

ANNUAL REPORT 2017

「THINK SCIENCE
CELEBRATE TECHNOLOGY
INSPIRE INNOVATION」

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2017

THINK SCIENCE | CELEBRATE TECHNOLOGY | INSPIRE INNOVATION

KEMENTERIAN TENAGA, SAINS, TEKNOLOGI, ALAM SEKITAR DAN PERUBAHAN IKLIM

AKADEMI SAINS MALAYSIA

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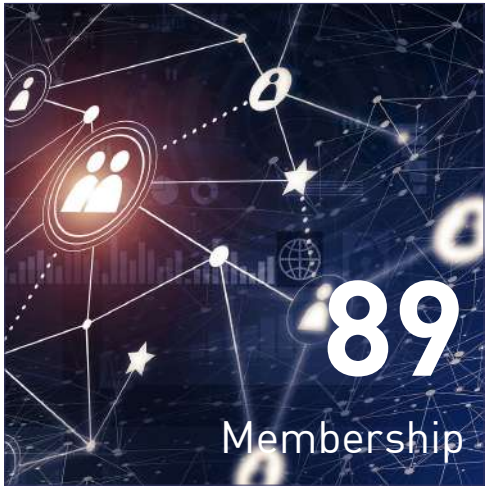
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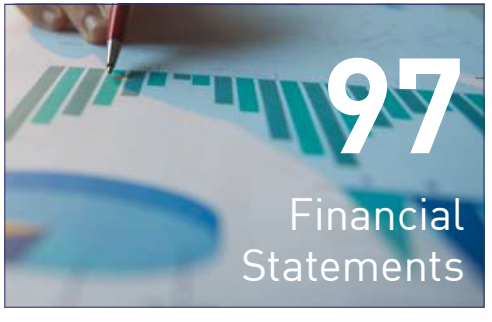
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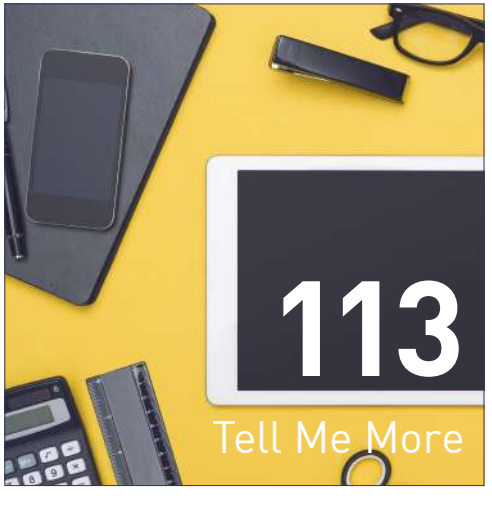
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Tell Me More

We Strive

1. To be the nation's Thought Leader for matters related to science, engineering, technology and innovation.

Mission

- To be a Thought Leader
- To be an apex Advisory Body on Science, Technology and Innovation (STI) matters
- To be an effective promoter of public understanding and awareness of STI
- To make STI a basis for economic development and societal well-being

Function

- Providing advice to the Government on matters related to STI of national and international importance
- Fostering a culture of excellence in science, engineering and technology (SET) in Malaysia
- Assisting in upgrading technological capabilities of Malaysian industrial sectors
- Promoting public awareness in understanding of science
- Enhancing international networking and collaborations
- Scientific publications

Strategies

- Harnessing scientific minds to charter STI direction for the country
- Fostering culture of excellence in SET
- Ensuring independent, authoritative and timely STI input
- Promoting the utilisation and application of STI for societal well-being
- Facilitating the implementation of innovation-led economy strategy

2. To pursue excellence in the fields of Science, Engineering and Technology for the benefit of all.

Our Work

STI Strategic Studies
- Malaysia 2050
- Socio-Economics
- Emerging Technology
- Sustainability Science

STI Strategic Programmes
- Capacity Building
- Gateway
- Science Consortiums
- Consultative Fora

Stakeholders

Internal
- Fellows
- Associates
- Members of Young Scientists Network (YSN-ASM)
- Top Research Scientists Malaysia (TRSM)
- ASM Management

External
- Prime Minister's Department and Central Agencies
- MOSTI and its agencies
- Other Ministries and relevant agencies
- Industry organisations
- Research institutions
- Higher Learning Institutions
- STI Professional Bodies
- International STI Organisations
- Urban and Rural communities

Client Charter

- Provide independent, evidence-based, reliable and timely advice
- Committed in initiating quality programmes towards developing strong STI foundation for the nation
- Represent Malaysia and its scientific community at the international arena
- Disseminate scientific knowledge



President's Message

2017 has been another great year for ASM to continue serving its role as the nation's think tank for matters relating to STI. This report is a culmination of the activities carried out throughout the year. It is also a monumental role for me to lead this prestigious institution as the fifth President, continuing the legacy of previous Presidents. I am humbled and ever conscious of the tremendous responsibility that comes with the role.

Progressive Malaysia 2050

Megatrends that are shaping our world today provide a glimpse of future opportunities and challenges. Studying and understanding these trends would help create a favourable future for Malaysia. Thus, ASM together with various stakeholders formed the Malaysian Foresight Alliance to chart Malaysia's course towards 2050. The three-year study culminated in the launching of Envisioning Malaysia 2050: A Foresight Narrative, which was a notable achievement for ASM. This study identified nine key drivers that would significantly shape Malaysia's future. A Trends and Attributes Map of Malaysia was developed to serve as a navigational chart that allows us to explore our possible futures and offers us insight into plausible timescales of significant milestones. The map takes into consideration mega trends, projections, threats, technologies, policies as well as Malaysian Government initiatives and projects. The end goal would be to achieve a harmonious, prosperous and sustainable milieu enabled by advanced science, technology and innovation, facilitated by agile governance.

This year, the Prime Minister engaged ASM's scientists through a TN50 Dialogue Session to discuss the scientific community's aspirations for Malaysia in 2050. This dialogue provided an opportunity for them to discuss the impact and importance of STI in the future and to realize the TN50 aspirations based on ASM studies such as the Envisioning Malaysia in 2050 Foresight Study. In addition, they also had the opportunity to propose three 'Big Impact Initiatives' as a starting point towards achieving the vision.

ASM embarked on an Emerging Science, Engineering and Technology (ESET) study to provide S&T Foresight input to ASM's flagship initiative on Envisioning Malaysia 2050. This study focused on five main technology areas namely biotechnology, digital technology, green technology, nanotechnology and neurotechnology and how they will shape Malaysia towards 2050. A technology tree that highlighted 21 Impactful Emerging Technologies towards realising Progressive Malaysia 2050 was developed. This was based on feasibility and attractiveness criteria in Malaysia's context guided by global trends and global risks.

As the nation's technological prowess grows, the need to have a proper cyber security infrastructure becomes more important. ASM recognises this, and initiated the Cyber Security study to improve the nation's current cyber security ecosystem. A multi-pronged strategy was recommended to enhance the ecosystem, its governance as well as strengthen talent with requisite knowledge and skills. The key strategies and recommendations of this study were presented to the National Science Council in August 2017.

