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Beyond Agenda 2030: Future-Oriented Mechanisms in Localising the Sustainable Development Goals (SDGs)

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Abstract: Given the complex nature of the UN's Sustainable Development Goals (SDGs), there are increasing calls for new inclusive and bottom-up governance mechanisms in building a relationship between governments and their citizens, in particular, the youth, to localise the 2030 Agenda. But such successful bottom-up multi-stakeholder engagement tools have yet to emerge in practice. Hence, of specific interest in this study is exploring bottom-up approaches useful for localising the SDGs and harnessing real transformative change to leave no one behind by 2030. Using a case study from the UK, we present a novel integrated mechanism to achieve this. An integrated Social Innovation (SI) and Scenarios Thinking (ST) mechanism remains a valuable bottom-up tool capable of empowering citizens, including the youth and decision-makers in delivering coherent SDGs plans, policies, and programmes. The study reveals that although the SDGs are distinct, they are also interconnected. A scenario development workshop with youth with no prior knowledge of the SDGs showed a common thread of policy measures for different SDG future images. Standard policy measures amongst different SDGs call for an equitable society at all levels; that all energy sources be from clean and renewable sources; investment in low-carbon technologies and research; and financial support for promoting sustainable transportation and consumption measures. This study highlights that we need to change how we think and talk about SDGs and recommends socially innovative steps to embrace cross-sectoral and nexus thinking as the backdrop of the citizen science concept. We conclude that the SDGs should not become a performative exercise or failed social experiment. And any practical localisation from the UN's Member States across the northern and southern hemispheres will require robust measures addressing future-oriented systemic thinking, inclusivity and good governance, together with standards for community resilience and sustainability.

Keywords: SDGs localisation; youth; social innovation; scenarios thinking; bottom-up decision making; future images; citizen science

1. Introduction

In the last several decades, the term sustainable development (SD) has become a buzzword in the global development discourse. SD highlights an integrated response to the linked global problems of poverty and environmental degradation, which ensures development pathways that guarantee the well-being of all humankind without negatively impacting planetary boundaries [1]. It's been argued that governance for SD is complex and, as its narrative reflects a series of normative ideas (e.g., protection of the environment, public participation in development decision making), which require contextualising and clear goals to enhance its rigour [2]. Now, with purpose and strategy

linked to address and implement these complexities, SD has been upheld by the United Nations (UN) General Assembly, following its 2015 adoption of the 2030 Agenda for Sustainable Development with its 17 Sustainable Development Goals (SDGs), 169 targets and 232 specific indicators. Thus, while the international community sees the 2030 Agenda as a holistic and transformative agenda [3], we argue that SDGs achievement by the Member States depends strongly on progress made at the local level through localised thinking—arguably even more so amid the COVID-19 pandemic.

The nature of SDGs' complex problems (sometimes described as 'wicked problems') has resulted in calls for new inclusive and deliberative multi-stakeholder governance mechanisms in building a relationship between governments and their citizens to localise the SDGs [3,4]. Despite these calls, successful bottom-up multi-stakeholder engagement tools, which are useful in localising and implementing the SDGs at the local level, have yet to emerge in practice [5]. This localisation is also true for the UK where there is lack of engagement in the SDGs across Government and a lack of multi-stakeholder partnerships that mobilise and share knowledge, expertise, technology, and financial resources, to support the achievement of the SDGs at the national and local level [6]. Significantly, there have been calls for the UK government to identify a formal mechanism for relevant responsible Ministers to come together regularly to discuss the implementation of the SDGs at the highest political level (ibid). Into this void, and the 'decade of action' for the international community to deliver the 2030 Agenda, testing of new bottom-up approaches to support regional and local level SDGs plans, policies, and programmes is urgently needed [5,7]. Hence, the importance of this study's aim to explore bottom-up approaches useful for localising SDGs and harnessing a real transformative change to leave no one behind by 2030.

Localisation best describes the process of defining, implementing and monitoring strategies at the local level for achieving global, national and subnational SDGs and targets [3]. However, critical to the success and localising of the 2030 Agenda is the role of young people (representing the new labour force, future leaders, and the heartbeat of most economies) in engaging with the local and national government to deliver on policies and programmes on the ground [8,9]. Notably, engaging and encouraging multi-stakeholder decision-making processes to address the SDGs is itself an SDG: SDG 17, to strengthen the means of implementation and revitalise the global partnership for sustainable development/partnerships for the SDGs. Moreover, the 2030 Agenda's High-level Political Forum on Sustainable Development, which includes voluntary national review processes (VNRs), represents a leverage point for youth engagement at the national level in the follow-up and review of 2030 Agenda implementation [10]. Thus, bridging gaps in bottom-up multi-stakeholder engagements mechanisms with youth in SDGs policy design and implementation is also critical for addressing SDGs' wicked problems, such as climate change, air pollution and the irresponsible consumption and production patterns currently experienced within our cities and communities (SDG 11).

Yet, SDG 17 as a normative concept and the VNRs' mechanism lacks multi-stakeholder engagement tools useful in localising the SDGs, specifically, with regards to the troubling absence of locally-led, bottom-up, and future-oriented instruments designed to deliver on policies and programmes to meet the 2030 Agenda and beyond [9].

In practice, the Council of European Municipalities and Regions are active in advocacy work localising the SDGs [3], including several initiatives on the need to harness SDG implementation at the local level [11]. Several prior studies have addressed multi-stakeholder initiatives in localising the SDGs. For example, collaborative initiatives for multi-stakeholder partnerships (SDG 17) are explored as a means of achieving sustainable communities and cities (SDG 11) [12]. Whereas, successful approaches are contextualised regarding SDG 11, including SDG17 partnerships and the critical role of researchers and other scientific actors as change agents [13]. The prevalence and complexity of local, sustainable development challenges and outcomes are also examined from the perspective of the strategic interest of the partners involved [14].

