

SAF5 Recommendations

SAF5 project team and expert working group

12 September 2016

1. Develop a New Approach to Managing Technological Change

Based on:

- Recognising that new technologies are the major driver of economic growth and provide large national benefits: this view need to be widely and consistently promoted.
- Maintaining multiple technology options open rather than attempting to pick specific technological winners.
- Recognising that failure is intrinsic to technological development, governments should adopt a more experimental approach to policy and support and ensure learning from failure is highly valued.
- Recognition that while new technologies almost always substantially improve the *average* welfare of the country, they also have negative effects for some. Policy which explicitly recognises the differential impacts and mitigates them by social safety nets removes a brake to progress.

2. Align R&D Investment with Technological Trends

R&D investment in Australia is shaped by the capabilities of previous technologies rather than the new technologies that are likely to underpin future economic growth. Government can improve the way R&D supports and underpins the development and adoption of new technologies by:

- Rebalancing the R&D spend to more closely match the areas of future importance to the economy, but in line with the previously stated need to keep a variety of technological options open.
- Signal an understanding that the economic returns from new technologies flow primarily into the general economy, rather than to the originating research institutions and hence avoid imposing onerous expectations for 'external revenue'.

3. Invest in Skills for New Technologies

The benefits of new technologies in Australia will not be realised unless Australia has the people to develop and use the technologies effectively. A highly skilled workforce is needed to drive the invention, adoption, and adaption of new technologies. Government needs to ensure that:

- Australia maintains and grows broad technical expertise, especially in emerging general purpose technologies. This will require increasing investment in the breadth and depth of technological training at all educational levels.

- Government should do more to encourage the development of skills for creativity. This can be done by requiring creative thinking, doing and making, in STEM education curricula at all levels.
- Vocational training should be refocused on adaptability and the skills needed for jobs of tomorrow (rather than today or the past), by reducing the amount of rote and technique learning, and increasing the degree of conceptual understanding of how and why processes work, thus enhancing the capacity to change and adapt.

4. Change the Way Technologies are Evaluated

The most important factor in the adoption of new technology is its perceived value to potential users. Government can facilitate better technological choices by improving the way technology evaluation is carried out by:

- Establishing an independent agency, as exists in many countries, to aid in the assessment of technologies to provide independent advice to citizens, governments and businesses.
- Since the value of a technology is extrinsic (depending upon the context and use), technology evaluation should be done specifically for the problem at hand.
- Cost-benefit analysis is the best starting point for technology evaluation.

5. Inspire a New National Technological Narrative

Consistently signalling an open, forward looking and optimistic narrative about new technologies could lift Australia's creation and rate of adoption of new technologies. Government can do this by:

- Signalling consistently that technological change is the major cause of improved standards of living.
- Inspiring collective action by setting grand technological challenges to which many can contribute.