

Small Initiative, Big Impact: The Case of the Green and Blue Quetta Project

Zainab Gohar
Global UGRAD Pakistan

Jun Yu
University of Louisiana Monroe

Joyce Zhou
University of Louisiana Monroe

Climate change has created several challenges worldwide, especially in developing countries. Recent research on community participation in efforts dealing with climate change indicates a promising direction for communities in developing countries to take. This research is based on the Green and Blue Quetta project, which was led by a resident and involved a team of dedicated volunteers concerned about the city's deteriorating environment due to climate change. Actively seeking participation by residents by the Green and Blue Quetta team and meticulous planning resulted in 10,000 trees planted in and around the city and significantly increased the awareness of climate issues among residents. People of various backgrounds, especially children, received education on climate change and the ways individuals can make their contributions to deal with environmental challenges. It is suggested that the case provides lessons that have implications for future environmental efforts for communities in developing countries.

Keywords: climate change, community participation, Quetta, Green and Blue Quetta

INTRODUCTION

Recently, it has been proposed that community participation in environmental conservation efforts is an important factor in the success of such efforts (Fikret, 2009; Harvey, et al., 2018; Zhang et al., 2020). People's attachment to the place where they live forms the foundation of a positive affective bond between the people and their environment. As Zhang et al. (2020) indicated, this concept can be traced back to early research in human geography and social psychology (Relph, 1976; Tuan, 1977). This line of reasoning suggests that enhanced relationship between residents and their environment could lead to behaviors that benefit the environment, as positive affect plays an important role in behavior change (Shiota et al., 2021). Therefore, educational and training programs that seek to enhance this relationship should be considered as an important part of environmental initiatives. Furthermore, the theory of community participation, which emphasizes residents' active participation in community development efforts (Hubley, 1990; Paul, 1987), indicates that getting residents actively involved in environmental efforts is also highly important in such initiatives. By taking part in environmental initiatives, community members may feel that they take

ownership in them and become more actively engaged in their environmental efforts both during and after the initiative's implementation.

This paper focuses on such an initiative recently implemented in Quetta, Pakistan. With about two million residents, Quetta is Balochistan, Pakistan's largest city and provincial capital. Surrounded by mountains, it is located in the southwestern part of the country. It is close to the country's border with Afghanistan and an important trading center between the two nations. Due to rapid and unsustainable urban "development" with little control and regulation, tree cutting on a large scale has resulted in receding and even vanishing green spaces in Quetta and its surrounding areas. This subsequently led to biodiversity loss and has devastated the local environment. The lack of trees also means bad air quality and loss of habitats for wildlife and indigenous flora and fauna. Water levels gradually decrease in the city and surrounding regions (Rehman, 2022). As such, there is a dire need for the government and the citizens of Quetta working together to address this impending climate catastrophe.

Sponsored by the U.S. Department of State, with funding provided by the U.S. Government and administered by World Learning, the Global Undergraduate Exchange Program (Global UGRAD) brings future leaders to the United States to experience U.S. higher education, gain critical professional skills, and explore new cultures and values. The alumni of UGRAD are eligible to compete for the Alumni Engagement Innovation Fund (AEIF). AEIF is a competitive grant program administered by the U.S. Department of State's Bureau of Educational and Cultural Affairs (ECA). It provides opportunities for U.S. government exchange program alumni to collaborate on projects that address global challenges and promote positive social change in their home countries and communities. AEIF projects typically align with global issues, including education, entrepreneurship, civic engagement, human rights, environmental sustainability, and public health. Alumni propose projects that address these themes and contribute to positive change.

The first author, a UGRAD Alumna, won AEIF grant in 2021 for the Green and Blue Quetta (GBQ) project. Implemented in 2022 and 2023, this project aimed to educate the public, mobilize and train the residents on issues related to climate action, and lead by example by helping planting trees in strategic locations throughout the city and the surrounding areas in order to establish urban forests and restore the forests in the degenerated mountains surrounding Quetta. In short, it aims to set an example of how small initiatives involving local residents can significantly improve the environment. In this research, we study the progress made by this project and its outcomes, and generate insights into community participation in the efforts in dealing with climate change.

