

# GRRID Corps

## Empowering Communities



GRRID/10/01  
Date: 17<sup>th</sup> October 2024

Sub: GRRID Corps Submission: CulTool / Sanchay Project for Urban Resilience Knowledge Portal

Dear Mr. Arvind Kavia and Ms. Unnimaya Balasundaran,

On behalf of GRRID Corps, a social entrepreneurial venture based in Kolkata, I am writing to express our strong interest in submitting an entry for the online knowledge management portal on Disaster Risk Reduction (DRR) and urban resilience.

We are confident that our project, titled **CulTool / Sanchay**, aligns perfectly with the portal's objectives of showcasing impactful interventions and promoting cross-learning within the urban resilience community.

CulTool / Sanchay was a transdisciplinary and cross-cutting intervention implemented in Jodhpur, India, over a year. It addressed critical challenges like heatwaves, urban floods, and the urban heat island effect. Notably, the project intersected with several thematic areas and sub-themes outlined in the call for entries, including community-based disaster risk reduction (CBDRR), capacity building, inclusion, equality & equity for women and children.

The intervention consisted of multiple activities meticulously phased and executed with the active participation of relevant stakeholders. This community-centric approach ensured the project's sustainability and empowered residents to manage future risks collaboratively.

We have documented the CulTool / Sanchay project in detail within Annexure 2 of this submission. We believe the project's innovative approach and demonstrably successful outcomes will be valuable additions to the knowledge portal. Should you require any further information or clarification on the CulTool / Sanchay project, please do not hesitate to contact us. We are eager to contribute to this vital initiative and look forward to discussing our submission further.

Furthermore, for your kind information, GRRID Corps is a team of diverse professionals with extensive experience in the intersecting fields of DRR, climate action, and sustainable development. We are confident that our expertise will enrich the knowledge-sharing platform and inspire further collaboration in building resilient urban environments.

Sincerely,  
**Sriparna Sil**  
Co-Founder & Managing Partner

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## Annexure 2

| Sl. No. | Thematic Area             | Sub-thematic Area  |
|---------|---------------------------|--|
| 1.      | Disaster Risk Reduction   | a. Community based DRR Strategies  |
| 2.      | Climate Change Adaptation | a. Urban Heat Island<br>b. Urban Floods  |
| 3.      | Socio-economic Resilience | a. Gender Inclusion and Equity<br>b. Education and Capacity Building<br>c. Community and Social Resilience |
| 4.      | Governance and Policy     | a. Policy Framework for Resilience   |
| 5.      | Technological Innovation  | a. Data Analytics and Urban Resilience   |



**Title and Location:**  
**CulTool / Sanchay, Jodhpur (Rajasthan, India)**

**Before Situation:**

- Owing to its geo-climate, Jodhpur experiences extreme heat. The episodic frequency of heatwaves have started to show an increasing trend as shown below in Figure 1. While unanimously it would be attributed to climate change, but it is necessary to study the natural variability too, to understand the incidence of such extreme heat episodes – whether it is during peak summer or pre-summer or even late-summer. **Such a hyperlocal analysis was missing.**

