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**Title:** Evaluating transition programs for low-carbon resilience that engage communities at neighbourhood scale: Do they work?

**Abstract:** One of the hardest transitions for cities to achieve in meeting climate change targets is to mobilize citizens in retrofitting their homes for low-carbon resilience. There are few successful precedents or visible programs for achieving rapid progress at scale in suburban neighbourhoods, beyond government-backed investment in redevelopment schemes or politically risky regulation & pricing policies. Standard interventions such as incentive schemes, energy conservation programs targeting individual households, and traditional public education methods have not made the large reductions in carbon emissions that most government targets call for. Key research questions are therefore: How can residential communities be mobilized widely to reduce carbon footprints and build resilience?; What are the critical components of successful examples of such transitions?; & How can these successes be scaled up and accelerated? Certain experimental approaches and pilot programs that use social innovations to overcome perceptual or social barriers to change have demonstrated increased action and substantive outcomes on mitigation and/or adaptation. This paper explores social mobilization programs from various countries that have combined innovative social processes and powerful visual or social tools to encourage high uptake of residential energy efficiency retrofits and switching to low-carbon energy sources. Many of these focus on the local neighbourhood scale, invoking place-attachment and collective impact models, harnessing drivers such as competition, collaboration, and visible evidence of change, often in combination with traditional tools such as incentive schemes. Some of the effective intervention techniques reviewed include thermal imaging of homes and neighbourhoods, spatial mapping to target high-suitability clusters, energy retrofit bundling programs, future visioning techniques, and multi-purpose collective action programs supported by NGOs and municipal governments. This paper reviews strategies used by recent programs (e.g. the UK's EVALOC program on low-carbon communities, California's Cool Block program, and Canadian neighbourhood scale pilots), systematically compares outcomes, and identifies the components that led to their success. Findings indicate that voluntary social mobilization approaches can be effectively fostered via multiple pathways and actors, and can in some cases deliver on fairly rapid low-carbon energy transitions at neighbourhood and wider community scale. However, several limitations to these effective community engagement methods on climate change are also identified, focusing on barriers and possible solutions to ongoing and wider scaling-up. The paper distils transferable lessons and recommendations for scalable future social mobilization initiatives, required support from anchor organisations such as municipalities, and implications for formal education and public messaging in further transitioning to low-carbon resilience.