

Regulating Quantum Decarbonisation Technologies in Queensland: A Case Study of the Engineering Enzyme Catalysis Using Quantum Sensors

Institution	The University of Queensland
Project details	This project is a sub-study within a broader research led by Dr. Pedram Rashidi, aimed at developing a regulatory framework for quantum decarbonisation technologies in Queensland. The project investigates whether existing regulatory regimes – i.e., those governing biotechnology, data privacy, intellectual property, etc. – can be adapted to oversee emerging research and innovation in quantum decarbonisation technologies, or whether entirely new legal instruments are necessary to address associated risks and ethical considerations. It adopts the case of engineering enzyme catalysis using quantum sensors with the objective of reducing methane and carbon emissions in agriculture. To investigate this, the project will employ a regulatory gap analysis methodology, supplemented by interviews with leading scientists in the field. The study will identify key regulatory themes and map the relevant legislative and policy landscape governing research and innovation in the engineering of enzyme catalysis using quantum sensors. It then evaluates existing legislation and regulations' capacity to address the challenges and foster opportunities associated with applications of quantum sensors. Expected aims and outcomes The project aims to deepen our understanding of the legal and policy complexities around the application of quantum sensors. Such understanding could minimise the risks and foster the adoption of quantum-enabled solutions in the decarbonisation sector. The primary outcome of this project is to: (1) identify key regulatory aspects, framed by thematic areas; (2) map the existing regulatory landscape, including relevant legislation and policies; and (3) identify gaps in the governing instruments for research and innovation in enzyme catalysis engineering using quantum sensors. The findings will contribute to an academic publication and will also inform policy briefs to be shared with QUBIC and the Queensland Government.
Who can apply	A student undertaking a dual degree in law and science would be ideal for this project.
Contact / Project supervisors	Dr Pedram Rashidi - p.rashidi@uq.edu.au