LITERATURE REVIEW

Several past studies on dealing with climate change with the focus on a particular locale are relevant to the GBQ project. Lankao (2008) highlighted the pivotal role of urban areas in the context of climate change. As climate change intensifies, cities are at the forefront of its impacts due to their dense populations and economic activities. They contribute to climate change through emissions while serving as centers for innovative mitigation and adaptation strategies. Climate change is expected to increase the frequency and severity of extreme weather events in urban areas, with the impacts varying based on development levels, governance, and socio-economic factors. Both adaptation and mitigation are essential responses to climate change, with urban areas playing a central role in these efforts. For example, African researchers are increasingly exploring climate change adaptation strategies. Lwasa (2010) pointed out adaptation is necessary to build a city's resilience to climate change. Cities face a range of different climate challenges ranging from storm surges, droughts, excessive rainfall, heat waves and cold waves. His case study of Kampala, an inland city that faced an increasing frequency of floods with associated impacts on health and infrastructure, shows that adaptation is urgently needed by city planners and managers and other community stakeholders to prevent future disasters.

Of particular relevance to the current study is Zhang et al.'s (2020) research that underscored the significant role of community participation in eco-environmental conservation in developing nations. Community participation strongly predicts pro-environmental behavior and moderates the relationship

between place attachment and such behavior in China's Nanling National Nature Reserve, providing valuable insights for future conservation efforts. Cloutier and Joerin (2012) found the participatory approach brings out benefits such as mobilizing local stakeholders to find collective solutions. It also makes it easier to focus on common practices in the urban context, which are likely to be altered by changes in mean temperatures, precipitations, etc. Samaddar et al. (2021) used the grounded theory qualitative research methods to survey 50 respondents across five rural communities in climate-change impacted Northern Ghana. Respondents suggested three criteria to evaluate the communities' meaningful participation in the adaptation projects. First, community participation in a climate change adaptation project can be considered successful if the project contributes towards the livelihood security of the residents in the community. Second, project outcomes should be tangible. Third, the project should enhance community members' skills and training so that the community can run a similar project in the future without much dependence on external agencies. Research of this type has significant implications for future efforts involving local participants. However, studies have also shown that practicing social participation in climate adaptation programs is not easy. Braun's (2010) investigation shows that there is little evidence that climate change mitigation actions involving stakeholders have been integrated into development strategies or have been part of social participation schemes in the case studies he conducted. However, some positive examples of climate change mitigation actions in different parts of the world involve local people in 'carbon-neutral' or 'social-carbon' projects.

THE GREEN AND BLUE QUETTA PROJECT

Quetta, in the province of Balochistan, rich in resources, with towering mountains and down-to-earth people, faces severe climate change impacts like droughts and floods. Quetta has been declared prone to drought. As a result of deforestation and tree cutting in the city and the neighboring mountains, Quetta looks like a barren, grotesque concrete mess. Subsequently, it receives less rainfall and the city's temperature is increasing with each passing year. Carbon and pollutants content circulate in the air while concrete buildings and hyper and unplanned urbanization are killing the city's greenery. Air pollution is an acute problem in Quetta. Traffic congestion, mismanagement of solid waste, smoke emitting vehicles and disorganized garbage disposal are further adding to the climate plight of the city. Though the city is suffering from loss of green space, biodiversity, and water shortage, a lot of water is being wasted along with biodegradable waste which could otherwise be utilized for the green recovery of the city. Instead of uniting along this common agenda of climate action, the potential of the communities living in Quetta is marred with sectarian and ethnic differences and people lacking in climate sensitivity.

As indicated in a recent report (Butt, 2022), Quetta is on the verge of becoming dry land. Climate change, low precipitation, and groundwater depletion is putting the lives of the people of Quetta in grave danger. Quetta was once known as the "fruit garden" of Pakistan due to extensive fruit production in and around the city, but is now barely able to provide drinking water to its people. Deforestation and ill-planned urbanization have disturbed the ecosystem of the region. In fact, realizing the urgent need for planting trees, several campaigns were initiated throughout the country (Mengal, 2020). One of those is the Prime Minister's Billion Tree campaign. There are several campaigns in Balochistan. For instance, the Spring Tree Plantation Campaign in districts Harnai, Duki and Kohlu. In Quetta, Different colleges and universities have started independent campaigns, one of which is Clean and Green BMC, a campaign started by the former principal of Bolan Medical College (BMC) who has geared up to plant trees inside the premises of the college. The Helping Hands, an active organization of Bolan University of Medical and Health Sciences (BUMHS), and the Balochistan University of Information Technology, Engineering & Management Sciences (BUIITEMS) both started their projects to help make the city green. The more recent GBQ project is a major part of the effort to improve the overall environment in Quetta.

