashiki City, Okayama Pref	Yata Ward, Mabi Town, Kurashiki City, Okayama Pref	Miyoshi Ward, Ozu City, Ehime Pref	Nomura Town, Seiyo City, Ehime Pref
Population/ households	4,394/1,734 as of 30 June, 2018	4,951/1,970 as of 30 June, 2018	885/403 as of 30 June, 2018	3,424/8,359 2015
Completely/ partly destroyed occupied houses	4,646/846 Kurashiki City as a whole as of 5 April, 2019		1/57	117/215
Dead/injured persons	52/120 Kurashiki City as a whole as of 5 April, 2019		0/0	5/0

Source: Mabi Town (Kurashiki City, 2019); Miyoshi Ward data provided by Miyoshi Community Centre; Nomura Town (Nomura Recovery Machizukuri Design Workshop, 2020; Seiyo City, 2018)

Figure 5: Flooding situations on 7 July, 2018: top-left, Kawabe Elementary School in Kawabe Ward, Mabi Town taken by the then Headteacher Mr Takuro Honda; top-right, rescue action in Yata Ward, Mabi Town (Asahi Shimbun, 2018); bottom-left, around the community centre in Miyoshi Ward (Japanese Society for Rehabilitation of Persons with Disabilities, 2018); bottom-right, evacuation in Nomura Town (Seiyo City Disaster Countermeasure Headquarter Operation Improvement Working Group, 2019)
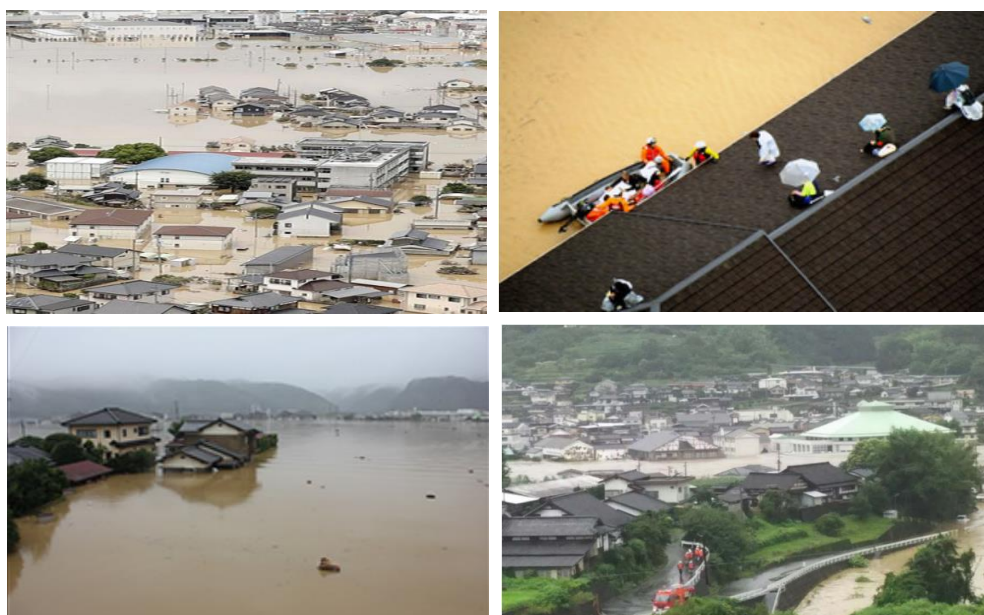
3. Methodology

This study is of an interpretivist nature and employs a case study approach investigating four community-based participatory RPPs in the west part of Japan. Three years on since the disaster, these communities have started engaging in preparedness activities moving forward from the recovery phase. Those projects comprise various preparedness activities through which local residents experience participation. The study was guided by the following research question: *What strategies do communities use to widen community participation in RPPs?*

The study set the following criteria for the selection of the case projects:
1. The project is self-managed by the community of interest, which engages in the planning, implementing and evaluating of preparedness activities;
2. Those activities are participatory and collaborative;
3. The project involves collaboration with various stakeholders, such as local governments, NPO/NGOs and expert academics in the field of DRR;
4. The project aims to reduce the disaster risk of future torrential rain and flooding;
5. The project participants have learned/are learning from their previous disaster experiences that have led to their preparedness action.

Four projects were identified by two means. Two projects were selected from the awardees of the Disaster Prevention and Community Building Awards (Fire and Disaster Management Agency, 2021) administered by the Japan Fire and Disaster Prevention Association, which was available in the public domain. The other two projects were introduced via our academic networks. Two researchers invited us to their fields in which they undertake recovery and community development [*machizukuri*] together with local residents.