A mechanism gaining traction as a useful tool for empowering local communities in localising and delivering on policies and programmes of the SDGs is the concept of social innovation (SI) and scenario

thinking (ST) [15]. SI encompasses new alternative practices (e.g., ideas, policy instruments, new forms of cooperation), methods, processes and regulations that are adopted by citizens, policymakers, etc. to resolve societal challenges [16]. It's been revealed how bottom-up SI approaches work across and support all 17 SDGs, highlighting how SI can create a new mindset and develop innovation and knowledge paradigms that are supportive in designing and delivering local public policy and services as a means to achieving the SDGs by 2030 [17]. There is a strong indication that scenarios are capable of empowering individuals to become more socially innovative and create deliberative processes that are themselves social innovations [18]. Applying scenario thinking (ST) helps inform desired, and plausible future images that reflect different perspectives on development [19], whilst social innovation (SI) brings about social change [20].

This study responds to the lack of bottom-up multi-stakeholder/youth engagement tools in localising the SDGs, exploring an integrated framework following SI and ST in the West Midlands Combined Authority Area (WMCA) in the UK via a participatory workshop. In doing so, we explore SDGs awareness, including future images and projections for locally relevant SDGs policies and programmes, and what 'leaving no one behind' means to the next generation of leaders, i.e., the pledge, vital in achieving the 2030 Agenda for sustainable development.

2. Context of the Study, Materials and Methods

2.1. Theoretical Framework

The theoretical framework used in this study combines insights from SI and exploratory scenarios development. Though the roadmap defines some strategies for localising the SDGs [7], few studies have attempted to integrate both SI and scenarios thinking to enhance SD decision-making at the local level. SI, as a "quasi-concept", addresses social change driven by every-day interactions, as well as the diverse ways in which social groups and communities deal with social, economic, and environmental challenges [15]. SI is a pioneering and nascent framework gaining interest from both the academic and policy disciplines [21]. SI has been applied to address global societal challenges, such as health and well-being [22], sustainable energy [23], and sustainable cities and communities [24].

SI practices are suitable for solving many of our current, most pressing societal challenges, including mitigating inequalities inherent to traditional solutions [25]. For instance, the effectiveness of SI has been highlighted in addressing sustainability challenges, such as sustainable consumption [26]. The UN now acknowledges that SI approaches are needed as mainstream tools for delivering SD [17], and are useful for finding acceptable progressive solutions for issues of exclusion while contributing positively to development [27]. Furthermore, SI initiatives address societal issues over the longer term [28] and are considered as a planned approach to future-oriented thinking in sustainability decision-making. These planned approaches to future-oriented systemic thinking are consistent with scenario thinking [29]. Scenarios enhance contemporary decision-making by creating awareness and measures for future challenges and opportunities [30].

Scenario thinking remains a popular tool, used to inform predictions of plausible futures that reflect different perspectives on development [31]. Scenarios created by stakeholders from different backgrounds can provide opportunities to include diverse knowledge and perceptions, enhancing understanding of cross-scale system interactions, including policy roadmaps [31–33]. Exploratory scenarios are descriptions of a range of possible futures and alternative events or are used to gain insights into uncertain future outlooks, by looking at several plausible futures based on the drivers of change [32,34]. In utilising this exploratory scenario approach, desired futures take into account the key uncertainties in the main drivers of change [35]. Exploring the drivers of change in scenarios thinking can address a range of driving forces within the Social, Technological, Environmental, Economic and Political (STEEP) systems [31]. In this study, participants employed a STEEP framework to develop exploratory scenarios (i.e., possible futures and better strategies for realising this future), including desirable/positive SDGs scenarios by 2030.

2.2. Why Focus on Youth—The Case

This study aims to bridge Agenda 2030 bottom-up transformative pathways and multi-stakeholder engagement gaps by combining the frameworks of SI and ST in a participatory workshop with youth/advanced-level secondary school students (A-Level) in the WMCA. Indeed, the active engagement of youth in SD efforts is fundamental to achieving sustainable, inclusive, and stable societies by 2030 [9]. Engaging young people in localising SDG thinking is crucial to averting the worst threats and challenges to SD, including the impacts of climate change, unemployment, poverty, inequalities and responsible consumption and production patterns. With 15–24-year-olds accounting for 16 per cent/1.2 billion (Figure 1) of the global population, SDGs decisions need to include this age group in the development of frameworks and processes that support SDGs implementation, follow-up and review (ibid).

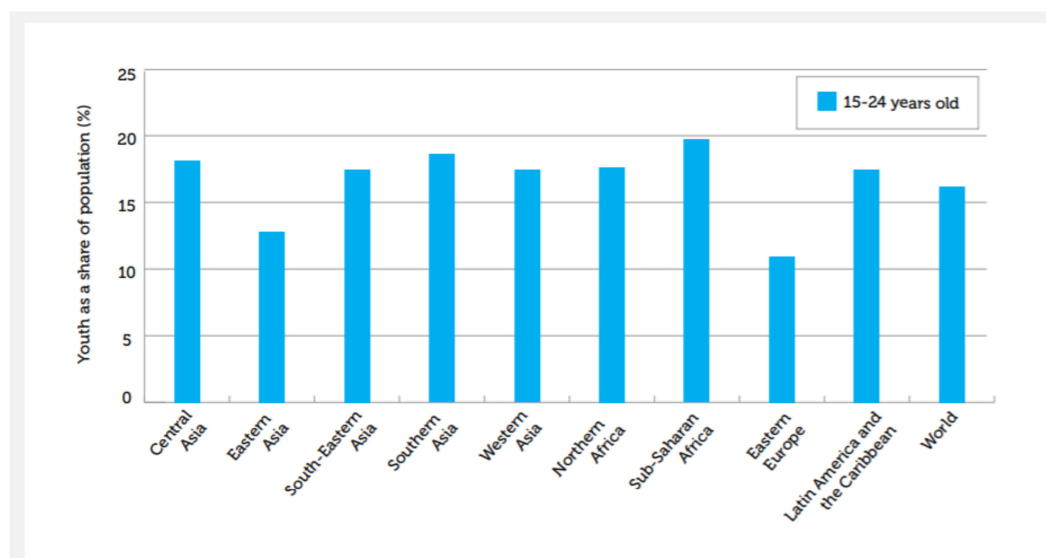


Figure 1. Youth as a share of the total population by region, 2015—Source: United Nations, 2017.

