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Relating social inclusion and environmental issues in botanic gardens

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Abstract

Botanic gardens have been evolving, responding to the changing needs of society, from their outset as medicinal gardens of monasteries and university gardens to more recently as organisations that contribute to the conservation of plant genetic resources. Considering that social and environmental issues are deeply intertwined and cannot be tackled in isolation from one another, a new challenge is now presented to botanic gardens: How can they redefine their purpose and expand their current roles in conservation, research, amenity and education in order to continue to be socially relevant? Empirical data regarding the impact of pilot community projects run by four UK botanic gardens show how it is possible in practice to address social, economic, political, neighborhood, individual, and group dimensions of exclusion whilst achieving public participation in plant conservation. This paper presents the evaluation results regarding the outcomes of the Communities in Nature initiative which illustrated how botanic gardens can grow a social role and be socially relevant institutions that engage with their communities and address issues of social and environmental importance. Recommendations suggest that addressing social issues should target addressing the causes of exclusion as much as the effects.

Introduction

Botanic gardens are by definition multidimensional institutions *'holding documented collections of living plants for the purposes of scientific research, conservation, display, and education'* (Wyse Jackson, 1999, p.27). The origins of modern botanic gardens can be traced back to the medicinal gardens of monasteries, university gardens, and gardens that were set up to support the expansion of Empires (Sanders, 2004). More recently, because of the dramatic human impact on the environment, botanic gardens have a motivation to adjust their functions by contributing to plant conservation (Heywood, 1987). Many scientists argue that we are entering the sixth great mass extinction and that anthropogenic climate change is one of the major threats to global biodiversity (Maclean and Wilson, 2011). Moreover, recent analysis has revealed that global plant life is at risk mainly due to man-induced habitat loss, with one in five plant species threatened with extinction (KEW, 2010).

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In line with the Convention of Biological Diversity (CBD), many botanic gardens are committed to promoting education and awareness about plant diversity and the need for its conservation. According to CBD's (2010) Aichi Target 1, by 2020 all people need to become aware of the values of biodiversity and the steps they can take to conserve and use it sustainably. Although botanic gardens worldwide run a range of education and community programmes, Dodd and Jones (2010) point out that according to research many of these are only relevant and accessible to a particular section of society, which is often identified as white, middle class, older visitors. Large sections of the public do not visit botanic gardens and certain groups often perceive gardens as exclusive and elite institutions (ibid). David Rae (2012) from Royal Botanic Garden Edinburgh argues that there is no point in addressing sustainability issues by engaging with only 5% of the population, 'so we've got to find new ways of reaching people who don't naturally visit the garden.'

Considering that environmental issues[1] do not exist in a vacuum and that they are intertwined with people's daily lives, botanic gardens are now encouraged to reach broader segments of society and "grow a social role" (Dodd and Jones, 2010; Rose, 2012). Growing a social role entails developing their commitment to working with their local and global communities on common issues of social and environmental importance, for the enduring benefit of those communities, the gardens themselves, and towards a sustainable future for our planet (Vergou and Willison, 2013).

Historically the environmental movement including the environmental activism resulting from Carson's Silent Spring was a white, middle-class affair. This was also illustrated by the lack of diversity in the staff of environmental organizations many of which traditionally resisted linking environmental and social justice issues (Taylor, 2000). Grant (2001) suggests that socially excluded groups may feel disengaged from environmental problems and consider them as irrelevant to their circumstances. Moreover, 'the capacity of socially excluded groups to contribute to the resolution of environmental problems may be diminished both by the resources available to them and their lack of engagement in society…What is important is that

[1] the word 'issue' is used to mean that which generates a concern and is at least potentially problematic for the environment (see Summer et al., 2000).

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policy solutions are developed in a way that is sensitive to the needs and priorities of socially excluded groups' (ibid, p.84). Engaging excluded groups in resolving environmental problems should be seen not only as an act of abiding to environmental policies but as a process that enables the groups to participate in decision making. This requires they are given the appropriate resources, knowledge, and power (Pellow, 2000). Judy Ling Wong (1999, p.3), Director of Black Environment Network which was established in the UK to promote equality in the conservation of the environment with respect to ethnic communities highlights:

> They are typical of hundreds of thousands of people who are unlikely to contribute to the care of nature... They have no access to the enjoyment of the wider environment. They have no information or resources for action. They have no influence over the qualities of the immediate environment in which they live. As a consequence of living in some of the worst local environments, we should note that many of our ethnic communities retain an untapped drive to improve the quality of the environment.

The discourse on environmental justice has emerged from the need to unveil the links between social and environmental problems. In particular, it has been found that socially excluded groups face disproportionate impacts from environmental hazards, and that there is environmental inequality by income, race, and ethnicity. It is often the case that disparities in income and quality of life are associated with environmental inequalities. Therefore it can be said that environmental inequalities are embedded in the social system (Pellow, 2000, Damayanti and Bell, 2008, Haluza-DeLay and Fernhout, 2011). Jennifer Schwarz-Ballard (2012) from Chicago Botanic Garden explains:

> While it may not always be obvious, issues of social equity are intimately interwoven with environmental issues in the sense that underserved communities often have insufficient or deteriorating infrastructure, reduced access to natural resources such as fresh food or water, clean air, and green space, and lack high quality social services such as health care and education. As botanic gardens work with communities to develop locally relevant programs, it is entirely appropriate to tie in environmental issues that are connected to the needs that the community has identified. In fact, communicating about sustainable practices in pursuit of something that is

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important to the community is far more likely to have a lasting impact than conservation messages outside of a meaningful context.