Table 4: Details of the four case projects

Project title	Aruku Project (A)	Satsuki Project (B)	Evacuation Card Project (C)	Nomura Recovery Project (D)
Location	Kawabe Ward, Mabi Town, Kurashiki City, Okayama Prefecture	Yata Ward, Mabi Town, Kurashiki City	Miyoshi Ward, Ozu City, Ehime Prefecture	Nomura Town, Seiyo City, Ehime Prefecture
Disaster experience	Floods from rivers	Floods from rivers	Flood from inland waters, floods from rivers	Typhoons, floods from inland waters, earthquakes
Interviewees	Leader (A-L)* 3 project members (A-M1, -M2, -M3) 1 researcher (AB-R) 1 NGO (AB-N)	Leader (B-L) 1 project member (B-M) 1 researcher (AB-R) 1 NGO (AB-N) 1 local government official (AB-O)	Leader (C-L) 2 project members and 2 residents (C-M1, -M2, -M3, M4) 1 local government official (C-O)	Leader (D-LO) 2 researchers (D-R1, -R2) 1 local government official (D-LO)

	1 local government official (AB-O)		(Group interview)	
Observations	Primary school's DRR walk in the ward	Exercise & teatime for the residents	--	Primary school's DRR education class; high school's group discussion

*L – leader; M – member; R – researcher; N – NGO; O – government official

The starting point of the study was these four projects were regarded as 'good practices'. Particularly the first two projects have had many media exposures (e.g. Budo no Ie, 2021a; Kawabe Recovery Project Aruku, 2020). Three have received recognitions and awards from the Japanese government and agencies. Aruku Project was awarded in 2020 the Regional Revitalization Awards organised by 46 regional newspapers and Kyodo News (Kawabe Recovery Project Aruku, 2020; Press Net Japan Co.,Ltd., 2021). Satsuki Project recently received the Prime Minister's Awards for the Distinguished Persons in the Contribution to DRR (Ministry of Internal Affairs and Communications, 2021). The project was also one of the awardees of the 25th Disaster Prevention and Community Building Awards administered by the Japan Fire and Disaster Prevention Association (Fire and Disaster Management Agency, 2021). Evacuation Card Project received the same award in the previous year. The fourth project has not yet been officially recognised given it is still at an early stage as a larger-scale scheme. Anecdotally, however, stakeholders including the researcher who is one of the main architects of the recovery project have confirmed its firm implementation process and the community's high level of social capital. Our observation of their engagement also suggested their commitment and solidarity. We are therefore tentatively including the project as one of the cases.

The main methods of data collection were semi-structured interviews and site observations. In total, 17 stakeholders were interviewed. Their composition is female 9 and male 8, ages between the 30s and the 70s. These methods allow the gathering of real-life narratives, which enabled us to grasp historical experiences and socio-cultural perceptions of the communities around disaster, community and participation. As a pilot study, the sample size was small. But it served the purpose of discussing each project's approach to promoting participation. With the interviewees' permission, the interviews were recorded and summarised. The interviewees are anonymised and quoted using the coded references indicated in Table 4.

4. Introducing widening participation agenda to participatory DRR

There is a growing number of DRR studies that question the treatment of participatory approaches as a panacea (Bajek et al., 2008; Sadiqi et al., 2017; Samaddar et al., 2021). Evidence is available that communities remained vulnerable to risks even after the 'successful' completion of the participatory projects, that external partners' interests were prioritised over communities' needs and that the quality of participatory action was poor (Arslan and Unlu, 2006; Kweit and Kweit, 2004; Samaddar et al., 2017). One of the reasons behind these inadequate outcomes is considered to be a lack of a comprehensive structure that allows researchers and providers to systematically evaluate the effectiveness of participatory approaches (Chess and Purcell, 1999; Rowe and Frewer, 2000). Two major streams of participation research emerged. The first derived from other disciplines defining participation is dependent on two factors: process-based criteria and outcome-based criteria (Dyer et al., 2014; Okada et al., 2018; Richards et al., 2007). The process entails the quality of the

participation, such as fairness, accountability and transparency, and researchers deploy different sets of variables. However, an effective process does not necessarily yield the desired results since participation is context-specific and time-dependent, and from there, outcome-based criteria, such as ownership, self-reliance and sustainability were proposed (Dyer et al., 2014; Webler et al., 2001). The other stream of participation research applies the typology-based definition of participation, which argues that participation is stratified based on the quality and intensity of engagement (Ekman and Amnå, 2012; Okada et al., 2018; Rowe and Frewer, 2000). Participants at the bottom of the participatory ladder are viewed as passive recipients of information, while those at the top are seen as active problem solvers being involved in democratic processes (Arnstein, 2019).

The above participatory structures address either of these two themes – 'success' factors or types of participation (Reed et al., 2018). We propose a discussion on the challenge of expanding participants, particularly in already functioning initiatives. Such perspective is pertinent in countries like Japan where participatory and community-based approaches to DRR have been widespread. The government and interest groups have created awards to celebrate achievements and promote more engagement. Accumulated knowledge and experience are shared via government websites, media programmes, as well as in academic publications. In many cases, however, some proactive enthusiasts lead DRR initiatives, while those with less interest in DRR remain uninvolved. How to engage the latter group of people tends to be a common challenge in many communities.

