Final Report

# Community Driven Climate Adaptation-Making sustainable climate adaptation solutions accessible to the urban poor, Bangladesh, NCF5

**Grantee: PlanBørnefonden**

**Local Partner(s): Social and Economic Enhance Program (SEEP)**

**Other Partner(s): ARUP**

Project start date: *1/05/2016*

Project end date*: 30/06/2019*

28/11-19 _____ _____

Date Person responsible (Signature)

**Gwen.wisti@planbornefonden.dk GWEN WISTI, National Director**
+45 70 22 12 11

**TABLE OF CONTENTS**

**ANNEXES**

Annex 1 Project completion fact sheet
Annex 2 Updated Logical Framework Matrix
Annex 3 Pictures
Annex 4 Other supplementary documentation:
- Annex 4A: “A youth driven approach to climate adaptation”
- Annex 4B: Prototype and Action Plan Report
- Annex 4C: CDCA Final Evaluation (internal)
- Annex 4D: PlanBørnefondens programme innovation framework

Annex 5.1 Case study on elevated pathway
Annex 5.2 Case study on waste management system

## 1. EXECUTIVE SUMMARY

Plan International, Social and Economic Enhancement Program (SEEP) and Arup has implemented a project titled "Community Driven Climate Adaptation (CDCA) - Making sustainable climate adaptation solutions accessible to the urban poor" in Dhaka. The project aimed at co-creating and implementing climate change adaptation solutions in Dhaka's Rail Line Slum and Match Colony in order to make the community more resilient to the multiple impacts of climate change, particularly flooding and water logging.

This is the final and closing project report documenting results from the start of the project in 2017 until the closure of the project in 2019. The majority of the activities during this reporting period have been focused on the design-adjustments of the prototypes and have demonstrated a limited degree of effectiveness.

From the findings presented in this final report it is clear that the community felt overall the project outcomes had been positive at the community level, but that the project did not live up to the expectations:

- This project has experienced a number of problems which were difficult to overcome and the final results have not lived up to the expectations of the community, the project partners, nor the objectives as set out in the baseline logframe. Several of the prototypes tested in the project did not show adequate potential for impact, financial sustainability and buy-in from the community.
- The probability of continued long-term benefits to the community of Match Colony and its residents are quite limited due in large part to the forced evictions within the community and the limited buy-in from the community.
- One positive long-term social benefit is the knowledge and improved capacities of not only the climate champions but of all the participants in the project. The climate champions in particular have developed a strong set of skills and knowledge which they can utilise and develop wherever they go.

The Community Driven Climate Adaptation (CDCA) project has been extremely challenging. Over time it became evident that innovation can be an abstract concept for project staff which requires careful and ongoing deliberation, and that the very high level of vulnerability of the target community – Rail Line and Match Colony – made the project even more challenging. In future community driven climate adaptation projects we will simplify the design to make it easier for field staff to implement, and rather than testing several new prototypes across five different intervention areas, we will build even more on existing practices and help target communities to select only one or two key challenges that they are ready to invest time and resources in. In addition three lessons learned which can inform future projects focusing on community driven resilience building should be highlighted:

- *Manage expectations*: Be clear about scope and limitations in community-led climate adaptation. Many challenges experienced by the community went beyond the scope of the project. it is important to explain clearly and frequently that a project like this can only improve coping practices and resilience, but not solve the underlying causes for community vulnerability (poverty, inadequate physical infrastructure, exclusion from public service delivery, disempowerment, etc.) nor replace services or investments by the relevant authorities. Project partners have often faced criticism by the community in the form of "why don't you permanently raise the

road?"). Likewise, there needs to be a mutual understanding between community and project partners about the innovative nature of the process, which means the community must agree to "host" experimentation which obviously can fail and not deliver the promised results

- *Ensure community ownership*: Match-fund community investments in adaptation solutions. Introducing a match-funding requirement early on in solution prototyping is essential to ensure that only ideas that have full community support are prioritised. If possible, such a match funding requirement should extend to involve the relevant authorities.
- *Co-creative design requires strong and continuous mentorship from professionals*. When developing climate adaptation solutions through a bottom-up co-creation design approach there is a need for strong and continued support and mentoring. Such mentorship involves suggesting new ways to approach a specific challenge and support to analyse the constraints of each prototype design option in terms of scope, costs, maintenance, durability and sustainability.

## 2. ASSESSMENT OF IMPLEMENTATION OF THE PROJECT

*Background: A*t the fringes of Dhaka, Bangladesh, the residents of Match Colony and Rail Line Slum are fighting a constant battle against the water and waste flooding their streets. Around 1200 households called the area their home in 2015 whereas the number of households at the end of the project in June 2019 is only around half of this due to massive evictions in 2018 and 2019. For 3-4 months a year, during the monsoon season, the area submerges under flood water. Due to inadequate infrastructure and services (roads, drainage systems, waste collection, water and sanitation, etc.) and the low lying nature of the area, Match Colony and Rail Line Slum were identified as one of the communities in Dhaka must prone to the consequences of climate change. To add to this, the ability to respond in a coordinated manner is hampered by the community's social and economic marginalisation.

During the course of the project the partners have worked with the community – particularly a group of young people - and have provided urban planning and civil engineering services, and social development support to strengthen the adaptive capacity and climate resilience of the broader community, in their ability to minimize, withstand and recover from negative physical, social, and environmental impacts of climate change, in particular flooding and waterlogging. Residents of Match Colony identified their most pressing challenges and through an extensive co-creation process we have identified, co-designed and tested practical and affordable climate adaptation solutions for climate proofing of their settlement. These climate adaptation solutions were grouped under five themes: a) street/public space upgrading, b) drinking water, c) waste management, d) community coordination and engagement (SMART Community), and e) housing. Solutions under the fifth theme – housing – were also explored, but no suitable solutions were identified for further development and testing under this theme.

## 2.1 Achievement of Outputs and Objectives:

| Planned Objectives and Outputs | Indicator(s): | Achievement of the objectives and outputs: |
|---|---|---|
| ***Overall Objective:*** *To strengthen climate resilience of disadvantaged urban communities in their ability to minimize, withstand and bounce back from negative physical, social, and environmental impacts of flooding and waterlogging.* | *Vulnerable slum communities in Dhaka at risk of climate related hazards and disasters actively employs climate adaptation designs and models and engage authorities in a constructive dialogue for more accountable governance on climate adaptation* | Not achieved/Too early to assess as the replication of the developed adaptation solutions outside of the target community was not achievable. The ambition is that the learnings from the project (e.g. captured in the card deck "*A youth driven approach to climate adaptation*" and in the "*Prototype and Action Plan Report*") and most importantly the solutions and practices in Match Colony will inspire other communities, organisations and stakeholders to invest in community based adaptation initiatives. |
| ***Purpose:*** *To decrease incidents and severity of flooding and waterlogging and diminish its negative impacts in the two target communities.*<br><br>***Immediate objective 1:*** *To make the target communities as well as the surrounding communities of Shyampur more resilient to the multiple impacts of climate change.* | *% Decrease in incidents, duration and severity of flooding and water logging*<br><br>*% Decrease in children suffering from waterborne diseases during and after periods of flooding and water logging*<br><br>*% Increase in access to clean drinking water during periods of flooding and water logging*<br><br>*% Increase in number of children with access to education, and women with access to markets during periods of flooding and water logging*<br><br>*% Decrease in building collapses due to water logging and flooding and % decrease in average household costs for maintenance and reconstruction*<br><br>*% Increase in access to functioning recreational space during water logging (disaggr. by gender and age)* | Partly achieved: Match Colony – the target community - has become more resilient through a number of small-scale interventions, increased understanding of environmental dependencies and better community organisation. This has diminished the impacts of flooding and water logging in the community.<br><br>The replication of the developed adaptation solutions outside of the target community was not achievable.<br><br>It has not been possible to measure impact according to the indicators set in the initial project application. Main reason for this was the challenges of obtaining quality data to serve as baseline. |

| | | |
|---|---|---|
| ***Immediate objective 2:*** *To develop concrete tools and solutions to strengthen the climate resilience of disadvantaged urban communities.*<br><br>***Output (Results)***<br>*1. 4-6 designs and models for adaptation solutions co-created by partners and community Climate Champions - 9 months into the project.*<br>*2. Prototypes of adaptation solutions implemented in Shyampur by partners and Climate Champions - 15 months into the project*<br>*3. Prototypes tested by partners and Climate Champions in Shyampur and disseminated across climate vulnerable slums in Dhaka by partners and local government representatives - 21 months into the project*<br>*4. Tools for replication in slums across Dhaka finalized by partners and local government at the end the project and rolled out.*<br>*5. Community capacity for climate change adaptation and advocacy strengthened* | *# designs and models developed including model descriptions and design briefs:* **5**<br>*# concrete adaptation solutions established in the two target communities:* **5 (with 'sub-solutions')**<br>*# concrete adaptation solutions tested and modified:* **4**<br>*# people dwelling in other slums knowing about the prototypes:* **unknown**<br>*# people in other slums employing tools for replication:* **unknown**<br>*# successful advocacy processes carried out based on resilience monitor data:* **several, but hard to count as it has been an ongoing dialogue.** | <u>Partly achieved.</u> The tested solutions have not delivered the expected results in terms of impact in target community or offering 1-1 replicable solution models. Some solutions show potential (waste solution, elevated pathways, street lights, SMART community)<br><br>Several of the advocacy processes have been successful resulting in collaboration from local authorities for waste management solution and from local factory for waste water. |

## 2.2 Deviations from the planned Outputs and Activities

| Phase and overview of issues | Planned outputs and activities | Deviations |
|---|---|---|
| **Phase 0**<br>• Late start<br>• Delay in activities | *1A: Project organization established including project advisory board*<br>*1B: Project area technical appraisal report drafted* | *Outputs achieved*<br>Late project start-up as well as a prolonged inception phase caused a significant delay in project activities. Key reasons were staff recruitment and difficulty in collecting information for site appraisal report. |
| **Phase 1A*:***<br>• New delay (2 months) | *2A: Co-creative workshop carried out in the community*<br>*2B: 20-30 climate champions recruited and trained*<br>*2C: Resilience indicator identification workshop carried out in the community* | *Outputs achieved*<br>Delay mainly related to the need for additional information and technical engineering support. A project engineer was hired. |
| **Phase 1B**<br>• Previous delays hampering implementation as original planning was coordinated with seasons.<br>• Potential flood proof housing solutions not yet identified: | *3A: Feasibility assessment and final drafting of models and design briefs*<br>3B: Community resilience monitor roll-out (system setup and training) | *Outputs partly achieved.*<br>Design briefs and technical note developed for 4 of the 5 chosen solution areas (street upgrading/public space, drinking water, waste management, community coordination and engagement (SMART Community) and housing).<br>Community resilience baseline prepared but not yet carried out. |
| **Phase 2+3**<br>The processes of co-creation, design, implementation and testing have been a lot more time consuming and complicated than foreseen with continuous consultations, numerous re-designs and experimentation. These processes have taken up most project resources and the challenges involved in arriving at the right designs have both caused major delays as well as the downgrading of other project deliverables. Key reasons:<br>- Too complex project design<br>- Lower local innovation capacity than expected<br>- Challenging translation of Nordic/"Western" solutions | *2A: 4-6 adaptation solutions implemented in target area*<br>*2B: 20-30 climate champions trained*<br>*3A: 4-6 prototypes of adaptation solutions tested and designs/models reviewed and dissemination activities begun*<br>*3B: Guidelines and criteria for micro-credit. facility finalized*<br>*3C: 5 guided visits to the test area and 5 advocacy events/ meetings carried out*<br>*3D: Community resilience monitor updated* | *Outputs partly achieved.*<br>Initial prototypes related to 4 of the 5 selected solutions have been implemented (street upgrading/public space, drinking water, waste management, community coordination and engagement (SMART Community). Initial testing showed that further adjustments and prototyping were needed.<br>Based on the review of the prototypes the micro-credit facility is only considered relevant with regards to the elevated path and the greening, and at a smaller scale than anticipated.<br>The climate champions organized a number of events and there were several meetings with relevant authorities, but as the prototypes still need redesigning no guided visits were carried out.<br>The planned bi-annual update of the resilience monitoring was much more challenging than foreseen. Combined with the delays and challenges related to prototype implementation this milestone was not prioritized. |

| | | |
|---|---|---|
| **Phase 4**<br>• Evictions<br>• Community buy-in to final solutions | 4A: 3 solutions scaled to community level (Match Colony)<br><br>4B Impact, learning and experiences from scaled solutions documented incl. impact with regards to community resilience to climate change and replication potential.<br><br>4C: Tools for replication of adaptation solutions finalised. (The tools developed will target other communities/community leaders, NGOs and other relevant actors).<br><br>4D: Ten guided tours of solutions and/or advocacy events/meetings carried out using the prototype solutions as platform for emphasising vulnerability of slum communities to climate change (for people from other communities and stakeholders/decision-makers) | *Partly achieved.*<br><br>The waste management solution show a lot of potential and have been taken further by the community; the elevated paths are being used, but community members keep stressing their preference for a raised road, the SMART community and the knowledge and coordination capacity built up during the project is recognised as a success of the project.<br><br>The impact assessment (Annex 1) has been finalized.<br><br>A card deck "A youth driven approach to climate adaptation" (annex 3) based on project learning has been produced.<br><br>The majority of advocacy learning sessions were not realised, which has resulted in limited feedback from the participants on this area of development |

## 2.3 Achievement of NCF indicators

Inserted below are the figures on how the project has contributed to fulfilling NCF indicators.

| NCF indicators | Results |
|---|---|
| 1. Number of beneficiaries reached (women/men) | 2774 (Male: 1478 /Female: 1296)[1]<br>We did not reach beyond the community, but we did affect all members of the community |
| 2. Number of people with increased resilience to climate change (women/men) | 2774 (Male: 1478 /Female: 1296)<br>We did not reach beyond the community, but we did affect all members of the community.<br>Understanding of resilience and decision making as opposed to physical interventions |
| 3. CO2e emissions reductions (actual at project completion and expected during the lifetime of the project's mitigation investments) | n/a (adaptation project, not mitigation) |
| 4. Number of green business concepts tested | 1 (local waste collection scheme[2]) |
| 5. Number of new decent jobs created (disaggregated by number of permanent (women/men) and seasonal (women and men)) | 2 (only the 2 people employed by the community to do waste collection) |
| 6. Number of people with improved livelihoods/income-generating possibilities (women/men) | 5-10 (only the few people employed by the community to do waste collection and a few community members growing some vegetables) |
| 7. Number of multi-stakeholder partnerships developed | 2 (between project partners + between waste management committee and local authorities) |
| 8. Amount of funds leveraged (actual project co-financing and possible secured future investments for scaling-up/replication) | 177.128 EUR |

[1] The number of beneficiaries is the total number of residents living in Match Colony at the end of the project period.

[2] A waste management committee was created comprising 5 community members. The waste management committee oversaw a) the distribution of bins (1 bin for recyclables and one bin for other waste with 2-4 households sharing the bin), b) collection of monthly household fees to cover waste management expenses, c) hiring and managing 2 waste collectors incl. their equipment to empty bins and transfer waste to transit point agreed with the local authorities, d) exploring opportunities for local recycling of organic waste. Approximately 200 households are part of the pilot waste management scheme each paying between 40-100 BDT monthly.

## 3. CLIMATE CHANGE

Reducing carbon emissions was not a priority set out by this project. The primary objectives were to adapt to and build climate resilience against the effects of climate change. This was to be achieved through a series of co-designed adaptation solutions. The climate adaptation solutions were grouped under five themes (see table below for overview).

| *Solution theme* | *Potential solutions identified* | *Status* |
|---|---|---|
| 1) Street / public space upgrading | **Elevated pathways** (design 1 with concrete/planks + design 2 with bamboo) | Tested and still in use in community. |
| | Greening | Initial test, but scaling through business model not initiated. |
| | Painting/colouring | Initial test, no further interest by community |
| | **Solar Street lights** | Tested and still in use in community. |
| | Street mirrors | Initial test, no further interest by community |
| 2) Drinking water | Monitoring and informing about drinking water quality | Discontinued as initial test showed that problems occurred at storage level |
| 3) Waste management | **Waste collection scheme** | Tested and scaled by community. |
| | Recycling of organic waste | Feasibility explored, but never tested |
| 4) Community coordination engagement | **SMART Community Committee** | Tested and still in "use" in community. |
| 5) Housing | | No practical solutions identified nor tested |

Of the different practical solutions explored/tested in the project only four (highlighted in bold above) are considered to have had actual impact. These are presented below.

Elevated Pathways:

*Short description of solution implementation:* One of the principle adaptation solutions developed during the CDCA project were the elevated pathways. These pathways were intended to provide better mobility during seasonal flooding and periods of extended waterlogging. Waterlogging was further exacerbated by the lack of waste management systems which would clog up drainage facilities. Under the street upgrading solution, the project installed two temporary elevated paths. One constructed with bamboo and the other with concrete blocks combined with wooden planks.

*Climate adaptation impact:*

- Approximately 600 people benefiting directly using the pathways on a daily basis allowing them greater mobility during the monsoon season.
- 87,5 % of community residents questioned during a sampled survey design found the paths useful.

- Community participants revealed following impact during evaluation consultations: elevated paths help to avoid contaminated water and particularly female participants noted that there had been a noticeable reduction in skin related illness.
- Sustainability: The pathways are still in use.

Solar Street Lights

*Short description of solution implementation*: The project installed two types of street lights of which one was solar powered. This solution was not targeting climate adaptation directly, but expected to increase security of women, girls and children to move after dark.

*Climate adaptation impact:* As well as providing improved security to vulnerable members of the community, the installation of solar powered street lights showcased to the community the sustainability and effectiveness of the solar street light, sensitizing community people to the understanding that these lights required no external electricity power source to operate, meaning that the community had experience of how they could be marginally more self-reliant and reduce their carbon footprint. Five new shops established themselves near the solar street lights which revealed that the solution not only improved safety, but also had positive commercial and economic consequences for the community.

Waste Collection Scheme

*Short description of solution implementation:* The waste management solution covered 120 (later scaled by the community to 200 households) households during the pilot which involved approximately 580 individuals. The waste management solution encouraged residents to segregate their domestic waste and have it collected by a transfer service. Residents were also informed of the effects of not adequately disposing and recycling their waste. Although the service didn't include a recycling

process, the collection process was still important as it meant that not only was waste not clogging drainage infrastructure, but it also did not pollute streets and public spaces in the community.

The reactions from the community revealed that participants believe this solution has made a significant change within the community. The waste situation in Match Colony was very unorganized before the project and residents used to deposit their waste into drains and anywhere, they could. Diseases were common, the settlement had an unpleasant smell and drains were also frequently blocked. During that time, residents also were not interested in contributing financially in a waste management system. The significant change which community participants describe is the creation of the Community Waste Management Committee which consisted of 16 members, which with the support of the Climate Champions has collected payments from interested residents of Match Colony and involved them with waste management activities.

*Climate adaptation impact:*

- One of the project objectives was to strengthen colony people in their ability to minimize, withstand and bounce back from negative physical, social and environmental impacts of flooding and waterlogging and this solution has been helping the community to manage their waste, ensure hygienic environment, reducing water logged situation as well as keeping the drains, roads, and open yards clean and hygienic
- By the closure of the project 120 households were separating their waste, but some people and small businesses in the proximity copied the practice so that the number in reality was closer to 200.
- Increased Awareness about the negative impact of waste littering streets and filling up drains.
- 83,3 % of community residents questioned during a sampled survey design say they now dump their waste in fixed waste bins.
- Currently more than 200 households have become enrolled on to the waste management service and are happy to continue paying for it as they maintain the waste management system helps to reduce uncontrolled waste dumping in public spaces and in drains and makes the surrounding environment cleaner.


SMART Community Committee

*Short description of solution implementation:* The SMART Community Committee was in essence a knowledge and communication solution. Its objective was to build up more accurate information of the community including key infrastructure, risks and hazards, increase the general level of understanding of these risks and issues and enhance ability to take coordinated action as a community (e.g.

joint waste separations efforts, collaboration with public authorities, etc.). A group of young people from the community established themselves as the SMART Community Committee and led data collection and visualization efforts incl. the roll out of an address system across the entire community.

The SMART Community Committee and Climate Champion group was one of the project's most notable successes. The SMART committee has acted as focal point gravitating between community leaders and Climate Champions. The group is still active and continuing the dialogue with community leaders and the broader community.

One of the most successful tasks undertaken by the SMART committee was the address system which since implementation has been adopted across the community with strong support. The address system also helped the Climate Champions identify areas of attention. The SMART Committee also created a map and dashboard, the dashboard has been used by the climate champions throughout the project to identify climate-related and environmental challenges, but it has not been updated frequently enough to be as effective is it could have been.

*Climate adaptation impact:* It is difficult to quantify the climate adaptation impact of the SMART community initiative. *The internal evaluation concludes that the community's capacity for climate change adaptation and advocacy changed during the course of the project. And that this in particularly related to learned skills and knowledge on climate change and adaptation measures.* The climate champions themselves argued that these solutions helped the community work together with leaders within the community and more efficiently in general. This solution has greatly enhanced the relationship between community leaders and the wider community as well especially among young people.