There are already botanic gardens worldwide that have a well-established social role and address social and environmental problems. Chicago Botanic Garden has 30-years experience in engaging low-income urban communities through gardening and science education and Kirstenbosch *National* Botanical Garden has a long history in supporting townships in Cape Town to turn wasteland into market gardens. Whilst much good work is being done, botanic gardens can do much more provided they address the factors that inhibit them to redefine their social purpose. These include lack of capacity and skills, workforce with limited diversity, management hierarchy, limited funding, and lack of evidence of gardens' impact on community (Dodd and Jones, 2010).

Botanic Gardens Conservation International (BGCI), an organization focused on plant conservation, set up the Communities in Nature initiative to enable botanic gardens to increase their social relevance by piloting and evaluating small-scale community projects. This paper reports on the evaluation results of four UK pilot community projects run by University of Leicester Botanic Gardens (ULBG), Royal Botanic Garden Edinburgh (RBGE), Westonbirt, The National Arboretum (Westonbirt) and Bristol Zoo Gardens (BZG). By reporting on these pilots, this paper aims to provide evidence of how botanic gardens can address environmental and social inclusion[2] issues by growing their social role and working with their local communities. The paper will not only present the impact of this work but also discuss the challenges this process may entail.

Evaluation design

The evaluation used a qualitative case study methodology[3] which emphasises words rather than the quantification of data, has a focus on natural settings, an interest

[2] Cameron (2006) explains that social inclusion is usually defined with regards to social exclusion which according to Walker and Walker (1997, p.8) 'refers to the dynamic process of being shut out, fully or partially, from any of the social, economic, political and cultural systems which determine the social integration of a person in society'.

[3] The term methodology refers to the choices made as part of conducting the evaluation i.e. identifying the appropriate forms of data, which cases to study, methods of data gathering and

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in people's perspectives and an emphasis on process; how things happen and develop (Cresswell, 2008; Bryman 2004). The case study methodology was a pertinent choice as it allows in-depth investigation of a contemporary phenomenon, involves multiple sources of evidence (Yin, 2009; Stake, 1995) and has been used in previous studies of gardens' community projects (e.g. Urbis Keys Young, 2004; Dodd and Jones, 2011).

The case study methodology does not provide findings that are generalisable, rather it offers transferable findings that other gardens around the world may be able to relate to. Lincoln and Guba (1985) point out that transferability involves showing that the findings have applicability to other contexts. Although gardens around the world are established in different contexts, and may have a different history, they all share common characteristics as organisations and have similar mission and objectives. By providing sufficient information about the case studies, through the evaluation, i.e. community projects run by UK botanic gardens and their impact on the participants, the aim is for other garden staff to be able to relate to 'the case' and identify commonalities in their own practice or become inspired to change their practices by the cases. By demonstrating what aspects of the community projects work well, other garden educators and leaders of their organizations may be encouraged to adopt and implement these in their work.

Communities in Nature also employed a utilization-focused evaluation, which according to Patton (2008, 37) is evaluation done for and with specific intended primary users for specific, intended uses. It is designed and conducted taking into consideration how people will apply the findings, to improve their performance and inform their decisions. Patton suggests that by engaging the users of these findings at the beginning of the evaluation process it is more likely that they will feel ownership over them and apply the findings in their practice. Communities in Nature projects' evaluation findings were intended to be used by the botanic gardens staff to improve their practice in future community projects as well as being used as evidence of the impact of their work for future fundraising purposes. The principal evaluator of Communities in Nature was the main author of this paper, supported by the co-author who had a consultation role. Both authors, BGCI staff, were also coordinators of the

forms of data analysis (see Silverman, 2006). The term methods refers to the specific tools or techniques that were used to collect, analyse and interpret the data (Bogdan and Biklen, 2003)

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initiative which involved bringing together the partner gardens, organizing training for their staff, and overseeing the community projects' progress. Issues related to what Nickerson (1998) describes as confirmation bias, because of the evaluators' dual role in the project, will be discussed in the next section.

In order to enable the garden staff to feel ownership of the evaluation process, they were presented an initial evaluation framework during the setting up period of their projects. The gardens were given the responsibility of collecting some of the evaluation data, tailoring the suggested evaluation methods or even deciding new methods depending on the community groups' skills and understanding. The garden staff were also engaged in interpreting and discussing the data, and commenting at the end of their projects on the appropriateness of the evaluation methods.

The data collection methods comprised (see also table 1 for an overview of the methods and the data collection timeline):

(1) a one-day observation visit to each project which allowed the evaluator to witness the experiences of the participants first-hand, look at the projects' progress, and establish rapport with the community members.

(2) semi-structured interviews (individual or focus group) at the end of the projects with key garden staff and community members. As Punch (2005) suggests interviews provide access to people's perceptions, meanings, and is one of the most powerful ways for understanding others. Consideration was given to the abilities and needs of each community group. For example the focus group interview with adults with learning disabilities was facilitated by a language therapist.

(3) evaluation cards which collected participants' views before and after each project in relation to how they feel about the botanic garden and the social and environmental issues the projects addressed. This method was not as effective as it was originally anticipated and was substituted in some cases by concept mapping, post-it comments on a board, and audio recordings.

(4) open-ended questionnaires which collected feedback from community groups that participated in one-off events in the gardens. Due to the limited contact time with these groups and the limited resources this was the more appropriate method to collect data.

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[Table 1: Overview of the evaluation design (methods and timeline)]

The data were interpreted using thematic analysis methods which, according to Braun and Clarke (2006, p.86), involves 'searching across data to find repeated patterns of meaning.' As the data started to fall into codes and then into more general themes there was an increasing need to either develop or find a framework that would allow one to make better sense of the impact of the projects. Looking at the literature at that point enabled the evaluators to use and combine frameworks and concepts from the environmental and social inclusion fields resulting in the framework of analysis on social inclusion and environmental issues. The framework will be explained following the description of the Communities in Nature case studies.