This paper borrows the notion of 'widening participation' from HE, which provides us with a direction as to how existing initiatives could further grow. Originally, widening participation refers to an approach which addresses 'discrepancies in the take-up of higher education opportunities between different under-represented groups of students in the UK context' (Connell-Smith and Hubble, 2021). One of the underlying aims of such an approach is social cohesion. By removing barriers that non-traditional groups of young people – mainly working-class and ethnic minority students – might face, widening participation policy aims to improve their access to and progression in higher education to enable social mobility. The UK government identifies four drivers of social mobility: 'Conditions of childhood', 'Educational opportunities and quality of schooling', 'Work opportunities for young people' and 'Social capital and connections' (Social Mobility Commission, 2022). Providing 'opportunities for access to higher education', which falls under 'Educational opportunities and quality of schooling', has been a flagship policy to raise young people's life chances. The schemes such as 'the removal of student number controls, increased availability of bursaries and support, and targeted information campaigns' (Hume and Selley, 2017) have been implemented to enable widening participation across the country. As a result, enrolment in higher education has become the highest in its history (Social Mobility Commission, 2022). The new 'inclusive' system 'has broken the cycle of social reproduction and social inequality within the under-represented groups who were historically excluded from HE' (Burnell, 2015, p. 106).

At the same time, complex analyses have been reported. For example, there is a clear geographical divide. Less than half of young students from the most disadvantaged areas in England entered higher education compared to those from the most advantaged areas (Outreach North East, n.d.). Moreover, the students from the former group are less likely to apply to high-ranking universities than those of their middle-class counterparts, even though financial and other forms of support are available from such universities to encourage non-traditional students to apply (Hume and Selley, 2017). This trend is referred to as 'increased stratification' (Reay et al., 2005) – a new divide between the universities for non-traditional students and those for traditional counterparts. There is evidence to suggest

providing target students with a range of information about HE such as employment options and economic benefits does raise their awareness but does not necessarily lead them to take an action to apply (McGuigan et al., 2012). Recognising this gap in widening participation policy, HE experts have developed tools for more effective approaches, one of them being the EAST framework.

5. The EAST framework as an analytical reference

The EAST framework was proposed by Hume and Shelley (2017) in the Behavioural Insights Team at the Higher Education Policy Institute. According to OECD (2022), 'behavioural insights' refer to

an inductive approach to policy making that combines insights from psychology, cognitive science, and social science with empirically tested results to discover how humans actually make choices.

Behavioural insights aim to inform policy decisions by understanding how people make choices and change behaviour. The approach has been widely used in public services allowing low cost interventions for better service outcomes (Local Government Association, 2022). Currently, 202 institutions across the world utilise behavioural insights in public policy making (OECD, 2022).

The EAST framework comprises four basic principles, 'Easy', 'Attractive', 'Social' and 'Timely', which inform the development of effective policies or initiatives in prompting people to take action for better life choices (Service et al., n.d.). Some of the most relevant elements of these principles are as follows. 'Easy' stands for breaking down a complex goal into simpler and easier actions. People are more encouraged to get involved when the message is straightforward. For 'attractive', many of us tend to make an action when our attention and interest are caught. Financial incentives are a clear example, but also beautiful images or bright colours could be effective in inviting people to get involved. 'Social' connections drive people to engage in something that they would not if they were on their own. Positive collective action and mutual support can be prompted through interactions and relationships. 'Timely' is about narrowing the 'gap between intentions and actual behaviour' (Service et al., n.d., p. 6). People are likely to do something when they are most receptive. The EAST framework has been applied in various policy settings, widening participation in HE is being one of them. One of the examples that Hume and Shelley (2017) refer to is the use of 'a relatable role model', who gives a talk to a disadvantaged group of young people as to how s/he benefited from going to a university. The role model makes the talk 'attractive' by sharing the positive gains such as confidence, awareness and employment and also 'social' by linking her/his background with the audience's reality. It is intended that the students will be able to relate themselves to the route into HE and decide to apply.

This paper explores an application of the EAST framework in community participation in RPPs. Despite being two different social agendas, how widening participation in increasing social mobility has been promoted in HE resonates with how community participation in building disaster resilience has been stressed in DRR. Since 'community-based' approaches were advocated in the Hyogo Framework for Action, which was updated in the Sendai Framework for DRR as 'all of the society engagement', experts and policy-makers have put the general public's participation at the heart of DRR policy. A large number of research papers and project reports on participatory approaches are evidence that they have become the mainstream methodology in DRR. Despite the positive outcome of the expansion in participatory approaches, there are findings to demonstrate unresolved challenges remain. One of them is the limitation to the number of participants, to which this paper pays attention.

