Foresight for the ASEAN Plan of Action on Science, Technology and Innovation (APASTI) 2026–2035

Actions and priorities

Summary | December 2024

Supported by the Australian Government through the Australia for ASEAN Futures Initiative

Analysis of science, technology and innovation capability and expertise across the ASEAN region

In 2024, ASEAN Member States as a regional bloc had a combined average ranking of **65.6 on the Global Innovation Index** – up from 72.16 in 2016.

(Source: Data61 and Global Innovation Index 2024)

ASEAN Member States have 2 of the top 100 global technology clusters in 2024 – **Singapore (33rd largest)** and **Kuala Lumpur (93rd largest).**

(Source: Data61 and Global Innovation Index 2024)

Singapore leads the ASEAN region in Science, Technology and Innovation but Malaysia, Viet Nam, and the Philippines are all in the top three innovation economies in their income group. These nations are leading in innovation spending efficiency.

(Source: Data61 and Global Innovation Index 2024)

Combined GDP growth across ASEAN was 4.1% in 2023, 4.7% in 2024, and is forecast to be **↑4.8% in 2025.**

(Source: ASEAN Statistics and ADB 2024)

ASEAN is the world's **5th largest economy** with a combined ASEAN GDP in 2023 was USD$3.8 trillion. This is predicted to grow to USD $4.5 trillion by 2030.

(Source: ASEAN Annual Report, and ASEC)

ASEAN conducted **>USD$3.6 trillion** in trade in 2023, or just under 10% of global trade.

(Source: ASEAN Annual Report)

Research activity across ASEAN Member States has expanded dramatically since 2000, with annual publications increasing from 9,500 papers in 2000 to 410,388 by 2023, representing a **43-fold growth.**

(Source: Lens Data 2024)

ASEAN Member States now contribute **>3.6% of global research output.**

(Source: Lens Data, 2024)

Over 50% of ASEAN publications involve **international co-authorship,** with Cambodia, Myanmar, and Laos exceeding 95%.

(Source: Lens Data, 2024)

In 2023, ASEAN recorded **>15,000 patents** **420,000 trademarks** **≈20,000 industrial designs.**

(Source: WIPO, 2024)

Singapore, Malaysia, Indonesia, and Viet Nam, collectively account for **>95% of patents filed** from ASEAN Member States.

(Source: WIPO, 2024)

ASEAN foresight workshops to determine actions and priorities

Over 80 participants from all ASEAN nations contributed to online and in-person workshops to develop and prioritise actions for the next APASTI 2026–2035 under 10 identified 'Forces of Change' or megatrends. The Forces of Change had been identified in previous work conducted by the ASEAN Foresight Alliance.

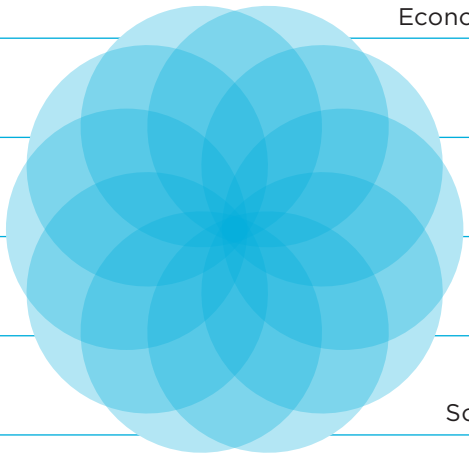
1 Population dynamics

2 Health demographics

3 Environment and planet

4 Food and water

5 Energy



Economics and industry competitiveness **6**

Consumer market dynamics **7**

Education and talent **8**

Politics and governance **9**

Society – justice equity and equality **10**

Workshop outputs

The workshops ranked the 10 forces of change, or megatrends, described by ASEAN Foresight Alliance in terms of their impact and uncertainty.

The top three trends in terms of impact over the coming decade were considered to be: 1. Environment and Planet, 2. Politics and Governance, and 3. Food and Water.

The top three in terms of uncertainty were considered to be: 1. Environment and Planet, 2. Politics and Governance and 3. Health Demographics.

Over 80 STI actions to address opportunities and challenges were identified under the forces of change. These were grouped into six strategic thrusts.

A multiple criteria decision analysis (MCDA) ranked improving skills and talent as the highest priority, while R&D info and infrastructure and finance were ranked in the next three places. Diversity and 'One ASEAN' actions were lower priorities.

The lower priority areas, despite containing a number of specific actions, may be seen as cutting across other areas of development.

