



Climate Resilience with Traditional Wisdom in Asia

Pallavi Tiwari^{1*}, Archana Kushwaha² and Yogesh Kumar Sharma³

¹*School of Planning and Architecture, Delhi, India.*

²*Mobius Foundation, Delhi, India.*

³*School of Planning and Architecture, Bhopal, India.*

Authors' contributions

This work was carried out in collaboration among all authors. Author PT designed the study, performed the literature review, devised the recommendations and wrote the first draft of the manuscript. Authors AK and YKS updated the draft manuscript. All authors read and approved the final manuscript.

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ABSTRACT

The climate is changing at a fast rate and the impact of the same can now be felt across all the world. The worst hit is the Asian countries which are the most vulnerable when it comes to extreme events. To cope with same, local level actions are the most effective if originated from local community and local context. Traditional wisdom originates from deep cultural and environmental considerations along with generations transformation that transcends these traditional practices to a much-suited action with respect to resiliency. The paper establishes the role of such traditional practices in the achievement of climate resilience in communities. The authors draw insights from the existing indigenous practices from various Asian countries and try to analyze the various challenges and potential in adoption of such practices on larger scale. The paper concludes with recommendations to overcome such challenges.

Keywords: Indigenous practices; local climate action; resilience; ecosystem services; traditional wisdom.

1. INTRODUCTION

The climate is changing with a rapid rate which has increased significantly in the last decade. The impacts of this changing climate can be felt across all the regions of the world in one or the other forms exposing the global population to a diverse range of vulnerabilities. Increased climate change induced disasters are causing loss of life and property in both short and long term thus creating the significance of mitigation and adaption becoming imperative to the societies all across the world [1]. More so in Asian cities, due to the diversity of geography, population and associative climate attributes exposing the Asian countries to unparallel risks. 90% of the projected urbanization is predicted to occur in the Asian countries [2]. In order to abate such challenges, it then becomes important to develop resilient communities that can thrive and prosper in a self-sustainable model with a build back better philosophy.

The map shows that the number of hydro – climate - meteorological disasters for the years 1995 to 2015. It is evident that the number is highest in Asian and North American Countries [3]. Thus, climate resilience becomes the key to address the increasing risk of climate change and induced disasters eventually leading to great loss to society.

Resilience is the key to adaptation and is defined by the resilient city organization as “Capacity of a community's economic, social, political and physical infrastructure systems to absorb shocks and stresses and still retain their basic function and structure”. Thomas Homer Dixon in *The Upside Down* describes resilience

as “An emergent property of a system – it’s not the result of any one of the system’s parts but of the synergy between all of its parts” [4].

2. TRADITIONAL WISDOM - INDIGENOUS CULTURAL PRACTICES

Literature suggests that western approaches and programmes are not as effective when seeing through a contextual lens as compared to traditional cultural practices [5]. Traditional wisdom and knowledge which more often finds its cultural roots embedded in the deficiency of resources presents a lot of opportunities to learn from. This traditional wisdom travels through generations in a dynamic setting resulting into many cultural beliefs and practices. These are based on context specific learning by doing and are dominant in organic rural areas due to the fact that urban areas undergo urbanization and eventually depend on technological innovations. Climate resilience at all scales largely depends on local response thus, locally developed traditions which become practices are potentially more effective than external interventions in long term climate resilience against climate risks. A study of such practices that have existed locally since ages should lead to formulation of climate resilient frameworks for local communities that will have a belonging to the native society along with technological assistance from the modern world to ultimately achieve resiliency in all aspects. Such an approach gives a platform to the local community to self-assess the changing climate and the respective response required therein based on certain self-identified indicators. A sense of community ownership thus strengthens the objective of such practices.

