

Enhancing the societal value of research infrastructures

A view from CSIRO, Australia

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CSIRO

Presentation Overview



- Introduction to CSIRO
- How CSIRO defines Impact
- Atlas of Living Australia
- Australian Synchrotron
- Advanced Characterisation Research Facility
- Pawsey Supercomputing Centre
- CSIRO's approach to enhancing the social value of its research infrastructure

An introduction to CSIRO

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) has delivered solutions for the environment, business, and society for over 100 years.

- Boost productivity, profitability and agro-ecosystem health for Australia's agri-food and fibre industries and partner globally towards food security in a resource and climate challenged world.

Agriculture & Food



- Deliver solutions that will enhance Australia's economic competitiveness and regional energy security while enabling the transition to a lower emissions energy future.

Energy



- Increase the productivity and effectiveness of Australia's health and biosecurity systems through technology and services.

Health & Biosecurity



- Deliver solutions for sustainable development and stewardship of land, water, ecosystems and communities, valued at over \$12 billion per annum in triple bottom line benefits.

Land & Water



- Deliver the scientific and engineering innovations to transition Australian manufacturing, creating jobs of the future, export growth, and increasing the value of the sector.

Manufacturing



- Deliver science and technology options for the discovery and efficient development of Australia's \$1T mineral resource endowment and enable flow-on benefits to the wider national economy.

Mineral Resources



- Boost Australia's prosperity and wellbeing through solutions that enable sustainable economic, social, & environmental use of Australia's marine estate, and management of the atmosphere.

Oceans & Atmospheres



- Australia's largest data innovation group, one of the largest digital research teams in the world and, outside of the Department of Defence, Australia's leading capability in cyber security research

Data61



National Infrastructure



Astronomy & Space Science

Australian Animal Health Laboratory

Marine National Facility

National Computing Infrastructure

National Research Collections

Service businesses span the breadth

CSIRO Futures

CSIRO Publishing

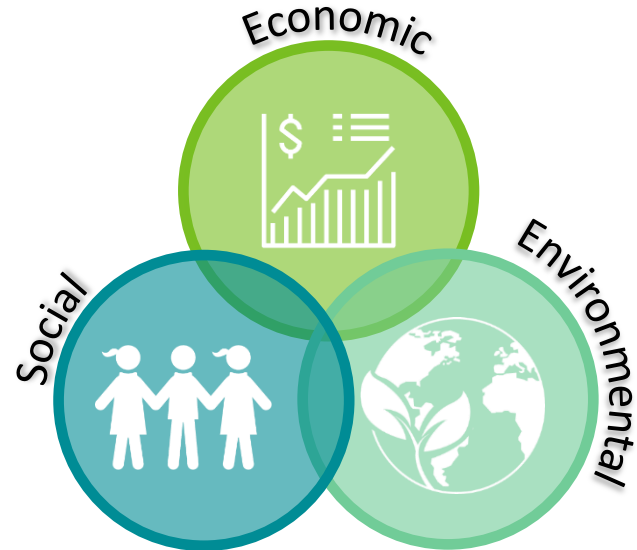
CSIRO Education

Infrastructure Services

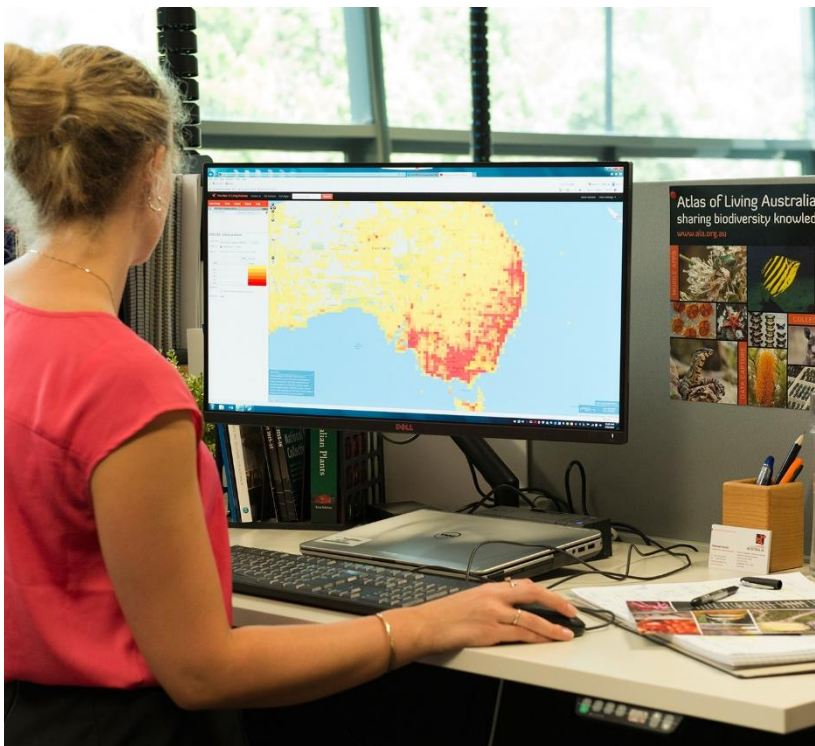
SME Engagement

How CSIRO defines impact

‘An effect on, change or benefit to the economy, **society** or environment, beyond those contributions to academic knowledge’



Atlas of Living Australia (ALA)