The name of the project, Green and Blue Quetta, has its special meanings. "Green" represents land-based initiatives like tree planting and urban greenery. "Blue" represents clean air and the restoration of clear skies. The objectives are threefold: community engagement and education, environmental conservation and restoration, and sustainable urban development.

THE GREEN AND BLUE QUETTA PLAN

Given the local dynamics of Quetta that breed a ghettoized mentality of the communities along religious and ethnic lines, this pilot project aimed to put together a multi-ethnic and multi-religious group of citizens to build a unified platform to help recover the lost greenery of Quetta and its neighboring mountains and take further climate actions to transform the city and the region. Once trained and organized, these citizens would plant thousands of trees in their city. Other things to aim for are deploying rainwater harvesting, rational use of wasted water and transforming biodegradable waste into fertilizer. As such, the goals of the project were:

1. Planting shade trees along roadsides and fruit trees in parks and graveyards to restore natural habitats, provide shade to the passersby in scorching summers, and an abode for the dwindling birds of the city.
2. Advocacy Awareness. Series of advocacy, awareness, and sensitization workshops on local environmental issues and ways to resolve them. Plans were made to use art and technology in this endeavor to help engage all concerned stakeholders, including community members, activists, volunteers, government officials, and college students. The objective was to build a unified group of citizenry led by youth whose aim is to recover the lost ecosystem of the city and its surrounding areas by establishing new and expanding green patches and further scaling up.
3. Urban forest development. This dense, thick forest within the heart of the city would not only provide the natural habitat for the endangered indigenous flora and fauna. Still, it would also improve the air quality of the city, acting as a carbon and pollutant sink and a lung within the concrete body of the city. The deep roots of the grown-up trees would function like a sponge and help increase the underground water level.
4. Restoration a historical mountain terrain to its original greenery. Once a mountain is restored it can be used as a sample that can be scaled up with more projects and resources. Combined with rain and snow water harvesting, this would result in recycling wasted water which otherwise gets into the sewage drains. Once the terrain is restored, it will add further to the region's biodiversity.
5. Integrating arts into the project like painting murals, as this is a medium visible to large audiences living in the city and highly receptive to young people.

There would be a significant number of people benefiting from the project. For planting trees in different locations in the Quetta region, people living in these locations, numbering round 100,000, would be direct beneficiaries. Indirect beneficiaries include the tourists, people visiting these roads and parks from other areas of Quetta. The number of indirect beneficiaries would be more than 100,000.

For advocacy awareness, a series of advocacy and awareness workshops and meetings were planned:

- 3-4 awareness workshops
- 3-4 brochures
- A Facebook page to promote the project
- A video documentary
- Murals in key areas of the city
- Engaging blogger/ social media influencers
- Newspapers and mainstream media channels coverage
- Radio Programs regarding environmental challenges and the role of citizens to combat those challenges would be aired for a large audience on local and national channels

PROJECT IMPLEMENTATION

The First Quarter

The project was officially launched at Serena Hotel on November 23, 2022. Ambassador Donald Blome of the United States participated in a community tree planting drive at the event. The ambassador highlighted that the U.S. government had provided more than \$97 million in flood-related assistance to Pakistan that year, including to Balochistan's individuals and communities in need. The Director General of Forest and Wildlife attended the launching ceremony and committed his full support for the implementation of the project. After the completion of the project, the department would take it over to ensure its long-term sustainability.

An awareness workshop for the Hazara Community was organized on the theme of tree planting and water conservation at Tameer Nasle Nau High School on December 10, 2022. Around 50 community members attended the workshop, including students and teachers. The workshop's main objective was to motivate people to participate in water conservation and tree planting through learning. Three sessions led by environmental activists and health consultants were provided: 1) Climate is changing - how should we change? 2) Tree planting - why do we need to plant trees? 3) We are running out of water! - It is time to conserve water.