## 4. DEVELOPMENT IMPACTS AND CROSS-CUTTING ISSUES

Development of effective community based climate change adaptation solutions were the aims of this project. These were intended to make the community more resilient to the multiple impacts of climate change, particularly flooding and water logging. It became clear throughout the course of the project that climate resilience for a slum community in a city like Dhaka is closely related to more general development issues such as gender inequality and social exclusion. These development impacts are presented below:

Youth empowerment and particularly the empowerment of young women: Before the project, there was no scope for young people and women in particular to contribute to the community decision-making process in relation to development which was largely due to the socio-cultural context of the community. Before the project, male community leaders made decisions and in the family home, males made household decisions. One of the community leaders claimed that "*This project was somewhat different from others as it created a bridge among the various tiers of the community like women, girls, men, policy makers, social elites and more*". Where "*usually we did not align youth and women in the decision-making process. But this project has done all kinds of work aligning all parties in taking decision and implementation process. It works very well and we would like to follow this learning in future*."

Throughout the process the project maintained a gender balance, and during decision making processes maintained a strong diversity of gender, age and ethnicities. When forming the Climate Champions group, gender inclusion was a high priority. The group was formed with 20 youths, 10 of which were adolescent boys and the other 10 were adolescent girls. Training events and workshops were planned in a way that made it possible also for the girls to attend.

The waste management committee was also formed from 16 members which included 12 males and 4 females, the fresh water committee consisted of 9 members, 4 of which were male and 5 female, finally, the and smart community committee was created and consisted of 8 members 4 boys and 4 girls.

Environmental and health improvements: The waste situation in Match Colony was very unorganized before the project and residents used to deposit their waste into drains and anywhere, they could. Diseases were common, the settlement had an unpleasant smell and drains were also frequently blocked. Clean drinking water and contaminated water in the streets were other major problems in the project area causing different kinds of health problems.

The situation is not that all of these problems are solved, but community people are more sensitized to the negative consequences of waste in the streets, particularly the way is hampers the functioning of the drains and impacts negatively on the liveability of the area. The introduction of the waste collection scheme and subsequent continuation and scaling[3] by the community testifies to this increased awareness. Increased awareness on unhygienic water storage practices have also been a positive impact of the project despite this solution not actually making it to testing stage as it was discovered that drinking water challenges are mostly related to storage practices and hardly to source water and poor distribution infrastructure.

Improved understanding and collective action capacity of the community: The SMART community committee was formed to assemble all information collected about the community focusing their problems, available resources, and to create an information hub. One of the outcomes was an address system developed for the whole community which placed a number plate on each household. Around 1540 people benefitted from this solution. Community people are using the number plate to open bank account, postal communication and so on. It is unclear to what extend the address systems supported households that were evicted (for instance to pursue compensations). Beyond that three community maps were placed in three different areas which help the community people to understand the overall condition of the community. The maps and information gathered is still relevant but obviously only for the part of the community which has not been evicted.

Besides offering improvements (at least in principle) of their local environments each implemented solution (and the co-creation process preceding it) has informed community people and other stakeholders about the negative impacts on their regular life and how these are related to climate change. But also how local practices, weak infrastructure and service gaps exacerbates the negative impact of climate change. The work done by the SMART community committee on gathering information and communicating among others through visual maps have helped the community to draw the attention of policy makers, local stakeholders as well as beneficiaries to work with implemented solutions. As a result, community people had come forward to resolve their problems by own initiatives. The project has created a bridge between community people and local stakeholders to share their environmental problems. Like, community people has started waste management solution through community contribution, they have arranged advocacy meeting with respective stakeholders to solve their drainage problem and so on.

[3] Plan International Bangladesh is still running some sponsorship interventions in Match Colony. Financial support to the waste collection scheme will be continued with agreements between Plan and the community on phasing the support out slowly in order for the community to run and finance the scheme independently.

*The CDCA project implemented Waste management solution is the breathing example of the coordinated action of the community. To implement this solution community people are contributing along with project. Each household is paying 40 to 60 taka for paying waste collectors salary and rest of the money of total cost are coming from CDCA project. The CDCA project played a big role to promote community lead solution strategy in the community. Now community people not only think about their problem but also think how much of this problem could be solved by their self-effort.*
Community Health Service Provider, RADDA

## 5. ASSESSMENT OF THE RESULTS AND IMPACTS OF THE PROJECT

### 5.1 Relevance

Overall conclusion: the project's objectives were highly relevant, but its approaches only partly relevant (see also effectiveness).

More than 880 million people currently live in informal settlements around the world, and those numbers are growing . The majority of these populations – around 70% of the total, representing 600 million persons - are highly vulnerable to climate change-related impacts, including flooding, coastal inundation, and landslides. Within cities, informal settlements are often located in the most hazardous and disaster-prone areas. The vulnerability of these communities is compounded by inadequate basic services, low-quality housing and limited adaptive capacity. The population of these areas are at risk of being left homeless or suffering health impacts, injury, or death. Indeed, the urban poor suffer from more than their share of climate impacts. While no global data exist regarding the overlap of informality and exposure to climate hazards, illustrative city- and country-level data suggest a substantial degree of overlap between these two populations. In Dhaka, Bangladesh, for example, of more than five million people living in slums, about 75% are affected by flooding, with associated health impacts (Khan et al 2014).

The Paris Agreement (2016) recognises that adaptation actions should consider "*vulnerable groups [and] communities*" and emphasises the "*intrinsic relation that climate change actions… have with equitable access to sustainable development and eradication of poverty*". At the top of the list of such communities are informal settlements, yet to date there has been no focused effort at scaling up initiatives to increase the climate resilience of these highly vulnerable populations. As a result, climate adaptation - defined by the Intergovernmental Panel on Climate Change (IPCC) as an '*adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities'* - is increasingly important among these vulnerable communities . Working on climate adaptation in informal settlements directly relate to the UN Sustainable Development Goal (SDG) Target 1.5: "By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters".

In Dhaka we have worked with youth living in an informal settlement, and have provided urban planning and civil engineering services, and social development support to strengthen the adaptive capacity and climate resilience of the broader community, in their ability to minimize, withstand and recover from negative physical, social, and environmental impacts of climate change, in particular flooding and waterlogging. We have encouraged and supported youth in the community to become 'climate champions', and understand, document, and monitor the area's resilience dynamics.

Together, we have identified and prioritized key challenges and co-designed and tested affordable climate adaptation solutions for climate proofing of their settlement. These solutions were grouped under five themes: a) street/public space upgrading, b) drinking water, c) waste management, d) community coordination and en-gagement (SMART Community), and e) housing.

## 5.2 Effectiveness

Overall conclusion: the project only partly delivered the expected results.

*Resilience of the target community has been strengthened:*

- Specific solutions brought some improvements in terms of increased mobility, improved health, better environment, and most likely also less waterlogging due to better functionality of drain.
- The community's capacity for climate change adaptation incl. knowledge and awareness, ability for collective action and advocacy improved during the course of the project. As a result, the community people has taken initiatives to solve their waste management and drainage problem by themselves to make their environment more clean and sustainable.

*Adaptation solutions have been developed and tested, but only with limited impact and without a clear scaling potential.*

The project did not achieve the scaling of the tested solutions nor solutions which were directly replicable without external support.

Reasons for poor effectiveness: There are several reasons for the poor performance of the project in terms of achieving the expected results. Some were inherent to the project, its design and implementation whereas others were caused by external factors outside the influencing sphere of the project partnership:

- *Complex project design:* Retrospectively the project design was complex with too many different deliverables and new kinds of approaches and activities. The key problem in terms of complexity were the number of different issues (4-6) and related prototypes which the project attempted to develop. Retrospectively, it would have been better if the needs assessment and co-creation processes had arrived at a much stricter focus on the design and implementation of 1-2 prototypes.
- *Challenging translation of Nordic/"Western" solutions:* The premise that solutions from the developed world (particularly Nordic) can be exported (with adequate customization) has also proven more challenging than expected. Several of the solutions relied on ideas or proven solutions originating from other contexts incl. solutions from developing and developed world (elevated paths, solar street lights, urban gardening, wall colouring, organic waste recycling,). During the cause of the project we attempted together with the community to localize these designs for instance with the elevated paths made of bamboo or by identifying a community based model for organic waste recycling. Both of these examples encountered lack of local ownership. Most importantly the scope of the project focusing on coping strategies/solutions rather than addressing root causes has been a difficult premise for all involved actors incl. both the members of the target group and the partners involved in the project.
- *Evictions:* One of the key limitations of the CDCA project has been the difficulty with the continuation and sustainability of solutions in Match Colony. As discussed in the introduction, the community have endured a prolonged eviction process nearing the end of the project which culminated in a large part of the settlement relocating to neighbouring communities and further afield. Regardless of the evictions however, the CDCA project also struggled to

inspire the community to embrace solutions offered, except from the waste management service which did generate community enthusiasm enough to wish to continue the service as Plan and the partnering organisations concluded activities.

### 5.3 Efficiency

Overall conclusion: the project has had low efficiency

Based on the results achieved by the project and the extent of these in terms of number of beneficiaries it must be concluded that the project has not been very efficient. We suggest the following reasons as the most important:

- The risks of failure is much higher when doing innovation work than if attempting something which has been tried extensively before. From this project we have learned that although the cost of innovation is not substantial in terms of procurement of material goods, it has been for the cost of labour, expertise and knowledge. On reflecting whether the CDCA project has been cost effective it can be argued that we took too long to fail on several of the solutions which meant that a lot of time was spent on testing before we came to the conclusion that work on a certain solution should be discontinued. This has impacted project efficiency negatively.

- *Lower innovation capacity than expected making failed experiments/innovation initiatives costly*: The project assumed a certain capacity for innovation and experimentation in this specific context. Generally, we have been surprised of the difficulties involved in running this kind of innovation processes where both project staff, community members and other stakeholders imagine new approaches and are open to new practices. This has resulted in very slow and resource demanding cycles of prototype development and adjustments.

- *Community expectations*: At the very beginning, community understanding was that they are not responsible for resolving their problems, rather the authorities and respective development organizations are supposed to come forward for resolving their problems. This has made it challenging to get full ownership and buy-in from the overall community since all solutions were developed on the premise that the community had to mobilise there own resources to make them sustainable. To some extent we believe that the project has changed this myth by igniting the community people to resolve their own problems collectively (such as the waste collection scheme).

Lastly we would like to draw NCF's attention to the heavy administration and reporting requirements in place for a grant of this size.

### 5.4 Impact

The measurable impact of the project is mainly located within Match Colony and this impact is understood to be weaker than what was foreseen at the outset of the project. *When that is said it is also clear from the findings presented in the impact assessment that the community felt that project outcomes had been positive at the community level, but that the project did not live up to the expectations. The impact assessment (evaluation) engaged members of the target communities; Dhaka Match Colony and Rail Line Slum, who were part of the project including Climate Champions as well as civil society stakeholders. The process was jointly undertaken by Planbørnefonden Denmark and Plan Bangladesh with project staff and participants who collected the majority of the data. An internal evaluation was chosen as the key objective was drawing lessons rather than verifying project results, which we already knew were not living up to expectations.*

*Key findings of the impact assessment (evaluation) of the project:*

- *The overall perception of the project and its outcomes are positive, despite the project experiencing a number of set-backs which were difficult to overcome, and the final outcomes did not live up to the expectations of neither the community, nor the project partners, nor the stated objectives as set out in the log frame.*

- *There were some positive elements which emerged from the project where the community decided to continue and expand certain programmatic features including the waste management component. Also revealed in this evaluation is how important and rich the learnings generated through the course of the CDCA project were and how they now fit into the deliverables as well as project planning for future projects.*

- *The project pursued adaptation solutions which were co-designed by community participants. Unfortunately, some of these interventions did not appeal to the community in many cases due to functionality and materiality of the interventions but not the principles behind the interventions themselves.*

- *Community members and the community as a collective developed knowledge and skills around their vulnerability to climate change and how to tackle some of these collectively.*

- *The probability of continued long-term benefits to the community of Match Colony and its residents after the project has been completed are quite limited due in large part to forced evictions within the community and the limited buy in from the community to several of the solutions. However, although initially funded by the project partners and set up by young members of the community, the wider community has decided to self-finance the waste management service after the project activities concluded. Improved capacities of the climate champions and participants in the project was also another long-term benefit which the community participants recognised.*

- *The CDCA project also promoted gender equality and inclusive, sensitive approaches to climate change adaptation and resilience throughout the process and explicitly aimed to improve the rights of children, young people and improve gender equality. There was a strong emphasis on gender balanced decision making and the rights of young people within their community were strongly promoted*

- Several of the advocacy processes have been successful resulting in collaboration from local authorities for waste management solution and from local factory owners for waste water. With regards to the waste collection scheme there was a long dialogue with the relevant authorities resulting in the agreement to designate a waste dumping site 2-3 km away from the community. And with the local factory owners (particularly an ice cream factory) dialogue let to the result that the factories stopped pouring waste water directly into the community when the drains were not functioning.

**Overview impact measured against objectives**

| Planned Objectives | Achievement of the objectives |
|---|---|
| ***Overall Objective:*** *To strengthen climate resilience of disadvantaged urban communities in their ability to minimize, withstand and bounce back from negative physical, social, and environmental impacts of flooding and waterlogging.* | Not achieved/Too early to assess as the replication of the developed adaptation solutions outside of the target community was not achievable. The ambition is that the learnings from the project (e.g. captured in the card deck "*A youth driven approach to climate adaptation*" and in the "*Prototype and Action Plan Report*") and most importantly the solutions and practices in Match |

| | |
|---|---|
| | Colony will inspire other communities, organisations and stakeholders to invest in community based adaptation initiatives. |
| ***Purpose:*** *To decrease incidents and severity of flooding and waterlogging and diminish its negative impacts in the two target communities.*<br><br>***Immediate objective 1:*** *To make the target communities as well as the surrounding communities of Shyampur more resilient to the multiple impacts of climate change.* | Partly achieved: Match Colony – the target community - has become more resilient through a number of small-scale interventions, increased understanding of environmental dependencies and better community organisation. This has diminished the impacts of flooding and water logging in the community.<br><br>The replication of the developed adaptation solutions outside of the target community was not achievable.<br><br>It has not been possible to measure impact according to the indicators set in the initial project application. Main reason for this was the challenges of obtaining quality data to serve as baseline. |
| ***Immediate objective 2:*** *To develop concrete tools and solutions to strengthen the climate resilience of disadvantaged urban communities.* | Partly achieved. The tested solutions have not delivered the expected results in terms of impact in target community or offering 1-1 replicable solution models. Some solutions show potential (waste solution, elevated pathways, street lights, SMART community)<br><br>Several of the advocacy processes have been successful resulting in collaboration from local authorities for waste management solution and from local factory for waste water. |

**Important Learnings which can inform future interventions**

With the setbacks experienced by the project – particularly the evictions and the long innovation and design cycles - it became a lot more relevant to focus on learnings from the project that could inspire and inform future interventions by the partner organisations, other development organisations, relevant authorities and donors.

This is also the reason the project partners decided to invest resources in capturing these learnings most notably in the development of a deck of cards guiding organisations in what we call a "*A youth driven approach to climate adaptation*" (see Annex 4A). The card deck has been developed to serve as an iterative tool to share the experience and knowledge gained through this project, with the aim of assisting our colleagues, other organisations, urban practitioners and decision makers working in similar projects to prompt discussion with youth and community groups in informal settlements, gain useful inspiration for their own projects, and avoid some potential pitfalls.

This tool gives guidance on how to plan, co-design and implement youth driven resilience building and climate adaptation initiatives in informal settlements and can be used across different stages of a climate adaptation project: a) To help guide the project design and planning; b To support the planning and facilitation of workshops or work processes with youth, community groups or a project team; c) To create awareness about climate related impacts in informal settlements; and d) To prompt discussion about the next steps of a project and potential challenges ahead.

We have developed rich learnings and acknowledge now that when developing innovative systems it is better to test and fail fast and then test again before exploring solutions in depth. Together with this final report we are therefore also happy to share PlanBørnefondens new innovation framework among others based on learning from this project (see annex 4D).

Plan Bangladesh also improved as an organisation in learning to engage with the community people in a way that inspired them to work toward project goals and outcomes with a strong degree of autonomy. Plan Bangladesh also learned how to develop the beneficiaries to take ownership of project

work and how to build coherence among the various groups into the community to work toward one set of goals.

### 5.5 Sustainability

Overall conclusion: the project has limited sustainability

The probability of continued long-term benefits to the community of Match Colony and its residents after the project has been completed are quite limited due in large part to forced evictions within the community and the limited buy in from the community. One of the key limitations of the CDCA project has been the difficulty with the continuation and sustainability of solutions in Match Colony.

The community have endured a prolonged eviction process nearing the end of the project which culminated in a large part of the settlement relocating to neighbouring communities and further afield. Regardless of the evictions however, the CDCA project also struggled to inspire the community to embrace solutions offered, except from the waste management service, which did generate community enthusiasm enough to wish to continue the service as Plan and the partnering organisations concluded activities. Improved capacities of the climate champions and participants in the project was also another long-term benefit which the community participants recognised.

## 6. POTENTIAL FOR SCALING UP AND FOLLOW-UP INVESTMENTS

Regrettably there is little possibility for this project to be directly scaled up in future or for follow up opportunities or investments to be administered with this programme. After the evictions came into force in 2019 the community was decimated, at this point, the project management team and partners prioritised the development of learning outputs to be produced which could explore successes and limitations of the project with a balanced approach.

A positive perspective of this prioritisation is that the documents which explore those learnings can be used by any other organisation interested in climate change adaptation projects in informal communities or who might be interested in urban community projects in Bangladesh or elsewhere.

## 7. UNEXPECTED OUTCOMES


The capacities and hence role of the climate champion group is one of the great achievements of this project. The climate champions are now taking an active role in their community something which was unheard off for young people of that age before the project. Now they are working as advocates towards and for the community to talk about their problems in many forums with different stakeholders.

During the Third Annual Conference on Urban Resilience' at the Institute of Architects Bangladesh (IAB) in November 2018 Plan International Bangladesh received an award of excellence for the Community Driven Climate Adaptation project. The event had around 500 participants and it was a great opportunity for show casing the importance of bottom climate adaptation interventions involving the most vulnerable communities.

## 8. LESSONS LEARNT

The Community Driven Climate Adaptation (CDCA) project has been extremely challenging. Over time it became evident that innovation can be an abstract concept for project staff which requires careful and ongoing deliberation, and that the very high level of vulnerability of the target community – Rail Line and Match Colony – made the project even more challenging. In future community driven climate adaptation projects we will simplify the design to make it easier for field staff to implement, and rather than testing several new prototypes across five different intervention areas, we will build even more on existing practices and help target communities to select only one or two key challenges that they are ready to invest time and resources in.

Several of the prototypes tested in the project did not show adequate potential for impact, financial sustainability and buy-in from the community. Yet such experiences offer valuable learning opportunities. The below lessons learned will inform our future projects, and we hope that our recommendations will help other practitioners working with bottom-up approaches to climate adaptation.

- *Manage expectations*: Be clear about scope and limitations in community-led climate adaptation. Many challenges experienced by the community went beyond the scope of the project. it is important to explain clearly and frequently that a project like this can only improve coping practices and resilience, but not solve the underlying causes for community vulnerability (poverty, inadequate physical infrastructure, exclusion from public service delivery, disempowerment, etc.) nor replace services or investments by the relevant authorities. Project partners have often faced criticism by the community in the form of "why don't you permanently raise the road?"). Likewise, there needs to be a mutual understanding between community and project partners about the innovative nature of the process, which means the community must agree to "host" experimentation which obviously can fail and not deliver the promised results
- *Ensure community ownership*: Match-fund community investments in adaptation solutions. Introducing a match-funding requirement early on in solution prototyping is essential to ensure that only ideas that have full community support are prioritised. If possible, such a match funding requirement should extend to involve the relevant authorities.
- *Co-creative design requires strong and continuous mentorship from professionals*. When developing climate adaptation solutions through a bottom-up co-creation design approach there is a need for strong and continued support and mentoring. Such mentorship involves suggesting new ways to approach a specific challenge and support to analyse the constraints of each prototype design option in terms of scope, costs, maintenance, durability and sustainability.
- *Implement with the weather*. When testing climate adaptation prototypes, it is necessary to consider the impact of the seasons on the process. In Dhaka Match Colony, it is essential to test out solutions during the rainy season, but this limits the time to 3-4 months. For that reason, it can

be necessary to test multiple different prototypes at once to be able to make adjustments in the time available.

- *Organise and engage communities*. Any kind of behaviour change takes time. Allow time to engage existing committees or community groups or established and develop new ones. Community engagement and organisation are the key to the continuation of the initiatives after the project is over. In youth-led programming, it is crucial to deliberately work on strengthening young people's ability to engage with and influence stakeholders as well as the ability to take joint and coordinated action.
- *Engage authorities and service providers just as much as community members*. Apart from building community members' understanding of climate and environmental issues, and involving them in the co- creation of solutions, it is also necessary to include components on advocacy and social accountability to make sure the community can negotiate with service providers and power-holders to find long-term solutions that can gradually replace adaptation measures. Especially in urban contexts where environmental challenges are multi-faceted and dependent on factors external to the community, collaboration with city authorities and service providers can help increase impact as well as potential for scaling and replicating solutions.

