Australian Academy of
Technology & Engineering

SOUTH AUSTRALIA
DIVISION

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2022 South Australian Election

Technology and policy-based initiatives to support innovation and economic growth in South Australia

The future prosperity of South Australia will rely on technology and innovation. This is particularly true as South Australia (along with the rest of the world) recovers from the effects of the worst global pandemic in a century.

Addressing climate change and other issues through development of emerging technologies offers major opportunities for South Australian business and society. The 2022 South Australian election requires inspirational vision to ensure the State remains a leading society and economy.

The Academy of Technology and Engineering (ATSE) has identified key initiatives across the sectors of energy, industry and innovation, mineral resources, digital transformation, agriculture, water resources, health and STEM education. If pursued these would enable South Australia to boost its economic growth and enhance its reputation as an international leader in technological innovation.

These key initiatives are summarised below. A more detailed document with supporting information for these initiatives is available from ATSE.

1. ENERGY

- Undertake a comprehensive techno-economic review of large-scale, base-load electricity storage and backup options as South Australia's demand for electricity inevitably increases over the next decade. The work should focus on activities compatible with increasing intermittent wind and solar power supply.
- Establish a South Australian Centre for Sustainable Energy Generation and Storage Technology with funding from the Clean Energy Finance Corporation, private sector capital, and the State Government. One initial focus should be developing technology for cost-effective recovery and recycling of valuable components from end-of-life solar panels and batteries.
- Provide an incentive for large-scale electrification and hydrogen-fuelled domestic and commercial transport through the establishment of an effective state-wide roadside network of fast, renewables-powered charging and refuelling stations for electric and hydrogen vehicles.
- Commence a new techno-economic, safety and environmental analysis of the proposal for nuclear waste storage in remote South Australia. This analysis should take advantage of technology for the handling, treatment and disposal of mining and processing waste in existing uranium and heavy mineral sands operations, and the experience and technology developed over many years at ANSTO and The Australian Radiation Protection and Nuclear Safety Agency.
- Establish a South Australian Centre of Materials and technology for nuclear power to develop the local skills and capabilities required for the construction, maintenance and decommissioning of Australia's new fleet of nuclear-powered submarines.

2. INDUSTRY AND INNOVATION

- Establish a South Australian Additive Manufacturing (AM) (3D printing) Hub to facilitate South Australian businesses especially small to medium enterprises (SMEs) taking up AM technologies best suited to their individual needs
- Establish a high-level Taskforce from government, industry and academia to develop a long-term strategy for diversification and growth of manufacturing and processing industries in South Australia. Opportunities could include the conversion of minerals and end of life renewable energy products to high value materials
- Establish a sub-group of this Taskforce to evaluate the suitability and development needs of the Upper Spencer Gulf (USG) and Olympic Dam region as a manufacturing and process hub.

3. MINERAL RESOURCES

- Support exploration of the Gawler Craton using remote sensing techniques.
- Expand research into in-situ leaching and treatment of low grade and complex ores and waste rock for higher extraction rates, more environmentally benign tailings, and easier disposal.
- Deliver priority training to personnel in the required technological disciplines to support the minerals and mining industry.

4. DIGITAL TRANSFORMATION

- Provide support and leadership to help transform businesses and government sectors in adopting digital transformation technologies to super-charge economic recovery from the COVID-19 pandemic and to create new jobs. This should include providing support for businesses to partner with government on pilot projects for AI-based solutions to regional problems.
- Take advantage of initiatives emerging from the national government's Artificial Intelligence (AI) Action Plan by working closely with the Federal Government to ensure South Australia is considered as a prime location of one of the four proposed AI Capability Centres.
- Establish a cross-sectoral taskforce to oversee development for local industry and government of minimum trust standards to ensure best practice in data security and cyber resilience.
- Undertake a critical assessment of the digital skills required for the transition to a digitally enabled economy and drive initiatives for digital skills development from Vocational Education and Training to graduate-degree level.

5. AGRICULTURE

- Support research to develop sustainable, low-energy and low-chemical input primary production systems that will facilitate their adaptation to a low-carbon future, matched to land management systems, that effectively sequester greenhouse gases.
- Support the development of diagnostic imaging for natural and agricultural ecosystems to assess and manage nutritional status, crop yield, biodiversity, fire hazards, quarantine incursions, and outbreaks of pests, weeds, and disease.
- Ensure that regulations addressing quantifiable risks or hazards of new primary production technologies including those that derive from crop genetics and improved animal welfare, are congruent with other jurisdictions and are science based.
- Seed-fund a collaborative government-industry-academia approach to developing a plant-based protein food manufacturing industry in South Australia, based around the dry fractionation of South Australian low-cost dryland crop products.

6. WATER RESOURCES

- Work with the Federal Government and the other state governments to develop a mechanism to ensure that all jurisdictions fully comply with the Murray Darling Basin Plan including the provision of an additional 450 GL of water per year for environmental purposes.
- Amend the Water Industry Act (2012) to make a single utility responsible for the planning, management, and operation of urban stormwater infrastructure for Adelaide and all large cities in South Australia.
- Provide significantly increased support for water resources research in South Australia and ensure increased cost effectiveness of water and wastewater services for consumers by encouraging SA Water Corporation to invest further funds in research and development of new water technologies.

7. HEALTH

- Improve 'Continuity of Care' across the 'Primary-Acute Care' Interface to address a major health system issue. Current digital health initiatives and health service reform could be leveraged to improve entry and exit from acute care and access to quality care in the community setting for benefit to all South Australians.
- Rebuild, from the grassroots, clinical and translational research in the public hospital system. Creating efficient and direct interaction between Local Health Networks (LHNs) and South Australian universities and medical research institutes to drive a culture of continuous improvement in the productivity and quality of care. Excellent clinical research leaders are essential to this regeneration.

8. STEM EDUCATION

- Promote quality STEM education for all students throughout levels 1 to 12 of school education by appointing specialist teachers with industry experience and pay a salary premium to teachers with expertise in appropriate areas of STEM.
- Develop curriculum in STEM subjects that encourages participation from groups of students who are currently poorly represented in these areas including female students and Indigenous students
- In years 7 to 12 develop an approach to STEM education that integrates science, mathematics, engineering, and technology through the increased use of inquiry- and problem-based pedagogies.
- Explicitly include the applied sciences, including engineering and computer programming, in the science and technologies learning areas at all year levels, to ensure the focus is on all STEM careers and learning, not just 'discovery' science.

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