The GBQ team held another workshop for college students on December 12, 2022 at KB Science College. More than 50 students attended the workshop and became Green Ambassadors of Quetta. The students learned about tree planting and water conservation and explored solutions to deal with climate change, including the roles of individuals through behavioral change. After conducting a series of workshops with 100+ community youth, a successful demonstration session on how to plant trees was held. The Director General of Forest and Wildlife planted the first tree. He also announced that his department would continue the campaign's sustainability by taking over the ownership of the trees after project completion. The Deputy Commissioner of Quetta promised his full support as well. Around 300 people gathered at the event to plant 1000 trees. Distinguished leaders from many organizations were present to lend their support. The third workshop was held for the Afghan nationals who reside in Hazara Town and belong to the Hazara Community. The project intended to include all nationals from all backgrounds – women, men, persons with disabilities, immigrants, children, and ethnic and religious minorities because climate change affects all and it is everyone's responsibility to act. Around 70 Afghan immigrants attended the workshop.

Green and Blue Quetta and Global Shapers - Quetta Hub held a Green Workshop for the students of BUISTEMS on December 22, 2022. One hundred students attended the workshop and 100 others joined the green club to plant trees on the university campus. Green Corridor on the campus was also started. These efforts connected students with plants/trees and made them eventually responsible for making Quetta green. Students who attended the Green Workshop each adopted a plant, gave it a name, and pledged to take care of it throughout their time at the university. And when they graduate, they will find another caretaker for it and make sure the cycle continues.

A large hillside letters project was organized. "Make Quetta Green" was written on the mountain – above the site where 1,000 trees were planted. The idea was to send a powerful message to a wider audience to act on climate change. This work was done in 5 days with the help of artists and community volunteers. This work earned acknowledgment on Google Maps and Google Earth.

FIGURE 1
HILLSIDE LETTERS PROMOTING THE GREEN AND BLUE QUETTA PROJECT



The Second Quarter

Tree planting events were conducted across the city from January to March of 2023. Around 10,000 trees were planted. The locations and the number of trees planted are:

1. Mehardar - 5,000 trees
2. Karkhasa Park- 1,000 trees
3. New Sabzal Rd- 1,500 trees
4. Hazara Town Graveyard- 1,000 trees
5. Tanzeem Nasle Nau High School- 100 trees
6. Provincial Institute for Teachers Education- 110 trees
7. Quetta Online Volunteers- 200 trees
8. Khanozai- 500 trees
9. Pishin- 200 trees
10. Streets at Hazara Town- 150 trees
11. Tree Camp- 300 trees

The GBQ team kicked off the planting drive at Mehardar in December 2022. On the opening day of the drive, fifty trees were planted by attendees, including government officials, civil organizations, community members, climate activists, volunteers, and minority groups. In the second quarter, the team continued planting at Mehardar and completed the target of 1,000 trees. As a result of a strong connection with the Department of Forest and Wildlife and their continued campaign, “Plant a tree-Make Quetta Green”, the team got in-kind support (4,000 trees) from the department to plant more trees at Mehardar. In total, 5,000 trees were planted at the site. Karkhasa Park is located at Western Bypass Brewery and has the potential to become a great national park for the people of Quetta. The plan was to have 1,000 trees planted. The Secretary of Forest and Wildlife launched the drive and applauded the efforts of the GBQ team. During the launch event, the drive opened a dialogue between the citizens and the government where residents pressed their need for a greener recreational park. The Secretary agreed to fulfill this demand and promised that immediate actions would be taken. He announced plans to plant more trees at the park, build separate toilets for men and women, and provide basic amenities for children. As a result, the neglected park got the government’s attention and will be developed into a true recreational park.

New Sabzal Road is 160 feet wide. On the road’s median strip, the team planted 1,500 trees with the support of the Department of Forest and Wildlife of the Government of Balochistan. The green belt on the