This age group represents future leaders and the labour force and will be the heartbeat of most economies: driving markets; becoming leaders within businesses and political parties; choosing political representatives, and bearing the brunt and consequences of humankind’s impacts on planet earth. They will be central actors in ensuring greater equality of outcomes for their workforces and broader communities, as stipulated by SDG 10 [36]. Thus, youth engagement addressing SDGs’ wicked problems is essential if the international community is to realise the SDGs by 2030. The SDGs are best achieved at the local level [7], and involving the expertise and input of youth in developing localised mechanisms for achieving the 2030 Agenda is vital [9].

2.3. Case Study and Why the West Midlands Combined Authority Area

Case study research offers the means to conduct an in-depth qualitative analysis of an issue and to understand and explain contemporary issues from the perspective of participants [37,38]. Applying the case study approach allows, amongst other things, policy developments and programme-based service reforms to be studied in detail in a real-life context [39]. The single case study approach offers additional insights into the choice of desired strategies, and in turn, can help develop or refine theory (ibid).

In this study, we chose the West Midlands Combined Authority Area (WMCA) in the UK as the case study, as the area remains one of the most diverse population areas experiencing rapid youth population growth [40].

The WMCA boundary includes a core grouping of local authorities, including the Black Country, Greater Birmingham and Solihull, Coventry and Warwickshire, and Wolverhampton (Figure 2).

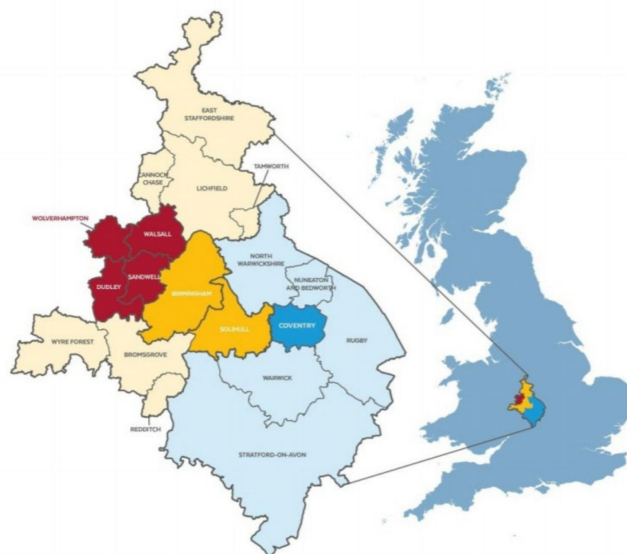


Figure 2. A map of the UK showing the West Midlands Combined Authority. Photo Credit: WMCA.

The WMCA area had nearly 2.8 million residents at the 2015 mid-year estimates, with 377,000 young people aged 15 to 24 [40]. Despite this, the youth and diversity of WMCA communities are not always reflected in the region's leadership [40]. Under the current Mayor's direction, the WMCA now strives to give young people a genuine platform to voice their concerns and vision for the future through various initiatives [41]. For example, the opportunity given to the Birmingham Youth Climate Strike group following a speech at WMCA Board's Annual General Meeting contributed to the declaration of a Climate Emergency in 2019 (ibid). The WMCA is committed to a model of inclusive growth and evaluating sustainability by the quality of development outcomes for people and places. The WMCA is also committed to contributing to local and international efforts in achieving the UN's SDGs [42] in the following ways:

- Reducing health inequalities and improving the health and well-being of the population, including tackling mental health issues, air quality and the global climate crisis
- Improving life chances for all, including those facing particular disadvantages or difficulties
- Building a movement for inclusive leadership/inclusivity, prosperity and fairness by spreading the message of why diversity and inclusion matters via the Inclusive Leadership Pledge. This pledge is designed for employers, asking organisations and senior leaders to commit to promoting diversity and embedding inclusion. (This was reflected in the Leadership Commission's call to realise a leadership that better represents the diversity of the West Midlands)
- Building the right skills in delivering improved productivity and prosperity, enabling all groups to access jobs. Improving skill levels so that people have the skills and qualifications to access jobs
- Improving place, infrastructure, air quality and the environment through addressing climate change
- As a result of these efforts, the WMCA has come to be recognised nationally in the annual league tables as one of the top performers on local sustainability initiatives [42].

2.4. SDGs Scenario Thinking Workshop Design: What Does 'Leaving No One Behind' Mean?

In this section, we discuss our data collection methodology and explain the conceptual basis for the design of the stages in the half-day (November 2019) ST workshop. The SDGs participatory workshop aligns with the WMCA's roadmap to 2030, addressing core strategic commitments to achieving the SDGs locally and internationally [43]. The workshop focused on four SDGs: (1) taking urgent action to combat climate change (SDG 13), (2) addressing inequality issues (SDG 10), (3) ensuring good health

and well-being (SDG 3), (4) and managing (un)sustainable production and consumption patterns (SDG 12).

2.4.1. Stage 1: Stakeholder Selection in Localising the SDGs

The first stage of the SDGs localising process involved selecting stakeholders from different backgrounds to participate in the scenario development workshop. With 17 distinct but interconnected SDGs, 169 targets and 232 specific indicators, localisation mechanisms become stronger when backed by local-level multi-stakeholder partnerships and stakeholders with multi-disciplinary backgrounds [5]. The Voluntary National Reviews (VNRs) underline the need and urgency for collaborative and multi-stakeholder governance to ensure the capacity of all stakeholders to act in favour of the SDGs. In previous studies, scenarios have been created using group data from 10 to 20 individual participants [31,44,45]. We used purposeful sampling to recruit a total of 14 year-13 students studying Advanced-Level (A-Level) subjects (e.g., economics, geography, sociology, environmental science, mathematics, information technology) to ensure a multi-disciplinary, representative workshop sample. To test and facilitate such a bottom-up localisation approach, we divided participants into one group of four and two groups of five.