STI Input

ASM in fulfilling its role as a "Thought Leader" in the STI arena is committed to provide the best scientific advice that is independent, credible, relevant and timely in nature.

ASM translates this mission into action by undertaking strategic STI studies on key aspects such as sustainability science, emerging technologies, socio-economics and Malaysia 2050 among others to facilitate evidence-based, informed decision making.

This year, ASM completed five flagship studies with five others still on-going. Apart from the above mentioned studies ASM also completed another two: the Integrated Urban Water Management that addressed the issue of sustainable water management in the urban environment; and El Niño – A Review of Scientific Understanding and the Impacts of 1997/98 Event in Malaysia that presented recommendations to improve the nation's readiness in facing this global phenomenon.

As a continuation of the Science Outlook 2015 endeavour, the Science Outlook 2017 was carried out. The Science Outlook provides an independent review equipped with evidence-based analysis, insights and recommendations pertaining to the national STI landscape. This study is based on six strategic thrusts of the current National Policy on Science, Technology and Innovation (NPSTI) 2013-2020. The report will be launched in 2018.

In support of the government's aspiration for Malaysia to be a high-income developed nation through the mainstreaming of STI, as mandated by the National Science Council, MOSTI commissioned ASM to formulate the National STI Master Plan (STIMP). ASM was also commissioned by MOSTI to review the current National Policy on STI (NPSTI) 2013-2020 and formulate the new NPSTI (2021-2030). These initiatives are being carried out simultaneously with cross-linkages with each other to ensure they are consistent and aligned.

The Ministry of International Trade and Industry (MITI) was mandated by the Government to develop a National Industry 4.0 Policy Framework. MITI engaged ASM and the Malaysian Industry-Government Group for High Technology (MIGHT) to be strategic partners to develop this Framework. The Framework is expected to be rolled out by the first quarter of 2018.

The Special Interest Group on Machine Learning (SIG ML) is an on-going initiative that aims to identify major changes in Machine Learning at the local, regional and global level and its implications on Malaysia's development in the next 5-10 years. It also aims to ascertain promising applications and explore key enabling factors for Machine Learning adoption in Malaysia. Furthermore, it seeks to catalyse linkages between academia and industry with the strategic partnership of the Government.

Aside from its own studies, ASM was also engaged by other ministries to provide STI-related input in various matters. In 2017, ASM has provided input to nine other ministries besides MOSTI, two State Governments and five key government agencies.

ASM's driving force is an extensive expert network comprising brilliant minds of the nation in the form of over 500 experts including Fellows, Associates, TRSM recipients as well as YSN-ASM members in various disciplines including Social Sciences. Furthermore, ASM is also able to tap on other relevant experts through effective linkages across strategic national and international platforms. The 28 Senior Fellows and 298 Fellows of ASM represent eight Discipline Groups that are Medical and Health Sciences; Engineering Sciences; Biological, Agricultural and Environmental Sciences; Mathematics, Physics and Earth Sciences; Chemical Sciences; Science & Technology Development and Industry; Information Technologies and Computer Sciences; as well as Social Sciences and Humanities. ASM's Associates are appointed to fulfil the increasing interdisciplinary nature of knowledge demand. They contribute to various ASM studies and programmes as well as represent ASM at external meetings . There are 44 ASM Associates to date.

The Young Scientists Network of the academy also strengthens ASM's expert network. YSN-ASM members are top young scientists in Malaysia who are committed towards enhancing the STI ecosystem and making a tangible impact to society.

Strengthening STI Capacity and Capabilities

ASM continues to champion the strengthening of the national STI proficiency and capacity. Various programmes and initiatives have been conducted, engaging different levels of the quadruple helix.

As part of ASM's ethos in promoting public understanding and awareness of STI as well as addressing the nation's need to boost interest in Science, Technology, Engineering and Mathematic, ASM organised the annual National Science Challenge. This year, participants learnt how to communicate science, develop a commercial product from waste and experience hands-on activities and modules developed by YSN-ASM members and affiliates. The invaluable experience gained nurtures them to be future leaders.

The ASM Chapters were established to create greater impact of ASM's initiatives by including the Northern and Southern regions. This year, two programmes were organised under the Chapters: Under the Southern Chapter, the inaugural Merdeka Meeting was organised as an extension programme to the annual Merdeka Award. This programme convened Merdeka Laureates and Malaysian young scientists to foster scientific and mutual exchange between different generations through a one-day assembly. The inter-generational relationship fostered from this programme entrenches shared vision to ensure the Malaysian scientific community is globally competitive. The Northern Chapter organised Young Maker's Programme that aimed to enhance students' mastery of STEM subjects through problem-based and project-based learning that relies upon hands-on, often collaborative, learning experiences as a method for solving problems. Students were exposed to skills and knowledge in providing solutions through the application of Internet of Things (IoT).

Malaysia continues to participate in the global STI arena by positioning its scientists in various platforms and programmes abroad. Aside from increasing Malaysia's visibility in the eyes if the world, this enhances the scientists' experience and expertise and widens their network of international contacts. ASM continues to serve as the knowledge partner in many international organisations. As such, ASM is able to nominate young scientists to participate in academic and exchange programmes, such as the annual Lindau Nobel Laureate Meeting, CERN Summer Student Programme, IIASA Young Scientists Summer Programme as well as the IAP for Health Young Physician Leaders Programme. They offer avenues for the young scientists to gain knowledge, enhance interaction and be inspired. It is important to inspire young scientists to achieve greater heights in STI and take their place as future leaders of the nation.

Communicating Science

ASM organises multiple programmes and conducts various studies across all fields of STI. It is imperative that these efforts to elevate the nation's STI standing are well communicated to enable better understanding and engagement by society. ASM packages these programmes and studies in an attractive and captivating format to be disseminated for all. In addition to the publications and promotional materials, ASM also utilises the media as a channel to ensure that the nation is well informed when it comes to STI. This has indirectly enhanced ASM's visibility as the nation's STI Thought Leader.

Appreciation

ASM is highly appreciative of the continuous support and strategic partnership from MOSTI towards creating greater impact in STI. As ASM also works across ministries and stakeholders, ASM highly values their input,contributions and support of ASM's role. The expertise and experience of ASM Fellows and Associates are very much appreciated in particular their leadership roles in various Task Forces and Working Committees. Lastly, I would also like to record my heartfelt appreciation to the management staff of ASM for their tireless efforts and dedication towards realising ASM's vision and mission.

Professor Datuk Dr Asma Ismail FASc





Advising the Nation on STI

Independent, credible, relevant and timely are the four qualities of ASM's strategic studies in providing advice on STI related issues of national and international importance.