Regardless of the positive recognition that the four projects have received, our empirical study identified their common challenge. The RPPs have been led by strong leadership and supported by enthusiastic members. They certainly own their projects exercising agency. Beyond this core group, however, each project admits a struggle in expanding the number of participants. Here are testimonies. For Aruku Project, at one of the seminar series we observed, the chairman of Kawabe Ward Machizukuri Committee made the following comment: 'Kawabe is doing great. But always by the same members. We need to involve a wider population'. This was echoed by the researcher: 'the people represented in Aruku are highly motivated and engaged in DRR and *machizukuri*. How to broaden the participation is the challenge.' (AB-R interview) Referring to both Aruku Project and Satsuki Project, the NGO staff member analyses that 'it is difficult to include a wider audience, the rest of the residents don't get involved, not interested in DRR. How to engage indifferent people in DRR is always difficult, wherever it is. We tried to have a booth in a shopping mall. We also try to involve kids in DRR' (AB-N interview). In Miyoshi Ward, the leader reflected, 'at the time of the Evacuation Card Project, there were reluctant people' who were not keen on getting involved in creating the card (C-L interview). The researcher observed that 'I am only seeing "strong" parts of the Nomura community. I am aware I am still missing those who aren't involved' (D-R1 interview). This was confirmed by another interviewee – in reference to the ongoing DRR seminar series, 'The majority is not participating! Those who participate are 30-100 out of 4,000', e.g. in a seminar series. 'I am not necessarily trying to encourage more people to participate. It takes energy to persuade people to participate (D-LO interview).' These testimonies commonly show the struggle of the projects to attract a wider audience and achieve a larger number of local residents to get involved in the projects despite demonstrating good practices. Motivating more residents to participate is significant in the realising of a democratic society. This common challenge is worth investigating in deepening the discussion on participation.

6. Four recovery and preparedness projects and widening participation strategies

This section first describes the development and aims of each RPP and then examines its widening participation strategy focusing on its key initiative with a reference to the EAST framework. To note, the 'Timely' aspect is considered to be applicable to all initiatives given they were a response to the flood disaster when people were likely to be amenable.

1) Aruku Project in Kawabe Ward, Mabi Town, Kurashiki City, Okayama Prefecture
a) Background and aims
The full title of the project is Kawabe Recovery Project Aruku established in Kawabe Ward, which had 99% of its households inundated above floor level by the 2018 flooding. Aruku Project aims to develop activities which 1) develop connections and friendships amongst residents and also their passion for life [*ikigai*], 2) create a safe community, 3) retain the disaster experience and prevent it from weathering. The project now has a permanent office offering social spaces for the people of Kawabe (Kurashiki City Social Welfare Council, 2021). Starting with 20 'friends' in Group LINE (social media platform similar to WhatsApp widely used in Japan), the number has now gone up to 600. Municipal officials are included as well (A-L interview).

The project began by one person shortly after the flooding occurred on 9 July 2018. She started Group LINE with 20 friends asking what they needed. She wanted to reach out to those who were facing difficulties. Her situation was better being able to evacuate to her parents living next to Kawabe and all essentials were available to her family. LINE became a platform to exchange vital information such as where temporary toilets were in Kawabe. 'Friends' rose to 100 that evening. The friends started

to mourn they would not return to where they had lived. Kawabe did not have a support hub. There was little motivation for recovery. Residents had to travel to receive a donation. So she started a food bank in Kawabe involving a local MP. At the end of August, 300 people queued for the food bank. Interestingly, queuing often started 2 hours before the food was served. People wanted to get together and have a chat. Kids were playing cards. 'Space' was needed. By September, the number of LINE friends became 300, and Aruku Project was launched in October with 20 volunteers who wanted to give hands (A-L interview).

The shift to get involved in preparedness occurred one year after the disaster. According to a member of the NGO, 'the driving force for preparedness was Aruku members regret not being able to help neighbours who passed away in the 2018 event. One year on, they strongly felt they 'were obliged not to repeat the same mistake' (AB-N interview). The people in Kawabe were also showing a rising awareness of preparedness through LINE surveys the project undertook. The survey response during the first six months after the disaster was dominated by demands requesting help, but the contents gradually included forward-looking and proactive comments on DRR (A-L interview). Aruku Project is now focusing on preparedness action. In fact, at the time of our visit, the members were considering removing 'Recovery' from the project title given they have been engaged more in preparedness lately (A-M1 interview). Responding to the survey results, the project has introduced a range of preparedness activities including informal classes and seminar series.

b) Yellow Ribbon – 'Easy' and 'Attractive'
Along with the above preparedness initiatives, Aruku Project introduced an emergency safety check, Yellow Ribbon [*Kiiroi tasuki*]. The activity is to tie the ribbon at the entrance of your property to show you and your family are safe. No ribbon indicates someone has to call out for [*koe kake*] the residents inside and offer support.

Figure 6: Yellow Ribbon (asahi.com, 2021)

The idea for this initiative stems from a painful lesson learned by many people in Kawabe. They were unprepared, not being able to call out enough or taking too long to reach out to those in need of help during the 2018 disaster. As the leader explains,

Kawabe didn't have an evacuation centre, nowhere to evacuate – residents were relying on top-down instruction and hard measures (A-L interview).

Nevertheless, the top-down instruction did not really work.

Official risk communication covers a wide area. The authority's area mail 'the river was collapsed' was not helpful at all because it didn't tell us what I should do. We didn't understand the information so couldn't link it to our own behaviour (A-L interview).

Their realisation was that

the trigger might be a top-down instruction, but what to do next is up to us. We need to think about how to save our lives. It is our responsibility to question and make changes (A-L interview).

Aruku Project, therefore, developed 'personalised' (A-L interview) preparedness initiatives, Yellow Ribbon is being one of them. Kawabe Ward had 1,700 households before the disaster, which came down to 1,500, of which 1,300 had a yellow ribbon distributed by March 2021. In May, the project organised a safety-check drill in which 65.8% out of 1,300 took part. The researcher supporting Aruku Project clearly indicated that

to get people involved and have a positive outcome, the initiative has to be easy (AB-R interview).