**FINANCIAL SUMMARY**

Please summarise below the project financing per project partner. Add partners as applicable.

**Table 1. Project financing per partner**

| | **Financing, EUR** | | | | |
|---|---|---|---|---|---|
| **Expenditures, EUR** | NCF | Grantee | SEEP | Revenues from the project | **Total** |
| Grantee (Plan DK +Plan BGD + ARUP) | 282.957 | 112.081 | 0 | | **395.038** |
| SEEP (Local Partner) | 108.225 | 9.802 | 55.227 | 520 | **173.792** |
| **Total** | **391.182** | **121.901** | **55.227** | **520** | **568.830** |

## 9. CONCLUSIONS AND RECOMMENDATIONS

Several of the prototypes tested in the project did not show adequate potential for impact, financial sustainability and buy-in from the community. The expected replication of the developed adaptation solutions outside of the target community was not achievable, which has make overall impact outside of the target community much more uncertain.

The probability of continued long-term benefits to the community of Match Colony and its residents are quite limited due in large part to the forced evictions within the community and the limited buy-in from the community.

One positive long-term social benefit is the knowledge and improved capacities of not only the climate champions but of all the participants in the project. The climate champions in particular have developed a strong set of skills and knowledge which they can utilise and develop wherever they go.

***Recommendations***

*Working with informal communities:* One of the key elements which will contribute to the future success of climate resilience projects in informal communities is a strong partnership approach to working with communities. Three core conclusions and recommendations emerge

1. Manage expectations, and, sub divide tasks within communities: Be clear about scope and limitations of the community-led climate adaptation project and manage expectations with frequent referring back to original brief. Engage the whole community as much as possible and ensure that designs are validated frequently by wider community. Run initiatives autonomously with separated community committees to focus on interest areas with an oversight group ensuring delivery and alignment to key values developed by the community.
2. Codesign the project with the community and secure their financial contribution: Engage with communities early on in the project and allow them to shape priorities together. Furthermore, to ensure community ownership of the project and its deliverables, employ match-funding initiatives and community investments in adaptation solutions.
3. Develop an eviction resilience and mitigation strategy: Many residents of informal settlements live precarious temporal lifestyles where they might relocate with little notice. Where residents might be uninterested in investing their time or money in experimental or temporary initiatives which do not resolve their immediate problems, it could be a good idea to develop a regularisation and eviction strategy for communities before implementation of a project to not only mitigate potential evictions but also to give residents a more permanent and tangible asset to fix themselves to.

*Working with authorities and organisational partnerships*

4. Engage with officials early on: Engage authorities and service providers early on with just as much as community members. Setting up an advisory committee which consists of local council official and political leaders as well as NGO's, CBO's, members of parliament and their opposition can be a good way to instil confidence, secure a project officially and avoid any unforeseen surprises which could bring the project to a premature end. It is also a good idea align

*Working with participatory design*

1. Clear goals and design methodology: Create specifications and briefs, refer back to them frequently, and use them like checklists to ensure the project outcomes remain focussed on the initial objectives. It would also be worthwhile using a clear participatory design or product development methodology to ensure that time is not wasted unnecessarily. Furthermore, product failure is a learning process, test a number of prototypes quickly, fail fast, then learn and develop.
2. Continuous professional and technical support: In communities where climate change adaptation, mitigation and resilience building are not commonplace terms and where technical expertise is not highly developed, consider planning for and continuous and extensive mentorship from professionals to nurture co-creative design process.

## Annex 1 Project completion fact sheet

| **Project Name:** | **Community Driven Climate Adaptation-Making sustainable climate adaptation solutions accessible to the urban poor** | | |
|---|---|---|---|
| **Country/ Region:** | Bangladesh | **Financing:** | |
| | | **EUR** | **%** |
| **Nordic Partner:** | Plan International / PlanBørnefonden Denmark | 121.901 | 21% |
| **Local Partner** | SEEP | 55.227 | 10% |
| | NCF grant disbursed | 391.182 | 69% |
| | Total | **568.830** | **100.00** |
| | Adaptation | **ALL** | **ALL** |
| **Classification:** | | | |
| **Project cycle:** | Contracted: January 2016 (with starting date July 2017)<br>Original Closing Date: 30.06-2018<br>Actual Closing Date: 30.06.2019 | | |
| **Project description:** | **NCF indicators** | | |
| **Key results:** | 1. Number of beneficiaries reached (women/men) | 2774 (Men: 1478, Female: 1296) | |
| | 2. Number of people with increased resilience to climate change (women/men) | 2774 (Male: 1478, Female: 1295) | |
| | 3. $CO_2e$ emissions reductions (actual at project completion and expected during the lifetime of the project's mitigation investments) | N/A | |
| | 4. Number of green business concepts tested | 1 (local waste collection scheme[4]) | |
| | 5. Number of new decent jobs created (disaggregated by number of permanent (women/men) and seasonal (women and men)) | 2 (only the 2 people employed by the community to do waste collection) | |
| | 6. Number of people with improved livelihoods/income-generating possibilities (women/men) | 5-10 (only the few people employed by the community to do waste collection and a few community members growing some vegetables) | |
| | 7. Number of multi-stakeholder partnerships developed | 2 (between project partners + between waste management committee and local authorities) | |
| | 8. Amount of funds leveraged (actual project co-financing and secured future investments for scaling-up/replication) | 177.128 EUR | |

[4] A waste management committee was created comprising 5 community members. The waste management committee oversaw a) the distribution of bins (1 bin for recyclables and one bin for other waste with 2-4 households sharing the bin), b) collection of monthly household fees to cover waste management expenses, c) hiring and managing 2 waste collectors incl. their equipment to empty bins and transfer waste to transit point agreed with the local authorities, d) exploring opportunities for local recycling of organic waste. Approximately 200 households are part of the pilot waste management scheme each paying between 40-100 BDT monthly.

| | Main Expected Outputs | Achieved | End-of-project status |
|---|---|---|---|
| **Project performance: "** | 4-6 designs and models for adaptation solutions co-created by partners and community Climate Champions<br><br>*Themes and solutions explored:*<br>1) Street / public space upgrading (Elevated pathways, Greening, Painting/coloring, Solar Street lights, Street mirrors<br>2) Drinking water (Monitoring drinking water quality)<br>3) Waste management (Waste collection scheme, Recycling of organic waste)<br>4) Community coordination engagement (SMART Community Committee<br>5) Housing (No practical solutions identified nor tested) | YES | Partly achieved: Match Colony – the target community - has become more resilient through a number of small-scale interventions, increased understanding of environmental dependencies and better community organisation. This has diminished the negative impacts of flooding and water logging in the community.<br><br>The replication of the developed adaptation solutions outside of the target community was not achievable. |
| | Prototypes of adaptation solutions implemented in target community by partners and Climate Champions | YES | Partly achieved: Match Colony – the target community - has become more resilient through a number of small-scale interventions, increased understanding of environmental dependencies and better community organisation. This has diminished the negative impacts of flooding and water logging in the community.<br><br>The replication of the developed adaptation solutions outside of the target community was not achievable. |
| | Prototypes tested by partners and Climate Champions in target community and disseminated across climate vulnerable slums in Dhaka by partners and local government representatives | NO | |
| | Tools for replication in slums across Dhaka finalized by partners and local government at the end the project and rolled out. | Partly | |
| | Community capacity for climate change adaptation and advocacy strengthened | YES | |
| | | | |
| **Final beneficiaries:** | Men: 1478 / Female: 1296 | | |
| **Climate change impacts:** | Reducing carbon emissions was not a priority set out by this project. The primary objectives were to adapt to and build climate resilience against the effects of climate change. This was to be achieved through a series of co-designed adaptation solutions.<br><br>• Approximately 600 people benefiting directly using the elevated pathway solution on a daily basis allowing them greater mobility during the monsoon season. Pathways are still in use. | | |

<table>
<tr><td></td><td>
<ul><li>The waste management solution has been helping the community to manage their waste, ensure hygienic environment, reducing water logged situation as well as keeping the drains, roads, and open yards clean and hygienic. It has been continued and somewhat scaled by the community.</li></ul>
The community's capacity for climate change adaptation and advocacy changed during the course of the project due to learned skills and knowledge on climate change and adaptation measures and their ability to work together with leaders within the community and more efficiently in general.
</td></tr>
<tr><td>Development impacts:</td><td>
The overall measurable impact of the project is mainly located within Match Colony and this impact is understood to be weaker than what was foreseen at the outset of the project. Reasons for this are both lack of community ownership to several of the solutions, but also to a large extend the evictions that hit the community towards the end of the project.<br><br>
Solution test results:
<table>
<tr><th>Solution theme</th><th>Potential solutions identified</th><th>Status</th></tr>
<tr><td rowspan="5">1) Street / public space upgrading</td><td>Elevated pathways</td><td>Tested and still in use in community.</td></tr>
<tr><td>Greening</td><td>Initial test, but scaling through business model not initiated.</td></tr>
<tr><td>Painting/coloring</td><td>Initial test, no further interest by community</td></tr>
<tr><td>Solar Street lights</td><td>Tested and still in use in community.</td></tr>
<tr><td>Street mirrors</td><td>Initial test, no further interest by community</td></tr>
<tr><td>2) Drinking water</td><td>Monitoring drinking water quality</td><td>Discontinued: initial test showed that problems occurred at storage level</td></tr>
<tr><td rowspan="2">3) Waste management</td><td>Waste collection scheme</td><td>Tested and scaled by community.</td></tr>
<tr><td>Recycling of organic waste</td><td>Feasibility explored, but never tested</td></tr>
<tr><td>4) Community coordination engagement</td><td>SMART Community Committee</td><td>Tested and still in "use" in community.</td></tr>
<tr><td>5) Housing</td><td></td><td>No practical solutions identified nor tested</td></tr>
</table>
</td></tr>
<tr><td>Innovation, technology and learning:</td><td>The ambition is that the learnings from the project (e.g. captured in the card deck "A youth driven approach to climate adaptation" and in the "Prototype and Action Plan Report") and most importantly the solutions and practices in match Colony will inspire other communities, organisations and stakeholders to invest in community based adaptation initiatives.</td></tr>
<tr><td>Partnership:</td><td>The partnership behind the project consisted of the following partners: Plan International, Social and Economic Enhancement Program (SEEP) and Arup</td></tr>
<tr><td>Sustainability and replicability:</td><td>The probability of continued long-term benefits to the community of Match Colony and its residents after the project has been completed are quite limited due in large part to forced evictions within the community and the limited buy in from the community.</td></tr>
<tr><td>Lessons learned:</td><td>The Community Driven Climate Adaptation (CDCA) project has been extremely challenging. Over time it became evident that innovation can be an abstract concept for project staff which requires careful and ongoing deliberation, and that the very high level of vulnerability of the target community – Rail Line and Match Colony – made the project even more challenging. In future community driven climate adaptation projects we will simplify the design to make it easier for field staff to implement. Equally important are the following lessons learned:</td></tr>
</table>

| | |
|---|---|
| | • *Manage expectations and be clear about scope and limitations in coping based community-led climate adaptation.*<br>• *Ensure community ownership among others through community match-funding requirements*<br>• *Co-creative design requires strong and continuous mentorship from professionals*<br>• *Organising and engaging communities takes time.*<br>• *Engage authorities and service providers just as much as community members*. |

## Annex 2: Logical Framework Matrix template and activity schedule

| Narrative Summary | Objectively Verifiable Indicators (OVIs) | Means of Verification (MOVs) | External Factors (Assumptions) |
|---|---|---|---|
| **Overall Objective**<br>To strengthen climate resilience of disadvantaged urban communities in their ability to minimize, withstand and bounce back from negative physical, social, and environmental impacts of flooding and waterlogging | • Vulnerable slum communities in Dhaka at risk of climate related hazards and disasters actively employs climate adaptation designs and models and engage authorities in a constructive dialogue for more accountable governance on climate adaptation | End of project evaluation and forthcoming local government policies and strategies | Key assumptions:<br>If relevant adaptation solutions can be made available by and for urban poor Government support can be secured if solutions are provided |
| **Purpose**<br>Decrease in incidents and severity of flooding and waterlogging and diminish its negative impacts in the two target communities<br><br>**Immediate objective 1:** To make the target communities as well as the surrounding communities of Shyampur more resilient to the multiple impacts of climate change. | • % Decrease in incidents, duration and severity of flooding and water logging<br>• % Decrease in children suffering from waterborne diseases during and after periods of flooding and water logging<br>• % Increase in access to clean drinking water during periods of flooding and water logging<br>• % Increase in number of children with access to education, and women with access to markets during periods of flooding and water logging<br>• % Decrease in building collapses due to water logging and flooding and % decrease in average household costs for maintenance and reconstruction<br>• % Increase in access to functioning recreational space during water logging (disaggr. by gender and age) | The indicators will be measured through the project's 'Community Resilience Monitor' based on an existing system developed by Arup, but adjusted to fit the target communities. | Putting in place climate change adaptation solutions at the community level will be able to contribute to diminish effects of climate change, even as these are on the increase. |
| **Immediate objective 2:** To develop concrete tools and solutions to strengthen the climate resilience of disadvantaged urban communities.<br><br>**Output (Results)**<br>1. 4-6 designs and models for adaptation solutions co-created by partners and community Climate Champions - 9 months into the project.<br><br>2. Prototypes of adaptation solutions implemented in Shyampur by partners and Climate Champions - 15 months into the project<br><br>3. Prototypes tested by partners and Climate Champions in Shyampur and disseminated across climate vulnerable slums in Dhaka by partners and local government representatives - 21 months into the project<br><br>4. Tools for replication in slums across Dhaka finalized by partners and local government at the end the project and rolled out.<br><br>5. Community capacity for climate change adaptation and advocacy strengthened | 1. Number of designs and models developed including model descriptions and design briefs.<br><br>2. Number of concrete adaptation solutions established in the two target<br><br>3. Number of concrete adaptation solutions tested and modified<br><br>4. Number of people dwelling in other slums knowing about the prototypes<br><br>5. Number of people in other slums employing tools for replication<br><br>6. Number of successful advocacy processes carried out based on resilience monitor data | 1. Design and model briefs<br>2. Visual communication material and implementation report<br>3. - Visual communication material and revised implementation report on prototypes<br>- Survey on local awareness and use of prototypes<br>4. Qualitative and quantitative survey report showing<br>5. reports, minutes and subsequent action plans from advocacy meetings with stakeholders. | Nordic solutions to urban climate change adaptation adaptable to slum context<br><br>Willingness of other slum communities to visit Shyampur to learn about climate adaptation<br><br>Willingness and availability of slum community members to pursue climate change adaptation as a livelihood strategy.<br><br>Solutions developed in one slum context adaptable to similar slum contexts |

| | | | |
|---|---|---|---|
| **Activities**<br>0.1 Mobilization of key stakeholders<br>0.2 Participatory baseline and identification of resilience monitor indicators<br>0.3 Technical appraisal of project area and context analysis<br>1.1 Identify existing adaptation practices<br>1.2 Co-creating initial designs and models<br>1.3 Feasibility assessment and final drafting of models and design briefs<br>2.1 Establishment of test area with implementation of hard and soft solutions<br>3.1 Dialogue and communication activities with test area as platform<br>3.2 Assessment and review of models and designs + business case development<br>4.1 Establish (access to) micro-credit facility<br>4.2 Project evaluation incl. Finalization of replication strategy and tools<br>5.1 Recruitment and training of climate adaptation champions<br>5.2 Action learning process with climate adaptation champions<br>5.3 Community resilience monitor roll-out (system setup and training)<br>5.4 Community resilience monitor update<br>5.5 Continuous advocacy engagement with municipal stakeholders | | | |
| **Inputs**<br>*Human Resources*: SEEP staff: project manager, community faciliators; ARUP staff: Engineer, Project manager, Plan DK: project Manager, Plan Bangladesh: DRM officer, Community facilitator, Community volunteers<br>*Materials*: workshop materials and stationary, food and beverages, building materials for climate adaptation solutions<br>*Equipment:* IT and communications (laptops, cameras), water testing equipment<br>*Financial resources*: Micro-credits (Euro 43,428) | | | |

**Annex 3 Pictures**

Please find additional photos in the below link

https://drive.google.com/open?id=14qpFfiSTRtTQwydn8yudgypzqbGT3ypX

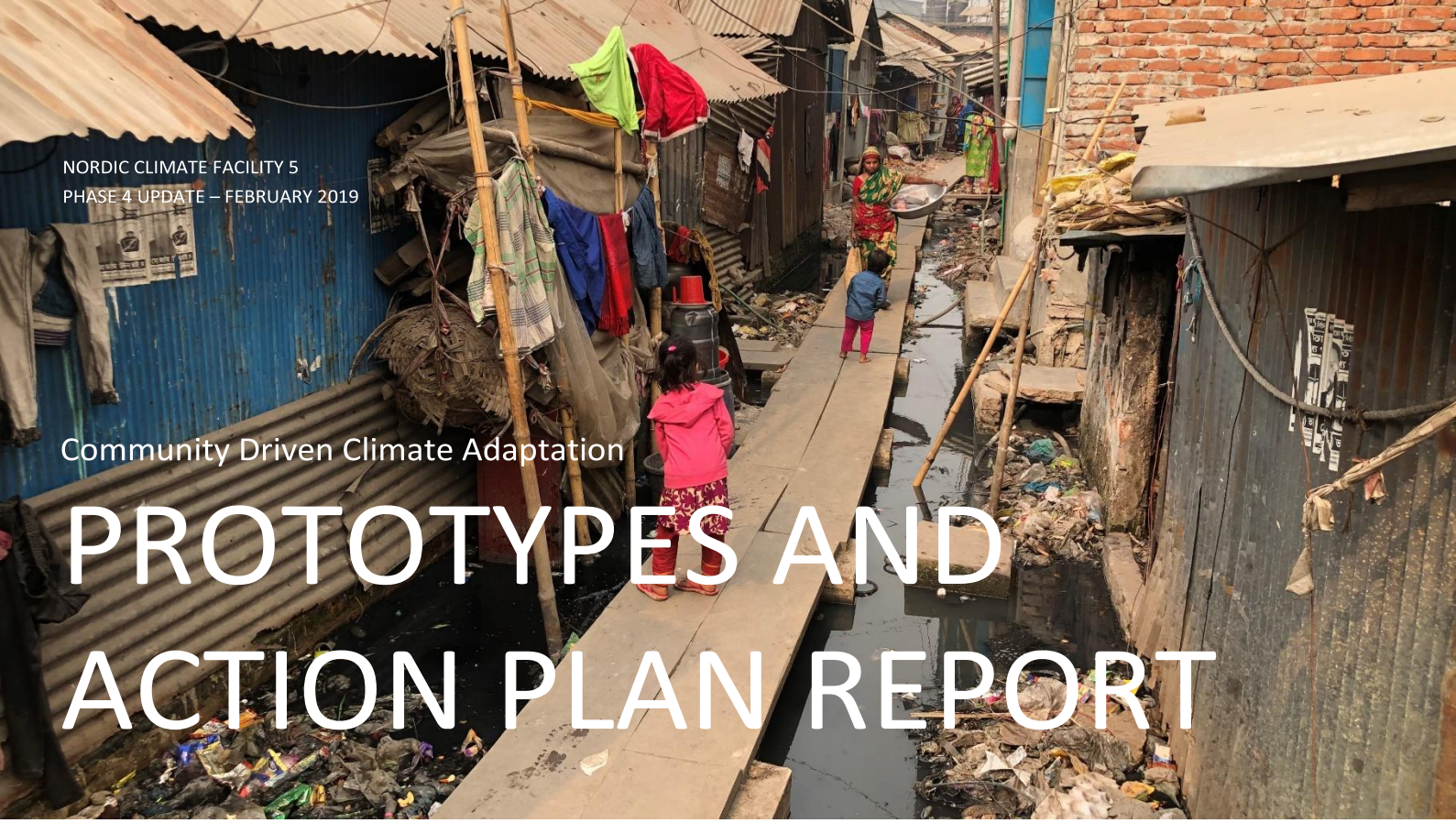

**Annex 4** **Other supplementary documentation:**

Annex 4A: "A youth driven approach to climate adaptation"

Link to Onedrive folder:
https://planinternational-my.sharepoint.com/:f:/g/personal/andreas_stabursvik_planbornefonden_dk/EgokNbv1r8NAt4FUsYNuQNQB-e5WTxleo6-aDfO7W1dEPQ?e=wrMusK

Annex 4B: Prototype and Action Plan Report

See next page.



NORDIC CLIMATE FACILITY 5
PHASE 4 UPDATE – FEBRUARY 2019

Community Driven Climate Adaptation

# PROTOTYPES AND ACTION PLAN REPORT

## Situation before the project

At the fringes of Dhaka, Bangladesh, the residents of Match Colony are fighting a constant battle against the water and waste flooding their streets. For 3-4 months a year, during the monsoon season, the area submerges under flood water. Due to a lacking formal waste management system, their proximity of polluting industrial sites, and their low lying nature, Match Colony has been identified as one of the communities in Dhaka must prone to the consequences of climate change. To add to this, the ability to respond in a coordinated manner is hampered by the community's social and economic marginalisation.