Malaysia 2050

Envisioning Malaysia in 2050 Foresight study

Foresighting or futures thinking enables us to embrace an imaginative yet realistic paradigm for strategic planning of the nation. The Envisioning Malaysia 2050: A Foresight Narrative attempts to foresee Malaysia in 2050 by integrating perspectives of science, technology and innovation, economics and finance, society and culture as well as geopolitics in charting the possible futures for Malaysia.

The possible futures of Malaysia are built upon views and expertise obtained from various stakeholders engaged throughout the three-year study. From the study, nine key drivers have been identified as the key elements that would significantly shape Malaysia's future. The nine key drivers are:



To address the possible future for Malaysia in 2050, four future scenarios have been identified. In the future scenarios, it has been determined that Leadership and Governance along with Economic Growth and Equitable Distribution are the two most dominant drivers of change, critical in charting Malaysia's journey towards 2050. These two drivers are vital in characterising the four future scenarios identified (see diagram on the right)



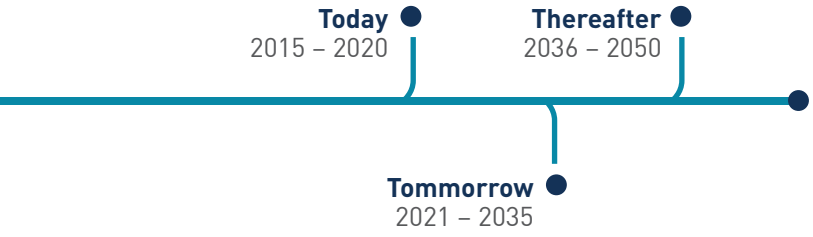


Progressive Malaysia 2050

A word that captures the forward thinking spirit of the nation that is already reflected in Malaysia's Rukun Negara, Wawasan 2020 and National Transformation 2050 (TN50) is "progressive". As such, the 2050 vision for Malaysia is reflected as Progressive Malaysia 2050.

"A Progressive Malaysia where we live in a harmonious, prosperous and sustainable milieu enabled by advanced science, technology and innovation and facilitated by agile governance"

The map has been delineated into three periods:



Charting a Path Towards 2050

To map our path towards a Progressive Malaysia in 2050, several megatrends have been identified that would most affect the journey: Sustainability; Rapid Urbanisation; Virtualisation; Social Change; Global Shift From West to East, and Disruptive Technology. The nine drivers as previously described are depicted as forces that singly or collectively control, guide and lead us to our final destination of being a Progressive Malaysia that is Harmonious, Prosperous and Sustainable.

Moving inwards is a journey forward in time. The lines were traced according to the nine key drivers of change and bore witness to their evolution and interplay. Serving its purpose as a navigational chart, the map allows us to explore our possible futures and offers us insight into plausible timescales of significant milestones. By being aware of such information, it can assist us in leveraging on future opportunities and mitigate the possible risks.

Scan Me !
QR Code for Trends & Attributes Map

Transformational Shifts

FROM		TO
LEADERSHIP & GOVERNANCE		
Administrative delivery	•	Innovative services
Post-truth decision making	•	Evidence-based decision making
Gradual governance and policies	•	Agile and responsive governance and policies
Centralised decision making	•	Empowered, facilitative and decentralised decision making
ECONOMIC GROWTH & EQUITABLE DISTRIBUTION		
Industry-driven economy	•	People-driven economy
Resource intensive	•	Knowledge intensive
Mass production of goods and services	•	Mass customisation of goods and services
Low wage employees	•	High wage employees
Low value-added products and services	•	High value-added products and services
EDUCATION & TRAINING		
Classroom and curriculum based	•	On-demand learning and democratisation of knowledge
Rote learning	•	Critical thinking and problem solving
Formal education	•	Informal life-long learning education and skills
STI CAPACITY & COMPETENCY		
Scientifically aware society	•	Scientifically engaged society
Consumer of goods and services	•	Prosumers of goods and services
Silo approach in research, development and commercialisation	•	Collaborative network approach in R, D & C
PEOPLE & VALUES		
Tolerant of the differences in a plural society	•	Respect and understanding of the differences in a plural society
Focusses on the bad	•	Highlights the good
Individualistic and materialistic worldview	•	Societal and for the greater good worldview
Wait-and-see attitude towards changes	•	Proactive attitude towards changes
TALENTS		
Job seekers	•	Job creators
Low skilled migrant talents	•	High skilled local talents
One skillset for a lifetime	•	Many skillsets for lifelong through reskilling
One job for one career	•	Different roles for one career
Permanent employment	•	Freelancers in a gig economy
POPULATION & DEMOGRAPHICS		
Centralised services	•	Decentralised services
Services and infrastructure catered to a young growing population	•	Services and infrastructure catered to ageing slow population
Reactive healthcare	•	Preventive healthcare
Social protection for a young and productive population	•	Social protection for a rising dependency ratio
URBANISATION & RISE OF MEGACITIES		
Concentrated development	•	Well-balanced and well-spread development
Disconnected infrastructure and services	•	Well-connected infrastructure and services
GREEN & SUSTAINABLE PRACTICES		
Practices towards short-term gains	•	Practices towards long-term sustainability
Waste and linear economy	•	Circular and shared economy
Over-consumption society	•	Sustainable consumption society
Green & sustainable practices out of enforcement	•	Green & sustainable practices out of awareness



To achieve the desirable Progressive Malaysia in 2050, it is also important to acknowledge the rapid evolution of technology and the changes in environment around us. Other than to leverage and mitigate the opportunities and risks of these changes, it is also important to make these transformational shifts to achieve the balance between humanity and technology. These shifts also need to be embedded in Malaysian values and heritage as people are the pulse of transformation.

The vision of a Progressive Malaysia 2050 must be driven by the people who are ultimately the custodians of the Nation's harmony, prosperity and sustainability.

The Progressive Malaysia 2050 is a living narrative in which all the ideas will evolve over time according to changes, developments or trends that take place nationally and globally.

factsheet

1. 40 presentations on the study findings were made to the relevant stakeholders both at National and International levels.

2. 15 ASM Fellows and 8 YSN-ASM members attended a Dialogue Session with YAB Prime Minister. The dialogue discussed on Malaysia's STI Scene, Progressive Malaysia 2050, challenges in Malaysia, STI as the problem solver and proposed 3 big impact challenges;
   - Malaysia Riding the Digital Tsunami
   - Healthy and Fit Malaysia
   - Zero Waste Malaysia

Science and Technology Foresight Malaysia 2050:
Emerging Science, Engineering and Technology (ESET) Study

An increasingly hyper-connected lifestyle has narrowed the gap between humans and enabled new and emerging technologies to transform the economy and more importantly solve societal issues.