Criteria for establishing the rigour of the evaluation

In order to ensure the credibility of the evaluation which according to Cohen et al. *(*2005) concerns whether the findings accurately represent the phenomenon under study triangulation and respondent validation were applied. Two types of triangulation were used i.e. triangulation of data and methods. Triangulation demonstrates how various means were used to arrive at the findings and support the evaluation claims. It is not regarded as a way to get to the truth, but as a strategy that adds rigor, complexity, and richness to the inquiry (Denzin and Lincoln, 2000). Data triangulation was applied by collecting data around the same events i.e. community project activities from different people (i.e. garden staff, participants, and community leaders) while method triangulation was applied by using different tools to collect data i.e. interviews, observations, questionnaires, and evaluation cards. The combination of the different methods provided a basis for checking interpretations or checking that my interpretation matched and reflected the participants' views and attitudes, although that is not always feasible or even desirable (Hammersley and Atkinson, 2007; Wellington, 2004). Respondent validation involved checking some of the findings with the stakeholders of the evaluation (see Stake, 1995; Bryman, 2008). For example, the principal evaluator discussed the data and findings from the observation visits extensively with the garden educators and community group leaders.

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Considering that objectivity is not possible i.e. social reality is not independent but socially constructed and it can have multiple meanings (Robbotom and Hart, 1993) the evaluation also aimed to fulfill the criterion of confirmability i.e. to minimize potential biases because of the evaluator's personal values and influence on the participants (Bryman, 2008). One of the ways to avoid bias due to personal values and position of the evaluator was by applying the aforementioned triangulation techniques. In addition, the evaluator checked whether their presence had an influence on the participants' behavior during the community engagement activities and responses to the interviews a phenomenon described by Hammersley and Atkinson (2007) as reactivity. In order to minimize reactivity the evaluator conducted the interviews with the participants after having spent some time with them during the evaluation visits. That way the participants felt more relaxed during the interviews and were more willing to provide feedback. Moreover, at the beginning of the interviews it was highlighted to all the interviewees (community members, garden staff, and partner organization staff) that the purpose of the evaluation was to improve the way botanic gardens develop their work with communities and that all the data would be treated with confidentiality. This clarification made the interviewees more open in terms of providing both positive and negative feedback rather than feeling anxious that they had to please the evaluator with their responses.

With regards to minimizing the evaluator's bias in the data analysis, preliminary findings of the evaluation were presented to and discussed with an external consultant, academic staff from the Research Centre for Museums and Galleries, at the University of Leicester in the UK. The consultant has been involved in previous activities of the initiative, including evaluating gardens' community projects, and provided an outsider perspective confirming the findings and even adding a new dimension to the data. For example, the consultant highlighted the importance of including participants' feedback related to aspects of the projects that need improvement in the evaluation report (see last part of the evaluation findings and discussion that refers to feedback from the Feel Green project participant). To our surprise, the consultant also commented that the botanic gardens involved in the evaluated projects showed evidence of a high degree of commitment to developing their social role in comparison to previous projects also funded by the Communities in Nature initiative.

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Evaluation findings and discussion

Having explained the background of the Communities in Nature initiative and the evaluation design, this paper will now continue by presenting the evaluation findings. The case studies of the evaluation will be described followed by the presentation of the framework of analysis, comprising an overview of the findings of the research. The data will be presented and discussed in four parts. Each part exemplifies the different ways that the community projects addressed simultaneously social and environmental issues. These can be summarized as:

- Addressing political and neighbourhood exclusion and enabling participation in plant conservation
- Addressing social and economic exclusion and achieving individual behavioural change
- Addressing individual and group exclusion and raising awareness of plant conservation
- Addressing individual and group exclusion but not environmental issues

These parts can be also regarded as the major themes emerging from the analysis and what follows is a rich description of how data from each of the four cases supports these themes.

Communities in Nature case studies

Westonbirt, The National Arboretum, ran the Hidden Voices project aiming to engage with communities that are underrepresented in its audiences and use a collaborative approach to develop a shared understanding of trees and what they mean to society. Westonbirt involved 112 participants from three community groups including Awaz Utaoh (AU) - 'Raise your voice' an Asian women's group that tackles issues of poverty, isolation, and domestic abuse, Bristol Drugs Project (BDP) an agency that supports drugs users, and the Stroud Macular Disease Society that supports older people with visual impairment. Each group visited Westonbirt on a monthly basis for six months followed by a final celebration. Garden staff and

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community members shared responsibility for the sessions which were tailored to the needs of the groups and ranged from sustainable woodland management practices to gardening, tree-based crafts, and food related activities.

University of Leicester Botanic Garden (ULBG) ran the Feel Green project in partnership with Mosaic, a disability services for adults. Feel Green aimed to provide horticultural and environmental workshops for a wide range of people with disabilities and involved four groups with 28 adults in total and their carers. Four workshops were developed focusing on horticulture, plant uses, the environment, and art. Over a period of three months each group participated in two full-day workshops at the garden and a celebration day which brought all the groups together.

Royal Botanic Gardens Edinburgh (RBGE) ran the Edible Gardening project (an expansion of a pre-existing initiative) which aimed at engaging with hard to reach audiences from deprived areas by teaching them horticultural skills and how to live a sustainable life. In total 23 young people from four community groups were involved in the project with their group leaders and volunteers. The two main groups were from the Broughton High School - More Choices, More Chances (MCMC), an initiative that supports young people who do not attend school regularly, and the Rock Trust, an organization that tackles youth homelessness. Over a period of five months the two groups visited RBGE on a weekly basis planted up and maintained their plots, harvested, prepared, and ate their crops. In addition, upon special request two further groups attended one-off training on how to establish and maintain their community gardens.