Yellow Ribbon's message is straightforward, and its task is simple. Besides, the colour yellow is symbolic and captivates people's attention. Some of the neighbourhood associations which had not been involved in community development wanted to join the Yellow Ribbon drill. The later online survey showed 68.8% had seen a ribbon being put up in other households. Some said they had gone home to tie the ribbon outsides (A-L interview). Such behaviour suggests participation can be contagious when tasks are made easy.

Yellow Ribbon was 'a turning point' for Aruku Project:

More than 60% participated, which is a very good result. I felt this was OK. It was proof of people's awareness going up. It also was an opportunity for Aruku members to be reassured that they were doing right (AB-R interview).

The Yellow Ribbon activity demonstrated a mutual effect, i.e. one's participation influences others' participation. Many said, 'I will evacuate next time' (A-L interview). Having discovered that easy-to-partake initiatives can be contagious, Aruku Project intends to make the most of this to increase the number of participants in Kawabe in preparing for future disasters.

2) Satsuki Project in Yata Ward, Mabi Town, Kurashiki City, Okayama Prefecture
a) Background and aims

Satsuki Project aims to build an inclusive cooperative community with an introduction of a new residential block that entails evacuation functions in Yata Ward. The block has a nickname 'Satsuki Apart' – 'satsuki' means azalea, the symbol flower of Mabi Town. The project is run by Team Satsuki, which is a loosely formed interest group comprising the founder of a local nursing home, a voluntary organisation for community development, a DRR researcher, the Social Welfare Council (Kurashiki City Hall), an NGO for disaster support and many more. The project derived from the issue of non-evacuation by the elderly and people with disabilities. Out of the 51 fatalities in the 2018 disaster in Mabi Town, 22 persons lost their lives on the ground floor not being able to evacuate vertically despite living in two-story buildings. The project identified three lessons learned from the disaster experience: a) 'a disaster can occur any time. We need to prepare now for our super ageing society'; b) 'preparedness of both infrastructure and lifestyle are important'; c) 'disaster survivors are also co-creators of the community having something to offer'. To materialise these lessons, the project turned an inundated two-story apartment block, which was donated by its owner, into an innovative residential block adding evacuation functions. One function is the external long slope which enables

wheelchairs or mobile beds to reach the upper-floor shelter space easily in a time of flooding. The shelter space is also a communal room, which is for social use for the block's residents and also neighbours. The residents also decided to store stockpiles and emergency kits in the room (Budo no Ie, 2021b).

Once the building was completed and some survivors of the disaster moved in to rebuild their lives, Satsuki Project shifted its focus to strengthening social connections, which would enhance community preparedness. Satsuki Apart's residents discussed how to develop a support mechanism in the block, some of whom have difficulties living on their own. The emphasis was also put on developing relationships beyond the facility with the neighbourhood as Satsuki Apart's residents were not necessarily from the area. Yata Ward's Machizukuri Committee has been involved in designing and implementing collaborative activities with the ward's wider organisations and residents. The committee leader explains,

it is important to develop links between Satsuki Apart and the neighbourhood; it is also important to know 'the other', to see their faces (B-M interview).

For example, using the communal space in Satsuki Apart, the committee has arranged gatherings for singing to which the residents and neighbours are invited. A potato digging event in which Satsuki Apart's residents harvest potatoes with the children from a nearby nursery was organised. According to the committee leader, Yata Ward's *machizukuri* includes the principles of welfare and 'warm' community-building, as well as DRR, which match with Satsuki Project's mission (B-M interview). Building positive intergenerational relationships has become a critical aspect of the project.

b) Satsuki Apart – 'Social'

Figure 7: Satsuki Apart

In the case of Satsuki Project, its strategy for widening participation is to make an evacuation action usual and social. As the leader of Satsuki Project says,

evacuation requires courage. People have a lot of hesitation (B-L interview).

She gives a list of examples: one of Satsuki Apart's residents was to stay at home because he could not move his bedridden wife; a family with an elderly with memory loss did not want to go to a designated evacuation centre; a paralysed woman hid from helicopter rescue. All of them did not wish to bother others.

But people can evacuate to a familiar place (B-L interview).

The more often Satsuki Apart's residents and neighbours walk to the communal room on the upper floor, the more confident they become of this action, i.e. evacuation. Gathering at Satsuki Apart for social and leisure purposes and joint local events allow them to get to know each other (B-L interview; Budo no Ie, 2021b). Regularity and familiarity reduce psychological and physical barriers. There was an opportunity to test the objectives of Satsuki Project. In another heavy rain of 2020:

residents and neighbours evacuated to here [the communal room], had a chat and a cup of tea, and nothing happened. They went home saying 'it was fun!'. It won't happen if they haven't been here before and didn't know each other (B-L interview).

At Satsuki Apart, evacuation is no longer a difficult exceptional matter but a daily act of getting together with friends and neighbours who enjoy socialising.