## Project results

Residents of Match Colony identified their most pressing challenges and through an extensive co-creation process they informed the design of a range of practical solutions to climate-related problems. The residents use their new understanding of the interdependencies of their problems to take more coordinated actions and adapt to the consequences of climate change and environmental degradation. Among the key achievements are:

› **Community-led waste management system**: A waste separation and collection system for 120 households, monitored by the community-based Waste Management Committee, is helping keep Match Colony cleaner. In the last 6 months of the project, the aim the system will be scaled up to all 815 households, establish a second dumping station, and add a composting component.

› **Enhanced mobility in flooded areas:** In the testing areas, elevated paths made of concrete and bamboo are increasing mobility. The paths enable residents to walk above the most flooded roads without walking in the deep polluted water, and thus have potential to decrease risks of waterborne diseases and skin infections.

› **Increased influence of youth:** 20 young Climate Champions between the ages of 15-24 were recruited from the community. They are now confidently acting as community change agents who conduct risk and needs assessments and help design climate adaptation solutions that are being used across the community.

› **Stronger community cohesion:** Match Colony is inhabited by a mix of long-term residents and seasonal labourers, which has hampered the coordination of efforts to address community challenges. The project has increased collaboration between youth and community leaders and introduced organised community committees, such as the Waste Management Committee that is monitoring the waste collection.

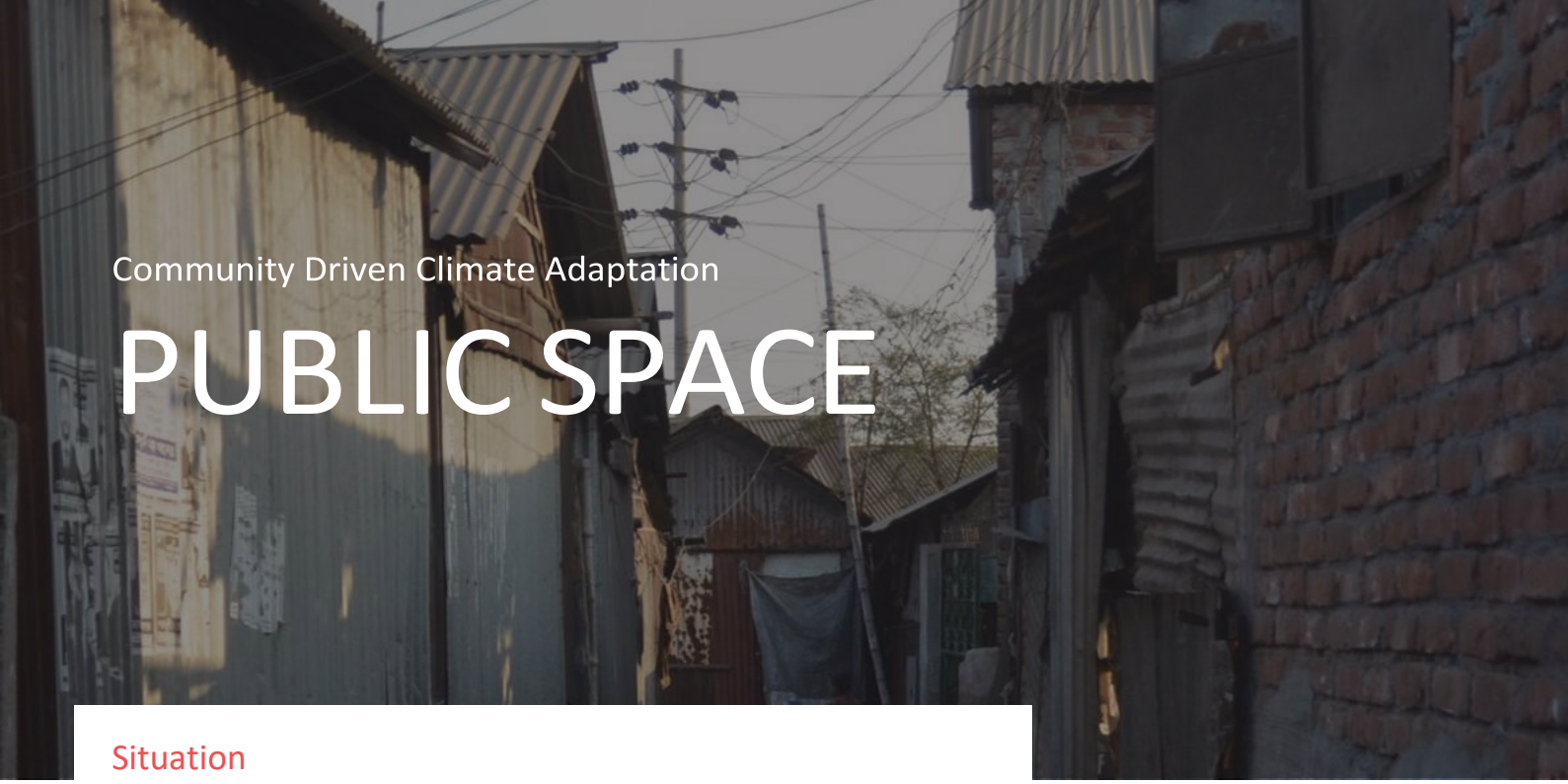
PLAN INTERNATIONAL SEEP ARUP NCF Nordic Climate Facility Initiative by NDF

## Challenges and Recommendations

The Community Driven Climate Adaptation (CDCA) project has been extremely challenging. Over time it became evident that innovation can be an abstract concept for project staff which requires careful and ongoing deliberation, and that the very high level of vulnerability of the target community – Rail Line and Match Colony – made the project even more challenging. In future community driven climate adaptation projects we will simplify the design to make it easier for field staff to understand and implement, and rather than testing several new prototypes across five different intervention areas, we will build even more on existing practices and help target communities to select only one or two key challenges that they are ready to invest time and resources in.

Several of the prototypes tested in the project did not show adequate potential for impact, financial sustainability and buy-in from the community. Yet such experiences offer valuable learning opportunities. Therefore, in this report Plan, Arup and SEEP reflect on what we have learned about facilitating innovation processes and community engagement in climate adaptation. The below lessons learned will inform our future projects, and we hope that our recommendations will help other practitioners working with bottom-up approaches to climate adaptation.

- **Manage expectations: Be clear about scope and limitations in community-led climate adaptation.** Many challenges experienced by the community went beyond the scope of the project. it is important to explain clearly and frequently that a project like this can only improve coping practices and resilience, but not solve the underlying causes for community vulnerability (poverty, inadequate physical infrastructure, exclusion from public service delivery, disempowerment, etc.) nor replace services or investments by the relevant authorities. Project partners have often faced criticism by the community in the form of "why don't you permanently raise the road?"). Likewise, there needs to be a mutual understanding between community and project partners about the innovative nature of the process, which means the community must agree to "host" experimentation which obviously can fail and not deliver the promised results
- **Ensure community ownership: Match-fund community investments in adaptation solutions.** Introducing a match-funding requirement early on in solution prototyping is essential to ensure that only ideas that have full community support are prioritised. If possible such a match funding requirement should extend to involve the relevant authorities.
- **Co-creative design requires strong and continuous mentorship from professionals.** When developing climate adaptation solutions through a bottom-up co-creation design approach there is a need for strong and continued support and mentoring. Such mentorship involves suggesting new ways to approach a specific challenge and support to analyse the constraints of each prototype design option in terms of scope, costs, maintenance, durability and sustainability.
- **Implement with the weather.** When testing climate adaptation prototypes, it is necessary to consider the impact of the seasons on the process. In Dhaka Match Colony, it is essential to test out solutions during the rainy season, but this limits the time to 3-4 months. For that reason, it can be necessary to test multiple different prototypes at once to be able to make adjustments in the time available.
- **Organise and engage communities.** Any kind of behaviour change takes time. Allow time to engage existing committees or community groups or established and develop new ones. Community engagement and organisation are the key to the continuation of the initiatives after the project is over. In youth-led programming, it is crucial to deliberately work on strengthening young people's ability to engage with and influence stakeholders as well as the ability to take joint and coordinated action.
- **Engage authorities and service providers just as much as community members.** Apart from building community members' understanding of climate and environmental issues, and involving them in the co-creation of solutions, it is also necessary to include components on advocacy and social accountability to make sure the community can negotiate with service providers and power-holders to find long-term solutions that can gradually replace adaptation measures. Especially in urban contexts where environmental challenges are multi-faceted and dependent on factors external to the community, collaboration with city authorities and service providers can help increase impact as well as potential for scaling and replicating solutions.



Community Driven Climate Adaptation

# PUBLIC SPACE

## Situation

The community have identified several issues affecting their streets and public spaces including:

WATER LOGGING

Several streets are waterlogged for periods of numerous months of each year. This makes it difficult to get access in the slum and puts people at risk of waterborne diseases

SAFETY

Many of the narrow and dark secondary streets feel unsafe, particularly at night.

UNWELCOMING STREETS

Community do not have pleasant spaces to be in and there is a lack of public/community spaces, reducing the sense of community

## Objectives

We will be prototyping solutions to cope with these three issues. The prototyping targets selected primary (paved) and secondary (unpaved) streets. By implementing the solutions the community will:

› Improve their mobility around the settlement with more accessible streets and increased access during the wet season.

› Improve the health and safety of the community by developing safer streets and avoiding contact with contaminated water and wastages

› Improve the general environment in public spaces with more welcoming streets.

## Solution

The solution consists of six different ideas designed to complement each other, resulting in the desired improvements to public spaces.

Temporary elevated paths

› Concrete blocks with wood planks about 224rft.

› Bamboo paths on stilts about 112rft.

Lightening walls (white/light colours)

› White/light colours increases light and decreases heat about 12000sft

## Did it work?

› Yes, but with deficiencies.

The paths increase mobility, but we have not arrived at a design that addresses all needs for durability, flexibility, price, storage, and maintenance, and which does not contribute to drain blockage.

› The wall painting was largely well received by the community and achieved the aim of brightening the streets. It is our hope that we will see residents who pick up the idea and start painting walls using their own resources.

## What would we do next time?

›Provide strong support to the community in the concept development and design, but include a co-funding requirement as early as possible.

› Integrate small-scale business model to increase financial sustainability.

› Too early to assess. This will be part of the evaluation.

Community street lights

› Solar lights and regular bulbs

› Shared electricity costs (monthly collection) or solar power

Street mirrors

› Increase (perception of) safety

› Strategically located at corners

› Allow street users to see what is around the corner and increase light in the street

Greening public spaces/streets

› Introducing some trees and plants in areas identified by the community to improve environment, provide shade and make streets more welcoming

---

› Not fully. The street lights achieved the desired effect of increasing safety in the lit up streets, but the community is not replacing broken bulbs. Solar lights are much more effective than Festoon lights

› No – with the most of the street lights not working, the mirrors loose the function at night.

› Yes, there has been continuous community interest in greening, and some people have started growing their own plants and vegetables after seeing the project work. However, this happens more in private than public spaces.

› Solar lights are usually better investments because they do not require a regular change of bulbs

› It increases the sustainability potential if the NGO only co-funds the lights.

› During the design phase, the community needs to develop their own maintenance plan

› With a co-funding requirement from the outset, this solution would likely not have been a community priority

› Individual greening initiatives that provide income generation opportunities have the highest sustainability potential while also contributing to improving the community environment.

› Work more directly with small-scale urban farming and engage technical partners from nurseries or similar to support business case development.

## Sustainability and Recommendations

A cross-cutting challenge for Street Upgrading has been that residents have been reluctant to invest their own resources in the solutions. This is due to seasonal migration in and out of Match Colony, expectations that project funds would cover all costs, and a persistent preference for permanent solutions rather than coping strategies.

The approach of paying for early designs and re-designs of prototypes made it difficult to manage such expectations and ensure sufficient commitment from residents. As a result, especially the wall painting, mirrors and street lights has ended up with low potential for sustainability, evident in the lack of community initiatives to maintain them. In light of the challenges, and in order to increase the impact and sustainability potential, the following is recommended.

› The elevated paths and greening solutions were deemed to be the most feasible and chosen for continuation in the final project phase.

› The bamboo elevated paths may significantly improve the mobility of residents in areas prone to waterlogging at a low cost, yet the solution suffers from community perceptions that only permanent – but expensive – solutions are worth investing in. Focus in the final phase is on training community members to construct and market the elevated paths and testing their business potential.

› Greening at household level has proven popular among residents, who have started growing vegetables and other consumable plants. The final phase will focus on developing a small-scale urban farming business model, which requires relatively small investments.

› There is a risk that the market is too small to create viable businesses around elevated paths and greening in the Match Colony and Rail Line communities. This will be tested in the final phase.

› Introducing a match-funding requirement at the outset of the design phase would ensure that there is an incentive for the community to only invest in the solutions they are committed to. Co-creating the initial concepts is key, but the more the community can lead the practical design, adjustment and implementation of the solutions the higher the chances of sustainable change.

Community Driven Climate Adaptation

# WASTE

## Situation

Dhaka Match Colony and Rail Line Slum lack any formal or informal solid waste management system, as there is no official waste storage, waste collection, transfer, or treatment/disposal in place. The consequences are:

› Significant safety, health and pollution issues

› Increased waterlogging due to clogged drains

› Low environmental quality of public streets/spaces

› Very little extraction by community members of existing value and useful resources (including nutrients, materials and energy) from the generated waste

› Around 80-85% of the waste generated is organic with plastic (5-10%) and “mixed waste” making up the remainder

## Objectives

We will be prototyping an integrated waste management solution for a section of the community (around 200 households). By implementing this prototype the selected parts of the community will:

› Decrease the amount of waste in streets, public spaces and drains. It is expected that this will significantly decrease the height and duration of waterlogging as well as adding to the general wellbeing, health and quality of

› Be able to extract value (either monetary or in kind such as soil

## Solution

The key steps are as follows, these will be undertaken by the climate champions with the support of Plan and SEEP.

1

Household separation and storage

› Set up separation of organic and "mixed" waste at household level

› Awareness raising

2

Introduce waste collection system

› Identify waste collection strategy and establish fee-based collection scheme

› Primary and secondary collection points

## Did it work?

› Yes, but needs more work to be sustainable. 120 households were separating their waste in the pilot, but some people and small businesses in the proximity copied the practice so that the number in reality is closer to 200.

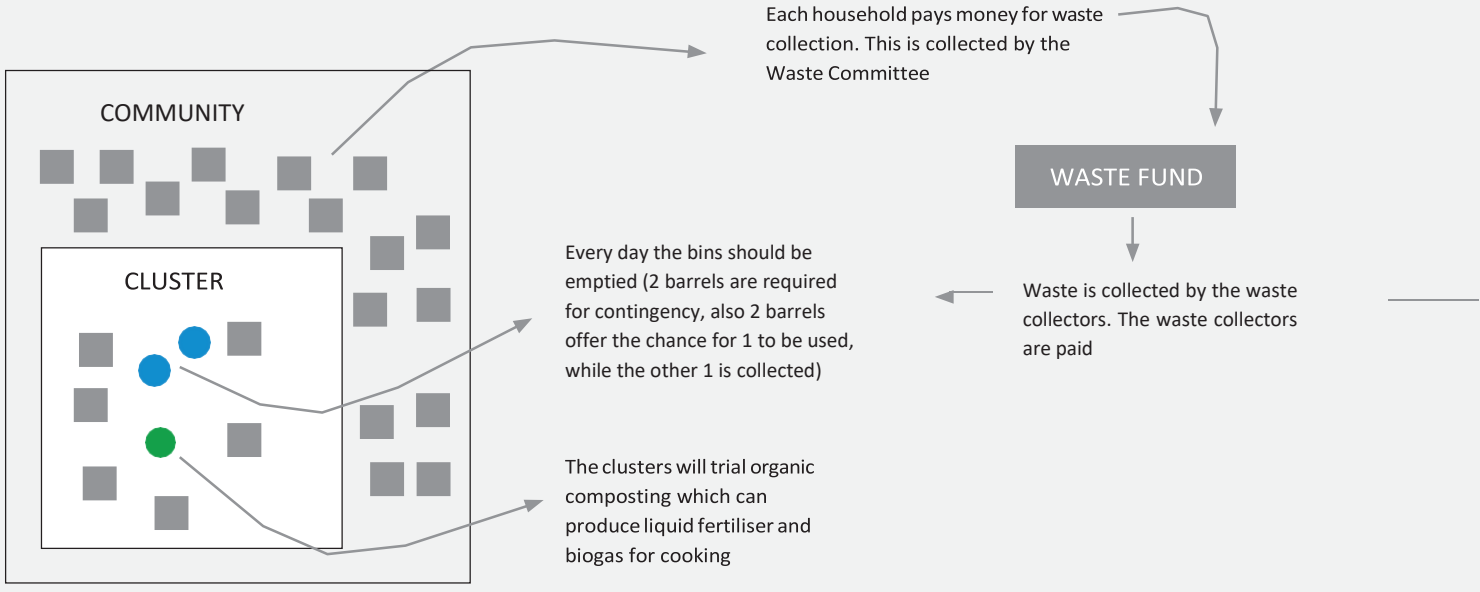
› Yes, the waste collection was well-received by the 120 households in the pilot, and a dumping site outside Match Colony, linked to the central waste management system, was successfully negotiated with local government.

## What would we do next time?

› Indications that behaviour related to waste management can be influenced are there, but the practice will only be sustained if integrated with a financially sustainable waste management system. Will assess this at the end of the project when final testing is done.

› 50% of the salaries of the waste collectors remain subsidized, but we are working on a business model which can fully fund this. It is therefore too early to assess the sustainability of the waste collection system.

## Waste Collection System



3

Local organic waste recycling

› Household level composting to produce liquid fertiliser and biogas

4

Strategy for using the compost

› Community/house-hold gardens.

› Selling the compost (depending on market analysis)

› No. This depended on successful recycling of organic waste, which we did not achieve.

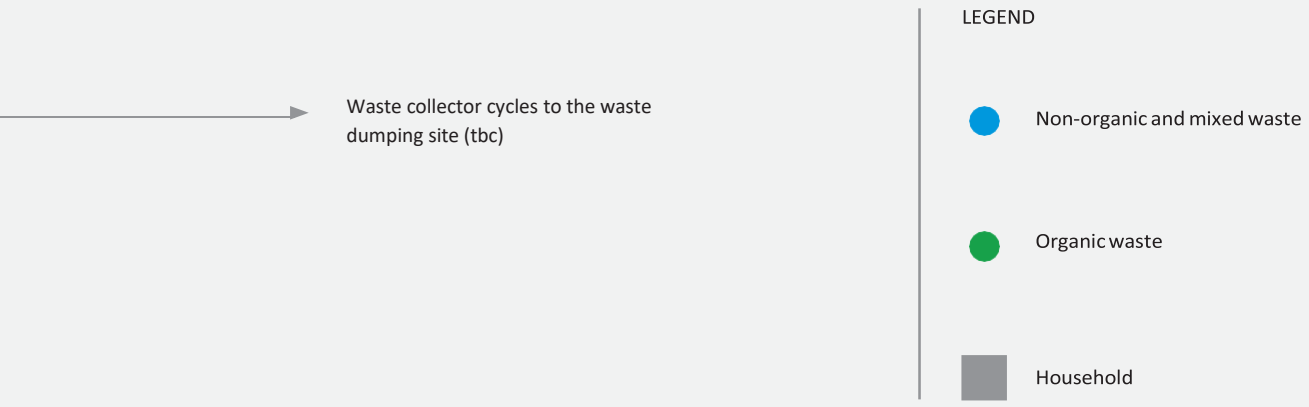
---

› No. There is limited available space for recycling technologies, little demand for organic fertilisers as few residents grow their own crops, and there has been resistance against composting close to residential areas.

› Too early to assess, but income generation is central to the sustainability of the waste management system. Strategies for using organic waste – whether compost, biogas or other – is key.

› Composting solutions depend on available space, cultural acceptance and profitable ways to dispose of the organic waste. Small-scale solutions are still being explored, so it is too early to discuss recommendations.

› N/A



## Sustainability and Recommendations

Residents in Match Colony have been committed to working on waste solutions, but cultural resistance against handling waste without payment has made it difficult to create a financially viable system. Very little value is currently being extracted from the waste, and few residents have been interested in organising voluntarily to manage the waste. Therefore, the waste collection system has been too expensive and it has not yet been possible to include cleaning of the public space.

We have identified the following recommendations for future programs and important actions that can improve sustainability:

› It is key to set up, support and train a group/cooperative/community which manages the waste system for the community and this group needs to have a strong understanding of the business model behind it. It takes time for the benefits of the waste system to become evident and people to feel confident that it is worth paying and the community involvement in building this confidence is essential.

› Working only at the community level is not enough. Rather, it is necessary to involve service providers to ensure that the solid waste can be transported to central dumping stations, and once the commitment is made it will take ongoing engagement with city level authorities to ensure that Match Colony is fully linked up with the central waste management system.