2.4.2. Stage 2: SDGs Awareness and Knowledge Transfer

Empowering people to make positive change through education and awareness-raising is central to achieving the SDGs. Stage 2 of the workshop included a questionnaire completed by each participant (Appendix A) that measured participants' familiarity with and awareness of the UN's SDGs. Following the questionnaire, the workshop leaders presented the workshop plan and goals, including a video series that introduced students to the SDGs and scenarios thinking. With an emphasis on what 'leaving no one behind' could mean, we used the following SDGs to guide the workshop:

- Reduced Inequalities within Societies (SDG 10), i.e., businesses and authorities addressing societal and inequality issues, e.g., racism, gender pay gap, equal opportunities, discrimination in all forms etc.
- Climate Actions, Good-Health & Well-Being—(SDG 3 and SDG 13), i.e., deciding the type of air we breathe and combating climate change and its impacts
- Sustainable Production & Consumption Patterns (SDG 12), i.e., encouraging responsible consumption, reducing the environmental impacts of production, and developing more sustainable systems of production and consumption.

The SDGs as mentioned above reflect the expertise and research projects of the academics/facilitators involved in the workshop, as well as those addressed by the WMCA roadmap to 2030/core values contributing to the local effort in achieving sustainable futures.

2.4.3. Stage 3: SDGs Collective-Vision-Based Scenario Thinking

Fundamentally, awareness-raising should not only be about making citizens aware of the existence of the SDG problems but should also be about empowering citizens to participate in impactful and bottom-up decision-making approaches in the pursuit of these goals. In this stage of the workshop, we advised participants to brainstorm the alternative futures, considering time dependencies in their decision-making following the ST concept described in Figures 3 and 4. Time dependencies in scenarios decision-making remain essential in the identification of what actions or what other decisions are needed [46].

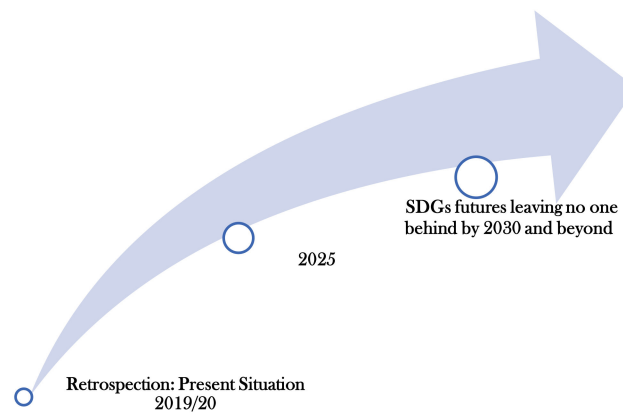


Figure 3. A foresight retrospective assessment towards Agenda 2030 and leaving no one behind.

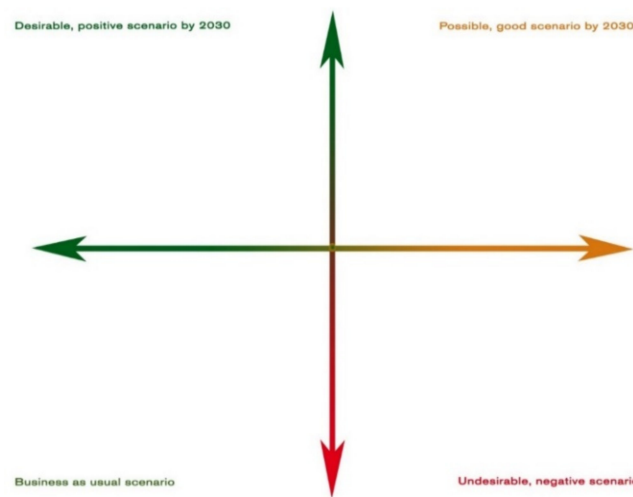


Figure 4. A template for scenario axes technique as a projection for exploring future images.

First, we conducted a retrospective assessment as a means for groups to tell their story of an idealised image of the future. We clarified what future preferences and strategies might be desirable (Figure 3).

Retrospective assessments represent useful tools for engaging citizens as proxies for future sustainability decisions [47].

2.4.4. Stage 4: SDGs Scenario Axis and Themes—What Are the Possible Futures?

In the fourth stage of the workshop, we assigned each of the student groups to a different SDG. The SDGs included: reduced inequalities within societies (SDG 10), the type of air we breathe and combatting climate change (SDG 3 and 13), and sustainable consumption and production patterns (SDG 12). We asked the participants to explore the question: ‘What are the desirable and possible futures?’ To assist the participants in the future thinking exercise, we engaged participants to apply the scenario axes technique or the basic quadrant approach for seeking four scenarios. This technique ensures scenarios are distinguished principally by divergent futures associated with two highly influential and highly uncertain drivers, i.e., desirable and undesirable or positive and negative futures (Figure 4).

The quadrant approach is one of the most commonly used methods for constructing scenarios and is simple to implement. If the axes are appropriately selected, it ensures scenarios are divergent [46]. This scenario axes technique and the nesting of the four quadrants maps the influencing factors/drivers

crossed on the x and y axes, using contemporary/business as usual (BAU) scenario as a benchmark (refer bottom left of the quadrant in Figure 4).

The quadrant technique is as a useful and straightforward tool to construct images of the future coherently and systematically [48]. Decision-makers, including academics, etc., can implement the quadrant technique in a half-day workshop with little preparation or supporting information [46].

2.4.5. Stage 5: SDGs Scenario Narratives & Drivers of Change

In stage 5 of the workshop, each group worked together to develop narratives that helped them visualise selected SDGs scenarios under which each of the four combinations could occur (Figure 4). This stage involved the participants creating convincing stories for each of the scenarios, in a creative process of storytelling that incorporated influencing factors or drivers of change. This stage also included a discussion of the meanings and reasoning behind the combination of drivers and their implications. The practical approach to developing the stories for the four quadrants involved the following:

- Allocating one individual to write the scenarios quadrant stories.
- Ensuring everyone in the group participated in developing the SDGs stories, reflecting on their own experience, local knowledge and contemporary science.
- At the core of a foresight exercise, participants highlighting possible futures believed to be plausible and relevant for today's decisions.