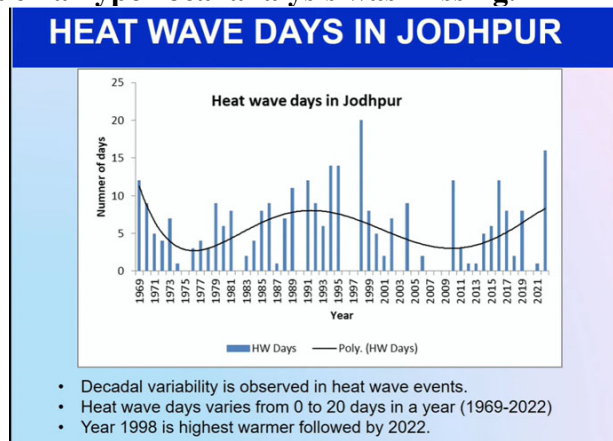


Figure 1: Heatwave days in Jodhpur

- Based on the above analysis, ideally, the urban local government prepares a **Heat Action Plan, which prior to 2023, was not present**. Usually, in such a Heat Action Plan, the component of humidity is not explicitly dealt with except in terms of heat stress.
- Jodhpur experiences localised urban flooding. It is essential to analyse the cause of such flooding based on a scientific approach.
  - Analysis of the climate variables illustrates a clear picture of the changes in the weather pattern, particularly the patter of rainfall (precipitation), which could induce urban floods.
  - Additionally, the drainage pattern of the city also needs to be considered. **Such an analysis was not done in Jodhpur.**
- While the old city has its own style of buildings (houses) and pattern of urban layout, the newer quarters of the city, exudes a more modern touch – contemporary houses, modern construction practices which, unfortunately, is not conducive to the climate of Jodhpur, **leading to Urban Heat Island effects and decreased energy efficiency of buildings.**

#### **Implemented Measures (theme-wise):**

Within the Net Zero framework of ICCROM, supported by the Swedish Postcode Foundation, an intervention – **CulTool / Sanchay** - was co-developed with important stakeholders & community members and was jointly implemented in a phased manner, with support from different relevant agencies and departments.

#### **Policy Framework for Resilience: Heat Action Plan of Jodhpur**

We analysed 100 years of climate data to understand climate change from climate variability & future trends. This helped us in understanding when the temperatures peak and how the rainfall pattern has shifted and most importantly, if at all, Jodhpur is witnessing the blunt effects of climate change.

Next, we analysed the potential to leverage traditional knowledge, indigenous practices and place-wisdom to beat the heat. We conducted and participated in multiple stakeholder engagements to corroborate literature based information against lived experiences.



Figure 2: Stakeholder consultation organised by NRDC India and MHT with assistance of GRRID Corps

And finally, with this background work, we assisted NRDC India and MHT in making the first of its kind HAP which integrated place-based wisdom in a policy document.

## 5.4 Leveraging culture as a tool to manage extreme heat risk

By virtue of its history, Jodhpur is well-equipped to manage heat risks in its own traditional ways. These measures are time tested measures that serve the purpose of immediate response as well as are key steps to long-term adaptation actions. Two such measures are:

- Blue walling of homes - the traditional way of coloring houses which imparts the signature blue look of the city.
- Water harvesting - there have been multiple water harvesting techniques, at different levels in the city, which needs to be harnessed to ensure mitigation and management of future risks due to extreme heat.

The possibility of modifying the development plans of the city should also be explored to serve crucial purposes ( to maintain the cultural integrity of the city in terms of built-up area and pattern, to ensure that emergent issues of UHI may be addressed)

Figure 3: Excerpt from Jodhpur's Heat Action Plan

### Community-based DRR Strategies; Gender Inclusion and Equity; Education and Capacity Building; Community and Social Resilience

With the policy-level ecosystem set, it was important to understand what kind of knowledge the place and the community holds which can practically be translated into action, keeping abreast of the modern times. For this, a two pronged approach was undertaken, through a co-learning space that was created with support from the Sambhali Trust for women of the old city and children (aged between 8 to 21).

- a. In this space, we learnt from women about their perceptions, perspectives and opinions about climate change; we learnt about their problems they face in their daily lives and we also learnt about the practices and knowledge they use to survive the hot summers. Interestingly, what surfaced was the burning issue of rising humidity which seemed to have doubled the problem for them. This interaction gave us a repository of actions and activities which can be included in the Heat Action Plan, thereby making the Heat Action Plan more contextual and acceptable to all. In turn, the women were explained about the science behind climate change and how their actions can help in adapting to the ill impacts of climate change. It is interesting to note that now, women within the old city (particularly from Ward No. 29) are more confident in participating in climate action.



Figure 4: Scenes from the co-learning space

- b. While the perspective of women were important, it was also necessary for us to understand the perspective of children and young people – how are they perceiving climate change and what do they think about contributing towards climate action.



Figure 5: Interaction with the young minds of Jodhpur

Based on the above interactions, it was decided to weave the narratives of all those who were involved in the process into a documentary which would unpack the riskscape of the city. This documentary is the first of its kind in India and is titled Sanchay, which, we believe portrays the climate-culture story of Jodhpur. The documentary not only talks about heat and humidity, but also other contemporary issues like urban floods and Urban Heat Island, but in a simple way.