› An integrated waste management system enhances the chances of lasting change if it is developed around a financially viable business model. Ideally it should include waste separation, collection of waste in public space and from households, disposal and recycling.

› Subsidising salaries for waste collectors can help show residents the benefits of a community-driven waste collection system, yet runs the risk of raising expectations of continued funding support. It is therefore essential that a viable business model is developed in collaboration with the waste collectors to ensure that the system can continue after the end of the project.

› Continuous awareness raising addressing health and environmental hazards is required to continue the gradual process of creating behavioural change

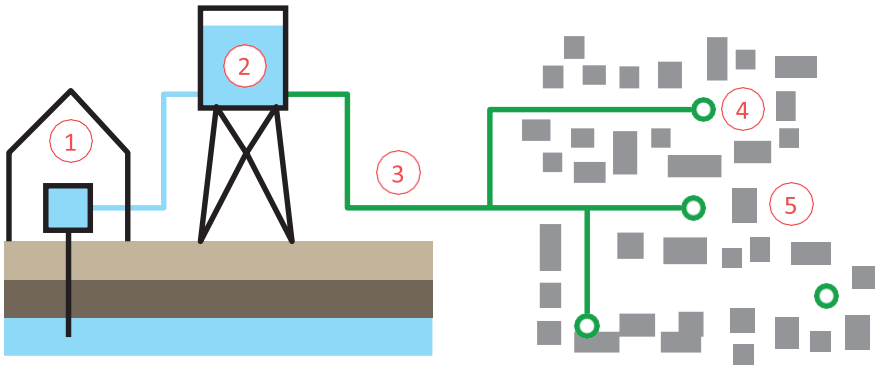
Community Driven Climate Adaptation

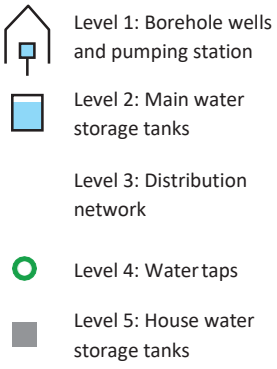
# DRINKING WATER

## Situation

There is little understanding within the community of where their water is coming from and the distribution network. Water quality is unknown, although residents believe that poor water quality is affecting their health, particularly during the rainy season. Most households appear to be buying water from borehole water sources maintained by private individuals. Waterborne diseases are very common throughout the community and hygiene awareness appears low.

PRESENT WATER SYSTEM STRUCTURE:




There are nine boreholes currently serving the comunity

## Objectives

Our solution consists of five integrated parts (see next page). By implementing this solution the selected parts of the community will:

› Understand their water network and identify high risk contamination points in the system.

› Work together to maintain their water system and solve problems as they arise.

› Gain valuable understanding of water quality including the importance of recommended hygiene practices.

## Solution

The five integrated parts are as follows, these will be undertaken by the climate champions with the support of Plan and SEEP.

1

ESTABLISH A WATER USERS COMMITTEE

› Encourage membership from across the community

› Define responsibilities of the committee (managing testing programme, communicate about contamination, take action to fix problems)

› Encourage and enable dialogue between stakeholders

2

MAP THE WATER NETWORK

› The climate champions, with support from Plan and SEEP, will create clear diagrams of the water networks including identification of sources and households supplied

## Did it work?

› The Water Users Committee helped bringing together water users and borehole owners, but was never fully developed since we did not find an appropriate water improvement solution.

› To some extent. The mapping and gathering of evidence worked well and had community support, but the pipe network was too difficult to draw out in detail. Only the tap to the source was mapped.

## What would we do next time?

› The committee has potential in future water quality projects if they are supported further to organise and define their mandate and responsibilities in the community.

› Would not change much. Despite the difficulties, the mapping helped increase understanding of water network and quality.

3

WATER TESTING PROGRAMME

› Develop a testing plan which is relevant and practical for the community

› Develop a system for the community to interpret data on water quality and alert relevant stakeholders in case of contamination

4

WATER QUALITY IMPROVEMENT METHODS

› Identify most cost-efficient methods to reduce contamination

5

SAFE DRINKING WATER AWARENESS

› Create clear guidance and communication materials

› Organise workshops and educational sessions with the community

---

› Testing indicated that contamination mostly happens in people's homes, but the results were inconsistent. There was also push-back from residents who believe contaminated happens at the source and nearby factories.

› Water testing can only be done if quality of lab tests can be trusted and/or affordable testing technologies that residents can use themselves are available.

› Very few people resorted to the cheapest option, boiling their water, despite increased knowledge of contamination, and we did not find any cheap alternatives that could improve water quality.

› Careful illustration as water quality is a complex subject that can easily be misconstrued. Addressing misconceptions by using evidence can help avoid conflict between water source owners and other community members.

› Workshops regarding different water parameters and types of contamination in water increased awareness of health risks, but it has not been possible to detect health improvements or significant changes in behaviour.

› We recommend a WASH programme for Match Colony to increase understanding of how to store water safely and reduce water-borne diseases, for instance by boiling water. This is outside the scope for this project.

## Sustainability and Recommendations

The challenges with contaminated drinking water have been complex and we have not been able to develop an affordable method that can give residents consistent data on the quality of the water. We concluded that the biggest immediate impact would come from better hygiene practices, which was outside the scope of the project. We decided to not prioritise developing water testing solutions further and instead we recommend the following:

› The community needs a sustained WASH programme to improve water and sanitation across the community and stress the importance of storing water safely and boiling it if possible before drinking. Safe drinking water awareness activities should be continuous and target a cross-section of the community to maximise outreach.

› The tension that arose between water source owners and other community residents during the project highlights the necessity of addressing misinterpretations of data early to avoid division in the community.

Community Driven Climate Adaptation

# SMART COMMUNITY

## Situation

One of the biggest strengths identified in Dhaka Match Colony and Rail Line Slum is the depth of local knowledge existing with the community members and the enthusiasm for improving conditions. However, systematic collection and use of information as well as efficient organisation and communication is lacking, meaning that collective initiatives for the benefit of the community are hindered.

## Objectives

We will be prototyping one solution consisting of five integrated steps involving the whole community. By implementing this prototype the community will:

› Build up more accurate information of the community including key infrastructure, risks and hazards, etc.

› Increase their general level of understanding of these risks and issues.

› Enhance their ability to take coordinated action as a community (e.g. joint waste separations efforts, collaboration with public authorities, etc.).

## Solution

The solution comprises steps which complement each other to create a 'smart community'

1

SMART Community Committee (previously Communication Team)

› Group composed of six leading Climate Champions

› Tasked with coordination, and compilation of data and community communication

2

Introduce address system

› Name streets, structures and households (and business and other entities).

› Put up street signs and numbers

› Create community map with streets and numbers

3

Create community control panel

› Develop base map, create large laminated copy of map, attach to metal background, get magnets, whiteboard markers and transparent sheets to display key pieces of information

## Did it work?

› Yes! The SMART Community Committee and Climate Champions have been among the project's greatest successes. The committee has acted as focal point between community leaders and Climate Champions.

› Yes. The address system has been adopted across the community with strong support and helps the Climate Champions identify areas of attention.

› Yes, to some extent. The dashboard has been used by the climate champions throughout the project to identify climate-related and environmental challenges but it is not being updated frequently.

## What would we do next time?

› Include trainings on "influencing" and facilitate processes where youth and adults work together in the co-creation of solutions. Establishing strong working relations between leaders and youth is central.

› Ensure dialogue with city authorities so that it can be formalized/aligned at a later stage.

› Continue to seek out tangible ways of using it, such as in waste management and potentially urban farming.

4

Resilience indicator baseline database

› Community resilience monitor survey / observations

› Visualize data in a dashboard

› Create community database with unique household identifier (address)

5

Community communication channels

› Create “contact book” of stakeholders and households (phone numbers)

› Identify platforms for communication (SMS, signposting, Facebook, flyering, meetings, etc.)

---

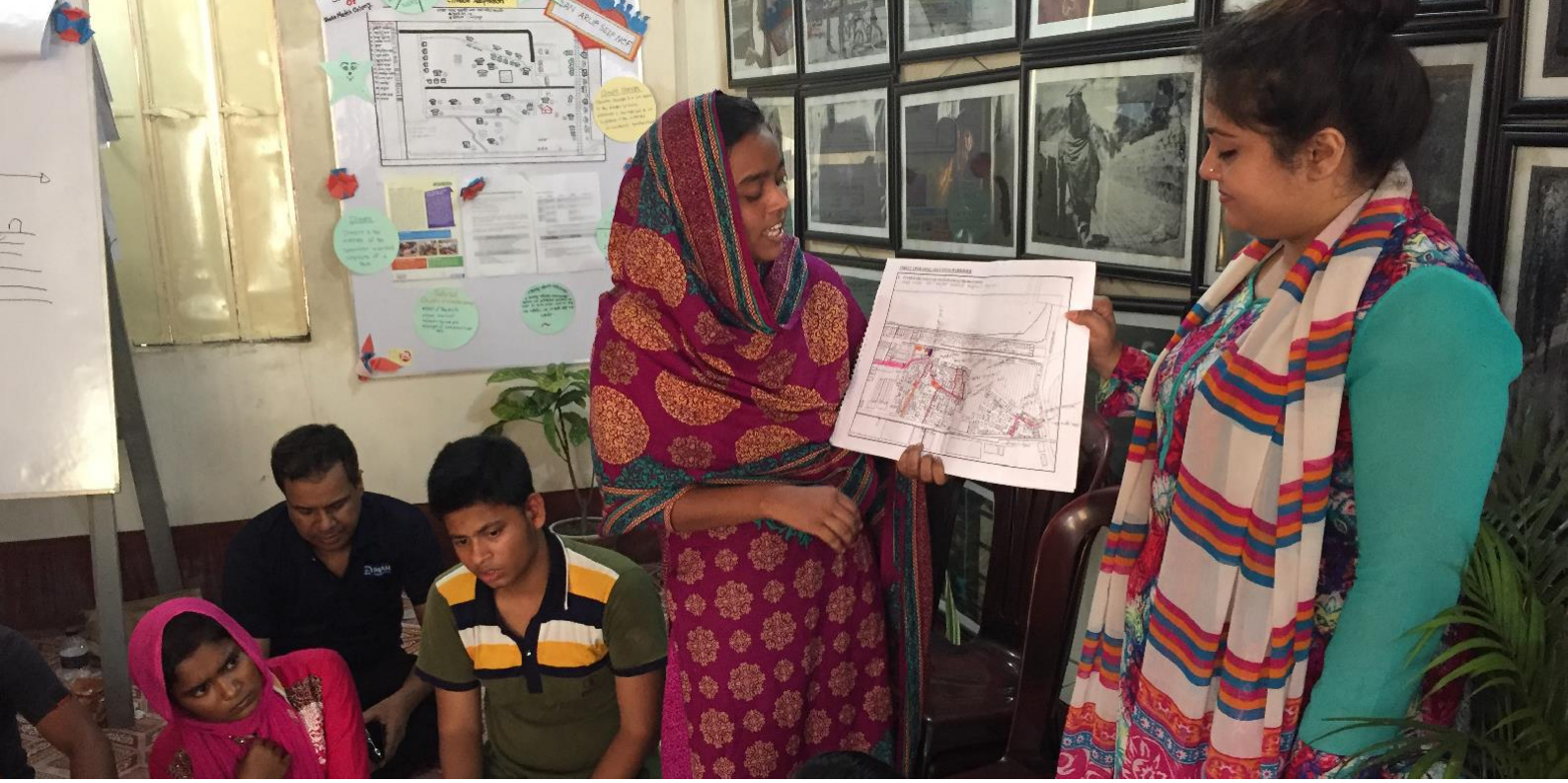
› No. Data has been collected monthly to track progress, but due to project delays and slow progress in implementing other prototypes, this solution was never fully developed.

› No. This activity was discontinued as it didn’t work well.

› We still believe in the idea, yet as the development of solutions has taken longer than expected, we have not been able to track the progress we anticipated. Would need thorough revision of indicators.

› N/A

Completion of a stakeholder mapping exercise with the climate champions



## Sustainability and Recommendations

Throughout the project the Climate Champions have acquired significant knowledge about climate and environment as well adaptation skills that can help increase the resilience of the community in years to come. To ensure that they do, we have identified the following actions:

› The Climate Champions were very young at the beginning of the project and had limited influence and confidence to speak up in their community. This could be addressed either by working with slightly older youth or continuing with a strong focus on capacity building in influencing and advocacy.

› The address system needs to be utilised as much as possible to ensure it will be sustained, and authorities should be engaged to ensure it is harmonized it with the central city address system.

› Building the commitment of the Climate Champions to continue mobilising their community around climate related-challenges is central to the sustainability of the project. Plan Bangladesh will continue to collaborate with them in future projects and provide them with networking opportunities outside Match Colonies to sustain their motivation and interest.



CONTACT DETAILS:
Mikkel Harder mikkel.harder@plandanmark.dk
Iñigo Ruiz-Apilánez inigo.ruiz-apilanez@arup.com

Funded by:

Annex 4C: CDCA Final Evaluation (internal)

See next page.

# CDCA FINAL EVALUATION

Contents

## Executive Summary

The final evaluation for the CDCA project applied a mixed-method design involving a desk review of relevant documents including quantitative data analysis and qualitative data collection. The evaluation also used the Most Significant Change (MSC) methodology to evaluate stories from key informants and Community Reflections during focus group discussions.

The intended outcomes of the evaluation were to learn the extent to which the interventions and their approaches have been suited to the priorities and policies of the people and communities they were intended to benefit. To learn the extent to which the community's capacity for climate change adaptation and advocacy changed during the course of the project? To understand the probability of continued long-term benefits to the target populations after the project or has been completed, and to know the extent of which the project has applied gender and inclusion sensitive approaches and explicitly aimed for results that improve the rights of children and young people and gender equality.

From the findings presented in this evaluation it is clear that the overall perception of the project and its outcomes were positive. The project did experience a number of set-backs which were difficult to overcome, and the final outcomes did not live up to the expectations of the community in many cases or the project partners and objectives as set out in the baseline log frame. There were some positive elements which emerged from the project where the community decided to continue and expand certain programmatic features including the waste management component. Also revealed in this evaluation is how important and rich the learnings generated through the course of the CDCA project were and how they now fit into the deliverables as well as project planning for future projects.

The CDCA project pursued bespoke, community specific solutions which were co-designed by community participants and which worked within the context. Unfortunately, some of these interventions did not appeal to the community in many cases due to functionality and materiality of the interventions but not the principles behind the interventions themselves.

the community's capacity for climate change adaptation and advocacy changed during the course of the project can be measured chiefly in the community's learned skills and knowledge on climate change and adaptation measures. The community developed this knowledge and skillset throughout the project. The majority of advocacy learning opportunities were not realised due to evictions and therefore there is limited coverage of this during discussions with the community,

The probability of continued long-term benefits to the community of Match Colony and its residents after the project has been completed are quite limited due in large part to forced evictions within the community and the limited buy in from the community. However, although initially funded by the project partners and set up by young members of the community, the wider community has decided to self-finance the waste management service after the project activities concluded. Improved capacities of the climate champions and participants in the project was also another long-term benefit which the community participants recognised.

The CDCA project also promoted gender equality and inclusive, sensitive approaches to climate change adaptation and resilience throughout the process and explicitly aimed to improve the rights of children, young people and improve gender equality. There was a strong emphasis on gender balanced decision making and the rights of young people within their community were strongly promoted.

## Annexes

| | |
|---|---|
| Annex 1 | CDCA Baseline Study Report |
| Annex 2 | Solutions Performance Report Analysis |
| Annex 3 | Evaluation strategy for CDCA Project |
| Annex 4 | The Prototype Outcomes and Action Plan Report |
| Annex 5 | Key Informant Interview Report |
| Annex 6 | Climate Champion Responses Male Participants |
| Annex 7 | Climate Champion Responses Female Participants |
| Annex 8 | Resident Responses Male Participants |
| Annex 9 | Resident Responses Female Participants |
| Annex 10 | Interview Guide for Key Informants |
| Annex 11 | Interview Guide for Climate Champions and Community evaluation |
| Annex 12 | Positive and Negative Learnings Report |

# 1. Introduction

PlanBørnefonden (DNO), together with Plan Bangladesh (BCO), ARUP and SEEP (Social Economic Enhancement Programme) have been implementing the Community Driven Climate Adaptation project in Dhaka- Making Sustainable Climate Adaptation Solutions Accessible to the Urban Poor, funded by NCF from January 2016-June 2018 in the city of Dhaka in Bangladesh.

The project's primary target community was Match Colony located in Shyampur (160,000 inhabitants) a slum area at the outskirts of Dhaka particularly prone to flooding and waterlogging which was compounded by adaptive measures taken in other areas of the city. Shyampur as well as other low-lying slum areas in the periphery of the city are often receive diverted surface water from other (more affluent) parts of the city through canals. These peripheral communities have very limited resources available to take any adaptation measures or to influence the municipal planning and authorities and investors to finance improvements (Annex 12).

The overall objective of the CDCA project was intended to:
*Strengthen climate resilience of disadvantaged urban communities in their ability to minimize, withstand and bounce back from negative physical, social, economic and environmental impacts of flooding and waterlogging.*

From the outset the project was intended to improve Match Colony and Rail Line with a number of adaptive measures. However, early into the process Rail Line was evicted which led to a re-focus of priorities. The project experienced further setbacks as it continued, and then Match Colony was threatened with eviction as well, and later evicted. At this point the project's priorities changed toward a more learnings driven focus rather than physical outputs. As a result of these changes, the final evaluation's reporting priorities changed as well. This document therefore is not intended to measure progress towards original outcome indicators, since the project changed so much, and had not fulfilled a number of the original objectives from the logframe. Therefore, the intended purpose is for this evaluation report is as a reflective work which incorporates key lessons learned from the project and assists future programme planning. It is also hoped that this evaluation can help increase sustainability and replication potential of the initiatives started in Dhaka Match Colony.

It is also hoped that findings of the evaluation with particular reference to impact stories collected throughout the process will be communicated to local and international organisations working in climate change adaptation or innovative participatory projects within Dhaka's context.

## 2. Objectives of Evaluation

This evaluation has been identified as an important opportunity to explore and present the learnings of this project as it was a pioneering approach to climate change adaptation in the international development sector, and as such, it is important to extract success and failings so that future projects undertaken by CDCA's partners as well as organisations implementing similar operations internationally can undertake frameworks which avoid the same traps and develop the successes of this project. (See Annex 3)

Listed below, are the key learning objectives of this evaluation.

1. To learn the extent to which the interventions and their approaches have been suited to the priorities and policies of the people and communities they were intended to benefit?

2. To learn the extent of which the community's capacity for climate change adaptation and advocacy (ability to take coordinated action as a community and collaborating with public authorities on issues related to climate resilience) changed during the course of the project?

3. To understand the probability of continued long-term benefits to the target populations after the project or has been completed?

4. To know the extent of which the project has applied gender and inclusion sensitive approaches and explicitly aimed for results that improve the rights of children and young people and gender equality?

# 3. Methodology

The evaluation process engaged members of the target communities; Dhaka Match Colony and Rail Line Slum, who were part of the project including Climate Champions as well as civil society stakeholders. The process was jointly undertaken by Planbørnefonden Denmark and Plan Bangladesh with project staff and participants who collected the majority of the data. This collaborative process was implemented to ensure full ownership of the reflections on project and to create a transparent and accurate account of the challenges and lessons learned.

The evaluation applied a mixed-method design involving a desk review of relevant documents including quantitative data analysis and qualitative data collection. The evaluation also utilised the Most Significant Change (MSC) methodology, stories and Community Reflection (CR) Sessions in order to create a broad understanding of the project's successes and limitations which could be cross referenced.

The MSC technique is a holistic participatory evaluation methodology which considers the performance of projects as a whole. This evaluation approach engaged with project stakeholders and beneficiaries and encouraged them to decide the sorts of changes which should be recorded as well as analysing the data. MSC represents a monitoring-without-indicators approach, where the answers to central questions about change are in the form of stories of who did what, when and why. The reasons 'why' this was important in the specific context.

The MSC technique aims to ensure downward accountability where the youth, community members and stakeholders are able to assess the most important changes and voice their level of satisfaction with the project. It will help identify gaps and challenges experienced by community members, map the most important changes that have come out of the co-creation process, and explore their suggestions for future development.

A study design workshop was held with all field staff involved in the evaluation, where they were trained in the MSC technique, the quantitative project data on resilience monitoring indicators was presented, and, based on semi-structured interview guides, were developed and pre-tested. After this, the methodology was finalized. Selected Climate Champions were also introduced to the methodology, as they could play a pivotal role in the data collection. (See Annex 3)

The format fort the MSC qualitative evaluation was to interview 16 Climate Champions (not having participated in the MSC-workshop) with the four trained Climate Champions, to facilitate one Focus Group Discussion (FGD) with 8 female Climate Champions and one FGD with 8 male Climate Champions. In interacting with the youth, participatory exercises were used, and, where the youth themselves defined the subjects that had been of key importance, and identified, discussed and analysed MSC stories. Following on from that, a further 16-20 community members through 2 FGDs (one FGD with 8-10 women and one FGD with 8-10 men) were interviewed by Plan Bangladesh project staff. Another important element of the final evaluation was Key Informant Interviews (KIIs) in which key community stakeholders (national, municipal and local government and service providers) were interviewed by the BCO project staff as they had an extremally valuable perspective on how the project had been delivered and importantly could compare with other projects which had taken place in the community before See Annex 3). Interview Guides for Climate Champions and Community evaluation as well as for the key informant Interviews can be found in Annex material 10 and 11.