In guiding participants to develop plausible and positive scenarios, the following questions were explored in the SDGs future projections and thinking:

- What should the future look like in ten years? (focussing on both national and local level analyses)
- As a future leader in an organisation, what should be the local goal(s) around the SDGs, and how should it be achieved over the next ten years? (vision focus)
- What risks and challenges do we face over the next five to ten years? What contingency plans should we put in place? (risk management focus)
- What strategies are required to achieve the desired outcome? (strategy development focus)

To help participants brainstorm and structure the scenarios quadrant future trends, we encouraged them to consider a range of driving forces within the Social, Technological, Environmental, Economic and Political (STEEP) settings [31]. The function of the STEEP categorisation is to help participants consider a sufficiently wide-ranging set of potential change-drivers that are useful in shaping the future SDGs trends and clarifying which types of drivers should be within or outside the scope of a scenario [46].

2.4.6. Step 6: Scenarios Evaluation

In stage six of the workshop, the groups reviewed and presented scenarios to be vetted by a panel of experts, comprised of the workshop facilitators and an outside expert on sustainable development. The experts evaluated the quality and characteristics of the desired and positive scenarios, following the key attributes of good scenarios [49]. The panel focussed on guiding students to challenge conventional thinking and assumptions, notably when these represented weak points in their scenarios. As part of this presentation, each group also shared their stories with the other groups/participants who helped screen and test the robustness of the scenarios—among other things comparing strategies to the three different scenarios, including the BAU scenario. Other participants were encouraged to critique and question the plausibility of each scenario (i.e., is the scenario possible?), the scenario's logical consistency and each perception of the future represented in different quadrants. As a group, the workshop participants used the presentations to identify the actors required to implement the strategies, as well as the institutional barriers and opportunities necessary for ensuring the implementation of important actions identified in the desired and positive scenarios [50].

2.4.7. Step 7: Post-Workshop Survey

In the final stage, we issued a post-workshop survey to help examine participants' overall perception of the workshop objectives and methodologies, as well as their self-identified knowledge of the SDGs gained from their participation in the workshop. The post-workshop survey aimed to gauge (i) the benefits of the methodology (SI and scenario development) developed for localising the SDGs, and (ii) the lessons learned by evaluating their new understanding of the SDGs and futures applications as business leaders, politicians, and other leadership roles (Appendix A).

3. Results

3.1. Pre-Workshop Survey on SDGs Awareness

Amongst the workshop participants, the initial level of SDGs awareness was deficient. 14% considered themselves somewhat or slightly aware of the SDGs, with 86% not at all aware of the SDGs (Figure 5).

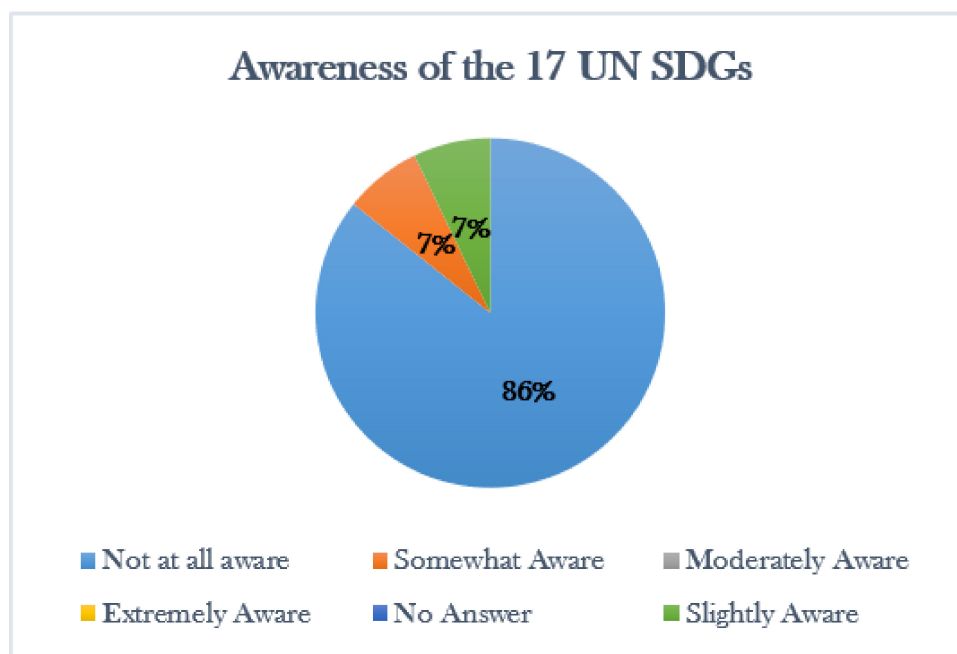


Figure 5. Results showing a pre-workshop survey on SDGs awareness.

3.2. Future Images

The innovative SDGs scenarios thinking process was collaborative and resulted in three future images: (i) transitioning to a sustainable low-carbon economy; (ii) an equitable and just society, and (iii) responsible consumerism and production patterns. In Tables 1–3 (below), we present the results of the workshop exercise and highlight the participant identified STEEP change drivers, i.e., S (Social); T (Technology); Econ (Economic); Env (Environment) and P (Policy/Political).

Table 1. Summary of the desirable and possible future images for SDG 13, including the STEEP dimensions to the envisioned future.

Future Images	Pathways	S	T	Econ	Env	P
Desirable, Positive Scenario by 2030	• All energy will be renewable source by 2030 and beyond					✓
	• Low-carbon technologies as alternatives to fossil fuels, e.g., Electric Vehicles (EVs), Carbon Capture & Storage Systems etc.		✓	✓		
	• Infrastructure Development, e.g., bikes lanes and EV charging etc.		✓	✓	✓	✓
	• Investment in research and technology		✓	✓		
	• Nationalise public transport					✓
	• Education and supporting developing countries	✓				✓
Positive, Good Scenario by 2030	• Adoption of renewables use					✓
	• More people becoming aware of the SDGs	✓				✓
	• National Health Service (NHS) involvement					✓
	• More vegetables and vegan/vegetarian people	✓			✓	
	• Efficient spending on measures			✓		

Infrastructure development policy and programmes in the transition to a Low-Carbon Economy should address sustainable transportation measures such as walking and cycling lanes.

Table 2. Below recaps the STEEP dimensions and the future image of the desirable and possible scenarios for an equitable and just society (SDG 10).