Bristol Zoo Gardens (BZG) under their project, Bristol Community Plant Collection, aimed to pilot a model for a dispersed national collection of hardy annual garden plants established by community groups. Plant Heritage, the organization that coordinates national plant collections identified the need for hardy annuals collections thus the project focused on *Calendula* spp. (marigold). Approximately 100 people were involved in this project from 9 community groups including primary schools, sheltered housing for residents over 50, a care home for people with dementia, and a community garden. During a six-month period the groups, after appropriate training, grew and propagated marigolds, provided plants to BZG for display, and participated in a celebration event.

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A framework of analysis on social inclusion and environmental issues

The Communities in Nature projects varied in terms of the types of social exclusion they addressed and the level of public engagement in environmental issues they achieved. This variation is illustrated in a framework of analysis (figure 1) which was developed based on a typology of social exclusion (see Percy-Smith, 2000) and ideas around and categorization of environmental learning and participation (see Scott and Gough, 2008; Reid et al., 2008).

Using symbols (see key in figure 1), the framework of analysis specifies which of the following social exclusion dimensions the projects addressed:

- economic (for example, long-term unemployment, income poverty)
- social (for example, homelessness, crime, disaffected youth)
- political (for example, disempowerment, alienation from political processes)
- neighbourhood (for example, decaying housing, environmental degradation)
- individual (for example, mental and physical ill-health)
- group (concentration of the above characteristics in particular groups: elderly, disabled, ethnic minorities).

Using a spectrum, the framework also depicts the different levels of community engagement in addressing environmental issues which ranged from enabling participation in conservation activities and behavioural change to developing a connection with nature and raising awareness for plant conservation. It should be noted that in some of the cases the gardens within the same project engaged different groups in different activities resulting in differences of the project impact on participants. Following is the presentation of case studies which demonstrate impact in relation to particular dimensions of social exclusion and engagement in environmental issues. The analysis will also discuss the characteristics of the projects that achieved particular impact and why, in some cases, the projects were not successful.

[Figure 1: Framework of analysis on social inclusion and environmental issues]

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Addressing political and neighbourhood exclusion and enabling participation in plant conservation

Bristol Community Plant Collection addressed issues of political and neighbourhood exclusion as they enabled individuals and their groups to become more involved in their communities and exercise their citizenship skills. By encouraging participants to work collaboratively and make joint decisions, for example in establishing community gardens and beautifying their surroundings, new community networks were established and existing networks reinforced. These unexpected outcomes were achieved because the gardens' staff responded to the participants and their groups' needs rather than continuing with their original project plans. Flexibility has been identified as one of the skills botanic garden staff need to have when working with communities. This was found to be the case in all four projects not only in the implementation phase but also explicitly mentioned during the gardens' staff interviews.

The Bristol Community Plant Collection's impact was strong in bringing the groups together and developing their confidence and skills to improve their surroundings. There were three elements in this project that contributed to community participation in decision making: 1) the project brought together the community members around a common action i.e. growing and saving seeds of *Calendula spp.* for plant conservation, 2) the group received continuous support and advice from BZG not only for growing the *Calendula spp*. but also for greening their environment, and 3) they learnt new skills in propagating, planting, and collecting seeds through training and advice. An example which showcases the project's impact on community cohesion comes from Chard Court, a complex of 32 flats in the south of Bristol for people over the age of 55. Rose[4], a resident of the complex explained:

> [the project] brought everyone together because we are all about the gardens now and the plants which are growing. Before we would all just be in our flats; …but now we all get together for our cups of tea and coffee, and we all do our little bits of our gardens, and we discuss it…I also think it helped

[4] For confidentiality reasons the names of the project participants quoted in this paper have been changed.

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> us to get things done in here…You got to keep on to the Council to get things done…we were really pushing it for those bushes to come out. Eventually we got it…and I know this is something we achieved as a group.

Rose's account of the impact of the project shows how the project became the glue for people (community and group cohesion) and how this gave them more confidence in their negotiations with the Council to make decisions for their own neighbourhood. Community cohesion, a feeling of neighbourliness, working towards a common goal, and creating opportunities and spaces for people to meet are all benefits that have been also reported in research and evaluation studies of other community gardens projects (see Firth et al., 2011; RHS, 2011).

Bristol Community Plant Collection was also successful in addressing individual and group exclusion issues by increasing participants' self-esteem and contributing to their mental health and wellbeing. For example, for the Upper Horfield Community Gardening Club members their participation in the project "elevated their awareness of the gardening club could do other than grow just veg,…built confidence in people, and made them feel more integrated and more useful within their local community", and gave the opportunity to older people to demonstrate that "they have a lot to offer, a lot of knowledge…and a lot of experience" (comments from Mary, the group leader).

Whilst addressing issues of political, neighbourhood, individual, and group exclusion it is also possible to achieve active participation in addressing environmental issues (see figure 1 for a visual depiction of the impact of the project). Bristol Community Plant Collection shows that conservation and sustainability is not an exclusive activity for policy makers and experts and that communities can also get involved and exercise their citizenship skills. The community groups received training and established a plant collection of *Calendula spp*. in their local surroundings. Participants from Chard Court said that they hope they had "made a difference" with what they "had achieved for BZG" and that it was "nice to know that they were part of it." They also appreciated that this project gave "the bottom people experience" and was not implemented by experts. Mary explained: "normally it is something that other people are doing. For me it is great that they are saying, well, they are going to see if people in sheltered accommodation would like to do it."