During the implementation period of the Community Driven Climate Adaptation project in Match Colony a number of project related documents were produced. These reports were a valuable insight into how the

partners valued the projects' outputs. The findings have been distilled and discussed alongside the feedback from the community members.

The documents which have been evaluated are listed in the annex section and include; Solutions Performance Report Analysis which quantitively questioned 48 households in the community to measure the improvement in their Knowledge, attitudes and behavioural change. The Prototype Outcomes and Action Plan Report was also referred to throughout the final evaluation as it was one of the most comprehensive reports to have explored the performance of each solution and intervention undertaken during the implementation period. The final document which was included a Positives and Negatives Learning Report which explained the stories of the most successful and least successful interventions of the project. resilience monitoring indicator reports were intended to be included and to form a strong part of the quantitative component of the evaluation which tracked the progress of the project throughout the implementation period but unfortunately the resilience monitoring indicator report was only completed once and does not present any correlations or unique findings out with the existing documentation

## 4. Limitations

Due to the continuous changes in the project activities throughout the project period, and delay in retrieval of data on the Resilience monitor indicators, this has not been reflected on to the level of depth which was outlined at the initiation of the project. Another limitation of the evaluation is the low number of informants in the Resilience monitoring indicator report and lack of representiveness which meant that a number of the quantitative findings presented should be viewed critically and given less weight when compared with the qualitative elements of the evaluation.

One of the key limitations of this evaluation is the poor quality of the baseline report and supporting material, in which the indicators measured did not adequately link to the objectives of the project, and thus it was not possible to do a pre- and post-assessment of changes towards project objectives as the intention had been from the outset of the project and which would have made a valuable contribution to the learnings of this project.

There are also potentially some bias accounts contained in the qualitative feedback related to the fact that Climate Champions who conducted the FGDs. This bias is likely to have emerged as the Climate Champions were heavily involved in the project. In spite of this however, this evaluation considered that rather than a significant limitation, this would in fact be a benefit to the information collected due to the trust between interviewer/facilitator and informant in this case.

It is also highly probably that during the course of evictions in Match Colony the responses might have been negatively or positively influenced depending on the interviewees. The evictions might also serve as a significant distraction for participants during the evaluation as they might have found it difficult to focus their attention to the results of the project in a time of despair and frustration.

# 5. Analysis and Findings

## 5.1 Physical Interventions

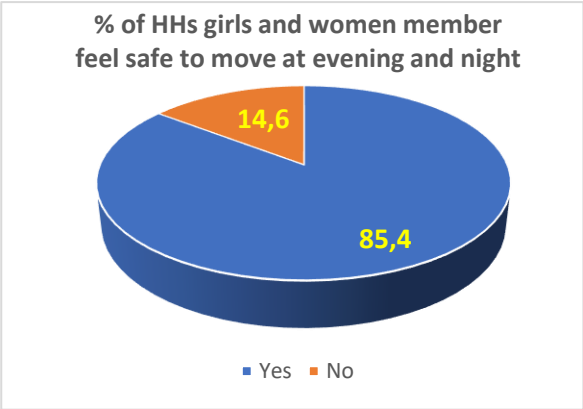
The CDCA project produced four street upgrading solutions which were solar street lighting, temporary raised public footpaths, street greening and street mirrors. The key objectives of the street upgrading solutions were to:

- Public space upgrades which Improve mobility around the settlement and provide more accessible streets especially during the wet season.
- Improve the health and safety of the community by developing safer streets by avoiding contact with contaminated water and wastage.
- Improve the general environment in public spaces with more welcoming streets. (Annex 10)

Solar street lighting

The feedback from project reporting documents suggests that the street lights achieved the desired effect of increasing safety in the community's streets. It was revealed in quantitative findings that 85.4% of female participants expressed feeling safer to move during evening and night with only 14.6% of female respondents stating that they still do not feel comfortable using public spaces at night (Annex 14A). It was also highlighted that Solar lights were much more effective than Festoon lights, however, the community has not replaced broken bulbs as the solar light bulbs are more expensive (Annex 10).

The graph shown below illustrates the positive opinion of lighting in public streets and spaces:




*Feedback from Climate Champions:*
When evaluating the performance of solar street lighting, female and male climate champions agreed that this action had significantly improved life in in the community. The feedback revealed that before street lighting was installed, movement for members of the community, especially girls, women and children was very limited, particularly at night. The lack of lighting was also particularly difficult during emergencies as well as for children and people going to mosque. During the night people often fell down, got hurt and got dirty from poor visibility. An unexpected benefit of the solar street lighting solution was also an increase in sales reported by shopkeepers who believed that people felt more safe shopping at night.
Climate champions were critical of the cost of solar street lights and argued that they would want to reduce the price for the solution to be embraced in future. One idea presented to remedy this was to utilize bamboo posts instead of metal to bring down the cost of lighting units.

*Feedback from the community:*
The feedback for the community is more positive than both the climate champions and the project's reporting and analysis. Community participants argued that in the past the roads were very dark, unsafe and it was hard to avoid criminals and gangs.

> One participant in particular suggested that before the lighting was installed criminals and gangs frequently gathered on "Shwapnochura Road".

Participants also stated that drug related crimes had also seemed reduced in the well-lit areas. During night, factory workers, especially women were also particularly vulnerable before the intervention. Community participants reflected that the houses nearby lighting have benefitted directly from the increased visibility at night by being far more mobile, they also stated that people are more social at night and feel more safe shopping late at night as a result of the street lighting. Community participants also suggested that the lighting had created a safe and secure environment for youths especially young girls and women to walk at night for attend any of their needs. Elderly people also benefitted, as they now have increased visibility when they wanted to go to the mosque at night.

One of the negative issues flagged by community participants was that they don't know how to maintain the solar lighting and think that project staff are responsible for maintenance and upkeep of lights. However, the Pochayet Committee (community leadership committee) have agreed to maintain and continue this solution.

<u>Elevated Pathways</u>
The findings from project reports and supporting documents show revealed that the paths effectively increase mobility during times of flooding in Match Colony, however, the findings also highlighted fundamental flaws in the design of elevated pathway structures. These flaws relate to important core functions including durability, flexibility, price, storage, maintenance, and failure to reduce drain blocking.
Evidence from quantitative findings suggested that a total of 87.5% residents asked expressed that street upgrading or constructing elevated path way is useful for them individually. It was also shown that 85.4% of

participants asked believed that their family members were able to move more safely during waterlogged periods. Furthermore, 79.2% participants stated that children could get to school with greater ease and more regularly. 70.8% of residents also stated that they could get to work with greater ease and more regularly with 41.7% saying they could visit the market more easily.

The quantitative analysis also supported the reporting documents by showing that roughly 12.5% of participants from Match Colony believed that the elevated pathways were not useful for them because it was not a permanent solution, nor did it get rid of water logging in the community (Annex 14A). Finally, it was revealed that the participants used the elevated pathway an average 6 to7 times a day.

| Usefulness of elevated path | | |
|---|---|---|
| | number | % |
| Yes | 42 | 87.5 |
| No | 6 | 12.5 |

| Reasons for Usefulness | | |
|---|---|---|
| Reasons | number | % |
| Family members can move safely on this elevated way | 41 | 85.4 |
| Family children can easily & regularly go to school | 38 | 79.2 |
| Family members can go to work place regularly | 34 | 70.8 |
| Family members buy necessary items from nearest shop | 20 | 41.7 |

*Feedback from Climate Champions:*
Before constructing temporary elevated pathway structures mobility in the community was very limited during periods of heavy rain and flooding. Community people were often afflicted with skin diseases and infections when they came into contact with the contaminated water. During those times children could not attend school. The climate champions state that once implemented, the temporary elevated paths improved movement in the particular areas of the community where structures were added. They also suggest that there was a reduction in cases of skin diseases and other waterborne diseases within implementation areas. The champions were critical of the structures' lack of permanence and argued that future iterations should consider having capacity for two vehicles to pass each other.



*Feedback from the community:*

The findings from final evaluation sessions with community participants revealed that there are few significant differences between the two prototype pathway solutions. Participants suggested that the concrete block pathway and Bamboo pathway are both useful during periods of water logging. Female participants in particular explained the during periods of water logging, the elevated platforms helped them to avoid contaminated, polluted water. The polluted water often caused skin diseases and sores but after using. the pathways, female participants noted that there had been a noticeable reduction in skin related illness.

One participant in particular mentioned that no one in her family had been affected by skin diseases this year as a result of the intervention.

Unfortunately, the concrete block raised platform prototype lead to a number of injuries and was considered less safe than its bamboo counterpart. It was reported that during periods of water logging the wooden planking often floated, and fastenings became loose, untied, and resulted in many people falling off the platforms and getting injured. Participants also explained that solid waste got trapped under the under the blocks and created barrier for water passing by. During dry session, participants reported that the main road is also causes mobility issues as the pathway's heavy concrete blocks get in the way and are not possible to move. Another complaint regarding the concrete block raised platform solution was that the cost of materials was prohibitively expensive for the residents to create any kind of long-term sustainable solution.

Although the Bamboo pathways were much better received by the community there was a similar complaint that the structure couldn't be disassembled, moved and stored easily during dry periods. There was also a complaint that during the rainy season the bamboo pathway gets very slippery and has a risk of accidental injury.

When considering how these solutions could be contextualized to improve effectiveness, the community participants suggested that a permanent road which raised the level of the whole road surface with sand and concrete would be more useful for them. Some participants also argued that the elevated pathways offered were not human friendly and required no more consideration for any contextualization. Other considerations offered by participants were that the community really required a water pump or improved drainage infrastructure rather than raised pathways.

Street Mirrors

Street mirrors intended to improve visibility with match colony's narrow streets were described in the project reporting and supporting documents as unsuccessful. They key reason for this was their lack of functionality during the night. When most of the street lights do not work and the streets are completely black, the mirrors cease to provide improved visibility and surveillance in the community (Annex 10).

*Feedback from Climate Champions:*

Before installing street mirrors, climate champions argue that sexual harassment, physical abuse frequently occurred in the community's narrow streets. After installing street mirror, the climate champions suggest that there was some reduction in sexual violence and harassment and that girls and women were safer during the day. The climate champions key criticism of the street mirror is the lack of functionality during the dark and that the mirrors were not installed to work with poor lighting in the community. Female champions had a more positive opinion of the street mirrors, suggesting that after installing street mirror, girls felt safer and could see if anyone was standing in their path who might try to harass them and avoid any danger or abuse. Similarly, the female champions argued that street mirrors did not make any significant changes as they had no real use in the night as there was no integrated or sufficient lighting system.

*Feedback from Community*

Reflecting on their thoughts regarding street mirrors, the community agreed that they have improved safety and security during the day, especially when using narrow, congested connecting roads and corners. Women and young girls have benefitted especially from the mirrors as thy help them read the situation of their route before proceeding into a situation where they feel unsafe. Before the introduction of mirrors, it was a common scenario people often had to tolerate being touched inappropriately, pushed or assaulted. Elderly people also benefitted from the mirrors for similar reasons. Female members of the community also stated that before the mirror intervention. One of the recommendations made by female participants was for more mirrors to be located around the settlement.

> One particular participant mentioned that she had used the mirror once to resolved an altercation between a young man and woman around the corner from her.

*Positive and Negative Learning Report* Initially to identify probable protype solution the project team conducted consultation sessions with different groups of people in the community and identified some solutions. Construction of temporary elevated path using concrete blocks and wooden planks was one of the six solutions. After implementing, this solution generated a mixed reaction among the community people about project activities. Many in the community were not interested in implementing this solution but the project team continued to develop the solution. The Temporary elevated pathway does not meet expectation of community as the community people expected permanent solutions for getting relief from waterlogging.

Furthermore, the design did not consider pregnant women, new mothers, children and people with disabilities at designing phase. Considering the scarcity of space and weight of materials it would be difficult

to manage using materials at dry season. The construction cost were also much higher than manageable so that it was not affordable for the community people to replicate this solution.

Moreover, during designing phase, risk analysis, cost-benefit analysis, maintenance and inclusiveness issues were not considered properly. And sometimes heavy rain overflowed the construction.

This prototype solution does not fit as an adaptive solution to implement in the targeted communities of Shympur Union. That is why this solution was not owned by community and not replicated in other areas. regarding maintaining this solution, it also became extra burden for the community people to remove this elevated path way during dry season or uphold the path due to raise height of water.

Street Greening

One the better received elements of the CDCA project from the reporting and supporting documents was the street greening intervention. The Prototype Outcomes and Action Plan Report reflects that there has been continuous community interest in greening, and some people have started growing their own plants and vegetables after seeing the project work. However, this happens more in private than public spaces.

*Feedback from Climate Champions:* The climate champions were relatively positive with regard to green infrastructure, they stated that significant changes have been made within the community as some community people have started their own initiatives. They have started planting vegetation after being inspired seeing plantation work undertaken by project. One shop owner who is quite young has already started planting and selling vegetables from the plantation he created and already he is experiencing significant changes. One criticism offered by the climate champions is that urban greening has not significantly improved spaces in the settlement as most of the community people are not aware about greening and plantation efforts and they do not have much interest in the solution. Although the climate champions also stated that a wider awareness program might have improved the overall effectiveness of this solution.

*Feedback from the community:* The participants from the community were less positive about urban greening efforts. They argued that the project-initiated planting programs but was not popular due to lack of space combined with the water logging situation.

Water Management

The CDCA project explored the issue of water quality and management within Match Colony, focusing specifically on establishing a water users committee and mapping the water network of the settlement. The key objectives of the water management focus were to:

- Understand the water network and identify high risk contamination points in the system.
- Work together to maintain their water system and solve problems as they arise.
- Gain valuable understanding of water quality including the importance of recommended hygiene practices. (Annex 10)

The water management focus created a water users committee which was invented to encourage membership from across the community, define responsibilities of the committee (managing testing programme, communicate about contamination, take action to fix problems), Encourage and enable dialogue between stakeholders. The Water Users Committee helped bring together water users and borehole owners, however, this was not fully developed as an appropriate water improvement solution was not found.

The second focus of the water management intervention looked at mapping the water network within Match Colony. The climate champions, with support from Plan and SEEP, created clear diagrams of the water networks including identification of sources and households supplied. The mapping and gathering of evidence worked well and had community support, but the pipe network was too difficult to draw out in detail. Only the tap to the source was mapped, but despite the difficulties, the mapping helped increase understanding of water network and quality. Testing indicated that contamination mostly happened in resident's homes, however, the results were inconsistent. There was resistance from residents who believed that contamination of water occurred at the source and was polluted by nearby factories. Very few people within the community resorted to the cheapest option, boiling their water, despite increased knowledge of contamination, and there were no cheap alternatives which could be implemented to improve water quality in the community. Another concerning element to consider was the tension that arose between water source owners and other community residents during the project. This highlighted the necessity of addressing misinterpretations of data early to avoid division in the community. (Annex 10)

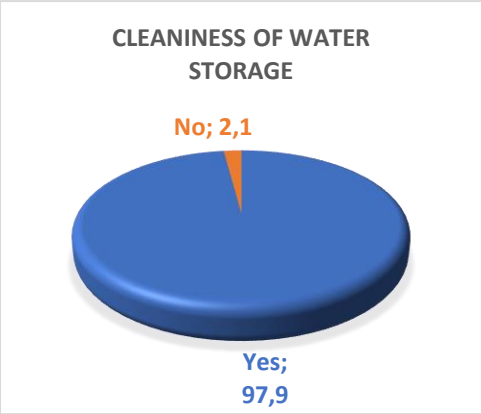
The charts below show a sample of the most common water born illnesses present in Match Colony set against the most prolific water storage systems. The project undertook interviews regarding the water tests conducted in the community and found that 43.8% of the participants stated that they have seen the test report, and the remaining 56.3% of participants stated that they did not know about the test results. It was observed however, that roughly 98% of the community participants kept their means of water storage neat and clean

| People suffering from most Common Diseases | | | |
|---|---|---|---|
| Illnesses | number | % | Average Days |
| Diarrhoea | 10 | 21 | 4 |
| Dysentery | 1 | 2 | 4 |
| Typhoid | 1 | 2.1 | 4 |

| Cleanliness Status of Water storage (Based on Observation) | | |
|---|---|---|
| | number | % |
| Yes | 47 | 97.9 |
| No | 1 | 2.1 |

(Annex 14A)

| Water Storage System | number | % |
|---|---|---|
| Water Drum | 43 | 89.6 |
| Water Jug | 41 | 85.4 |
| Water Jar | 5 | 10.4 |
| Filter Machine | 4 | 8.3 |
| Pot | 17 | 35.4 |
| Bottle | 22 | 45.8 |
| Other | 1 | 2.1 |




*Feedback from Climate Champions*:
Before implementing the water management solution, champions noted that they were not aware about the quality of water that they were using for drinking and washing purposes. After performing water testing in different zones of the community and sharing of the report, the champions suggest that they are now much aware about the quality of water in our community. They also state that they learned the different parameters of water and its standards. The champions discussed the negatives of the water management solution as well and argued that it did not make any significant changes as the solution apart from providing knowledge.

Considering context of the solutions to improve effectiveness, the community champions would have preferred an intervention which provided filtration systems or concrete solutions which could have treated water from contamination.

*Feedback from the community:*
When evaluating the effectiveness of water management, the community participants expressed disappointment as they argued that the project has completed three tests and only three reports have been shared with them.

The participants learned that their water is not highly polluted and contains minimal amounts of pesticides which are tolerable to the human body. The participants maintained however, that many of the water transmission pipes were open and could easily be contaminated by insects and dust.
the project has implemented some water tap attachments with some water transmission pipes that has reduced wasting of water and pollution from insects, but the community would have preferred that steps were taken to implement purification solutions.

One of the positive outputs of the water management element of the project was the change of community practices after they learned that water storage and preserving methods in domestic situations were the main reason for water born sickness. As a result, a number of families are now covering water vessels or using jars. Unfortunately, this has not extended to boiling water for purification.

People suffered much due to the industrial polluted water in every day. After getting the motivation from CDCA project, the community leader sat with the owner of the Industrial site neighbouring Match Colony along with Chairman and Members of this colony to solve this problem. As a result, the industrial owner constructed a brick wall so that the polluted industrial water could not flow into the colony in future.
*Community leader and Ex member of UP*

Waste Management

The waste management focus area implemented a prototype of an integrated waste management solution for around 200 households and attempted to create a sustainable business model in the process. The objectives of this focus are shown below:

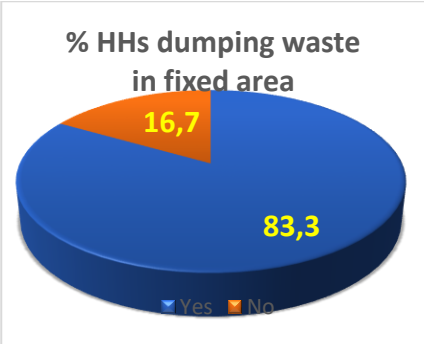
- To decrease the amount of waste in streets, public spaces and drains. It is expected that this will significantly decrease the height and duration of waterlogging as well as adding to the general wellbeing, health and quality of the community
- To be able to extract value, either monetary or material value (Annex 10)

The findings from the project reporting and supporting documentation reveal that a program of separation of organic and "mixed" waste at household level, awareness raising, and waste transfer were undertaken. The results show that while this element of the project was successful, it required more work to be sustainable. By the closure of the project 120 households were separating their waste, but some people and small businesses in the proximity copied the practice so that the number in reality was closer to 200.

The quantitative findings revealed that the average water level raised 3.8 feet and the maximum level of water raised 4.5 feet and that the average duration of water logging was 53 days with a maximum of 250

days. It was also revealed that at least 07 drains in the community were blocked for 28 days on average. According to some respondents, a number of drains were blocked as many as 200 days or more.