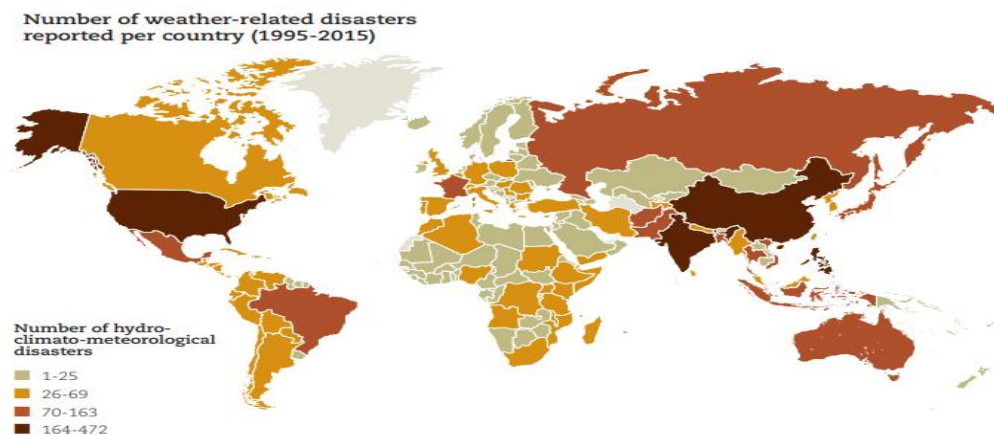


Fig. 1. No. of weather related disasters
Source [3]

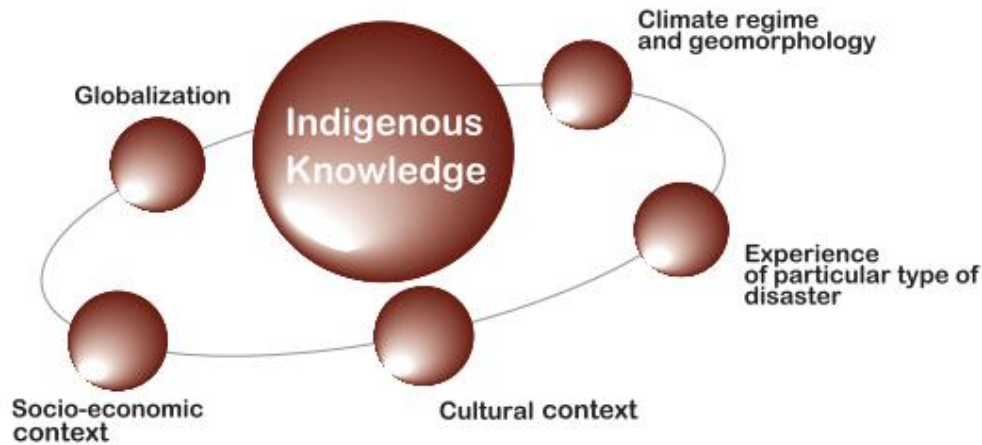


Fig. 2. Indigenous knowledge relation

Source [6]

Cultural and environmental assets so originated from indigenous knowledge evolve through generations with impact of urbanization, climate, geomorphology, historical experience, the cultural context as well as the socio-economic context of the community. These practices show a profound comprehension and capacity to adapt to calamities through local response and action. There is an increasing acknowledgment that such practices must be recognized and must frame a comprehensive way to deal with climate risks that join cultural practices with present day advancements.

3. CASE STUDIES OF INDIGENOUS PRACTICES

Literature has evidence of such indigenous practices playing an effective role in formulating climate resilient and adaptation plans in Asia at national and local level. Many studies suggest through documentation of such traditional wisdom and local practices that have proven to be climate resilient and sustainable time and again. ADB in one study on Indigenous and local knowledge and practices in Nepal have documented such practices in districts of Nepal [7]. Nepal, which is an agrarian society have indigenous practices which addresses the variability in terms of both the amount and the timing of the rainfall for irrigation. The traditional water management practice takes into account both the “too less” and “too more” scenarios and has thus become a resilient approach of adaptation through local response. This

approach is named as “Farmer based irrigation system” and it focuses on rich paddy cultivation. The mechanism in such FMIS is widely adapted in the local and national policies and it is observed that those traditional practices which were not appreciated and included in action plans largely remain in a state of ceasing. It becomes imperative to further take traditional wisdom and translate it to modern context in order to fully utilize the contextual origin of the approach along with the necessary advancement it requires to function in long term [7].