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Similarly to Bristol Community Plant Collection, Hidden Voices and especially Westonbirt's work with Bristol Drugs Project (in which the participants did practical woodland management) shows that it is possible to address dimensions of political, neighbourhood, individual, and group exclusion and enable participation in plant conservation (see figure 1). However, the concept of public participation and how it is operationalized in environmental conservation activities has been criticised. Reid et al. (2008) point out that in some participatory projects experts may impose solutions to the problem without the consent of the target groups while in other cases the target groups are given maximum autonomy with minimum input by the experts; therefore the concept of participation can become tokenistic especially if the participatory actions are fulfilling a donor's or political requirements. Reid et al. (2008) suggest that the facilitators of participation and participants both cede control and offer transparency in their working arrangements and practices. Moreover, it should be taken into account that there are different levels of participation ranging from consultation and being involved in decision making to synergy (see Reid and Nikel, 2008).

Bristol Community Plant Collection adopted a top down approach in the project by predetermining its aims, processes, and outcomes at the beginning and then engaging the community groups in the activities. However the participation in this project should not be regarded as tokenistic. During the progress of the project, BZG staff by being flexible and by developing a closer relationship with the community groups enabled participants to shape the project based on their interests. For example, the residents of Chard Court Sheltering accommodation decided to do an experiment with the *Calendula spp*. and test the growth and flowering of the plant in different conditions. On the other hand, Hidden Voices is an example of a bottom up approach which allowed the participants from the beginning of the projects to express their preferences on what conservation activities they would like to focus on. Provided those who facilitate participation are willing to listen, are committed to both addressing environmental and social inclusion issues, and are flexible then genuine participation is possible no matter if it is embedded in the beginning of the project or if it grows inherently as the project develops.

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Addressing social and economic exclusion and achieving individual behavioural change

The project most concerned with addressing issues of the social and economic dimensions of exclusion (e.g. issues of exclusion from the labour market, homelessness, and disaffected youth, see Percy-Smith, 2000) was RBGE's Edible Gardening project. The project engaged with young people who have a background in or are at risk of homelessness and often lack support networks (participants from the Rock Trust) along with young people who are not very academic, struggle in social situations, and do not attend school very often (MCMC group).

The project offered a real life experience of what it means to grow your own food and a sense of what a gardener and horticulturalist's work entails. Considering the challenges that both groups experienced and despite the issue of low attendance, the Edible Gardening project did seem to have a significant impact. Stephanie, the MCMC teacher, explained that the project was a way to entice students to attend school and while the "first time they [visited the garden]…they were really quiet and they didn't really like speaking to strangers", later on "they really grew and…enjoyed going and some of them…realised that maybe that could be a job that they could do…gardening." Similarly, Mark, one of the Rock Trust participants commented: "since I've come to the garden, I've changed, I want to be a gardener, I'm changed from being a bad boy…[to thinking about] being a gardener, it's keeping me out of trouble and that's it." The socioeconomic impact of RBGE's project, in terms of raising the aspirations and confidence of young people from these groups is in line with the Scottish Government's commitment to eradicate homelessness (BBC, 2012) and its strategy to reduce the proportion of young people not in education, employment or training.

At the same time the Edible gardening project also addressed issues of group and individual exclusion. In particular the project had a positive impact on the wellbeing of the young people who learned how to grow and cook fresh produce for the first time. They tasted vegetables they had never tasted before, some of them started growing edible plants at home, and also took the fresh produce to share with their families. Research has also pointed out that social interaction during gardening, and preparing and eating vegetables may influence young people's food consciousness and eating habits, and when young people grow food to bring home

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they carry the positive interactions home from the garden (see Libman, 2007). Considering that Scotland has a poor health record attributed to unhealthy eating habits, (The Scottish Government, 2010) and that the diet of these young people consists of prepackaged food due to their convenience and low cost, the impact of the project was significant. Benefits to the health and wellbeing of the community as a result of engaging in gardening projects with botanic gardens have also been reported in other cases such as the Community Greening programme run by the Royal Botanic Gardens Sydney (Urbis, 2004), and the Urban Veg project run by the Winterbourne House and Garden (Dodd and Jones, 2011).

The Edible Gardening project not only addressed issues of social exclusion but also addressed environmental issues by advocating and promoting individual behavioural changes (see figure 1). Heimlich and Ardoin (2008) point out that many environmental educators make the mistake of focusing specifically on behavioural outcomes rather than the steps required to reach those outcomes. They also suggest that in order to change behaviours we must consider each of the individual behaviours and actions that add up to the larger environmental behaviour we want to encourage people to undertake. Teaching skills can be one of the ways to change behavior. Following that viewpoint, the Edible Gardening project, aimed to change individual behaviours by teaching young people how to live more sustainably and how to grow their own food using environmentally friendly practices. Heather, the person responsible for the project, explained:

> We talked broadly about…local and seasonal food,…composting in relation to producing waste that goes to landfill and recycling,…and using water from the water butts, rather than taps...so it was kind of running a vein through the whole project and obviously we don't use any chemicals in the gardens...I think next time, I'd try and make that more explicit.

Despite the environmental issues not being explicitly discussed, the young people were able to articulate what it means to live more sustainably. Ruth, a Rock Trust participant and a single mum with two young children, reported that growing your food "saves money" and "less will go to waste" and "it will taste better from you growing it, than buying it out of the supermarket." What was lacking from the young people's responses was an acknowledgement and understanding that their individual behavioural changes can be part of a bigger food movement which as Walter (2013)

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suggests provides alternatives to industrial food systems, to consumerism, technologies of heavy pesticide, and chemical fertilizer use, and to genetically modified plants. The lack of acknowledgement by the young people that their actions can be part of a wider social movement can be possibly attributed to the concern of the garden educators of being too political and prescriptive. Rose (2012) Communities Project Manager of the Eden Project, UK also expressed similar concerns:

> Environmental issues can be easily embedded in community gardening projects and often come up in discussion when doing a seemingly unrelated activity, digging up a leek for instance can lead to conversations about the use of pesticides vs. organic growing, food miles or climate change. We find it's best not to be preachy or negative but focus on the positive contribution people can make to the environment; looking after plants is after all a great place to start.