Furthermore, due to project intervention residents are now dumping in fixed waste bins. The following graphs illustrated that 83.3% households dumping domestic waste in fixed place. (Annex 14A)




| Reasons for not dumping waste in fixed location | number | % |
|---|---|---|
| Do not have any idea | 2 | 4.2 |
| No separate bin | 6 | 12.5 |
| Don not feel any necessity | 7 | 14.6 |
| Others | 1 | 2.1 |
| | | |

| Water Logging status | | | | |
|---|---|---|---|---|
| Faced Water logging (%) (n=48) | Average (Feet) | Average duration of water logging (Days) | Maximum level water raised (Feet) | Maximum Duration (Days) |
| 90 | 3.8 | 53 | 7 | 250 |

| Number of households which dump waste in fixed place since implementation | | |
|---|---|---|
| | n | % |
| Yes | 40 | 83.3 |
| No | 8 | 16.7 |

*Positive and Negative Learning Report*

The positive and negative learning report described learnings from two of the most successful and least successful initiatives driven by the CDCA project. The waste management system was seen a positive story to tell. the CDCA project took several initiatives to establish a waste management system in the community. Earlier in the project Match Colony was under the jurisdiction of the Shyampur Union Parisad (Council) until it was brought into the administration of the Dhaka South City Corporation (DSCC). To establish bridge with (DSCC) different initiatives were undertaken to establish a proper waste management system. Regular communication and meetings were arranged with the waste department of (DSCC), chief executive officer of Zonal-5, slum development officer, and an executive engineer of Japan International Cooperation Agencies

(JICA). An application for the use of a secondary dumping station was also submitted to the Chief Executive Officer of Dhaka South City Corporation. Final approval of a Secondary Transfer Station (STS) was granted. However, before that, some activities had also been implemented to bring behavioural change to the community people. These initiatives featured the distribution of 400 bins at household level clustered around 120 households into 20 areas for a pilot, one van for collecting waste, 120 households educated on how to segregate organic and in-organic waste, formation of a waste management committee comprising of 16 members as well as recruiting two waste cleaners from the community to collect and dump waste at the STS.

People have since started dumping their household waste at waste specific bin. Community level waste collectors collect waste from community bin and dump it Secondary Transfer Station (STS). Regarding behavioural changes of household members are aware about negative impact dumping their household waste elsewhere as it causes drain blockage. Community people contributed money for maintenance of waste bin & waste collection van and remuneration of waste collectors.
One of the project objectives was to strengthen colony people in their ability to minimize, withstand and bounce back from negative physical, social and environmental impacts of flooding and waterlogging and this solution has been helping the community to manage their waste, ensure hygienic environment, reducing water logged situation as well as keeping the drains, roads, and open yards clean and hygienic.

*Feedback from Champions:*
When discussing the outputs of the waste management solution, the Climate Champions argued that this solution made a significant change to the community. previously, community people threw waste onto streets, drains, canals and ditches. Whereas, after implementing this solution in 120 households, residents where encouraged to have waste sorted, collected and delivered to official waste processing sites. The environment of the implemented area is much cleaner than before, and people now sort different types of waste and try to dump organic and inorganic wastes into two separate bins which they didn't do earlier. With this solution, it increased the leadership capacity of women in the community as the operation was driven in a large part by women.

One of the key criticisms offered by the climate champions was that the waste collection and dumping started initially with only in 120 household and not in whole community. Their argument was that the majority of Dhaka Match Colony is still in unchanged and disposing of their waste in unsustainable ways. The climate champions offered a solution to this by increasing the workflow of wastes collection to the entire community, and thus minimizing the operational cost for wastes collection.


*Feedback from the community:*
The reactions from the community revealed that participants believe this solution has made a significant change within the community. The waste situation in Match Colony was very unorganized before the project and residents used to deposit their waste into drains and anywhere, they could. Diseases were common, the settlement had an unpleasant smell and drains were also frequently blocked. During that time, residents also were not interested in contributing financially in a waste management system. The significant change which community participants describe is the creation of the Community Waste Management Committee which consisted of 16 members, which with the support of the Climate Champions has collected payments from interested residents of Match Colony and involved them with waste management activities. Furthermore, the community successfully recruited two waste collectors from the settlement to collect and transport domestic waste 3 times a week on average and to transport it to the Gendaria dumping station.

The community people also suggested that they have been using an existing project waste collector van to carry the waste and also costume provided by CDCA Project. About 120 households have been practicing keeping their household waste by using waste container for separating organic and inorganic waste. Since the project began, many of the community people are now aware on how to manage waste by themselves and also interested to pay for keeping their community clean through community-based waste management system.

Though the project was initiated for 120 households', there are now more houses and even some hotels who are willingly involved with this Waste Management system. One participant also mentioned that the tenants living in his home are now conscious about house domestic waste and have been separating their organic and inorganic waste and storing it with a cover on it. When discussing what more could have been done on a contextual level, the community suggested that drains needed some maintenance, some cleaning activities and to be covered with slabs.

> Here community also contributing in paying waste collector salary along with project. This is the live example how coordinated approach works here to minimize community problem"
> *Field Coordinator, BRAC*

> The CDCA project implemented Waste management solution is the breathing example of the coordinated action of the community. To implement this solution community people are contributing along with project. Each household is paying 40 to 60 taka for paying waste collectors salary and rest of the money of total cost are coming from CDCA project. The CDCA project played a big role to promote community lead solution strategy in the community. Now community people not only think about their problem but also think how much of this problem could be solved by their self-effort.
> *Community Health Service Provider, RADDA*

SMART Community
The SMART Community deliverable was initiated to support community individuals create an understanding of the community's layout, infrastructure, risks and hazards in order to enhance the community's ability to respond effectively. The principle objectives were to:

- Build a more accurate set of information about the community including key infrastructure, risks and hazards.
- Increase the general level of understanding of risks and issues within the community.

- Enhance community ability to take coordinated action as a collective in areas like joint waste separation efforts and collaboration with public authorities). (Annex 10)

The SMART Community Committee and Climate Champions was one of the project's most notable successes. The SMART committee has acted as focal point gravitating between community leaders and Climate Champions. One of the most successful tasks undertaken by the SMART committee was the address system which since implementation has been adopted across the community with strong support. The address system also helped the Climate Champions identify areas of attention. The SMART Committee also created a map and dashboard, the dashboard has been used by the climate champions throughout the project to identify climate-related and environmental challenges, but it has not been updated frequently enough to be as effective is it could have been.

The quantitative findings show that 54.2% households were aware of the SMART community map and among them 43.8% households were aware that map has been updated at regular basis. Furthermore about 97.9% households noticed the holding plates which displayed residents' locations, and that 98% respondents stated that the holding plate is important for themselves and others to identify the houses in the area. (Annex 14A)

| Awareness about Colony Map | | |
|---|---|---|
| | n | % |
| Yes | 26 | 54.2 |
| No | 22 | 45.8 |
| Updated status of Colony Map | | |
| | n | % |
| Yes | 21 | 43.8 |
| No | 5 | 10.4 |
| Visibility of holding plate in the community | | |
| | n | % |
| Yes | 47 | 97.9 |
| No | 1 | 2.1 |
| Awareness on importance of holding plate | | |
| | n | % |
| Yes | 43 | 89.6 |
| No | 5 | 10.4 |
| Importance of holding Plate | | |
| | n | % |
| Yes | 47 | 97.9 |
| No | 1 | 2.1 |

*Feedback from Champions:*
The reaction from the champions regarding the smart community solution was that it has made a positive change to the community. Through this solution, the community has developed a settlement map and established address system throughout the community. The champions argued that these solutions helped the community work together with leaders within the community and more efficiently. This solution has

greatly enhanced the relationship between community leaders and the wider community as well especially among young people.

The Community Champions' criticisms of the SMART community solution was that it did not make any significant changes as the address system had been developed according to map, and that most of the community residents were not well oriented with the map or how to use it. Furthermore, the champions argued that the community were not convinced of the importance of the map and that the holding plates were not durable and, in some cases, got damaged and obscured the information.

*Feedback from the community:*
Reporting from the community revealed that many of the parents of children who are involved with the SMART community committee are now using their leisure time with this project beside their study. The parents were positive about this as the children learn new skills has developed their capacities on climate change adaptation and about their rights.

One participant has shared that he has used the number plate information regarding his National Identity Card processing purpose. He has also mentioned that, now it's very easy to locate anyone house by following this number plate information.

One participant has informed that she has been supported by one of community people to open a bank account and also bank statement papers has been coming to that concern by using this number plate information. Now its very easy for them to search out anyone home by following this number plate.

Most Successful Solutions
When asked to rank the solutions hierarchically the community expressed a variety of opinions which they felt were most successful. What it's clear from this question is that the solar street light along with the waste management program were considered the most successful. The elevated bamboo pathway and street mirrors were the only solutions which most of the participant groups shared similar value rankings. Bamboo elevated pathways were third as an impact priority and the street mirrors were fourth. The least favourite solution offered was the SMART community and their outputs. On reflection, it's quite likely that the participants valued interventions which were most charismatic or most frequent in their lives as opposed to their effectiveness as a product or service.

## 5.2 Community capacity for climate change adaptation

Community Capacity
This section of the evaluation presents the findings qualitative findings from the key informant interviews, interviews with community participants and the climate champions discussing how the community's capacity for skills, knowledge and ability to problem solve improved throughout the CDCA project implementation period

*Feedback from champions*

The responses from the champions on how much capacity the community has gained from the CDCA project was positive overall. They state that as a community, they have taken part in many different training events, workshops and action learning events. Furthermore, community members have been actively involved in photography and communication sessions, child protection training, workshop on waste segregation, workshop on WASH guidance, advocacy & leadership training, training on environment & climate change adaptation, training on bamboo made structure and training on creating green spaces within the community. The Champions assert that these interventions have helped to enhance knowledge and skills within the community as well as raising awareness of different issues caused by climate change. They explained that they have learnt how to develop community maps themselves and how to spatially identify and indicate available resources in the community.

Another important development within the community which the CDCA project fostered was a strong relationship building component within the community while working in this project. The Climate Champions suggested that as a result they can share their thoughts, problems, and demands more effectively toward developing the community. The community people also appreciated the activities of the CDCA project and the Climate Champions, trying their best to support the development work which the Champions did where such a capacity had not existed before in the community. Considering the trainings and action learning events, the climate champions argued that the project has made a very significant and progressive change to their lives.

The Climate Champions also explained that they had learned how to present themselves and as a community through attending discussions, consultation meetings, trainings and action learning events. The champions also stated that at the very beginning of the process the champions were very introverted. They felt shy speaking in front of crowds, but, while working in this project the changed that position and started developing themselves. The Champions continued to explain that they are much vocal than before and can now contribute in any meeting through active participation and decision-making.

> I was very shy and calm boy at the beginning. He got afraid while doing presentation to others. After being part of this project, he slowly but continuously develop himself to be a knowledgeable person and now he is providing tuition to 17 students.
>
> *-Male Climate Champion*

> Another Climate Champion has had the opportunity to participate in World Bamboo Workshop 2019 in India where he got opportunity to learn about different categories of bamboo, their uses and learnt how to make structure with bamboo. Personally, it was a very important thing for him to participate in a global platform and gather knowledge.
>
> *-Male Climate Champion*

> One of our Climate Champions got a big opportunity to take over the role of IFC Country Manager, Wendy Werner for a day in girls' takeover program.
>
> *-Female Climate Champion*

> One of the Climate Champions visited Denmark to observe International Day of the Girls as ambassador and met Prime Minister of Denmark, Lars Løkke Rasmussen, in Copenhagen. Now she has become the member of National Youth Advisory Panel of Plan International Bangladesh.
>
> -Female Climate Champion

*Feedback from the community:*

The community expressed a mixed response to community capacity building efforts made during the CDCA project. The positive impacts which community members noted were that there was a lot of effort in working with waste management, the result of which has improved knowledge on adverse effect of waste in the community as well as practicing learning on how to manage community-based waste management. where previously the community didn't know any adverse effect of waste and how to manage waste in their community. The key criticism listed by the community participants was that they believe the climate champions have been informed and empowered to such a level that they think they are more knowledgeable than their parents and often violate the community guardians' instructions.

*Feedback from key informants*

The findings from interviews with key informants revealed that the CDCA project had in most cases successfully improved the community's capacity. One of BRAC's fieldwork coordinators who works with Match Colony explained that before the project's implementation the community people didn't do any work by their own initiative and that they believed that the Government was responsible for resolving all of their problems or that outside organisations would resolve issues. The fieldwork coordinator continued to suggest that they were unaware about their own capacities as well as displaying an unwillingness to take any initiatives on by themselves. Now the scenario is completely different, and people are now sensitized enough to come forward along with government and other stakeholders to solving their problems. He further

explained that the community residents started to believe that nobody will solve their problems until they come forward with their own initiative, and that, this change did not come within a day. He described how different NGOs initiatives made this change, that NGOs also tried to enhance community knowledge and capacities in different aspects and raise awareness in the communities about the importance of advocacy for ensuring rights.

A Community Health Service Provider from RADDA shared a similar position, expressing that in her personal point of view, the community capacity has improved significantly after taking coordinated action in Dhaka Match colony during the CDCA project period. She stated that this was largely due to efforts to sensitize the community about their roles and responsibilities, as well as, community people being trained to resolve different issues. The community health service provider also stated that the community people learned about their rights and were now aware of government and private service providing agencies. these things, she continued, changed the community people's knowledge, attitude and behaviour, and, now they felt that they also have some responsibilities to accelerate the journey of community development. The final statement from the representative from RADDA was that NGOs have helped the community to generate the idea that nobody will help you until you start to help yourself.

One of the Community leader and Ex members of the UP was interviewed as a key informant and stated that he believed the community capacity has improved during the CDCA project. Community people are now aware about their problems and resources as well as sensitized about what could be done to solve these problems by themselves. He argued that this change happened because of different NGOs initiatives in the community. Many initiatives advanced by NGOs during this project period have enriched the community people's knowledge, skills and sensitized them about their own responsibility to bring about this change. He continued to explain that the CDCA project mainly worked to change the attitude of the community people and from the commencement of the project, it kept the community people in the driving seat during the project activities. He stated that this project taught them that they are responsible for solving their problems, and that nobody will take steps until they come forward.

Another community leader interviewed as a key informant interviews asserted that he could provide many examples of coordinated actions of community that had happened due to improvements of the community capacity during the CDCA project period. Some of which were the implementation of waste management solutions, drain cleaning and brick wall construction by the industrial owner. These changes did not happen quickly, he continued, but rather happened due to many reasons especially sensitizing the community people to come forward to solve their own problem and enhancing community. When asked about how NGO's had impacted these changes, the community leader insisted that many NGOS had contributed to the process and provided an example in the CDCA project which trained the community people how to make bamboo elevated pathways. As a result, if any community person would now like to do this at his/her area, they could easily do from this as a result of the CDCA projects learnings. He also explained that the CDCA project oriented the people to take community driven imitative for resolving problem instead of waiting on some other to solve it, and that the CDCA project taught them about the sources from which they could seek support for solving problems. (Annex 4)

<u>Democracy and advocacy skills development in Champions & SMART committee</u>

This section of the evaluation presents the findings qualitative findings from the key informant interviews, interviews with community participants and the climate champions discussing how the community's capacity for skills, knowledge and ability to problem solve improved throughout the CDCA project implementation period

*Feedback from the champions*
The Climate Champions reported that before the process started, they were not particularly involved in the decision-making issues and that the community leadership often did not consider their needs. They now contribute in decision making for the community development and their parents also encourage them to participate in different trainings, workshops and meetings which didn't happened before. Another change which has taken place in the Climate Champions' homes is within the family decision making process where parents now often prioritize the opinions of champions and encourage them to move forward.

*Feedback from the community:*
The community has expressed that they are highly satisfied for the Climate Champions knowledge and skill development activities under CDCA project, especially with regard to waste management and the increased knowledge of Climate Change Adaptation from the project.

*Key informant feedback*
The findings from interviews with key informants when discussing democracy and advocacy skills development relating to the Champions and SMART committee were extremely positive. The fieldwork coordinator working for BRAC in match colony stated that he had observed a major change in the community during this project intervention. Arguing that youth engagement in community development issues along with other stakeholders (i.e. CBOs, senior citizens etc) had significantly improved during the course of the project. The fieldwork coordinator continued to explain that youth groups and other stakeholders in the community are now working together whenever there is any problem. Senior leaders like to know the young people opinion before making any decisions and also intend to use the youth strength to resolve their community problems. He stated that initially the situation was not like this, and that this was the result of various NGOs initiatives. Stating that 'most of the NGOs are working following the strategy youth led approach, that helps the community people to understand the importance of youth engagement for the betterment of the community'. The respondent also added that the CDCA project had done a great job to change the senior leader's attitude and behaviour toward young people, and that the CDCA project implemented all solutions where youth people specially the climate champions played a pivotal role. Ultimately, he argued that this helped to change the senior leader's attitude and behaviour about young people.

A significant change has been viewed by the Community Health Service Provider from RADDA with regard to the relationship between young people in the community and senior local leaders during the project period. Now young people of the community have easy access to the senior leaders. This happened because NGOs created a platform where the young people could share their views about social problems and engaged them with problem-solving initiatives. It helped the young people to explore their capacity as well as to show their positive willingness for working for society. As a result, senior leaders understood the importance of the young people's contribution to the betterment of society. She also added, that before the project all sorts of decisions about social problems were taken by the Senior Male group or senior leaders of the community, but due to NGO's sensitizing the community about the importance of inclusive engagement (Male, female, youth (girl and boys) this has changed and development of the community is much more smooth. She explained that the CDCA project has performed a pivotal role in changing the social leader's attitude about young people in the community. The CDCA project has kept the young people in the driving seat during implementation of all solutions, but it's also aligned the senior leaders (male and female) in the project work. This has significantly helped change the senior leader's attitude and behaviour toward young people of the community. This platform inspired the senior leader's to kindly and effectively involve young people in contribution to resolve their community problems

The CDCA project has done a great Job with regard to democracy and advocacy skills development relating to the Champions and SMART committee, explained one Community leader and Ex member of UP. In fact, he states, 'this project has changed our perception about young people', explaining that 'we had a prior assumption that, young people are good for nothing'. Before this project, the community leader continued, 'They did not have any concern for the development of the society as well as they didn't like to take any responsibility and due to this narrow assumption, we always kept the youth people isolated from any kind of decision-making process. This project, also 'prepared a vibrant group consisting of 20 young people called the Climate Champions' who further changed he and the other leader's assumptions about young people, and he states were 'very effective in supporting the implementation of this project. This group, he explained was is now seen by the community people as 'helping agents' as well as a 'warehouse of information'. The relationship shared between the community leaders and climate champions is now a very comfortable working relationship where the leaders like to engage with them in the decision-making process all as a result of NGOs developing a bridge in between the senior leader and youth of the community.

Another Community leader added, stating that This project has been implemented by aligning senior leaders, women and youth of the community, and continued to argue that due to the CDCA project's working nature, developed bridges between all classes' people in the community, especially with community leaders and young people. The project was very tactfully completed as it identified the community problems, explored the solution modalities through young people and validated through senior leaders of community. As a result, senior people understood the capacity and importance of young people and generated a positive mind set about them. This happened because NGOs facilitated numerous initiatives to improve the knowledge, capacity and skills of young people and built bridges between the senior leaders and young people.
(Annex 4)

## 6. Sustainability and continuation

One of the key limitations of the CDCA project has been the difficulty with the continuation and sustainability of solutions in Match Colony. As discussed in the introduction, the community have endured a prolonged eviction process nearing the end of the project which culminated in a large part of the settlement relocating to neighbouring communities and further afield. Regardless of the evictions however, the CDCA project also struggled to inspire the community to embrace solutions offered, except from the waste management service which did generate community enthusiasm enough to wish to continue the service as Plan and the partnering organisations concluded activities.

*key informants Feedback*
The theme of future sustainability was explored during interviews with key informant in which the question was asked whether any elements of the project could be sustainably used outside the CDCA project. The respondent from BRAC stated that it was possible for their organisation to utilise the information hub of the CDCA project and that it could be helpful to develop a realistic Community Action Plan (CAP). The Field Coordinator also stated that BRAC would work to accelerate the waste management solution that was started by the CDCA project, as well as to engage with the 'vibrant climate champions group' with their work.

The Community Health Service Provider from RADDA added that although there is less scope to develop linkage between the CDCA solutions and their health programs, she could see how the household number plates created by the SMART Community group could be beneficial to her organisation's activities within the community. She elaborated, explaining that this solution was very effective for RADDA in identifying their service receivers.

How could it be more sustainable?

*Key Informants Feedback*

The key informants were also asked to explore how the project could have been more sustainable and a number of suggestions were offered. The Field Coordinator from BRAC suggested that the CDCA project could have revealed more opportunities of how other stakeholders working in Dhaka Match colony could have aligned their work with these solutions. He also explained that the CDCA project could have taken more initiative to institutionalize the implemented successful solutions.

Another suggestion offered by RADDA's Community Health Service Provider was that the CDCA project could have been implemented with different solutions coordinated by different formed groups like the waste management committee, water committee, and a smart community committee. The CDCA project has also nurtured these committees throughout the project period, enriching their knowledge and teaching them about the solution management process. Ideally these committees would be less active after finishing the project period and form one apex group ensuring participation from all committee representatives and would be responsible for nurturing and managing the implemented solutions after finishing the project period.

The Community leader and Ex member of UP expressed the opinion that SEEP and Plan International Bangladesh should have worked for a longer period of time in in Match Colony on th CDCA project. His rationale was that a long-term result from implemented solutions could not be expected as, he felt the community had entered a self-driven process for development but that further community nurturing was required. Another suggestion offered was for similar projects working in Match Colony to follow up the CDCA project activities.