Recognising this, ASM in 2015, embarked on an Emerging Science, Engineering and Technology (ESET) study. It aims to provide S&T Foresight input to ASM's flagship initiative on Envisioning Malaysia 2050. This ESET study focused on how emerging science, engineering and technology will shape Malaysia towards 2050 and emphasised on the development of emerging technologies in five main technology areas, namely*:*



Biotechnology



Green Technology



Digital Technology



Nanotechnology



Neurotechnology

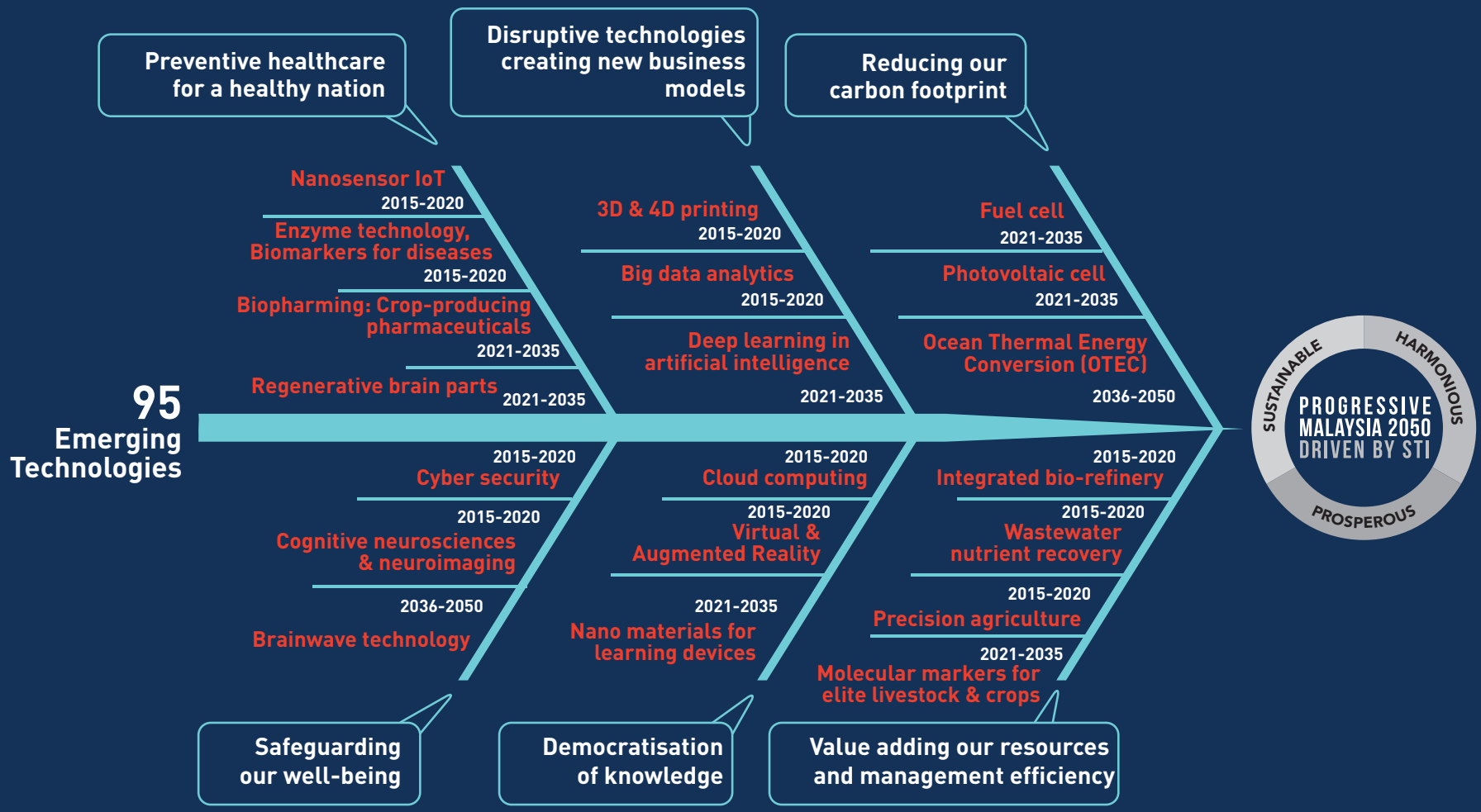
These ESET areas were identified based on their importance and prospect to Malaysia's advancement. The convergence of the ESET areas is projected to create a set of powerful tools that have the potential to transform societies, industries and provide solutions to societal challenges such as food security and ageing population.

This study provides three landmark outputs as follows:

- A list of 284 products, services, technologies, possible applications and outcomes relevant to Malaysia towards 2050.
- Malaysia's Emerging Technology Timeline towards 2050 that showcases 95 emerging technologies and their interlinkages based on Malaysia's strengths and needs.
- This timeline depicts the 95 emerging technologies for Malaysia in three phases: present (2015-2020), probable future (2021-2035) and possible future (2036-2050).
- A technology tree that highlighted 21 Impactful Emerging Technologies towards realising Progressive Malaysia 2050 prioritised based on feasibility and attractiveness in Malaysia's context guided by global trends and global risks.

Scan Me !
QR Code for
S&T Foresight
Malaysia 2050

Technology Tree: 21 Impactful Emerging Technologies for Malaysia's Well-Being, Wealth Creation and Governance



Strategic Intervention

i) Good Governance

- There is a need to revisit the practice of companies designated to drive the technology agenda for areas identified as the nation's engine of growth.
- A government-anchored directorate should be in place to lead the way in partnership with relevant corporations.
- Trans-disciplinary institutional set-ups are necessary to provide integrated solutions for societal challenges besides technology advancement and economic growth.

ii) Institutionalising S&T Foresight to Future Proof the Nation

- Institutionalising S&T foresight to enhance future technological readiness and innovation capacity of the nation.
- Adopting a long-term outlook and open perspective that supports a multiplicity of technology developments and applications.
- Setting of national level research and development (R&D) priority areas to effectively harness the promise of emerging technologies and get all stakeholders on board with a unified focus in terms of resources, talent, strategic investment, collaboration.

iii) Talent the Winning Factor

- Talent by design and not by chance.
- The ability to learn must be embedded, nurtured, reinforced and incentivised throughout the talent development value chain.
- Invest in building the workforce of the future, in particular by strengthening and expanding the STEM talent pool.
- Prioritise high level STEM specialisation in cutting edge, disruptive technology based on foresight intelligence.
- Sharpen talent pool competencies in the 4Cs: critical thinking, creativity, collaboration and communication.
- Create opportunities and resources for talent in cutting edge technology areas to collaborate with the brightest and best globally.

iv) Collaborative Networks for Disruptive Innovation

- Establish collaborative networks in Malaysia's priority sectors based on the 21 impactful technologies and its six impactful outcomes.
- Carry out industry-led strategic planning to enable demand-driven R&D and mobilise emerging technology applications.

v) Enhancing Private Sector Participation, Social Financing Models and Technology Start-ups