Addressing individual and group exclusion and raising awareness of plant conservation

Hidden Voices work with the Asian women's group has been particularly successful in terms of addressing issues of the individual and group dimensions of exclusion (see Percy-Smith, 2000). In particular the project increased the group's self-esteem and contributed to their physical and mental health. Aasha, the leader of the group, pointed out the importance of that impact considering that the women face complex problems in their lives, have experienced domestic violence, are isolated and have mental and physical health issues. Rosemary, Westonbirt staff, explained how the women's confidence grew gradually:

> We could never have asked that group…to go off on their own in the first visit or two, because they were so nervous about walking and how far to walk and getting lost, so I'm delighted that they feel confident enough just to go off and wander, it's just brilliant.

Nabhitha, one of the participants who had been suffering with depression said at the end of the project: "I wandered if they could open [Westonbirt] for the night so we could stay for camping,…and we can cook there, and …eat there. Spend a

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night as well." The women felt also proud of the skills they developed when doing craft activities which they then took back in their communities to transfer to their friends and families.

Literature on the social inclusion work of museums (Sandell, 2003; Hooper-Greenhill et al., 2000) has identified enhanced self-esteem as one of the outcomes when museums engage with communities, which results in people developing more active, fulfilled, and social lives.

By participating in the Hidden Voices project the Asian women's group benefitted from access to a safe environment which offered peace and beauty away from the inner city of Bristol where all they "see is broken bottles, junk, even in the parks which are open" according to Aasha. Having access to Westonbirt, a place they have never been before, meant gaining access to a place where they felt kindness, welcomed, and appreciated, a place which had a "nice and fresh atmosphere", and a place they felt connected to because it has trees that remind them of their home countries. Udita stated about the visits: "I recognise when we come home, we come back we feel so relaxing as well". A growing body of literature points to the therapeutic role of nature in relation to mental health. Research on adults according to Bell and Dyment (2008) shows that contact with the natural world can provide relief from stress.

The project had also a physical health aspect as it included walks and eating healthy snacks during the day aiming to address issues such as unhealthy diets and low levels of physical activity. These issues have been reported by Gatineau and Mathrani (2011) as pertinent in minority groups who have lower socioeconomic status in the UK, including Asian populations, and are associated with obesity and related conditions such as cardiovascular diseases, type 2 diabetes, and strokes. It was notable that during the project the motivation of the women to go on a walk at the arboretum increased.

The Hidden Voices project's impact on the Asian women's group also included raising their awareness for the importance of trees across the globe and the importance of tree conservation. Westonbirt staff explained that they developed the environmental focus of the visits based on discussions with the group leader and by looking at the group's interests and experience. The activities that engaged the Asian

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Women in exploring the environmental theme included walks in the Arboretum looking at the global trees collection and the management of the site, exploring a range of foods that come from trees, doing craft activities using plant material such as making books and paper, dying fabrics, and making coasters. The group was able to articulate and express their environmental learning which based on Scott and Gough's (2008) categorization included change in values, feelings about the environment, understanding environmental processes, and understanding the need for conservation. One of the participants explained her spiritual connection with the Westonbirt trees: "These trees are our family, I have a bond with them, I talk to them, I can feel them". It was also interesting to see attitudinal changes in the group who after the first visit commented "we've seen enough trees now", later in the project stated "we want to spend more time with the trees" and by the end of the project they were requesting to have free time to explore Westonbirt by themselves.

Moreover, the experiences of the women at Westonbirt stimulated their critical thinking in relation to environmental issues. During the focus group interview the women expressed their appreciation of the biodiversity of trees and pointed out that trees are important to our lives because they support various human activities and because of their aesthetic value. The women also discussed the need for managing plant resources sustainably and the legislation for the protection of trees at Westonbirt and abroad. The women felt that tree conservation was relevant to their everyday lives.

Although the Asian women with their comments indicated their increased awareness of trees and tree conservation, they did not articulate how they could be part of resolving environmental issues such as deforestation and unsustainable use of resources. On the other hand, Bristol Drugs Project participants, who were involved in practical woodland conservation management at Westonbirt, appreciated their active role in conserving species biodiversity. Bristol Drugs Project engagement is a successful example of what Heimlich and Ardoin (2008, p.22) suggest: focusing on developing skills that build on pro-environmental attitudes is a critical step toward changing or reinforcing behaviors. Literature from the Environmental Education field has highlighted that changing knowledge and attitudes towards the environment does not lead to pro-environmental behaviour (Kollmuss and Ageyman, 2002; Heimlich

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and Ardoin, 2008) and based on this argument, raising awareness of the Asian women towards plant conservation cannot be translated in changes in their behavior.

Addressing individual and group exclusion but not environmental issues

Inclusion conveys a right to belong according to Burden and Hamm (2000) and all of the Communities in Nature projects were successful in addressing individual and group exclusion issues, including raising the participants' self-esteem and developing a sense of belonging. As James, member of the SMDS group who participated in Hidden Voices, noted: "Most of all I have enjoyed taking part and feeling part of the show".

This impact has been important for the individuals and their communities and for the botanic gardens as organizations. Widening access and engaging with groups that are at risk of exclusion isn't something that comes naturally to botanic gardens and their staff. Dodd and Jones (2010; 2011) explain that factors that determine who the garden is for and who is excluded, include location, layout, publicity, events, and also the perceptions of the garden in the mind of the public. Westonbirt, ULBG, BZG, RBGE by running small scale projects managed to change the perceptions of the community groups they worked with and enabled them to access their resources. The process the garden staff and their volunteers went through during the Communities in Nature initiative gave them the opportunity to understand the groups' needs and break down stereotypes and prejudices people had.