3) Evacuation Card Project in Miyoshi Ward, Ozu City, Ehime Prefecture
a) Background and aims
Miyoshi Ward had actually acted on preparedness prior to the 2018 Heavy Rain Event, which makes their case different from others in terms of the timing of the learning from the previous disasters. Historically, Miyoshi Ward has faced inundation water, which led to 'bitter experiences' (C-L interview) in the area. The 1943 disaster washed all houses away, damaged agricultural products completely and killed a firefighter. Protecting residents and agriculture is a matter of survival for the people of Miyoshi. In 2006, a voluntary disaster prevention organisation [*jishubosaisoshiki*] was set up in Miyoshi Ward as the first case in Ozu City. The association then led the creation of the disaster prevention management plan completed in 2015. Their proactive attitude in DRR was also demonstrated in their application for the Cabinet Office's Disaster/Evacuation Card Model Projects in 2016 (Kubota, n.d.). Miyoshi Ward selected and developed two types of evacuation cards – a business card type and a leaflet type – through three community workshops. Eight groups were formed according to the possibilities of inundation identified from the 1943 event to discuss evacuation actions in the workshops – the community was learning from the previous disaster experience, even though it was more than a half-century ago. In the third workshop, using the evacuation cards, the groups took part in an evacuation drill and revised the contents of the cards afterwards. To disseminate the evacuation cards to every resident in Miyoshi Ward, the neighbourhood association and the voluntary disaster prevention organisation requested 17 sub-wards to hold another workshop separately in 2017. The detailed information such as your temporary shelter and whom you will call out was filled into everyone's card, which was put into a strapped plastic case to be hung, for example, on the fridge at home to make it visible all the time (C-L interview).

Miyoshi community's efforts to learn from the bitter experience bore fruit. They were able to achieve no fatality in the Heavy Rain Event of 2018, even though it was the largest disaster in the post-war time. When the torrential rain began, the members of the voluntary disaster prevention organisation set up a countermeasure headquarters at the public hall [*kominkan*] which was one of the designated evacuation shelters. They collected the information on the rainfall and the dam situation and also called for evacuation to residents using local cable broadcasting, which prompted their evacuation. The headquarter later assessed the risk of the public hall being flooded and the timing of the secondary evacuation. The evacuees all moved to a substation facility on higher ground. The public hall was later inundated. During these evacuation processes, the Evacuation Cards were deemed effective. Residents were able to collect those whom they were supposed to give hand, which had

been decided in the workshops and noted in the Cards (Fire and Disaster Management Agency, 2021). Owing to the Evacuation Card Project, 'every resident has been able to learn the importance of protecting one's life by oneself' (Kubota, n.d.). 'We have a high awareness of water disasters and a strong motivation to protect ourselves against them (C-L interview).'

Figure 8: Disaster/Evacuation Card (Asahi Digital, 2018)

(Translation)

Emergency contacts of family (someone you could rely on)	
Name	Contacts (e.g. work, mobile)
171 (Disaster Messaging Dial)	
If you cannot be connected	
*You can leave a message	
Tell where you are: Record (1)	Check where your family are: Replay (2)

Disaster/Evacuation Card (my information)	
Name	
Gender	Blood type
Date of birth	
Address	
Tel	
Notes	e.g. Illness, medications
Take this card with you when evacuating	

b) Evacuation Card Project – 'Social'

Preparedness action in Miyoshi has been undertaken under the leadership of the chairman of the neighbourhood association and the president of the voluntary disaster prevention organisation (C-M1 interview). The development of the disaster management plan or the Evacuation Cards would not have happened without the leadership. However, the leaders were aware forcing participation would not make any impact. As the chairman said, 'the plan wasn't created only by certain seniors or executives in Miyoshi' (C-L interview). Using cable broadcasting, the leadership team invited residents to join the process with the following persuasion:

For a water disaster, we know it is coming, unlike an earthquake or tsunami. Our communities know the best what is happening at the time of a water disaster, authorities don't. Circumstances differ from community to community. We cannot rely on kojo [public help] (C-L interview).

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Between 80 and 100 residents did gather (C-L interview). As a small rural community, 'good relationships were already there' (C-M1 interview) in Miyoshi Ward. This high degree of social capital contributed to bringing the community together in the Evacuation Cards Project.

We invited everyone to the workshops, those who were interested attended them and many of us studied together. This means there is always someone in the neighbourhood, who is familiar with DRR (C-L interview).

Even when some residents showed reluctance in engaging in the project, they were not pressurised. The leaders had a friendly conversation with them explaining 'we have to do this for survival' and encouraging them to participate (C-L interview). Those who were not keen at the beginning became the ones who appreciated most after going through the flood when the cards saved them. Miyoshi's widening participation strategy is by encouragement and invitation because of the established social relationships in the community.

