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Contribution of Space Activities to Solving Global Societal Issues (2)

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A ROADMAP FOR THE AUSTRALIAN SPACE INDUSTRY TO CONTRIBUTE TO GLOBAL SOCIETAL CHALLENGES

Abstract

Australia has recently announced the formation of a national Space Agency and the intention to increase engagement in international space activities. Australia faces many acute challenges common across the world, including water management, sustainable development, an ageing population and resource constraints. A new Australian space roadmap from Australia's national research institute identifies opportunities for developing space technologies that can make a direct impact on societal challenges and a path for supporting an emerging space industry.

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) is Australia's national research institute and one of the largest and most diverse single multidisciplinary research institutes in the world. CSIRO conducts world-leading research and development to solve national and global challenges in close association with all Australian industry sectors, including our advanced mining industry, energy, digital technology, food and agriculture, manufacturing, population health and biosecurity as well as astronomy and space science. This mandate also makes CSIRO an ideal vehicle for applying space technology developments to a wide variety of societal issues in association with Australia's recently announced Space Agency.

As part of the inauguration of the Australian Space Agency CSIRO has published a space technology roadmap which identifies areas of strength for the Australian industry and a range of opportunities to make a significant global contribution to space technologies and space exploration. The roadmap also highlights the central role for CSIRO to enable commercialisation of space-related innovations to impact societal issues. Australian examples of space innovations directly impacting global societal issues today include microsensors for studying the global issue of honey bee health, earth observation of air quality and fugitive emissions from the energy sector, water management for the optimal sustainable development of agriculture, and advanced lightweight materials for energy efficiency.

The future of space exploration offers limitless opportunities for society, including space resource utilisation. Commercial in-situ resource utilisation may be a 20+ year prospect, but key engineering solutions are being advanced today. Deep technical expertise and understanding of mining and minerals processing is core to Australia's modern economy. Much of this expertise resides within CSIRO and its wider industrial network. The Space technology roadmap details some key challenges for space resource utilisation and draws on CSIRO's leading expertise in minerals processing and 3D metal printing to

describe some of the major challenges to effective space resource utilisation, define some of the solutions and a path to commercialisation and means for supporting today's emerging companies.