Working closely with the community groups for a prolonged period of time rather than on a one-off basis is crucial for meeting the groups' needs but it can be a tempestuous process. Westonbirt staff when they initially asked the SMDS group what kind of activities they would like to do the type of responses they got were: "anything you do, we'll be happy with and we really don't mind, everything's wonderful" indicating that the group didn't feel confident or even comfortable to express their wants, likes and dislikes. As a result the group was unhappy by the outputs of some of the craft activities which they felt were 'childish' and not good enough. Rosemary, education officer at Westonbirt explained that "with that group, confidence is a real issue". She also explained how they managed to address that issue:

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> It's just great; having so many visits with them and getting to know them,…getting to know their names, and being able to talk directly to them and knowing their characters and their likes and dislikes…has really helped to move that group's activities on…so we've been able to adapt a few activities based on what they feel happy to do.

Westonbirt's approach was flexible enough to accommodate SMDS groups' interests in the activities and ultimately address issues of social exclusion. However, the activities were not successful in terms of raising awareness or achieving participation in addressing environmental issues. Based on initial discussions with the group leader Westonbirt staff focused the environmental theme of the visits on climate change but during the implementation of the project it became evident that not only was the knowledge of climate change of the group limited but, more importantly, the participants weren't much interested in the subject. An indicative comment from the participants was: "well, we're not going to be alive when the effects of climate change happen, if they happen." Even when the staff tried to bring a simple message about climate change and link the issue to the next generations they didn't manage to arouse any interest from the participants. Rosemary, the project officer reflected on that:

> I think with this group, they would have...got involved more with the theme of trees and how we use them in our lives and therefore, why we need to have the variety of trees…For them, they needed to see how they personally connected [to the environmental issue] and if they personally were not going to connect with the changes of climate change, then that was really difficult for them…We need to meet the groups and develop a more general partnership and relationship with them, to really discover them and what interests them, so that we can find the best way of approaching those environmental issues with them.

Findings from the SMDS case indicate that, in order to raise awareness and/or encourage participation in addressing environmental issues with groups that face social exclusion gardens need to ensure that the environmental issues are relevant to them and that the groups' views are included in the project during its planning phase. This is a process that requires time and relationship building considering that these groups may not be used in giving feedback and expressing their interests and

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expectations from the outset of a project. It should be also noted that findings from the SMDS case agree with findings from the Feel Green project run by ULBG (see figure 1). Feel Green's environmental focus was on climate change and water conservation. There was no evidence that the project managed to engage its participants i.e. adults with disabilities with the particular issues. Retrospectively climate change was regarded as a complicated issue to engage the groups. In addition Feel Green offered two workshops and a celebration day to each group which also meant that there was limited time to engage the participants with the particular environmental issues in a meaningful way. Moreover, in relation to being relevant to the participants' needs, a member of the Feel Green project (young male adult with low communication skills) reported that he would have preferred a younger educator to have led the sessions. This evidence indicates that community projects should carefully consider the profile of the community members they will engage with when deciding who is going to deliver the project activities.

West (2014) has highlighted that research and evaluation literature in environmental education often reports only on the positive outcomes of projects and that practitioners' views of the outcomes may differ from participants'. Communities in Nature evaluation from its outset aimed to report both the positive and negative impact of the projects. Evidence of negative or lack of impact is crucial for improving future community engagement activities at botanic gardens.

Conclusion(s)

The Communities in Nature projects illustrated how botanic gardens can be socially relevant institutions that engage with their communities and address issues of social and environmental importance. Patton (2008) suggests that a utilization-focused evaluation should provide evidence of the impact of a project/activity but also the factors that contributed to this. Similarly, the evaluation findings of Communities in Nature identified not only the benefits accruing from the projects but also the project characteristics those benefits can be attributed to. Moreover, Zint (2013) argues that when incorporated in such ways evaluation can help environmental education programs to better meet their objectives in the future. The framework of analysis on social inclusion and environmental issues (figure 1) is one of the main

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outputs of the community projects evaluation and can also be used to support other gardens to reflect on different ways they can combine addressing social and environmental issues through their work.

The framework of analysis provided examples of projects that engaged with community groups and inspired them to contribute to plant conservation. Bristol Community Plant Collection run by BZG enabled community groups to actively participate in conserving the biodiversity of *Calendula spp*. whilst at the same time the project increased community cohesion, helped the community to exercise their citizenship skills, beautify their surroundings, and increased their confidence. The Edible Gardening project run by RBGE worked with youth at risk and introduced them to careers in horticulture, healthy eating, and increased their self-esteem whilst they also learned how to grow their own food using environmental friendly practices. Caveats were also pointed out when gardens engage community groups in plant conservation; the Hidden Voices project run by Westonbirt was successful in terms of raising the confidence of one of the community groups, supporting their wellbeing, and developing a sense of belonging but failed to stimulate an interest in environmental issues since the focus of the activities on climate change was perceived to be irrelevant by the group.