Future Images	Pathways	S	T	Econ	Env	P
Desirable, Positive Scenario by 2030	• Equal access to good healthcare and good education, including cheaper access to cleaner transport	✓				✓
	• Zero discrimination and diversity within businesses (both public and private entities)	✓				✓
	• Better and equitable access to technology/ICT, and guidance on using technology	✓	✓			✓
	• Youth empowerment, including community and political involvement and representation at the top level, e.g., Member of Parliament	✓				✓
	• Tackling income inequality, gender pay gap and youth having role models amongst the different cultures in societies	✓			✓	✓
	• Equal criminal justice system and tackling racism, homophobia etc.	✓				
	• Cheaper and accessible transport system				✓	✓
	• Zero pollution, green transport and recycling					✓

Table 2. Cont.

Future Images	Pathways	S	T	Econ	Env	P
Positive, Good Scenario by 2030	• Equal punishment for all gender across race and criminal justice system	✓				✓
	• Improved quality of the transport system					✓
	• Improved knowledge access to technology and communication		✓			
	• Increase in diversity and income inequality, including racial representation in the workplace, schools etc.	✓				
	• Opportunities for apprenticeship			✓		✓
	• Climate change education and environmental pollution awareness creation	✓				✓
	• Strict environmental rules and incentivising pro-environmental behaviours/attitudes				✓	✓

Policy measures towards a positive equitable and just society are to ensure strict environmental rules and incentivising pro-environmental behaviours/attitudes within marginalised communities.

Table 3. Below, summarises the key themes for the desirable and possible scenarios, including their STEEP dimensions.

Future Images	Pathways	S	T	Econ	Env	P
Desirable, Positive Scenario by 2030	• All energy from renewable sources					✓
	• Efficient production methods and systems		✓			
	• Waste reduction and circular economy business models, including plastics	✓			✓	✓
	• Reduced consumers consumption patterns, i.e., tackling food waste and water scarcity	✓			✓	
	• Charity tax and rooting out corruption			✓		✓
	• International support for Low-Middle Income Countries (LMICs)			✓		✓
Positive, Good Scenario by 2030	• Enforcing and incentivising efficient production and consumption patterns, i.e., tackling food waste and water scarcity	✓		✓		✓
	• Incentivising (rewarding) renewable energy use/sources		✓	✓		✓
	• Addressing corruption at all levels and helping LMICs to prioritise sustainable production and consumption patterns, the introduction of charity tax		✓	✓		
	• Volunteering and efforts to transition to sustainable consumption and production	✓				✓

A 'green' volunteer program dedicated to young people to understand sustainable development, sustainable consumption and efficient use of natural resources.

3.2.1. Transitioning to a Sustainable Low-Carbon Economy

The first future image comes from the group who applied the scenario axes technique to 'transitioning to a sustainable low-carbon economy' (Table 1), addressing air pollution (SDG 3) and

climate change (SDG 13). The measures highlighted echo the UK's commitment to cleaner energy technologies and transport systems aiming to reduce air pollution, as well as reducing emissions towards net-zero carbon emissions by 2050 [51]. This future image's highpoint was increasing public engagement at the local level, including innovative investments and access to diverse sources of financing, if cities and regions are to address climate change (SDG 13) and promote SD solutions.

3.2.2. Equitable and Just Society

The second future image comes from the group who applied the scenario axes technique to 'equitable and just society', addressing reducing inequalities within societies and ensuring no one is left behind. This future image is integral to the WMCA's inclusive leadership pledge to improve skills levels so that all people have the skills and qualifications to access jobs. The equitable and just society future image emphasises equal access to good healthcare and good education, access to cleaner transport and zero pollution. It also highlights tackling discrimination and diversity within business, providing better and equitable access to technology and guidance on using technology, tackling racism, income inequality, the gender pay gap, and youth empowerment identified by participants in this future image (Table 2). This image harks back to the original development of SDG 10 in necessitating a more equal and equitable distribution of resources across all aspects of society [36]. Although we conducted this study before the global COVID-19 pandemic, the pandemic health crisis illuminates the need for an 'equitable and just society'. The COVID-19 situation heavily impacts the most vulnerable and disadvantaged within our communities (e.g., the elderly, those with underlying health conditions, low-income working people, the poor, including vulnerable minority communities), especially within the developed countries such as the UK and the US.

Inadvertently, the equitable and just society image is strikingly similar to a recent DNV GL and UN Global Compact assessment on the COVID-19 crisis and SDGs setbacks, emphasising the need to accelerate both desire and actions if the 2030 Agenda is to be realised [52].

3.2.3. Sustainable Consumption and Production Patterns

The third future image shows the application of the scenario axes technique to 'sustainable consumption and production patterns', addressing the 2030 Agenda's global effort to encourage responsible and sustainable consumption and production patterns. Central to the 'sustainable consumption and production patterns image' are measures emphasising: all energy should come from renewable sources; efficient production methods and systems; waste reduction and circular economy business models; tackling food waste, plastics pollution and water scarcity; a charity tax and rooting out corruption, as well as international support for Low and Medium Income Countries (Table 3). This future image suggests that the youth believe radical changes in human behaviour and lifestyles are required to address significant sustainability challenges. For example, proposed changes include phasing out single-use plastics, promoting a resource-efficient and circular economy, creating a waste-free society, and reducing resource-intensive consumption [3]. The financial requirement of addressing this future image reveals the need for countries to rapidly increase investment in environmental waste management and responsible production and consumption systems.

3.3. Post-Workshop Survey on SDGs Awareness

In a post-workshop survey, when we asked about awareness and knowledge of the SDGs, 100% of the participants' responded to being fully aware of the UN SDGs. All the participants found the scenario development method for understanding the SDGs in action beneficial, which met their expectations of the workshop. We also asked participants the question: How useful do you think what you have learned would be for conversations on sustainability in the future? In response, all the participants also indicated that they would be willing to share with others what they had learned during the ST workshop. Participants' perception of their awareness of the SDGs increased, as 100% of the participants found the workshop extremely useful.

