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Title: Development of Durable and Energy-Efficient Climate Resilient Buildings for India (HCP059)

Task 1.1: Compendium for Climate-Resilient Traditional and Fusion Construction Technologies of India

Abstract: Traditional knowledge of climate-appropriate construction technologies and materials has evolved for thousands of years within the specific context of diverse ecosystems and dominated local housing; instead of developing the traditional techniques with the advancement of science and technology, industrialization and urbanization altered the approach of building construction into an efficient, expedient industry that is not particularly responsive to the environment. Globalization has influenced local techniques adversely. Modern construction techniques are easy to build, require less maintenance, and take less construction time, which are the major reasons for abandoning traditional construction technologies. Modern construction materials are engineered, synthetic, climate-inappropriate, and result in a higher carbon footprint. Moreover, the manufacturing industry sells its products with various certifications and ratings, which merely become a marketing gimmick.

There is a limited strategy to assess the potential of integrating traditional knowledge with modern structures to reduce the material intensity and embodied energy of the material, enhance thermal comfort and livability, and reduce environmental impacts. These materials and techniques include wattle and daub, cob-based walls, stone-based walls (random rubble), Bhunga roofs, Kathkuni and Dhajji Diwari structures, and an array of walling and roofing technologies that utilize local materials and local skills to construct houses. Even though official documentation of building materials and techniques has begun, more focused policy framing is needed to promote, support, and fund hybrid and fusion technologies in the housing sector, especially in peri-urban and rural areas.

The research begins with the intention to embark on the significance of traditional architecture following the climate. It intends to test indigenous technology's performance efficiency. Furthermore, to propose upgradation to the local technology to meet modern requirements.

Scope for the project are:

- To classify zones/regions for categorizing traditional construction 86
- Technologies based on climate (topographical conditions) and availability of local materials.
- To provide guidelines and norms for the practitioners involved in traditional and fusion technologies for Climate Resilient Buildings
- To develop such prototypes at innovation and demonstration centers of CSIR Labs in India
- To develop a user-friendly app that allows the practitioner to review guidelines quickly. Local technology to meet modern requirements.

Objective: To develop a Compendium and Knowledge Repository (KR) of traditional as well as fusion construction technologies

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