- The Atlas of Living Australia (ALA) provides free, online access to a vast repository of information about Australia's amazing biodiversity.
- Delivered and potential impacts include: Efficiency gains for biodiversity data management; open sharing of data and standards

The ALA Impact Evaluation indicated efficiency gains applied to Commonwealth expenditure on biodiversity and national parks to be \$26.9 million in 2016, with a benefit-cost ratio of 3.5:1

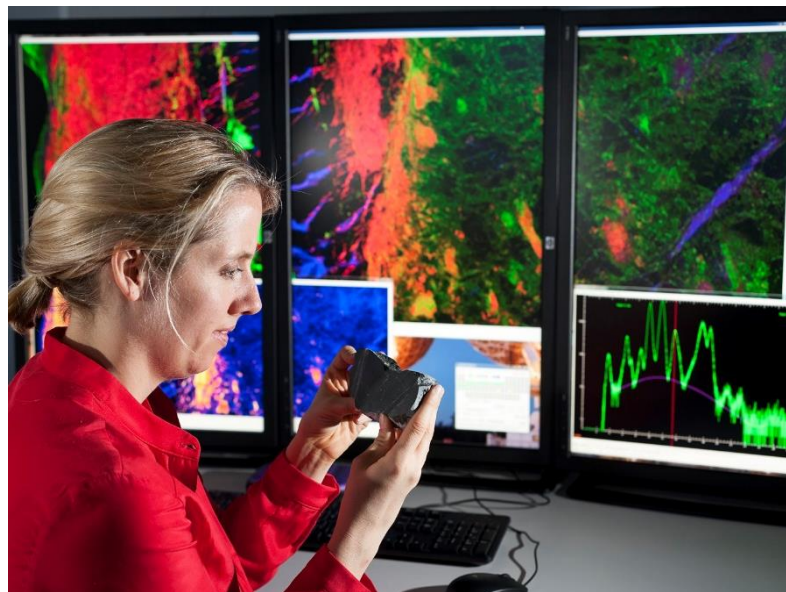
Australian Synchrotron



- The Australian Synchrotron produces powerful beams of light that are used at individual experimental facilities to examine the molecular and atomic details of a wide range of materials.
- Assessment of: (a) Gold in eucalypt leaves, saving cost and time involved in drilling and unnecessary exploration; (b) Understanding the nano structure of casein micelles, significant potential benefits for dairy farming, manufacturing and export; (c) Faster and more detailed analysis of proteins and other molecules, important role in new pharmaceuticals

The estimated net present value of the Synchrotron is \$799.3 million (2016-17 dollars), with a benefit cost of 68.3. Note these are based on 3 projects.

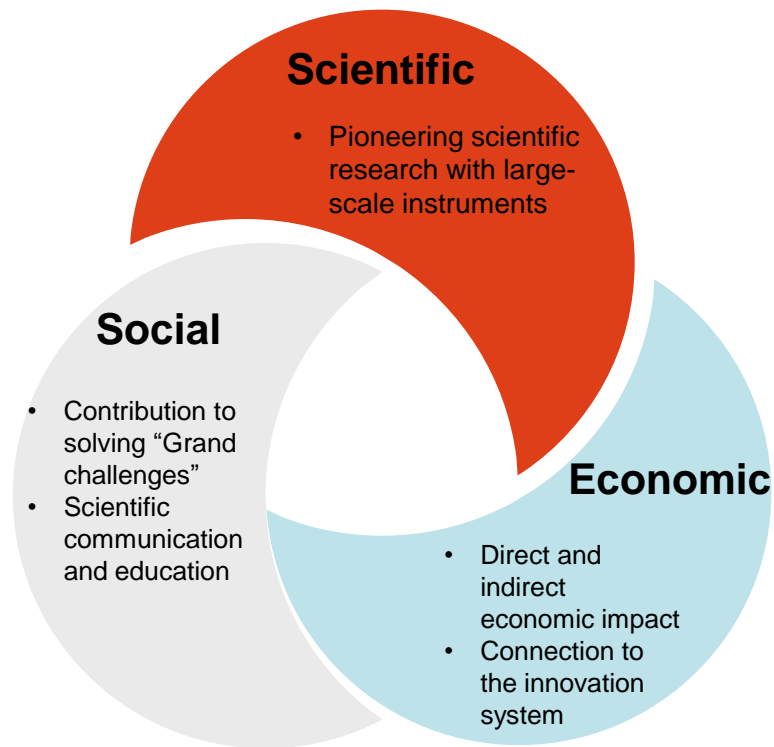
Advanced Resource Characterisation Facility (ARCF)



Given the relatively short time that has elapsed since ARCF equipment was installed, it is too early for an economic analysis of its net benefits to be conducted.

- The ARCF provides a global hub for metre to atomic scale analyses through an advanced workflow involving the measurement and interpretation of multi-scale compositional analyses for the research community, industry, and government geoscience agencies.
- CSIRO established the Maia Mapper laboratory, which allows unprecedented high resolution, large area core-scale chemical mapping
- A better understanding of how to efficiently extract minerals from mined ore could lead to potential energy savings in the extraction process.

Pawsey Supercomputing Centre



Enhancing the Social Value of CSIRO's RI

- Providing access to the public – for education & social purposes including access to national collections
- Enhancing scientific literacy of Australians
- Improvement of connectivity between CSIRO, science & the community
- Social benefits from attracting international researchers
- Driving employment/health benefits through research conducted at facilities



Thank you for your attention!

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