According to a review of environmental education literature (Zint, 2013, p.305) 'environmental education programs designed to meet the needs of participants from low income or working class backgrounds have the potential to change these participants' as well as their families' behaviours. Communities in Nature evaluation suggests that botanic gardens can engage less privileged groups of the population in environmental conservation provided the activities also address social issues the people face and the environmental issues are relevant to people's lives and experiences

As a concluding remark, botanic gardens and other similar organizations when growing their social role need to consider what sort of social and environmental change they are aiming for. Social inclusion as Burden and Hamm (2000) highlight should not be seen in a narrow perspective of facilitating social cohesion but as addressing inequality. Therefore, the focus of social inclusion projects should be on addressing the causes of exclusion of those members of society who are disadvantaged by specific structural processes. Accordingly staff from the Eden

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Project, a UK based botanic garden, assert that social change needs to be much more radical: 'It's really easy to go on at people to go home and change a light bulb but actually the real problem is how do we change the power station?' (see Dodd and Jones, 2010, p.). Scott (2012) explains that Eden's point of view illustrates a dilemma for botanic gardens when they grow their social role: do they work with individuals and families and help them change how they live or do they work with people to help them collaborate in order to lead to structural and systemic change – whether at community / local / regional / national / international levels? The temptation will always be to do the first because it's easier and people have been schooled to accept the remedial approach. However, the second is more important than the first as it addresses prevention.

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Table1: Overview of the evaluation design (methods and timeline)

Gardens / **Evaluation methods**	ULBG	RBGE	Westonbirt	BZG
Evaluation Visits	05/07/2012 Observation of community group visit to the garden	11, 12/06/2012 Observation of school group visit and community group visit to the garden	10/07/2012 Observation of community group visit to the arboretum	25/06/2012 Visit to the community group sites (a sheltered accommodation, a care home, a primary school and a community garden)
Interviews with botanic gardens staff	11/09/2012 Interview with project responsible 16/07/2012 Interview with garden educator	29/08/2012 Interview project responsible 15/08/2012 Interview with horticulturalist	19/09/2012 Interview project responsible	07/09/2012 Interview with project responsible
Interviews with senior management staff from the gardens	25/09/2012 Interview with garden director	10/08/2012 I Interview with director of Horticulture	25/09/2012 Interview with arboretum director	07/09/2012 Interview with zoo-gardens director
Interviews with community group leaders and members	16/07/2012 Interview with partner organisation leader 16/07/2012 Interview with group leader 16/07/2012 Interview with community members carer (group with disabilities) 17/09/2012 Written feedback	21/09/2012 Interview with school teacher 01/10/2012 Interview with partner organisation project responsible 20/09/2012 Interview with two project participants 19/09/2012	19/09/2012 Interview with community group and individual interview with group leader	04/10/2012 Interview with community group (care home) leader 07/09/2012 Interview with community gardening group leader 07/09/2012 Group Interview with sheltered

Overview of the evaluation design (methods and timeline)
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	from partner organisation project responsible	Interview with project participant		accommodation participants
Evaluation cards	Completed by the project participants (group with disabilities) or their carers at the end of every session	Completed by participants at beginning and end of project	Completed by participants at beginning and end of project	Completed by participants at beginning and end of project
Questionnaires		18/07/2012 Completed by youth group participating in one-off training day 01/08/2012 Completed by community group participating in one-off training day		

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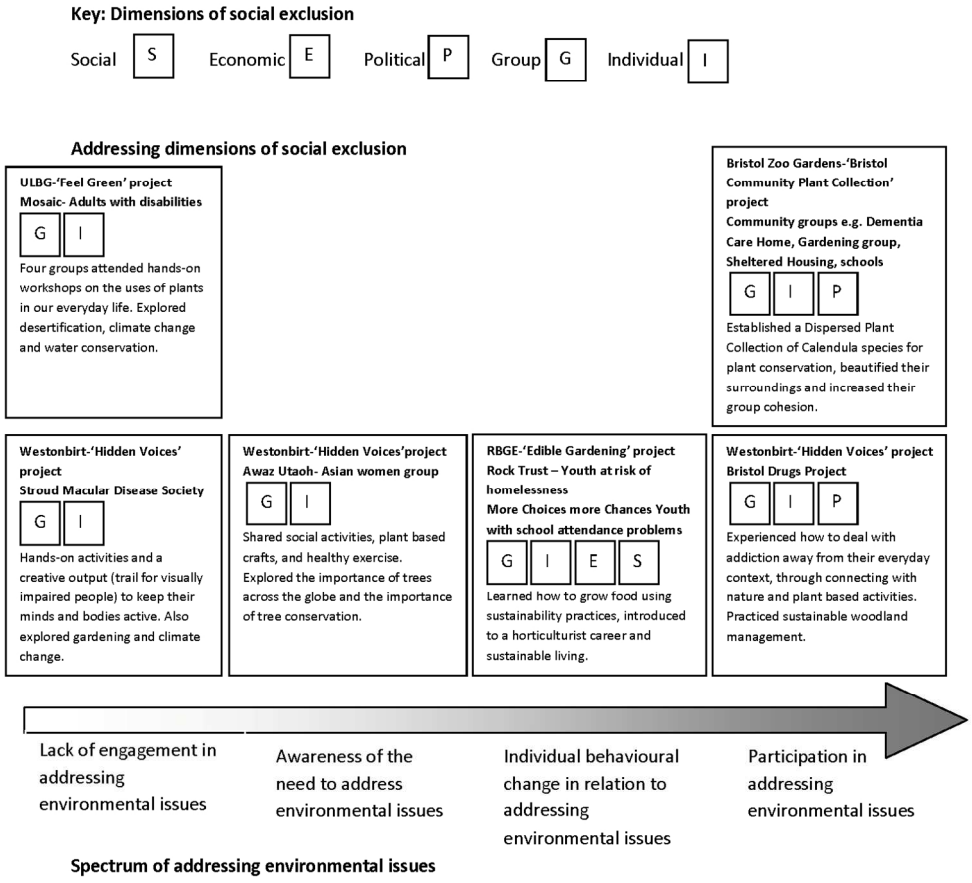

Framework of analysis on social inclusion and environmental issues
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