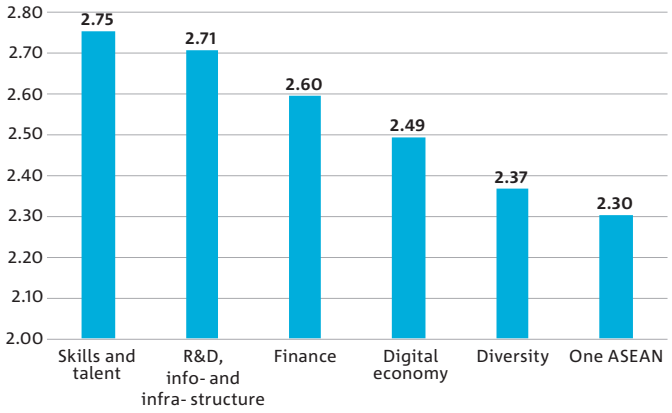
The prioritised actions match the identified areas of weakness for STI development in ASEAN Member States such as skills and talent and R&D infrastructure.

The actions were placed on a timeline that has been included as a broad roadmap to inform the APASTI 2026–2035 development and sequencing of activities.

The report concludes with recommendations for the development of the APASTI, specifically around the clarity and trackability of future APASTI strategic thrusts and identified actions.

With clear and achievable actions that address prioritised need and the ability to track progress on a more regular basis there is no doubt the next APASTI 2026–2035 can greatly assist ASEAN Member States in further building significant science, technology and innovation capability.

In doing so, the APASTI can also steer the application of STI capability to address the considerable challenges and opportunities of the next decade, and use it to build a prosperous, inclusive and sustainable future.



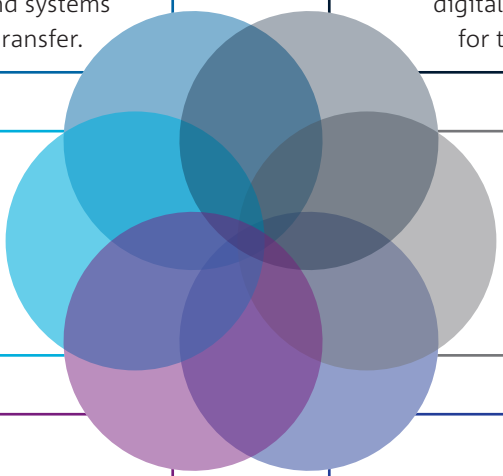
Six strategic thrusts

One ASEAN

Coordination, collaboration, harmonisation of regulations and standards, interoperability of systems, IP and data-sharing, laws and systems to create frictionless tech and trade transfer.

R&D, info- and infra-structure

Platforms, information repositories and architecture, centres of excellence and digital and scientific infrastructure for R&D for transformative emerging technology.



Skills and talent

Access to education, skills mapping, collboration tools, skills development and mobility for advanced science capability.

Finance

For innovation including entrepreneurs, R&D, infrastructure and new business models for a digitally-mediated world.

Diversity

Inclusion, access and alternative perspectives for sustainability (including the regenerative economy).

Digital economy

Governance, civic empowerment, inclusion and adoption of new digital tools, principles and frameworks for responsible innovation particularly related to AI, quantum, bio-informatic data and privacy and security.

Broad roadmap of prioritised actions

1 Talent and skills

- Mapping STI skills and capability to areas of growing industry need and technology gaps
- Developing networks, partnerships and linkages across ASEAN and with external STI leaders in emerging science areas
- Investing in skills for green jobs and the healthcare sector
- Improving STEM and digital literacy skills across the population

2 R&D and infrastructure

- Centres of Excellence in areas of scientific advantage
- Digital and data-sharing platforms for scientific research and collaboration
- Greater assistance for technology transfer and commercialisation from the research sector

3 Finance

- Set national goals for R&D expenditure across ASEAN Member States
- Examine new taxes for R&D development for transition (e.g. carbon taxes or credit schemes for a climate fund)
- Examine circular economy initiatives
- Support venture capital attraction and new funding models for digital entrepreneurships

4 Digital economy

- Invest in new e-government and digitally delivered services including using AI, blockchain, robotics and sensor networks, and quantum technologies
- Support AI incubators and business support centres
- Examine dedicated digital platforms for – e-Health, humanitarian assistance, data-sharing, talent, ASEAN social media, STI collaboration
- Tech clusters to support entrepreneurs

5 Diversity – inclusion, access and alternative perspectives for sustainability (incl. the regenerative economy)

- Greater appreciation and use of Indigenous knowledge systems – particularly in natural resource management (water, forest systems, ocean resources)
- Inclusion of people with disability in STI planning and funding
- Targeted STEM activities for gender equity
- The inclusion of local economies in STI actions and funding

6 One ASEAN

- ASEAN-wide data-sharing platforms and systems
- Integrated STI resource-sharing and collaboration
- Interoperability in IT and payment systems
- Laws and regulations to create frictionless transfers of skills, IP, and knowledge to enable greater STI gains across ASEAN Member States

Complete roadmap and actions found in the full document

Cameron A, Bratanova A and Pham TH (2024) Foresight for the ASEAN Plan of Action in Science, Technology and Innovation (APASTI) 2026–2035: Actions and Priorities. CSIRO, Australia.

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