The documentary can be accessed here - [Sanchay: Fragility or Resilience? The climate-culture story of Jodhpur](#)

In case, one is interested in a teaser of the documentary, the same can be found here – [Sanchay: resilience or Fragility | Teaser](#)

#### Data Analytics for Urban Resilience; Urban Heat Island

For anyone who visits Jodhpur, the most common lore one would come across is the fact that the blue / indigo coloured houses have the exceptional quality of maintaining ambient indoor temperatures and the reason is the blue colour. To understand this, we designed a prototype, which we call – tiffin-box – loaded with temperature and humidity sensors and an atomic clock.

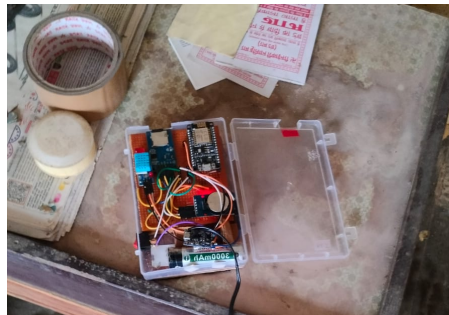


Figure 6: Tiffin-box

This device records the temperature and humidity at regular intervals. When we carry this device with us and travel walk from the courtyard of the house to the innermost rooms, we record the temperature and humidity at each second. A small snapshot of a record is shown below –

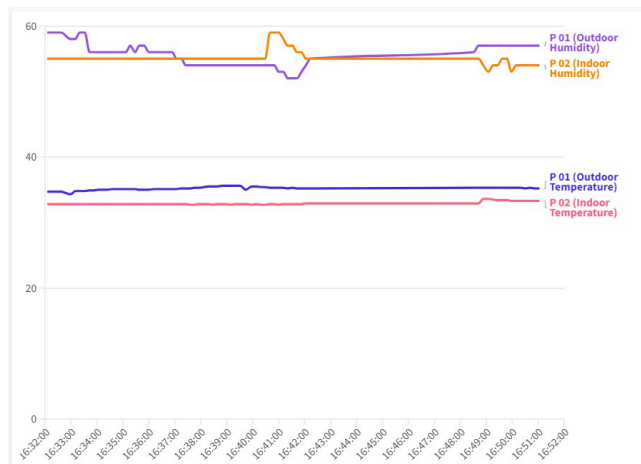


Figure 7: A typical record from tiffin-box

The use of the device established the fact that in houses which were constructed traditionally, using vernacular practices, indeed had lower indoor temperatures as compared to the contemporary houses. Such houses had lesser effect of UHI and had higher energy efficiency.

Therefore, we undertook a detailed architectural study of selected traditional buildings within the old city of Jodhpur with the aim of identifying architectural elements which could be integrated into contemporary styles of construction, such that the new buildings contribute less to UHI and have better energy efficient – they are climate-intelligent!

The report of this study has been communicated to the local urban body with the aim that it can be used to inform future development plans. The report can be accessed here - [Traditional construction knowledge of the Blue City \(Jodhpur\): Paving way for a cooler future](#)

In addition to this, the development of tiffin-box opened up a new avenue. Given the utility of the tiffin-box, it can actually be used as an warning system for households (sounding alerts above a particular threshold of temperature and humidity) and through citizen-science approaches, these devices can also be used to collect substantial data to define hyperlocal thresholds for heat-stress.

To know more about the development of the tiffin-box, the following blog can be read - [The blue houses of Jodhpur: Traditional wisdom for a cooler future](#)