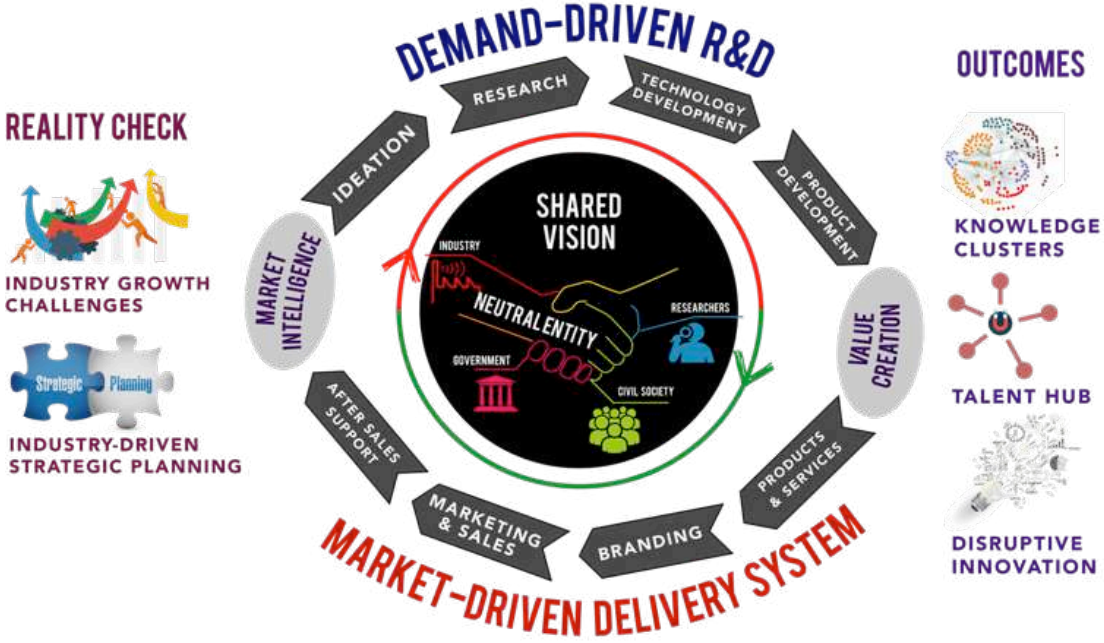
- Facilitate, diversify and increase private sector and social financing platforms to reduce dependence on public sector funds and maximise social impact.
- Encourage and incentivise technology based start-ups with private sector and community partnership.

vi) Data is Power

- Establish National Technology Data Centre by empowering existing entity with expanded mandate.
- The Data Centre collects, homogenises, integrates and analyses the data.
- Data Scientists should work in concert with experts to churn out relevant data.
- Analysed data should be made available through a public domain.

New Economic Opportunities in STI-based Industries

In order to remain competitive and sustainable in the global economy, the National Science Council (NSC) felt the need to formulate a mechanism to identify new and emerging economic opportunities based on STI. ASM and the National Council of Professors (MPN) carried out this study and proposed the most appropriate mechanism and relevant economic opportunities for Malaysia.



Collaborative Network for Disruptive Innovation

The study identified that Malaysia's primary challenge in innovation is in bridging the chasm between industry players and the R&D community. Hence a knowledge-based collaborative network for disruptive innovation was proposed.

The mechanism is meant to facilitate industry's formulation of demand-driven R&D to draw the participation of researchers through open research calls. Therefore, knowledge-rich products could be developed, while extending the market reach of the industry. The proposed collaborative network will spawn thriving knowledge clusters and talent hubs leading to sustainable disruptive innovations.

The collaborative network can be an effective mechanism for Malaysia to leverage on her niche and strength to become one of the top 20 countries in the world, in line with our TN50 aspiration.



Two main recommendations of this study are as follows:

- For Malaysia to adopt the collaborative network mechanism in four potential focus areas; **Industry 4.0, Fintech in Islamic Finance, Virtual Health Delivery System, Halal Supply Chain** in order to enable Malaysian industries to become more S&T-based and innovative using home-grown technologies.
- Empowering a trusted neutral entity for each focus area with the appropriate mandate, resources, and manpower to coordinate the collaborative network for demand-driven R&D and market-driven delivery system.

Manufacturing (Industry 4.0)

Services (Fintech in Islamic Finance)

Health & Wellness (Virtual Health Delivery System)

Halal (Halal Supply Chain)

factsheet

The findings of the study were presented at the NSC meeting on 7th February 2017. The action plan and the way forward of this study was later presented at the National Innovation Council (NIC) on 21 February 2017. Following this, engagement sessions involving the key stakeholders such as the MITI, Ministry of Health (MOH), Central Bank of Malaysia (BNM) and Halal Industry Development Corporation (HDC) were held.

Sustainability Studies

El Niño – A Review of Scientific Understanding and the Impacts of 1997/98 Event in Malaysia

The prolonged drought induced by the 1997/98 El Niño event in Malaysia had caused significant impact the nation's environmental, social and economic sectors. The 1997/98 El Niño was regarded as one of the strongest El Niño-Southern Oscillation events in recorded history. ***This study assesses the impact of El-Niño on the following sectors: Water resources, Energy, Agriculture, Forestry, Industries, Marine and terrestrial ecosystems, Air quality, Health, Education and Tourism.***



Despite the escalating impacts of drought, very few developing countries, including South-East Asian countries, are able to effectively respond to and cope with these events. There is a lack of emphasis on the development of national policies and response measures for drought risk reduction based on the best available data. In addition, the lack of human and institutional capacity to cope with drought is also a pressing issue that needs to be addressed. These shortcomings were fully exposed during the 1997-1998 transboundary haze event that seriously affected the South-East Asian countries.

Recommendations

Recommendations on Policy & Institutional Framework

- Establish a National Drought Committee.
- Improve drought management practices.
- Enhance technologies such as rain harvesting and water conservation.
- Develop a framework to promote understanding of natural and human-induced drought.
- Empower communities, academia, civil societies and private sectors to play an active role in drought risk reduction as natural or human-induced disaster.
- Propose the establishment of South-East Asia Network for Drought Risk Reduction (SEANDRR) to facilitate sub-regional collaboration for drought risk reduction.

Recommendations on Scientific Research

- Develop national scientific and research capabilities.
- Increase transboundary pollutants studies to be prepared for future haze episodes.
- Improve scientific research on the impacts of El Niño-induced drought or non-El Niño-induced drought on agricultural crops, biodiversity, terrestrial and marine ecosystems, and fisheries.
- To increase research on the environmental, social and economic costs of prolonged drought induced by the past El Niño events.
- Further research on how climate change affect the onset, magnitude, intensity and frequency of El Niño.
- Research on the synergy between economics of drought and the economics of climate change, biodiversity and land degradation.
- Further strengthen scientific and policy research on the environmental, social and economic impacts of the El Niño-induced drought.

Recommendations on Data Collection

- Systematic collection of all climatic, environmental, social and economic data relating to an El Niño event by the relevant government agencies.