4) Nomura Recovery Project in Nomura Town, Seiyo City, Ehime Prefecture
a) Background and aims
Together with the other four towns, Nomura Town has been guided by Seiyo City Hall in the recovery processes after the 2018 disaster. Nomura had the largest damage in the city – five out of six fatalities, and 919 out of 1,367 damaged households including those fully destroyed (Seiyo City, 2019). The population in the town did not have a DRR awareness before the disaster (D-LO interview) and therefore has relied on the authority's leadership. Despite such a top-down formation, the city hall's intent was collaborative from the onset, presenting three principles in the city's recovery *machizukuri* plan issued in March 2019: let us take time to recover from worry and grief by 'standing next to each other and supporting one another'; recovery is about 'one step of 100 persons, rather than 100 steps of one person'; all stakeholders including the public administration need 'to prioritise carefully what has to be done' (Seiyo City, 2019, p. 17). Based on the city's plan, Nomura Town developed its breakdown plan in October same year. While outlining infrastructural recovery schemes, the October plan contains preparedness measures linked to the recovery schemes. For example, restoring the inundated riverbed of Hiji River is an engineering project, but also an educational effort to prepare future generations for disasters by involving them in deciding on sustainable uses of the riverbed space.

b) Citizenship Education Project – 'Attractive 'and 'Social'
This paper treats two initiatives that aim to foster public responsibility as well as disaster awareness in Nomura's next generations as one Citizenship Education Project, although they derive from different objectives in the town's plan. One emerged through the infrastructural *machizukuri* strand, which discusses the utilisation of the spacious riverbed of Hiji River. After a series of workshops, the people of Nomura decided to develop vegetable, fruit and flower farms, a public park and sports fields utilising the space. In the discussion process, the researcher whose expertise is environmental engineering came up with an idea to involve Nomura High School. Its Investigatory Hour [*Tankyuu no jikan*], which is a field-based active-learning lesson, has been allocated for the planning and implementation of a project. A group of students chose to lead the management and maintenance of the farms (19/11/21 observation; D-R1 interview). When we observed their class at the high school, students were creatively discussing the dishes using the harvested sweet potatoes, which were to be served at the approaching major festival in the town (19/11/21 observation).

Figure 9: Investigatory Hour at Nomura High School

The other initiative is part of the DRR education package lessons for primary schools called 'Learning From the Disaster' coordinated by Seiyo City (Seiyo City, 2021). We observed a lesson delivered at Nomura Primary School, which uses its Integrated Study hour for DRR education (19/11/21 observation). A citizenship education expert from a university is invited to give lessons on preparedness education with a focus on fostering participation and citizenship. The primary school lesson had group discussions about the school's stockpile storage – what to write on the note which will be displayed on the storage to inform evacuees what to do. An official from the city hall was there to offer feedback to students and also to borrow some of their ideas for implementation. Such procedure had been discussed between the school, the city hall and the university with a belief that students also have a stake in society and they should understand that (Inoue, 2020).

Both educational activities at the high school and the primary school share a common theme – 'becoming a citizen through social participation' (D-R2 interview). It can be suggested Nomura's Citizenship Education Project allows for both fostering citizenship and widening participation through students' social engagement in community initiatives. Starting early by targeting students is often regarded as an effective approach to cultivating DRR readiness (Mutch, 2014). The high school initiative also has some elements of attractiveness by collaborating with the local festival which is the largest event in the town. This could motivate students to take part in, for example, the farm initiative. It is intended that students' social action will be reinforced by receiving an affirmation from adults – the city hall taking their ideas on board, and customers paying for self-made dishes and enjoying them at the festival. These positive experiences encourage the learners to further engage in social action (Inoue, 2020).

5) Capacity of the EAST framework

Table 5 summarises the widening participation strategy of each RPP. We were able to illuminate different approaches taken in four cases. Yellow Ribbon is a one-off and captivating initiative, whereas the other three are longer-term developmental initiatives that require social relationships. Within those three, Satsuki Apart and the Citizenship Education Project aim to build connections through social activities, while the Evacuation Card Project capitalises on the existing social capital to enable the project. One proposition here is that the EAST framework has the potential to guide a variety of participatory preparedness initiatives in terms of scale, target and objectives.

Table 5: Summary of the widening participation strategies of the four projects

Location	Kawabe Ward, Mabi Town, Kurashiki City	Yata Ward, Mabi Town, Kurashiki City	Miyoshi Ward, Ozu City	Nomura Town, Iyo City

Project title	Aruku Project	Satsuki Project	Evacuation Card Project	Nomura Recovery Project
Disaster experience	Historically had floods	Historically had floods	Historically had floods	Little
Project aim	Recovery, preparedness, machizukuri	Recovery, preparedness, machizukuri	Preparedness	Recovery, preparedness, machizukuri, citizenship
Key initiative	**Yellow Ribbon**	**Satsuki Apart**	**Evacuation Card Project**	**Citizenship Education Project**
Strategy for widening participation	**Simple and clear task which has contagious effect**	**Socialising opportunities in daily life**	**Capitalising on strong social capital**	**Educating future generations**
	After the disaster when people are most receptive (except Evacuation Card Project)			
EAST*	**E, A, T**	**S, T**	**S, T**	**A, S, T**

*EAST: Easy, Attractive, Social, Timely

7. Strengthening the EAST framework

In considering the way forward of the EAST framework in the DRR context, this section attempts to link the four principles with the broad observations surfaced in the empirical study of the four RPPs beyond the key initiatives examined above. 'E' for making the action easier is akin to the idea of 'lowering the hurdle' commented by Aruku Project and Satsuki Project (A-L interview; B-L interview). The idea is advocated by Yamori (The Yomiuri Shimbun, 2022), who uses generic language for better communication with the public. For many, the hurdle of participating in DRR activities is high. The reasons for this have been studied. One obvious response is a lack of time and resources. The denial that 'a disaster will not happen to/affect me' –'the normalcy bias' (Omer and Alon, 1994) – is another. People show reluctance or resistance when they perceive they are compelled to participate (Yamori, 2011). Lowering the hurdle is about making it accessible, approachable and embedded in daily life. The Yellow Ribbon activity conveys a clear message of safety through the simple act of hanging the ribbon at the door. Taking a small concrete step as such, rather than embarking on a grand design of a community-based plan, encourages people to get involved.

