Inter-disciplinary Programmes

Inter-disciplinary research that leverages NZ's unique situation and challenges to advance the vision of earthquake resilience. These programmes draw on expertise in multiple disciplinary themes.

IP1: Functional Recovery with Repairable Multi-storey Buildings: Repair of earthquake damage is a critical component to the recovery after an earthquake disaster. After recent events, the time to return the commercial and industrial building stock to functionality has been hindered by the lack of understanding of residual capacity and repair. This programme will identify time-to-functionality targets and repairable building solutions, thus providing the underlying science to support the development of the world's first functional recovery-based seismic design standard.

IP2: Thriving Residential Communities: The Canterbury earthquakes illustrated the potential for large financial losses ($16B of $40B total) and multi-year disruption to NZs residential sector, with significant implications on mental health and the disaster insurance market. This programme will tackle the problem of resilient housing – including effective engineering and technological solutions, land-use planning, improved insurance processes and frameworks, effective legislation, and communication and engagement strategies.

IP3: A Resilient NZ Transport System: A resilient transport and logistics system is critical to the ongoing and future viability of businesses and communities across the country, supporting the efficient movement of goods and people. This programme will integrate component- and system- level modelling of networks and their users, consider interaction between different transport and logistics modes, and the social and economic impacts of disruption, to inform policy and investment decisions on the transport and logistics systems of the future.

IP4: Harnessing Disruptive Technologies for Earthquake Resilience: This programme will identify how transformational (i.e. order of magnitude) advancements in NZs infrastructure resilience can be achieved through strategic adoption of disruptive technologies, via government and market-led initiatives. A central hypothesis is that rapid adoption of several disruptive technologies (e.g. distributed solar power) will result in a significantly greater resilience gain than the conventional wisdom of incremental investment to improve existing asset classes (e.g. centralized transmission networks).