4. Discussion

4.1. Challenges & Opportunities

With a continuing push towards climate action (SDG 13), more equitable and equal outcomes for all (SDG 10), and sustainable production and consumption patterns (SDG 12), roadmaps for localising the SDGs should seek to ensure bottom-up processes in addressing local needs, priorities and expectations [5]. Similarly, to set local SDG preferences, decision-makers should review local and regional programmes to identify the primary requirements, priorities, gaps and cross-sectoral linkages of the territory and their relationship with the SDGs and national importance (ibid). The idea is that bottom-up participatory governance processes via ST and SI will improve SDGs discussion and public policies in pursuit of the 2030 Agenda. The methodology and findings of this study echo the originators of the wicked problem argument that humanity increasingly lives in a time in which planners alone cannot solve societal issues but requires multi-stakeholder approaches [53]. In improving multi-stakeholder decisions and local level SD policy roadmaps, decision-makers should strive to give the public, including young people, an open platform to voice their concerns and vision for the future.

The study reveals that one of the biggest challenges for localising SDGs is the lack of awareness and mechanisms, which would support the development of healthy social capital towards building resilient and sustainable futures. In this study, we show how a scenario thinking approach not only helps frame SDGs and create awareness locally but also provides a mechanism for assessing and mainstreaming SDGs thinking. The insight provided by the future images developed during the workshop showed a common thread of policy measures for the different SDGs. Thus, we hypothesize that although the 17 UN SDGs are distinct, they are also interconnected. Notably, the common themes and main outputs threading through the results/three future images show that to localise SDGs policies and programmes, and 'leave no one behind' by 2030, national and local governments' SD policies should be addressing the following:

- All energy sources to be clean and energy should come from renewable sources
- Investment in technology, research and financial support for all countries, e.g., in adopting low-carbon technologies including sustainable production and transportation measures
- Promoting equitable society at all levels and encouraging multi-stakeholder partnerships to share knowledge and expertise in influencing the 2030 Agenda.

By focusing on a diverse and young sample, this study offers several insights. First, the multi-stakeholder backgrounds of the participants enabled analysis of SDGs future images from different perspectives, which generated a diversity of perspectives and understandings of what 'leaving no behind could mean'. This study affirms the view that recognising the role of SI and leadership from the youth and local actors remains vital in localising the SDGs, as local actors can bring their unique and diverse perspectives to sustainable development projects [54]. Second, the examples of the desirable and positive policy measures derived for the different SDG future images mirror the wide range of interventions regarded as imminent in many global, regional and national strategies. Indeed, several of the proposed actions that emerged in the workshop are not dissimilar to the UK, EU, and UN policy measures addressing climate change and air pollution, e.g., aspects in the UK Ten Point Plan for a Green Industrial Revolution.

Finally, direct engagement with youth in this study reinforces the notion that 'the youth are unwavering in their determination and desire to help build a better future, but would require more tools, greater awareness of the opportunities to get involved and further support to sit at decision-making tables' [55].

The mechanisms (SI and ST) applied in this study delivered several of the desired objectives, raising participants' SDGs awareness and comprehension. The STEEP dimensions aligned with essential characteristics of scenarios thinking, i.e., its capability in empowering individuals to think of

novel sustainability solutions. The results show how applying the STEEP dimensions to an analysis of future images enhances the scenarios development approach by helping identify scenarios drivers that may be customarily overlooked [46].

As there is inconsistency in national and local level SD research on how SDGs are defined, understood, implemented and measured or reported, we can describe localising SDGs as a distinct approach to SI and ST that should involve citizens and decision-makers alike. This study illustrates the relevancy of SI for involving citizens' in local SDGs policies, plans and programmes. Our findings support previous research demonstrating the substantial role of SI at the local level in generating momentum, leading to growing public awareness of novel solutions, bringing forth new forms of organisations in response to policy gaps, and effecting regime shifts at the societal level [15]. Our findings also highlight the concept of community/citizen science, which emphasizes enabling active public participation in scientific programmes actively, and allowing citizens to freely access, and share data [56]. Citizen science enhances cooperation, buy-ins, education and knowledge exchange amongst public, community, academics, government, businesses and civil societies and improves access to scientific data/information. This study shows how outputs from citizen science projects represent a tool for building resilient and sustainable communities in the face of ongoing global crises, such as air pollution, the climate emergency and Covid-19 pandemic.

As future leaders, young people represent future catalysts for change and those who must challenge the status quo and the political BAU scenarios to achieve the 2030 Agenda. By empowering young people to think critically about political and moral issues, we can empower them to attain permanent resolutions and equitable outcomes [36]. In a recent PwC study [57], researchers revealed how board directors support diversity in theory but not in practices. It is clear that changing these practices, by shifting how the next and future generation leaders think, care and have passion for the environment and society (sustainability values), as compared to the current generation of leaders, remains more crucial than ever.

4.2. Assessment of the Theoretical Approach

This study shows how an SI and ST integrated approach offers a possible novel approach that is useful for the examination of societal problems and provides a structure to accommodate different perspectives of plausible futures towards SD. For many participants, it was the first opportunity to work with academics researching within the areas of the SDGs and to hear opposing viewpoints on SD. Almost all stakeholders emphasised how they enjoyed the contemplative nature of the scenario development process and described the approach to be an excellent mechanism to help resolve societal challenges and implement the SDGs. Importantly, this study underscores the attributes of SI for social change, i.e., a process of collective creation in which members of a particular collective unite, learn, invent and layout new rules for social change in collaboration or new social practice. Likewise, taking into account cognitive, rational and organisational skills [58]. The innovative nature of developing future images reveals the indicators and dynamics of the potential capacity of social innovation. An SI approach to SD and localising SDGs enhances the ability to identify and assimilate knowledge (i.e., exploration), underscoring learning capacity versus realised capacity of social innovation. In particular, knowledge acquisition, the ability to make an impact and enabling development and social governance through inclusion and participation of the target population [59].

This study shows the utility of the scenario axes as a useful technique for structuring the unknown, whilst empowering individuals/citizens and decision-makers to become more socially innovative in creating pathways for future sustainability decisions. The application of the scenario axes as a mechanism for SDGs futures studies is beneficial to structure deliberations about SD. Scenario axes technique can serve as a tool for local planning and implementation of the SDGs.

The methodology applied in the study represents a useful analytical toolkit for other countries, including LMICs local practitioners/policymakers, SDGs working groups or task forces, in localising the SDGs.