Philippines another country adversely impacted by sever climate induced disasters has local and indigenous knowledge or LINK with examples of “*bayanihan*” which is an intentional aggregate activity of individuals to help those affected by disasters, for example, moving a shelter to somewhere else, planting yields, and helping neighbours in crises. They have built up an early warning system utilizing conch shells, they strengthen their homes, and save food that will empower them to eat without cooking during a disaster event. Prediction of storms is locally done observing the sky, relating the animal behaviour and other such indigenous ways [8].

Indonesia another country with multiple climate risks have a cultural practice in rural communities. One model is the customary guideline encompassing the foundation and planning of settlements around waterbodies. For large water bodies, individuals are forbidden

from setting up houses nearer than 100 m from the floodplains while for smaller water bodies, this separation must be in excess of 50 m, which reduces harm during flood occasions. The concept of coastal forest is also practiced in the communities where a forest of different species is planted along the coast which acts as buffer to reduce the intensity of the storm that reaches the settlements. This practice is named “Uteun Pasie”. Other Acehnese practice to plan for floods include building conventional raised wooden houses [8]. Local norms are set whereby wood and bamboo must be collected or harvested on every 6th day also an individual that cuts down a tree is has to plant another tree [9].

India, also prone to multiple climate risks has over the years evolved its individual set of diverse traditional practices which are primarily enhancing the coping capacities of communities through ancient times. Khonds tribe in Odisha, for instance has a socio-economic traditional practice of having diverse crop farm on single farm with the concept of agro-diversity embedded in the approach. If due to some reason one crop fails, the farmers have other crops growing to depend their food and livelihood security. The use of native birds, pests, insects etc instead of harmful pesticides has also led to a harmonious balance between the environment and the local population [10].

Even the arid desserts areas of Rajasthan have seen communities not merely survive but thrive without water resources. Their traditional practices as small as serving water to guests in

a single pot or as large as constructing “kunds” and “pars” in habitations have all been well tested, time aged mechanisms which are working through generations without any external input and have been fulfilling the water requirement in an arid area. The traditional wisdom indicates the resource utilization in the most optimal way ensuring the resilience in adverse conditions [11].

Such traditional and cultural practices are not just confined to the agricultural sector or rural communities. Vernacular architecture itself a segment of such traditional wisdom has shown some exemplary methods of coping with the climate. Jallis, a feature of Rajasthani architecture, can be seen everywhere while one roams in the narrow lanes of Jaisalmer. These beautiful intricate and decorative elements form an ornamental detail added to all the buildings but serves for a bigger purpose in arid regions. They are used as protection from the hot sun. When the hot air pass through these jallies, it cools down thus making the insides cool and comfortable reducing the dependence on any external cooling system and reducing the energy demand in doing so. Courtyards made in all the monuments of Rajasthan are one beautiful feature of Rajasthani architecture. The purpose of courtyards has no finite boundaries, creation of gathering spaces to open space for domestic daily activities, or privacy of the women of the family, courtyards are a way of providing natural light and ventilation. Before air-conditioners were invented, most of ancient India employed the stepwell, a pond dug into ground that uses evaporated water to cool a space.