The second Community leader interviewed suggested that groups formed for the projects could have been strengthened and given more responsibility to manage the implemented solutions after finishing the project period. Another key step offered was to align with the city corporation to accelerate the waste management solution and WASA to ensuring safe water for the community. They continued to explain their position suggesting that the water committee and waste management could talk the responsibility to ensure support from WASA and City corporation. (Annex 4)

*Feedback from Champions*: The climate champions also had some ideas regarding the promotion of sustainability of the existing solutions undertaken by the CDCA project. They maintained there should have been greater efforts to make community people more aware about different issues of climate change and environment. They also recommended that there could have been greater efforts to mobilizing community people about the effective use of existing solutions, and to focus more on making solutions more permanent rather than temporary.

The champions also advanced the notion that they themselves could have taken on more initiatives by themselves to promote sustainability during the project by maintaining solutions on a more permanent rather than temporary basis, by mobilizing all community people, by making people more aware about the disadvantage of climate change, and finally by making solutions more contextual to the community's environment.

*Feedback from the community:* The have embraced a number of solutions which though they do not directly relate to climate change adaptation are still key components of the project. Participants from Match colony state that the community waste management solution, the solar lighting solution, and the provision of street mirrors will be sustained through the local leadership group (Panchayet Committee) moving forward and that they have already discussed with local government representatives how to solve their water logging issues and drainage system in their community.

They are also proud of the climate champions as they are now empowered enough from receiving training on various issues relating to Climate Change adaptation to continue helping the community as the project concludes. The community fed into the recommendations offered by the climate champions by suggesting that the project could have worked closer with Local Leaders and the City Corporation and that there could have been better communication with those stakeholders.

*Positive and Negative Learnings Report*

To bring success to any advocacy initiatives, enabling stakeholders and community interests need to be identified to ensure their ownership. As waste management is one of the key issues for Shympur community, that's why people engaged with this advocacy issue and the authority of JICA works as an enabling stakeholders which bring success to getting access in STS of Dhaka South City Corporation although railway slum people of Shympur was not under jurisdiction of getting facilities of Dhaka South City Corporation. In Urban Contexts, waste management is challenging issue for slum communities. To conduct a successful advocacy, advocacy issues need to be identified considering community and engaging community people & enabling stakeholders those who actually keep influencing role to make success in advocacy issue.

Temporary solutions or experimental initiatives without proper feasibility study and risk analysis create negative impression among the community people about implementing organization which hampers other activities as well. In this urban context community people are not permanently in same place. They frequently move from one place to another for several reasons including evictions and changing livelihoods or profession, that is why they are not interested in investing their time and money in experimental or temporary initiatives which do not resolve their immediate problems.

*Prototypes and solutions plan*

The Prototypes and solutions plan created during the project systematically evaluated each solution and prototype and set out some very strong recommendations for how the project could have been more sustainable moving forward. Reviewing those recommendations since the conclusion of the project, it is important to note that the recommendations are still viable for any continuation of the project's solutions as well as any future projects moving forward. The list shown below featured in previous phasing reports, the prototypes and solutions plan and in the sustainability report as it is still very relevant advice for any future iterations of this style of project. There is one recommendation which could have been included however, that is, that the innovation design process could have followed much tighter product development design briefs and specifications with a clear participatory design methodology. This could have restricted the number of deviations from the core objectives as laid out in the original log frame.

Manage expectations: Be clear about scope and limitations in community-led climate adaptation. Many challenges experienced by the community went beyond the scope of the project. it is important to explain clearly and frequently that a project like this can only improve coping practices and resilience, but not solve the underlying causes for community vulnerability (poverty, inadequate physical infrastructure, exclusion from public service delivery, disempowerment, etc.) nor replace services or investments by the relevant authorities. Project partners have often faced criticism by the community in the form of "why don't you permanently raise the road?"). Likewise, there needs to be a mutual understanding between community and project partners about the innovative nature of the process, which means the community must agree to "host" experimentation which obviously can fail and not deliver the promised results

Ensure community ownership: Match-fund community investments in adaptation solutions. Introducing a match-funding requirement early on in solution prototyping is essential to ensure that only ideas that have full community support are prioritised. If possible, such a match funding requirement should extend to involve the relevant authorities.

Co-creative design requires strong and continuous mentorship from professionals. When developing climate adaptation solutions through a bottom-up co-creation design approach there is a need for strong and continued support and mentoring. Such mentorship involves suggesting new ways to approach a specific challenge and support to analyse the constraints of each prototype design option in terms of scope, costs, maintenance, durability and sustainability.

Implement with the weather. When testing climate adaptation prototypes, it is necessary to consider the impact of the seasons on the process. In Dhaka Match Colony, it is essential to test out solutions during the rainy season, but this limits the time to 3-4 months. For that reason, it can be necessary to test multiple different prototypes at once to be able to make adjustments in the time available.

Organise and engage communities. Any kind of behaviour change takes time. Allow time to engage existing committees or community groups or established and develop new ones. Community engagement and organisation are the key to the continuation of the initiatives after the project is over. In youth-led programming, it is crucial to deliberately work on strengthening young people's ability to engage with and influence stakeholders as well as the ability to take joint and coordinated action.

Engage authorities and service providers just as much as community members. Apart from building community members' understanding of climate and environmental issues, and involving them in the co-creation of solutions, it is also necessary to include components on advocacy and social accountability to make sure the community can negotiate with service providers and power-holders to find long-term solutions that can gradually replace adaptation measures. Especially in urban contexts where environmental challenges are multi-faceted and dependent on factors external to the community, collaboration with city authorities and service providers can help increase impact as well as potential for scaling and replicating solutions.

# 7. Discussion

From the findings presented in this final evaluation report it is clear that the community felt overall the project outcomes had been positive, however, this project has experienced a number of problems which were difficult to overcome and that the final results in many cases did not live up to the expectations of the community, the project partners, or the objectives as set out in the baseline logframe. It is also important to consider the dynamic, non-static nature of this project's implementation as well as the consequential outcome of the evictions throughout the implementing period. As highlighted in the introduction the project had to adapt to a number of new circumstances. However, as the reports produced by project partners and findings from the final evaluation show, there were some positive elements as well as extremely important and rich learnings generated through the course of the CDCA project.

One of the issues presented within the findings was the disparity between quantitative and qualitative findings which were in some cases at odds with each other in terms of results. One of the best examples of this was when the quantitative analysis showed that of 42 participants 87.5% felt that the elevated pathways improved their lives. In this case it's important to consider the size of the sample group, and binary nature of yes/no answers, which is why it is so important to consult the qualitative findings to support or criticise certain answers.

When considering the extent the extent to which the interventions and approaches employed have been suited to the priorities and policies of the people and community they were intended to benefit, the project did actually drive for bespoke solutions which were co-created by community participants and which worked within the context. Unfortunately, some of these interventions did not appeal to the community in many cases due to functionality and materiality of the interventions but not the principles behind the interventions themselves. The important learnings which we have taken from this is that the process in future would require much more direct experimentation with the wider community where they can fully engage and own the final product. An example of this was the elevated bamboo pathways which, although innovative and functional for the majority of community users, were not well suited for younger members of the community, people with mobility issues and were impractical during periods without waterlogging.

The extent of which the community's capacity for climate change adaptation and advocacy changed during the course of the project can be measured chiefly in the community's learned skills and knowledge on climate change and adaptation measures, of which they developed throughout the project. Some participants took part in limited advocacy skills development sessions but as the project's activities were forced to conclude ahead of schedule, the majority of advocacy learning sessions were not realised, which has resulted in limited feedback from the participants on this area of development.

the probability of continued long-term benefits to the community of Match Colony and its residents after the project or has been completed are quite limited due in large part to forced evictions within the community and the limited buy in from the community. However, as discussed previously, a large proportion of households in the community will continue to support the waste management. Although initially funded by the project partners and set up by young members of the community, the wider community has decided to self-finance this service after the project activities concluded.

Another positive long-term social benefit is the knowledge and improved capacities of not only the climate champions but of all the participants in the project. The climate champions in particular have developed a strong set of skills and knowledge which they can utilise and develop wherever they go. The social dimensions of which were highlighted by community leaders and community participants alike, who had recognised improved leadership and engagement from younger members of the community

Building on that, this project has promoted gender equality and inclusive, sensitive approaches to climate change adaptation and resilience throughout the process and explicitly aimed to improve the rights of children, young people and improve gender equality. The make-up of the Climate Champions was very gender balanced and as a group of young people, these champions heavily promoted the rights of young people within their community. As discussed in the section on Community capacity for climate change adaptation, the senior leaders of the community embraced young people as a result of this project and their opinions and contributions to community development are now valued by the whole community.

## 8. Key Learnings

- The community did not like proposed temporary solutions and preferred long-term options.
- The elevated footpaths were not well received for functional and material reasons not out of principle
- The waste management component was embraced by the community
- Street lighting was positively received but not extensive enough and did not give the community the ability to fix, install and maintain the intervention
- The street mirrors didn't work at night and should have been combined with street lighting
- The fresh water component was not well received by the community who believed their water was contaminated at the source and not in the home, however, it did positively effect hygiene practices within the community.
- The project was extremely successful in making young people into active, engaged citizens through the climate champion component
- The project positively challenged gender and age discriminatory social structures within Match Colony by giving young people from both sides of the gender divide a voice in community matters
- Mapping of the settlement was helpful for implementation of interventions but as a spatial tool for community use, this element was not fully utilised.
- The street greening initiative was not successful as individuals couldn't make enough money from the final product
- The SMART committee was well received by the community as it built the capacities of individuals in the community
- The community felt as through capacities of young people and the community as a whole had been improved by the project

# 9. Recommendations

**Working with informal communities:**

One of the key elements which will contribute to the future success of climate resilience projects in informal communities is a strong partnership approach to working with communities. Three core recommendations have emerged as a result of the CDCA programme findings in this evaluation

1. leave no one behind, manage expectations, and, sub divide tasks within communities: Be clear about scope and limitations of the community-led climate adaptation project and manage expectations with frequent referring back to original brief. Engage the whole community as much as possible and ensure that designs are validated frequently by wider community. Run initiatives autonomously with separated community committees to focus on interest areas with an oversight group ensuring delivery and alignment to key values developed by the community.

2. Co-design the project with the community and secure their financial contribution: Engage with communities early on in the project and allow them to shape priorities together. Furthermore, to ensure community ownership of the project and its deliverables, employ match-funding initiatives and community investments in adaptation solutions.

3. Develop an eviction resilience and mitigation strategy: Many residents of informal settlements live precarious temporal lifestyles where they might relocate with little notice. Where residents might be uninterested in investing their time or money in experimental or temporary initiatives which do not resolve their immediate problems, it could be a good idea to develop a regularisation and eviction strategy for communities before implementation of a project to not only mitigate potential evictions but also to give residents a more permanent and tangible asset to fix themselves to.

**Working with authorities and organisational partnerships**

4. Engage with officials early on: Engage authorities and service providers early on with just as much as community members. Setting up an advisory committee which consists of local council official and political leaders as well as NGO's, CBO's, members of parliament and their opposition can be a good way to instil confidence, secure a project officially and avoid any unforeseen surprises which could bring the project to a premature end. It is also a good idea align

**Working with participatory design**

1. Clear goals and design methodology: Create specifications and briefs, refer back to them frequently, and use them like checklists to ensure the project outcomes remain focussed on the initial objectives. It would also be worthwhile using a clear participatory design or product development methodology to ensure that time is not wasted unnecessarily. Furthermore, product failure is a learning process, test a number of prototypes quickly, fail fast, then learn and develop.

2. Continuous professional and technical support: In communities where climate change adaptation, mitigation and resilience building are not commonplace terms and where technical

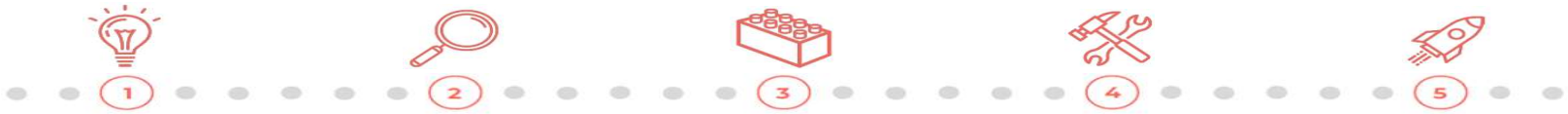
expertise is not highly developed, consider planning for and continuous and extensive mentorship from professionals to nurture co-creative design process.

3. Durable, contextual solutions which work for the whole community: When creating climate adaptation prototypes test them during different times of day and different times of year and in different conditions. Furthermore, it is also vital to the inclusivity of adaptation solutions that output work for the least mobile and most vulnerable in the community.

Annex 4D: PlanBørnefondens programme innovation framework

See next page.

# Process for innovation projects




| | New Idea Generation & Pitch | Explore Concept | Minimum viable concept | Initial test | Tested at scale / prototype |
|---|---|---|---|---|---|
| ***Indicative SPA resources available*** | No activity budget<br>Only TA to DNO and informal stakeholder consultations | Initial funds for stakeholder meeting activities + DNO TA for further concept development | Budget for activities and TA based on initial resource evaluation | Budget for activities and TA based on approved budget | Limited/No SPA innovation funds available for this step |
| ***Suggested activities*** | • Develop idea/solution<br>• Describe how the idea/solution could solve the identified problem<br>• Initial consultations with local partners | • Set learning goals<br>• Consult stakeholders<br>• Workshops/seminars<br>• Further define concept<br>• Initial evaluation of resources needed | • Stakeholder feedback<br>• Draft project plan<br>• Finalise budget<br>• Draft Partner Agreements<br>• Identify potential scale-up possibilities | • Piloting, testing, prototyping in the field<br>• Documenting learnings for upscale of tested solution<br>• Search and apply for other funding | • Full scale project<br>• Start for scaling up to new settings where this solution might be useful (modification might be needed) |
| ***Go/No-Go criteria for entering next stage*** | ✓ Innovative<br>✓ Contribute to one of the overall strategic objectives<br>✓ Address a clear problem for our target group<br>✓ Accepted by Innovation steering group | ✓ Clear outcomes and value creation are defined<br>✓ User consultations<br>✓ Local committed partners are identified<br>✓ Risk assessment has been done | ✓ (In-kind) contribution by partners / stakeholders<br>✓ Budget and partner agreements<br>✓ Scope of pilot defined<br>✓ Scalability possibilities | ✓ Proof of concept<br>✓ Positive business case based on test results<br>✓ Other funding in place (preferably also local)<br>✓ Documented learnings | |
| ***Deliverables / Documentation*** | • Elaborated concept, ready-to-present<br>• Complete one-page innovation fund application | • Concept note with defined outputs and link to strategic objectives<br>• Fill in the first three sheets of the Learning and Evaluation tool | • Project plan and Budget<br>• Describe learning conclusions & outcomes in the Learning and Evaluation tool | • Report on programme outcomes<br>• Solution evaluation on Learning and Evaluation tool<br>• Scaling strategy | • Scalable concepts / solution<br>• Evaluate and document impact/ change on the ground |

**Annex 5** **Impact story**

Annex 5.1 Case study on elevated pathway

# COMMUNITY ADAPTIVE ELEVATED PATHWAY

Almost two third of the water of Dhaka Match Colony (Area of 1.85 acres) destined to pond located within community area. It is connected with another adjacent water body with two small pipe culverts which are currently damaged or clogged with solid wastes. So water cannot pass through easily during monsoon and causes water logging. The area submerges under flood water during any kind of heavy or short rainfall. Dhaka Match Colony encounters the worst waterlogged situation for 4 to 6 months (March - August) in each year due to lack of adaptive measures either by City Corporation or by Union Parishad trigger clogged up drainage, stench and roads becoming stagnant dirty and polluted water. Such situation make the transport system difficult and people have to commute through polluted water resulting severe skin diseases.

## COMMUNITY DRIVEN CLIMATE ADAPTATION (CDCA) PROJECT

Plan International Bangladesh in partnership with Social and Economic Enhancement Programme (SEEP) is implementing 'Community Driven Climate Adaptation (CDCA)' Project in Dhaka Match Colony since 2016 in order to make the community more resilient to the multiple impacts of climate change locally, particularly flooding and water logging. Solutions have designed through a combination of local knowledge and practices as well as innovative design practices, enabling the community to develop and own their replicable solutions.

**ELEVATED PATHWAY SOLUTION:** Elevated Pathway is one of the component under Street upgrading solution. Apart from this, Climate Champion and Smart Community Committee has been formed to aware, train and educate to work as a driving force to implement this solution. Initially Climate Champion Group has developed a community map and identified the most useful pathways which have been waterlogged through maximum period of the year. Finally CDCA project has established two elevated pathway solutions as temporary based, one is Bamboo made and another one is Concrete Block by available technical support from project and consultation and validation by Climate Champions and Smart Community Committee.

Temporary Elevated Path Using Bamboo

Temporary Elevated Path Using Concrete Blocks

## CLIMATE CHAMPION SPEECH:

Rofiqul Islam, Climate Champion, Dhaka Match Colony

Rofiqul Islam, is a Climate Champion has been residing in Dhaka Match Colony since his birth. He said, during water logging all over the community turns into too much vulnerable for children, girls and people with disabilities from water borne diseases, protection and even their daily movement. He expressed how tough it was previously, to use the road especially for the children during the rainy days when the community suffers from waterlogging. “CDCA Project has brought significant changes in our community”. “Now we have elevated path in our community. We don’t have to walk through the filthy water and suffer from skin diseases and other health issues. Girls and women now can walk without discomfort as now we don’t have to raise our cloths to avoid nasty water.”

# COMMUNITY DRIVEN WASTE MANAGEMENT SYSTEM

Dhaka Match Colony is a slum, located in Shyampur Union (Ward No. 59 under Dhaka South City Corporation). Total number of inhabitants of Dhaka Match Colony is around 4000. Very lately, Dhaka Match Colony has gazette under Dhaka South City Corporation but eventually the locale is not expe-riencing any existing facility of it. The living standard and services like - Water, Sanitation and Hygiene (WASH), drainage, electricity, waste management conditions are very miserable here. On the other hand, the reverse impact of climate change is very dominant here, particularly waterlogging. The area submerges under flood water during any kind of heavy or short rainfall. About 4 to 6 months (March - August) in each year, Dhaka Match Colony encounters the worst waterlog situation due to lack of adaptive measures neither by City Corporation nor by Union Parishad.

One of the major cause of waterlogging in the community is unavailable waste management system. Which encouraged community people to dump their household waste at drains, roads and in any open space of household yard resulting in clogged up drainage, stench and roads becoming stagnant dirty and polluted water. Such situation made the commute system difficult and people had to move through polluted water resulting in severe skin diseases.

## COMMUNITY DRIVEN CLIMATE ADAPTATION (CDCA) PROJECT

Under this situation, Plan International Bangladesh in partnership with Social and Economic Enhance-ment Programme (SEEP) is implementing 'Community Driven Climate Adaptation (CDCA)' Project in Dhaka Match Colony since 2016. The project comes up with some innovative and sustainable solution to strengthen climate resilience in disadvantaged Dhaka Match Colony community to minimize, with-stand and bounce back negative physical, social and environmental impacts of flooding and water logging.

**WASTE MANAGEMENT SOLUTION:** The project has been work-ing on four solutions to make the community adaptable with different adverse impacts of climate change. Waste management solution is one of them. Apart from this, a waste management committee has been formed to train and educate the committee members and to work as a driving force to implement this solution. Initially this com-mittee started waste collection from 120 households as piloting basis. The committee oriented 120 households' owners about kinds of waste, ways to segregate organic and inorganic waste, usefulness of organic waste and de-merits of improper waste management. 02 (two) paid waste collectors are working to collect waste from the community and dump those waste properly in appropri-ate place. As there is no nearby secondary transfer station surrounding Dhaka Match Colony in support of project the waste management committee has taken approval from Dhaka South City Corporation for using their second-ary transfer station situated at Gandaria Railway Station.

Waste Separation Workshop at Dhaka Match Colony

Dumping Separated Wastes into the Drum

Collecting Waste from community by Waste Collector in Van


Dumping Waste in the Container

## CASE STORY:

Bilkis Akter Moyna has been residing in Dhaka Match Colony since her birth. She is the witness of the change Dhaka Match Colony has so far went through, as she says, previously the colony was unlivable, it was filthy with garbage thrown here and there, with clogged up drainages. “Plan International Bangladesh has been bringing significant changes in our community” she said. She pointed out one major reason of water logging is clogged up drainage due to throwing non degradable wastage here and there. Bilkis Akter shared that now they know it is injurious to them and the community for which they are now getting accustomed to throw degradable and non-degradable waste separately. For this Plan International Bangladesh has provided them separate dustbins. Time to time waste collectors come and take away the garbage, which she indicated contributing in improving the environment of the community.


Bilkis, Inhabitant, Dhaka Match Colony

The waste management committee is very optimistic to scale up the solution all over the community shortly in future. They are planning to develop a business strategy to make the waste collection system a profitable business. The committee is closely working with project to establish a secondary dumping station at Dhaka Match Colony area in support of Dhaka South City Corporation to make the waste management system easier. The committee firmly believes that, Dhaka Match Colony will be an example of clean urban area where every people will be responsible to collect and manage their waste. At present CDCA Project is advancing to scale up its community based waste management system towards recycling and business model by coordinating with Practical Action.