5. Conclusions and Future Directions

It is critical that the SDGs not become a performative exercise or a failed social experiment. Thus, we cannot be thinking about future SDGs possibilities in abstract forms, instead, would be better with more provocative insights via future images to better understand what the future could be. This paper serves as a guide for establishing the structures, processes, tools and activities that need to be in place to move the 2030 Agenda forward in a coordinated, acceptable and coherent manner. The paper also highlights young people as one particular group of the various actors that must be involved and the partnerships, innovation, designing and investment required to localise the SDGs. Future local-level Agenda 2030 SDGs localisation projects should aim to bridge and strengthen the awareness, engagement and implementation gaps, emphasising robust and bottom-up mechanisms, particularly among the youth.

As the SDGs and targets form a complicated network of interlinkages, SDGs decision-making should follow cross-sectoral and nexus thinking, rather than current sectoral/silo-thinking practices. A cross-sectoral and nexus approach remains essential to achieving coherent local and national SD policies, plans and programmes. These thinking mechanisms help recognize cross-sectorial interactions/interconnectedness between SDGs systems, e.g., a climate action (SDG 12)—responsible production (SDG 13)—cleaner energy (SDG 7) nexus.

We also argue that for the successful localisation of SDGs, future SI research and SD decision-making processes must embrace the bottom-up concept of citizen science. SDGs citizen science projects will become useful for governments, communities, businesses, youth and citizens to access and share scientific data/information and jointly address conflicting socio-ecological and economic demands at a landscape level.

Of course, it is one thing to set a goal and another to plan, implement and achieve it, as influential decision-makers and business leaders can publicly say one thing and do not follow through, or engage in contradictory lobbying. Given this, any proper localisation of the SDGs from local authorities or decision-makers will now require measures addressing:

- i Future-oriented systemic thinking: a holistic view of the SDGs and its approach to local development, i.e., building the know-how and capacity of local actors including civil societies to explore and understand SDGs complex/wicked problems nature. This measure will be useful in identifying and design plausible future scenarios, long-term planning and solutions and understand the systemic linkages inherent in SDG actions across sectors and scales.
- ii Inclusivity & Good Governance: encouraging and enabling multi-stakeholder decision-making, i.e., genuinely engage (formally or informally) with local community groups, minority groups, civil societies, academics, businesses, and financial organisations to jointly develop bespoke local SDGs bottom-up plans, policies, and programmes to—among other things—delineate and set local SD priorities and baselines.
- iii Community Resilience & Sustainability: new regulatory standards and policy incentives to strengthen institutional and fiscal/financial frameworks localising the SDGs, e.g., local government access to international and national public finance and public-private partnerships to implement SDGs mandates. Such investments and collaboration should support: job creation, SDGs knowledge and understanding, economic diversification, ecosystem integrity, intra and intergenerational equity and work towards building community resilience to withstand future shocks, such as the impact of climate change and pandemics, in pursuit of sustainable and thriving communities.

We are running out of time to address the rapidly expanding SDGs wicked problems of inequality, the impact of environmental pollution and climate change experienced within our communities. Thus, to make a real transformative change and to leave no one behind by 2030, we encourage the SDGs Member States across the northern and southern hemispheres to commit, care and act swiftly in this

decade of action. And firm-up individual national and local SD baselines for the benefit of the people, planet, peace and prosperity.

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Appendix A

PRE-WORKSHOP SURVEY

Please complete this survey before we begin the workshop.

What is your age: ____

How would you rate your awareness of the United Nations 17 Sustainable Development Goals?

(Please select your level of awareness and circle only one answer.)

Not at all Aware	Slightly Aware	Somewhat Aware	Moderately Aware	Extremely Aware	No Answer
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I am familiar with some or all of the 17 UN Sustainable Development Goals.

(Please select your level of agreement and circle only one answer.)

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	No Answer
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The UN Sustainable Development Goals are important to me personally.

(Please select your level of agreement and circle only one answer.)

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	No Answer
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The UN Sustainable Development Goals are important for society in general.

(Please select your level of agreement and circle only one answer.)

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	No Answer
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POST-WORKSHOP SURVEY

Please complete this survey after you have finished the post-activity.

How did you find the workshop overall?

(Please select and circle only one answer.)

Excellent	Very Good	Good	Fair	Poor	No Answer
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How useful was the scenario development method for understanding the Sustainable Development Goals in action?

(Please select and circle only one answer.)

Not at all Useful	Slightly Useful	Moderately Useful	Very Useful	Extremely Useful	No Answer
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How useful do you think the scenario development method would be for conversations with other people in your life?

(Please select and circle only one answer.)

Not at all Useful	Slightly Useful	Moderately Useful	Very Useful	Extremely Useful	No Answer
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How useful was the background material on the Sustainable Development Goals?

(Please select and circle only one answer.)

Not at all Useful	Slightly Useful	Moderately Useful	Very Useful	Extremely Useful	No Answer
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How relevant did you find the contents of the scenario development exercise?

(Please select and circle only one answer.)

Not at all Relevant	Slightly Relevant	Moderately Relevant	Very Relevant	Extremely Relevant	No Answer
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What were your expectations for this workshop?

Did the workshop meet these expectations? Yes:___ No:___

Were the objectives of the workshop clear? Yes:___ No:___

If no, why not?

How would you rate your awareness of the United Nations 17 Sustainable Development Goals?

(Please select your level of awareness and circle only one answer.)

Not at all Aware	Slightly Aware	Somewhat Aware	Moderately Aware	Extremely Aware	No Answer
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The UN Sustainable Development Goals are important to me personally.

(Please select your level of agreement and circle only one answer.)

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	No Answer
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The UN Sustainable Development Goals are important for society in general.

(Please select your level of agreement and circle only one answer.)

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	No Answer
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Meeting the UN Sustainable Development Goals can help solve environmental issues.

(Please select your level of agreement and circle only one answer.)

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	No Answer
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Meeting the UN Sustainable Development Goals can help solve social issues.

(Please select your level of agreement and circle only one answer.)

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	No Answer
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Meeting the UN Sustainable Development Goals can help solve economic issues.

(Please select your level of agreement and circle only one answer.)

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	No Answer
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What were the three most important new things you learned today?

Do you think the topics and discussions from the workshop will help make you a better leader in the future? How so?

Is there anything we could have done better?

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