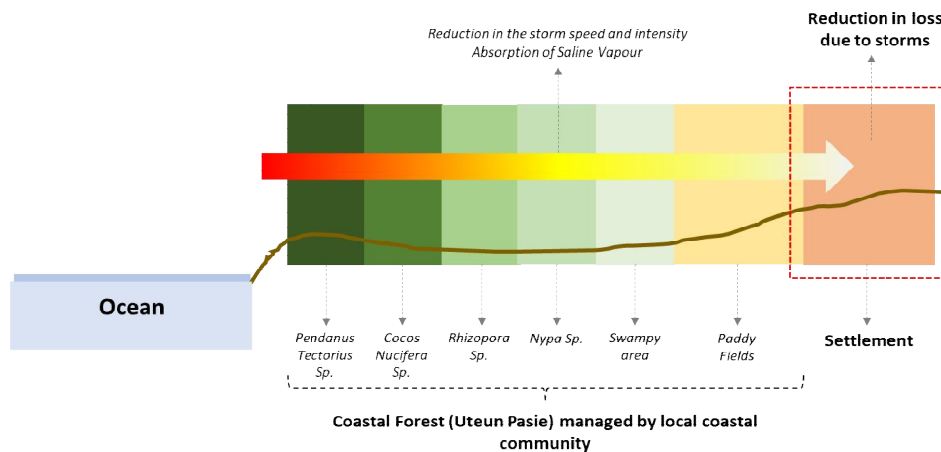


Fig. 3. Coastal forests managed by local communities in Indonesia
 Source: Illustration by author

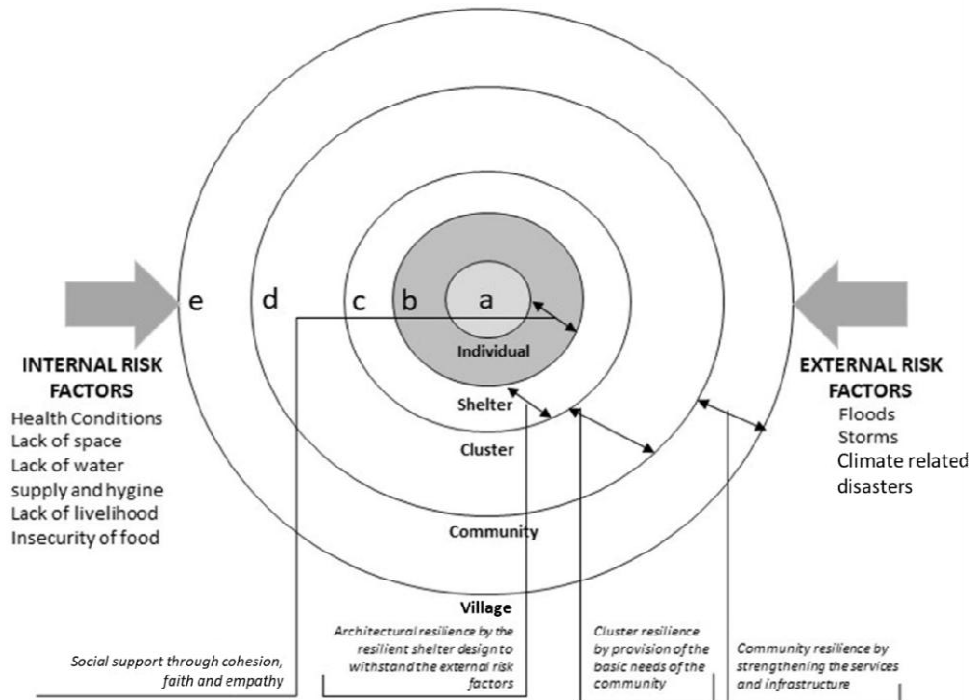


Fig. 4. Levels of Resilience in a community

Source: Illustration by author published at [12]

The above practices relate with climate resilience in multiple ways. Social cohesion promotes a collective response during disasters. The strong sense of community ownership and community cohesion enhances the practice and encourages long term solutions [13].

4. CHALLENGES AND SOLUTIONS IN APPLYING THE TRADITIONAL KNOWLEDGE

One of the key challenges focussed in majority of literature pertains to the contextuality and unique character of each cultural practice. In order to revive, adoption of such practices needs to be mainstreamed and backed with policy and institutional support at a larger scaled up level. Mere transfer knowledge from one community to other would only work at small scale unless support of modern advancement and policy level inclusion is provided [14].