Recommendations on Capacity Development

- Strengthen human and institutional capacity at the national, state and local levels.

factsheet

- Constraint on the availability of water resources significantly affected the productivity of agriculture (e.g., oil palm yield/ha decreased by 16.8% and paddy yield/ha decreased by 11.3%).
- There was a significant decrease in hydropower (i.e., 23.8% from 1996 to 1997), which was made up by the increased use of the diesel and gas-generated electricity, implying a higher emission of greenhouse gases.
- The Gross Domestic Product (GDP) contributed by manufacturing decreased by 4.7% from 1996 to 1998.
- Decline in tourists arrival, which accounted for RM318.55 million (USD127.42 million).
- Wild fires were reported at a number of locations in East Malaysia during the 1998 drought period. In Sabah, about **1,580** km^2 was engulfed in wild fire.
- Tawang et al. (2002) estimated more than RM3.3 billion economic losses of oil palm, rubber and rice from 1980 to 1999.
- A systematic study estimated that the total economic losses in Malaysia associated with the transboundary haze episode during August-October 1997 amounted to RM801.9 million (or USD321 million at 1997 exchange rate).

Integrated Urban Water Management in Peninsular Malaysia

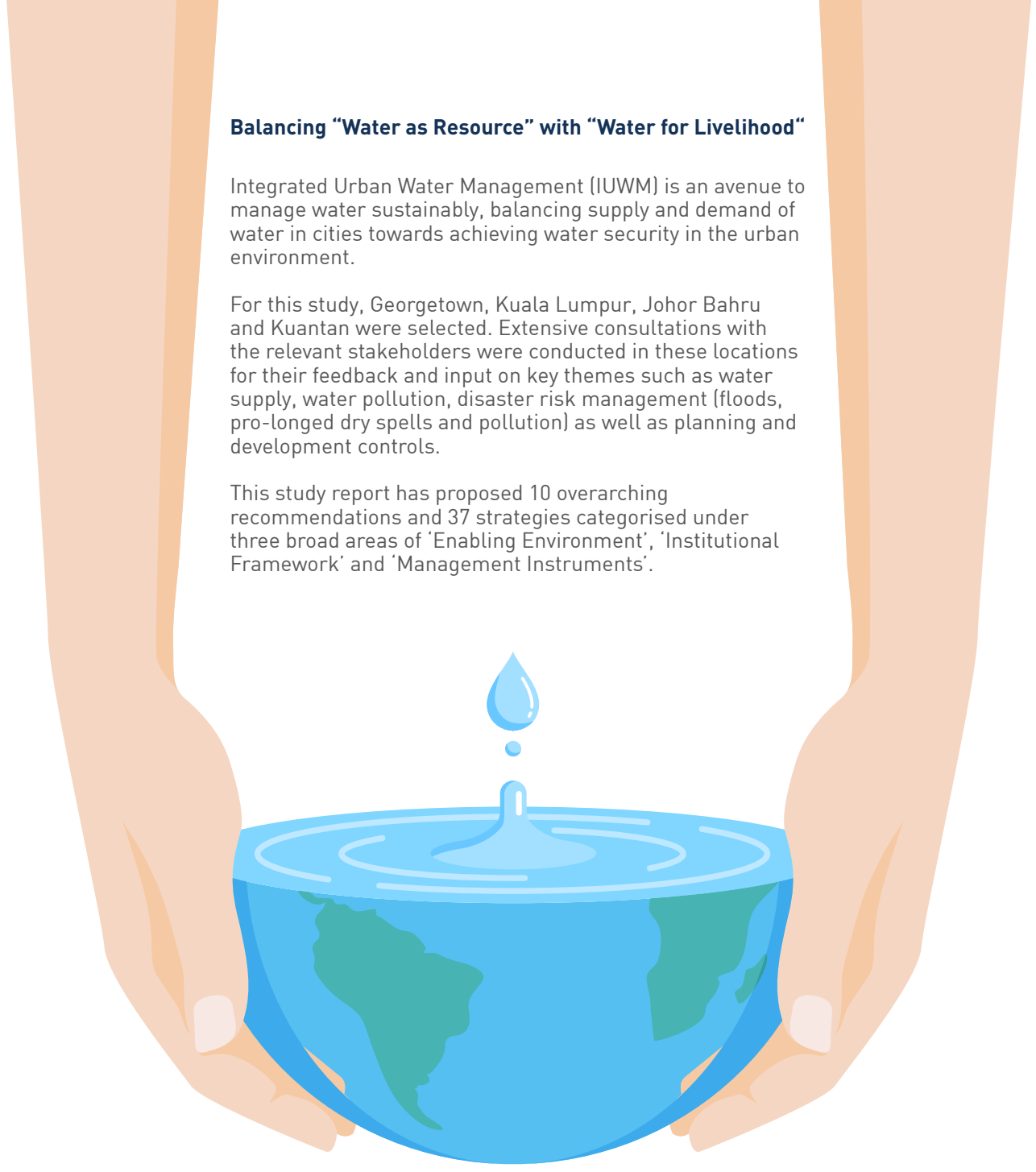
> *"This is the situation today; tomorrow will bring intensified effects from climate change and the continued growth of cities. Extreme weather events, from prolonged droughts to violent tropical storms that are poised to overwhelm urban water infrastructure and caused extreme suffering and environmental degradation."*
>
> – Global Water Partnership, 2012

Balancing "Water as Resource" with "Water for Livelihood"

Integrated Urban Water Management (IUWM) is an avenue to manage water sustainably, balancing supply and demand of water in cities towards achieving water security in the urban environment.

For this study, Georgetown, Kuala Lumpur, Johor Bahru and Kuantan were selected. Extensive consultations with the relevant stakeholders were conducted in these locations for their feedback and input on key themes such as water supply, water pollution, disaster risk management (floods, pro-longed dry spells and pollution) as well as planning and development controls.

This study report has proposed 10 overarching recommendations and 37 strategies categorised under three broad areas of 'Enabling Environment', 'Institutional Framework' and 'Management Instruments'.



37 Proposed Strategies under 10 Recommendations

Enabling Environment

1. Streamlining the water resources management at federal and state levels to focus on urban waters.
2. Review any related urban legislations and guidelines pertaining to water pollution, flooding and general environmental management in cities.
3. Ensure adequate financing is available for IUWM implementation

Institutional Framework

4. Review institutional roles for federal and state with regards to urban water management

Management Instruments

5. Strengthen development controls by integrating urban planning when developing water resources or in river basin management.
6. Ensure adequate and equitable water allocation among urban stakeholders.
7. Ensure effective pollution controls in urban areas to safeguard water resources downstream towards achieving water security.
8. Implement integrated urban flood management (IUFM) or disasters such as floods.
9. Develop urban water stress management mechanisms for prolonged dry spells.
10. Encourage stakeholder participation in urban water management

This study reflects the first Phase of the ASM Integrated Urban Water Management Study for Malaysia. Coverage of the study will be expanded in 2018 under Phase 2 to include Sabah and Sarawak.