#### Urban Floods; Community-based DRR Strategies; Education and Capacity Building; Community and Social Resilience

While analysing the precipitation data against the urban planning of the city, it was realised that a major cause of urban flooding (colloquially: water logging) is the increased groundwater level of the city. It was interesting to note that in a city which is otherwise semi-arid has higher groundwater levels. To understand the reason behind, a detailed study was undertaken. This study revealed that when Jodhpur was established the problem of water scarcity and water stress was foreseen and hence the city was planned as a watershed, which would collect the rainwaters from the nearby hills and this would eventually be flown into numerous waterbodies of Jodhpur, which are either jhaalras, baawris, beras, etc. For centuries, the communities have been using water from these waterbodies, as it was meant to be. However, with the advent of developmental agenda(s), piped water supply was made available to households. Because of this, the historical waterbodies fell out of use – some of them

have been forgotten, some are not maintained, few are maintained for the purposes of tourism. While the piped water supply did not correct the woes of the people (many houses still get water on alternate days), it completely ruined the groundwater balance of the city and hence, now, incessant rain over a smaller period of time, eventually leads to water logging.

With the root cause figured out, we wanted to build capacity and awareness of the youth around this, hoping that this would snowball into action. Therefore, with support from Living Waters Museum and East India Dastangos and selected schools of Jodhpur were invited to be a part of 4 days immersive and experiential workshop. Children and teachers were given the facts and evidences – from science and from culture – and they were urged to use any form they wanted to express their views. On the final day, through songs, drama and dance, in front of a huge audience and local media, the students performed and voiced their concerns.



Figure 8: Glimpses from the 4 days' workshop

A dive-in into the workshop can be viewed here – [Is this Our Future?](#)

### Significant Effects After Implementation

The effects and impacts of the intervention have been absolutely amazing.

1. India's first Heat Action Plan which integrates local knowledge for climate action.



Figure 9: News report after stakeholder consultation for HAP

2. Citizens have become more committed and hence in the long-run, the issue of groundwater would be addressed.



Figure 10: Letters are now being written to local government to ensure the upkeep of waterbodies

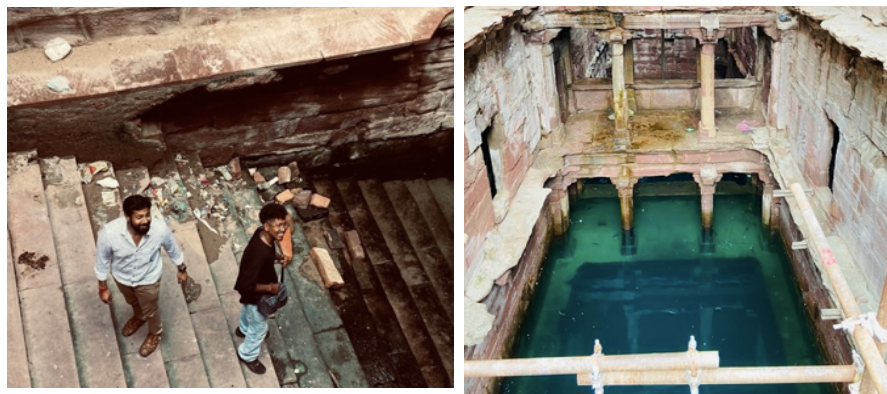


Figure 11: Waterbodies are now being well-maintained by the communities

3. The Royal Family have taken up the responsibility of committing to the use of their traditional knowledge for sustainable development.



Figure 11: Acknowledgement from His Highness



#### 4. Empowered citizens



Figure 12: Discussions in the local news on our workshops and our work on vernacular architecture

#### Financial Details

The total project budget was €15,000, funded by the Swedish Postcode Foundation, with additional support from ICCROM. The budget was allocated to community workshops, research and capacity building programs.

#### Other Details

- a. Project Duration: November 2022 to March 2024
- b. Key Stakeholders: ICCROM, GRRID Corps, Mehrangarh Museum Trust, Sambhali Trust, Maharaja Gaj Singh II of Jodhpur, Jodhpur Nagar Nigam, Local Schools, Community leaders, Living Water Museum, East India Dastangos
- c. Publications:
  - i. [Transformative Adaptation: The case of Jodhpur, India](#)
  - ii. [Culture for climate action in Jodhpur: reversing the trajectory from fragility to resilience](#)
  - iii. Adoption in the World Cities Report 2024 (soon to be launched)
  - iv. Awarded as the Best Project in the Enabler Category in NbS India Forum 2024
  - v. Nominated for the Gender Just Climate Solutions Award 2024 (at CoP 29)