median strip represented a significant improvement in the appearance of this part of the city and created new a habitat for birds. The next site, the Hazara Town Cemetery, is busy on most days, especially in the second half of the week. People come here to visit the graves of their loved ones. The team planted 1,000 trees (700 on the borders of graveyard and 300 near/on graves), with a large amount of support and appreciation from the community members. All the trees were adopted and planted in the memory of the loved ones. The community members will also take care of watering of the trees. These trees will provide shade to the visitors and shelters to birds. At Tanzeem Nasle Nau High School, the team had an awareness session with students in November 2022. Students who attended the workshop actively participated in major tree planting drives and showed interest in planting activities at their school. After a long winter break, students resumed school in March and arranged a planting activity with the Green and Blue Quetta team. Around 15 active students with their teachers planted 100 trees on campus, completing a green boundary wall for the school. The students proudly took ownership of the trees, which will be cared for and watered daily by students. At another educational institution, the Provincial Institute for Teachers Education (PITE), a Program Manager at UNICEF who had been onboard with the project since the beginning invited the GBQ team to PITE for a planting activity. Around 110 trees were planted at PITE with the officials of UNICEF and the Government of Balochistan. The employees themselves manually dug all pits to help improve awareness on climate change.

As a result of urbanization, the city has lost its green spaces in communities. The GBQ team stepped further ahead from climate awareness in quarter 1 to climate action in quarter 2. With the full support of 50 community members, the team acted towards a greener climate by planting trees in several neighborhoods. With around 150 trees, the effort transformed four streets into green model streets in Hazara Town. These planted trees are owned by the local community members (women, men, children, and even the disabled) who will water the trees regularly. Furthermore, a two-day tree camp was set up at the Hazara Town cemetery to sensitize the passersby, street vendors, and out of school children to climate change. At the camp, the team gave away 300 trees for adoption. Pishin is a Balochistan district connecting Quetta, the provincial capital to Pakistan. It is considered part of the Pashtun Belt of Balochistan and the largest district of Pashtun tribes. A tree-planting event was organized in collaboration with the PUAN Quetta chapter. After achieving the target of 3,000 trees for Quetta, the team moved to adjacent districts. Two hundred trees were planted in the Pashtun community. Khanozai is an area of Pashtun Community, some 80 km away from Quetta. Five hundred trees were planted near a lake at Khanozai, making the lake a tourist attraction. Finally, Quetta Online Volunteers is an online platform for the largest group of volunteers who work on social causes for the betterment of society. They have been our key partner in the GBQ project. The GBQ team Planted 200 trees with those volunteers at various locations across Quetta.

FIGURE 2
TREE PLANTING ON THE MEDIAN STRIP OF NEW SABZAL ROAD



FIGURE 3
A MODEL STREET AT HAZARA TOWN



The Closing Ceremony

The closing ceremony of GBQ on July 17, 2023 was a momentous occasion to commemorate the successful completion of an ambitious project to transform Quetta into a greener and more sustainable city. The project's collaborative efforts brought together various organizations and volunteers, planting 10,000 trees across 5 hectares of land. The ceremony was filled with joy, appreciation, and a shared commitment

to continuing the journey toward a greener future for Quetta. At the ceremony, the Spokesperson to the Chief Minister of Balochistan applauded the remarkable work accomplished under the Green and Blue Quetta project and assured full support from the Chief Minister's office in all future endeavors. The Coordinator to the Chief Minister also suggested replicating the project in other parts of the city. The U.S. Consulate General Karachi played a significant role in the event, encouraging the youth of Quetta and PUAN Alumni to carry forward the Green and Blue Quetta initiatives and explore opportunities like AEIF for community development initiatives. The Department of Forest and Wildlife affirmed its support for the collective efforts against climate change. A MoU was signed during the event as a symbol of continuity and dedication, officially handing over the project's responsibilities to the Department of Forest and Wildlife. This ensured the project's continued progress and its lasting impact on Quetta's environment. The event served as a platform for the GBQ participants to share their experiences and pledge to carry forward the project's initiatives with even greater determination. The atmosphere was filled with hope and determination to continue the journey towards a better, greener, and more resilient Quetta.

Sustainability of the Project in the Future

It is extremely important for the momentum created by the GBQ initiative to continue. In fact, the project was planned to ensure its sustainability by following efforts:

- Reusing water of several local swimming pools for plants
- Capturing rain and snow water by integrating the rainwater harvesting techniques into the project
- Engaging the local community so that the local residents take ownership of the trees and maintain them after the end of project
- Using local varieties of plants so that they are resilient with the local environment and can fight the harsh weather or insecticides
- Developing good relationships with local government so that they can oversee and continue project initiatives with little or no investment
- Working with local chapters of GreenSquad which will be taking care of trees and pooling community funds for further scaling it up
- Planting 100,000 Trees across Quetta to continue to enhance its urban forest
- Raising awareness about climate change and environmental conservation among the two million residents of Quetta, fostering a collective commitment to a sustainable future
- Kitchen gardening training in households with the knowledge and skills for kitchen gardening promoting self-sufficiency and greener living