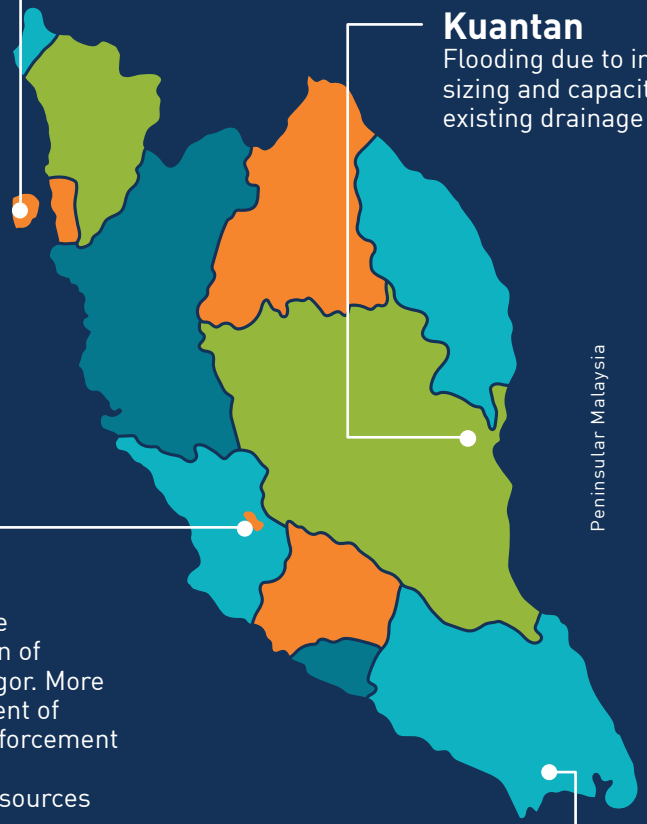
factsheet

George Town

George Town recorded 291 Litres/Capita/Day of household water consumption in 2015. Singapore consumption is 143 Litres in 2017

Kuantan

Flooding due to inadequate sizing and capacity of existing drainage systems.



Kuala Lumpur

Kuala Lumpur shares the transboundary river basin of Sungai Klang with Selangor. More coordination and alignment of policy, legislation and enforcement are required for effective management of water resources

Johor Bahru

Iskandar Regional Development Authority (IRDA) faces difficulties on water resources management as it is managed by 5 different local authorities more coordination is needed.

Special Interest Group on Machine Learning (SIG ML)

The new economy is a post-industrial phenomenon brought about by the rise of knowledge and innovation fuelled by the digital revolution. The new economy is made up of new high-growth industries that are on the cutting edge of technology and is characterised by knowledge-based development, the emergence of a knowledge society and proliferation of knowledge intensive enterprises. One of these technologies is artificial intelligence (AI) that is seen as a possible driving force for economic growth.

AI is the science of programming digital technologies and enables machines to do highly complex tasks effectively. Over the years, more niche areas of AI have started to develop, such as machine learning (ML). ML is the science of getting machines to act without being explicitly programmed and could possibly disrupt the lives of people.

According to a 2016 report by the McKinsey Global Institute (MGI) titled "The Age of Analytics: Competing In a Data-Driven World", technologies based on machine learning have the potential to improve forecasting and data analytics and disrupt all major industries around the world. In a separate report by MGI on "Artificial Intelligence and Southeast Asia's Future", current technologies could automate 51% of the workforce in Malaysia.

In light of these findings, we need to identify the changes, applications and enablers for the adoption of machine learning in order for Malaysia to benefit from it.

This initiative aims to determine major changes at local, regional and global level that will promote the adoption of machine learning; to ascertain promising applications and explore key enabling factors of machine learning; and catalyse linkages between academia and industry facilitated by the Government.

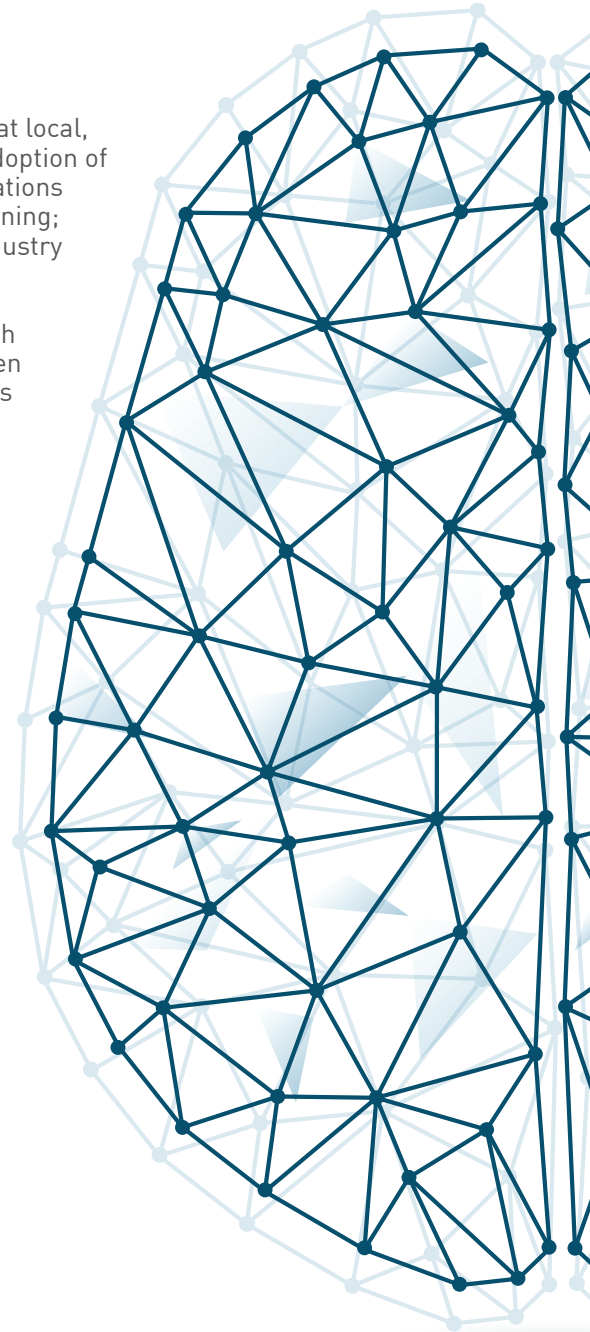
AI could immensely contribute to inclusive growth and positive social outcomes but it will not happen organically. Strategic and structural interventions from policy makers combined with a greater commitment from the industry are crucial to advance Malaysia's AI agenda.

To move forward, we need to:

- Facilitate enabling factors through forward-looking policies and strategies;
- Enhance industry-academia linkages and establish collaborative networks to create demand for machine learning applications;
- Possess responsive leadership to champion the agenda;
- Prepare the next generation so they can successfully co-exist in a two-way learning relationship with AI;
- Advocate a code of ethics in the development and use of AI; and
- Address the redistribution effects to help groups disproportionately affected by changes of employment and incomes due to AI.

factsheet

Currently, the SIG ML comprises 21 researchers whose fields of research are mainly related to AI.



