Australian Government
Office of the Chief Scientist

Australian Academy of Science

FOREWORD

The Office of the Australian Chief Scientist commissioned the Australian Academy of Science to develop two complementary reports on the importance of recent advances in a selection of the sciences in the knowledge that the economy is not an end in itself but a means by which we realise our many goals. The Academy contracted the Centre for International Economics to do this work.

We now have, for the first time, two reports that estimate the extent to which our economy, our health and our environment are based on global advances in specific fields of knowledge over the past 20 to 30 years.

While further analysis and projections may follow, the reports aid policy making and public discussion based on rigorous estimates of the current contribution of the core sciences.

The contribution is substantial—and consistent with estimates for the same sciences made using different methods in other countries.

It is estimated that if advances in the physical, mathematical and biological sciences over the past 20 to 30 years had not occurred, and those advances had not been incorporated into a range of products and services, our economy would be between 20% and 30% smaller than it is today.

Further, it is estimated that if advances in the biological sciences over the past 30 years had not occurred, and the new medical products and practices underpinned by those advances had not been created, the burden of disease in Australia would be 18% to 34% higher than it is today.

These reports do not attempt to make a case for more science funding by speculating on future returns on investment; nor do they seek to quantify how much of our economic value can be attributed to scientific knowledge first acquired in Australia compared to knowledge uncovered in other parts of the world.

Much of the impact of new knowledge on the economy is incremental, but the cumulative effect of these changes is undoubtedly substantial. Science is now, and will continue to be, important to the economy and therefore important to all Australians.

ABOVE LEFT:
Australia's Chief Scientist,
Professor Ian Chubb AC

ABOVE RIGHT:
Professor Andrew Holmes AM PresAA FRS FTSE
President
Australian Academy of Science

ADVANCED PHYSICAL, MATHEMATICAL AND BIOLOGICAL SCIENCES*—

underpinning Australian economic activity and worth $330 billion each year

Physical, mathematical and biological sciences help to support our national wealth.

We need to continue our national commitment to the advanced physical, mathematical and biological sciences if we are to recognise opportunities and capture the rewards. It is of substantial economic benefit.

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Prepared for the Office of the Chief Scientist and the Australian Academy of Science by the Centre for International Economics

*Advanced means science undertaken and applied in the past 30 years for the biological sciences and 20 years for the physical sciences.

14%

14% of Australian economic activity relies directly on advances in the physical, mathematical and biological sciences

26%

The total direct and flow-on impact of advances in the physical, mathematical and biological sciences amounts to 26% of Australian economic activity or about **$330 billion per year.**

$84b

Exports associated with advances in the physical, mathematical and biological sciences are worth around $84 billion a year. This is 32% of Australia's goods exports and equivalent to 25% of total Australian exports of goods and services.

$185b

The direct contribution of advances in the physical, mathematical and biological sciences to the economy is around $185 billion per year

1.172m

10% of total Australian employment (about 1.172 million jobs) is directly related to advances in the physical, mathematical and biological sciences