DISCUSSION

The successful completion of the GBQ project, marked by planting 10,000 trees, showcased the potential of community-driven initiatives in transforming cities for a greener and sustainable future. The dedication and passion displayed by all involved underscored the importance of continuing this journey towards environmental preservation and climate action. As noted earlier, sustainable environmental efforts should include community participation (Samaddar et al., 2021; Zhang et al., 2020). The activities organized by the GBQ team, including the educational workshops, tree planting at various sites, television and radio segments, tree adoptions, and even the launch and closing events, all heavily involved the local residents. These residents showed pride in participating in programs that would benefit lives for themselves, their community, and the future generations. The GBQ project was designed to involve people from various ethnic and religious backgrounds so that nobody is excluded. The collective ownership in the efforts to battle climate change has to exist for these efforts to succeed. In short, community participation is an indispensable reason for the success of the GBQ project.

In terms of involving people from different backgrounds, it could be further argued that in addition to including women, men, people of different ethnicities and religions, and even the disabled, it is critical to

get the youth involved. Some of the most promising work of the GBQ team was done with the participation of children, high school students, and college students. Schools are the best place for educating children about climate change and our role in mitigating the effects of global warming. Such activities (for example, planting trees at schools and colleges) produce pro-climate students who will contribute consciously towards creating greener spaces. Most importantly, through learning about climate change and its impact on the environment and people's lives, young people are incentivized to permanently adapt their behavior to participate in environmental efforts, and they will, in turn, influence future generations to do the same. The long-term positive impact of such educational workshops and tree planting should not be underestimated.

Success in community participation in environmental efforts also needs relationships with organizations such as UNICEF internationally and the Quetta Online Volunteers locally. Strong connection with government entities such as the Department of Forest and Wildlife was an important factor for the success of the project. From donating trees and other resources, opening a dialogue between the people and the department, helping launch the project and directly participating in tree planting and educational events, and taking over the responsibilities of taking care of the trees after the completion of the project, the Department has been an invaluable partner in the journey of GBQ. Future projects in Quetta and other regions should also seek partnerships with government entities and local, national, and international organizations to ensure the projects' successful implementation and sustainability.

The project's marketing strategy is designed to engage the community and build a sense of collective responsibility for environmental stewardship. The project's emphasis on advocacy, awareness, and sensitization is essential for ensuring the sustainability of this and future environmental initiatives. The project's use of art is a unique and innovative approach that has the potential to set a precedent for future initiatives, emphasizing the intersection of aesthetics and environmental consciousness as a powerful tool for engagement and mobilization.

Most importantly, the GBQ initiative shows that a project like this not only produces immediate tangible results, but also is sustainable. The project satisfies the three criteria outlined in Samaddar et al. (2021). First, community participation in a climate change adaptation project can be considered successful if the project contributes towards the livelihood security of the residents in the community. Second, project outcomes should be tangible. Third, the project should enhance community members' skills and training so that the community can run a similar project in the future without much dependence on external agencies. As such, it could be considered a model approach for communities in the developing world. Indeed, although GBQ is a local project focuses on just Quetta and its surrounding areas, its impacts can be extended to any city facing similar climate challenges. The positive results from the GBQ project should motivate other cities in Pakistan and beyond to consider similar approaches to combat climate change. It can be seen that if a determined leader leads a group of people to focus their efforts on combating climate change; with the participation of community members, large impacts could be created. Therefore, the GBQ project has national or even international implications.

CONCLUSION

The Quetta City Environmental Sustainability Project is a groundbreaking initiative that is poised to have a significant and lasting impact on the region's environment and society. The physical transformations achieved by the project, such as the creation of urban forests and the restoration of historical mountain terrain, offer tangible examples of how environmental enhancements can improve the region's well-being. The main factors that led to the success of this initiative – community participation, determined leadership, relationship building with various organizations and government entities, careful planning, ingenious marketing tactics, including people of different ethnic and religious backgrounds, mobilizing the youth, and forward-looking arrangements for sustainability – should be taken into consideration for community-based environmental efforts in the future, especially in developing countries.

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