Also, evidence suggests that documentation of such cultural practices which have evolved from the traditional wisdom is not very extensive. Main reason that can be associated to this lack of research in the domain is the fact that people

who practice these indigenous cultural or environmental practices do not do so with the clearly defined intention of achieving climate resilient. Since a larger section of such practices have been handed over from one generation to another, they have been applied as part of lifestyle and not something external enforced on people to practice. This makes it difficult to identify such practices. In a country like India, where the climatic conditions and geological socio-cultural nature of regions is so varied it becomes even bigger a challenge to find such practices and study their contribution in that community towards climate resilience would take a lot of effort. A possible solution to this can be focussed group discussions with the elders of the communities and identifying the lifestyle pattern and routine through them to pin point entry points of tradition cultural practices. Also, an impact assessment study can lead to identification of such communities where the communities were successfully able to build back better on their own without significant external support after past disasters. Certain practices would work better in certain contexts thus research should be encouraged in order to identify what practices work when and where.

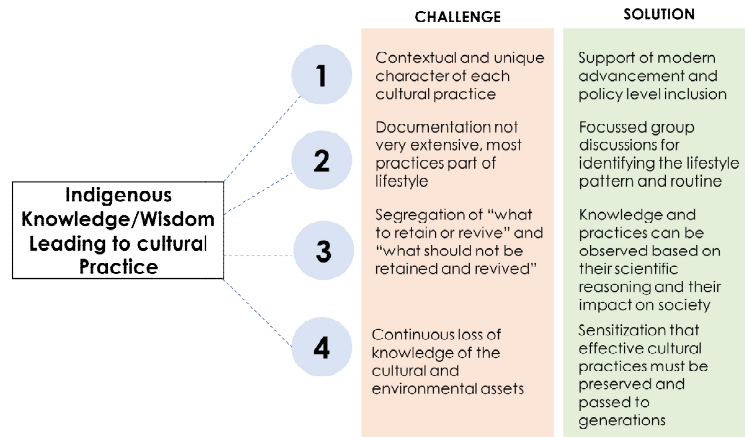


Fig. 5. Challenges and solution to adoption of cultural practices

Source: Illustration by Author

In historically rich countries through reforms and development many traditional practices have been carefully addressed and ceased due to their regressive nature. Superstitions, although a stigmatic concept, is still very deeply rooted in many cultural practices in Asian cities. Thus, the challenge is also to segregate “what to retain or revive” and “what should not be retained and revived”. Hiwasaki et al., [15] suggests that the knowledge and practices can be observed based on their scientific reasoning. It is possible that certain cultural practices might not have a strong scientific reasoning and yet might be inducing resilience in the community thus a holistic study should be done to analyse such practices with an understanding of not just the root of the practice but also the kind of impact that it has on the society and if it at all helps the community during times of climate extreme events.

Another challenge is the continuous loss of knowledge of the cultural and environmental assets. Through the advancement of technology and the penetration of new cultures and norms it's also absorbed that the traditional, cultural, intangible knowledge or practice is on the verge of extension. Rural or urban, communities must be sensitized that the practices which are effective must be preserved and passed to generations [5].

5. CONCLUSION

As is evident from the literature, traditional wisdom extracts from balance and co-existence with nature leading to development of native practices that are most appropriate for the local

communities without harming the nature. Asian cities today face the immense challenge of being the most highly vulnerable to climate change, however the same cities have a tremendous potential as well. The sheer diversity of the culture and environment in Asia, provides the region with a wide spectrum of solutions that can be explored first and applied at larger scales. Many cultural practices that were an integral part of the societies and were considered to be an identity of the same are now diminishing as we progress from organic to organized. Such loss of cultural, traditional and environmental assets is in many ways an even greater a risk for the cities as they take away from us the possibility of ensuring resilience when faced with a disaster through local action, which is the most effective form of any response. It becomes key to the concept of climate resilience that such assets are explored, acknowledged and applied in coherence with a policy and institutional backing to implement them at a larger global scale. Failing to do the same would lead to increased dependence of communities on external coping strategies which are not suitable for long term solution pertaining to climate change and induced disasters. What is required instead is the absolute empowerment of societies to “build back better” on their own while also reducing the impacts of the changing climate. This could only be done through focussing on contextual solutions rather than fixed common set of methods which cannot be applicable in all contexts. Community through its own wisdom and experience can define and create indicators that fit well with the climatic conditions to better plan for such adversities.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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