'A' for creating an initiative attractive can be translated into making it enjoyable. All RPPs, except the Evacuation Card Project, mentioned this principle was important. Aruku Project, for example, was set up to create 'something to look forward to' (A-L interview) after the devastating disaster. People queue for the food bank but also arrive early to have a conversation while waiting, which gave them a moment of joy. Singing sessions in Satsuki Project and joining up with the local festival in the Citizenship Education Project share a similar mission to make their initiatives enjoyable to attract more participants. What we also came across in the interviews is the current participants (A-M1 interview; B-M interview) and also the researchers said, 'I am having fun' (AB-R interview; D-R1 interview) engaging in the projects. The fact that the participants are enjoying the projects may trigger others to participate.

'S' for emphasising social connections is probably the most frequently addressed principle in the RPPs we studied. The first example is the phrase 'to be connected [*tsunagaru*]', which was repeatedly used in the interviews. 'Creating a space [*ba o tsukuru*]' is an associated phrase, which refers to a means to allow people to be connected. The larger the number of familiar places or places to visit people

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have, the better their health and safety will be. Such an attempt was illustrated at Satsuki Apart with the social gathering space. When a disaster occurs, 'calling out [*koe kake*]' each other becomes critical to support the vulnerable and identify who is silent and therefore needs help. In Miyoshi Ward's Evacuation Card Project, the residents decided who should call out to whom in an emergency. In the 2018 flooding, following the plan, they called out the ones they were supposed to call out (C-M4 interview) resulting in no victims. For the response and recovery phase, 'standing by side [*yorisou*]' is used as a manner to support those who are affected by a disaster. '*Yorisou*' literally means 'to snuggle' but has been used in the context of health and welfare and increasing in DRR 'to be there', not physically but psychologically. All of these phrases regularly appear in the policy domain, academia and media forming a powerful social discourse stressing the 'people first' (Ferdinand et al., 2012) approach in DRR and *machizukuri*.

The interviewees did not explicitly refer to 'T' for grabbing the momentum. However, RPPs' decisions were consciously made to act on developing preparedness shifting from recovery efforts. For Satsuki Project, it was when the apartment was built, and residents moved in. They began discussing concrete ideas for preparedness programmes. The shift for the Citizenship Education Project was when the breakdown plan specifically for Nomura was created. The timing is different in Miyoshi's case, which embarked on the Evacuation Card Project in between the past experience and a future possibility. Their momentum was not shortly after being hit by a disaster but during the usual time when they saw an opportunity to act on preparedness through the government scheme. Their case is a demonstration of the significance of preparedness action in the usual time.

Although the criteria of the framework were broadly applied at this stage, the above discussion demonstrates that the four cases of the existing RPPs entail aspects of EAST. This may make sense because they are recognised as good practices. Follow-up studies on whether these strategies or approaches have increased the number of participants as well as whether a strategy which combines all four principles has a better outcome than a strategy based on one principle are required. With more empirical data, the EAST framework can be consolidated as a compatible frame of reference which guides communities to develop effective plans.

8. Conclusion

This paper has argued that the perspectives on widening participation are significant in DRR contexts given there are many ongoing participatory and community-based projects that share recruitment challenges. One limitation seems to remain. There is a discrepancy between widening participation as a government policy and widening participation as a community initiative, which needs to be taken into account. The difference may manifest in methodology. Behavioural insights research utilises 'rigorous testing and trialling based on a rich understanding of the context in which a policy is being delivered' (Service et al., n.d., p. 8). Communities are likely to have rich understandings of their contexts but unlikely to have resources for 'rigorous testing and trialling'. How to enhance rigour in studying widening participation in community projects requires further investigation. Despite this, we suggest the EAST framework could address a new dimension of participation which has been seen in neither success factors frameworks nor participation typologies. Together with the existing theories, the EAST framework would be beneficial in co-creation and democratic decision-making.

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Authorship contribution

Kaori Kitagawa was the main researcher in designing research, arranging fieldwork and constructing this paper. Subhajyoti Samaddar contributed to the theoretical and technical aspects of the paper. Both researchers collected the data in the four field sites.

Data availability statement

The data is not made available due to ethical reasons.

Declarations and Conflict of Interests statement

- **Conflicts of interest** We declare there are no conflicts of interests or competing interests.
- **Ethics approval** We have obtained approval from UCL IOE Research Ethics Committee (REC1555).
- **Consent for publication** We have secured informed consent from all research participants to participate in the study and to publication.

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