National Industry 4.0 Policy Framework

Since that Industry 4.0 is given focus by most countries, Malaysian industries must transform to remain competitive and relevant.To ensure Malaysia responds proactively to advancements in the global arena, the MITI has been mandated by the Government to develop a National Industry 4.0 Policy Framework. To develop this Framework, MITI collaborated with ASM and the Malaysian Industry-Government Group for High Technology (MIGHT). The Framework is expected to be rolled out by the first quarter of 2018.

A High Level Task Force (HLTF) chaired by the Secretary General of MITI with representation from various ministries and agencies was established to spearhead development of the government's strategy for Industry 4.0. This involved extensive stakeholder engagement with members of the industry, academia, policy makers as well as civil society. In addition, five Technical Working Groups (TWGs) were formed based on the five identified key enablers of Industry 4.0 adoption:

1. Digital Infrastructure and Ecosystem led by Ministry of Communication and Multimedia (KKMM): This TWG outlines a digitised and connected infrastructure across supply and manufacturing value chains.

2. Funding and Incentives led by Ministry of Finance (MOF): This TWG outlines incentives and funding options that are available by both Government agencies and private entities, and create strategies which encourage companies to adopt new manufacturing technologies and processes and invest in R&D.

3. Talent and Human Capital led by Ministry of Human Resources (MOHR) and Ministry of Higher Education (MOHE): This TWG plans stategies and programmes to create a skilled and diverse workforce.

4. Technology and Standards led by MOSTI: This TWG outlines the strategies to embrace Industry 4.0 through digital/technology labs and collaborative platforms in disseminating Industry 4.0 technologies and transferring knowledge.

5. Small Medium Enterprises (SMEs) led by SME Corporation Malaysia (SME Corp): This TWG focuses on programmes and efforts to increase the awareness of the need and benefits of adopting Industry 4.0 technologies and processes.

Cyber Security

Cyber security is a key reflection of a nation's socio-economic development. It is also a key consideration to boost the level of confidence of investors. The Fourth Industrial Revolution that heralds an era of unprecedented technological disruption also ushers a new level of cyber threats that are becoming increasingly sophisticated. The expansion of cyberspace and the value of using it have triggered escalating exposure to cyber threats. The growth and pervasiveness of network-ready technologies such as IoT and AI are poised to fuel disruption at an accelerated pace globally.

The fabric of society, data, devices and analytics have created an ecosystem rich in information, mechanism and tools that impact day to day activities, decision making and life in general. This new ecosystem has, at the same time widened and deepened the risks of security and privacy, demanding the need to strengthen cyber security and safety.

Key Strategies & Recommendations

1. Cyber Security Strategy

- Adopt a risk-based cyber security ecosystem to strengthen the existing committee-based structure.

2. Governance

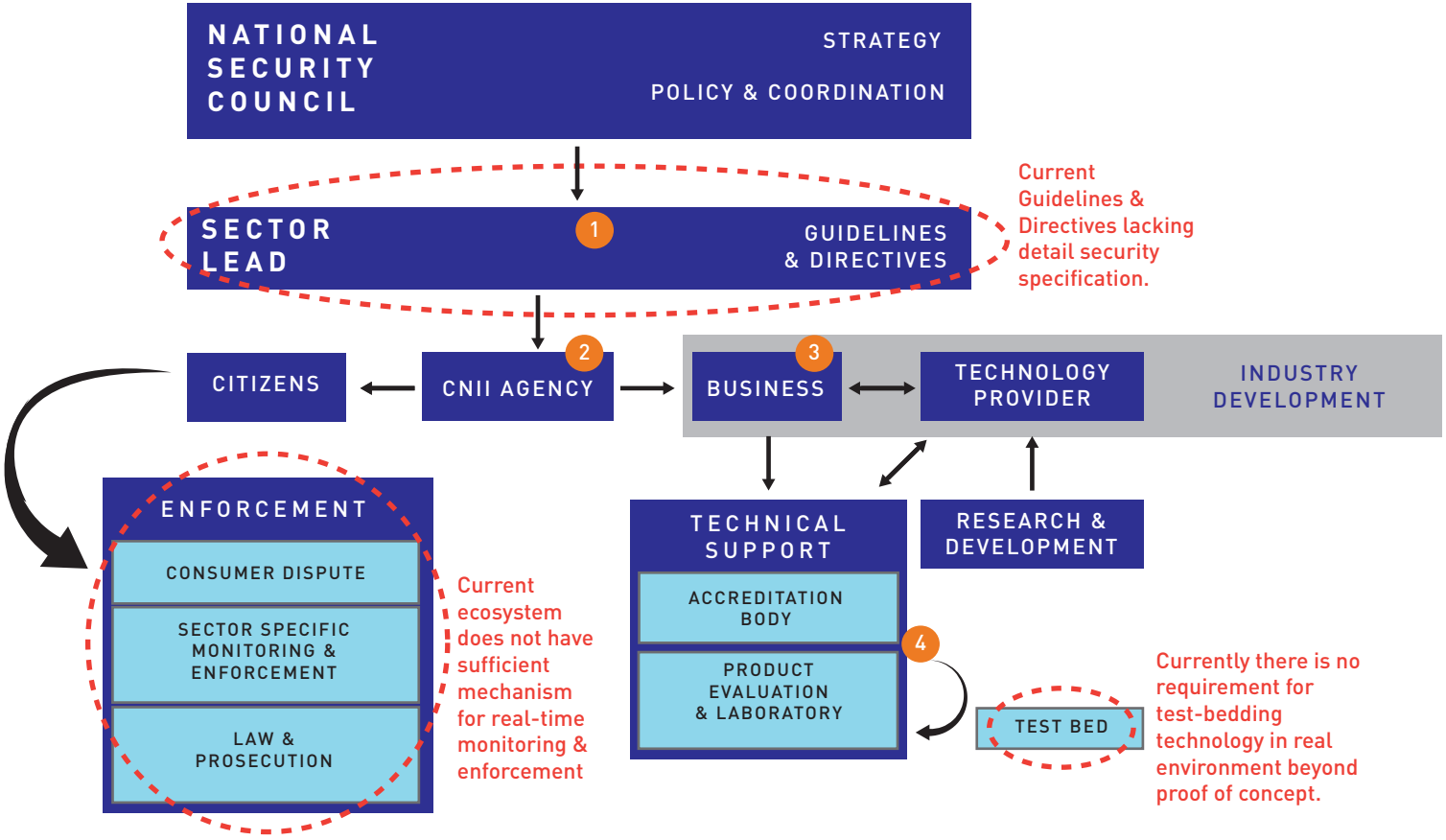
- Empower central entity with the mandate to formulate, monitor, coordinate and synchronise the implementation of cyber security policy, framework and strategy towards safeguarding all relevant entities.
- Cyber security to be made a mandatory requirement for acquisition of critical technologies related to networks, systems and applications.

3. Science, Technology and Innovation

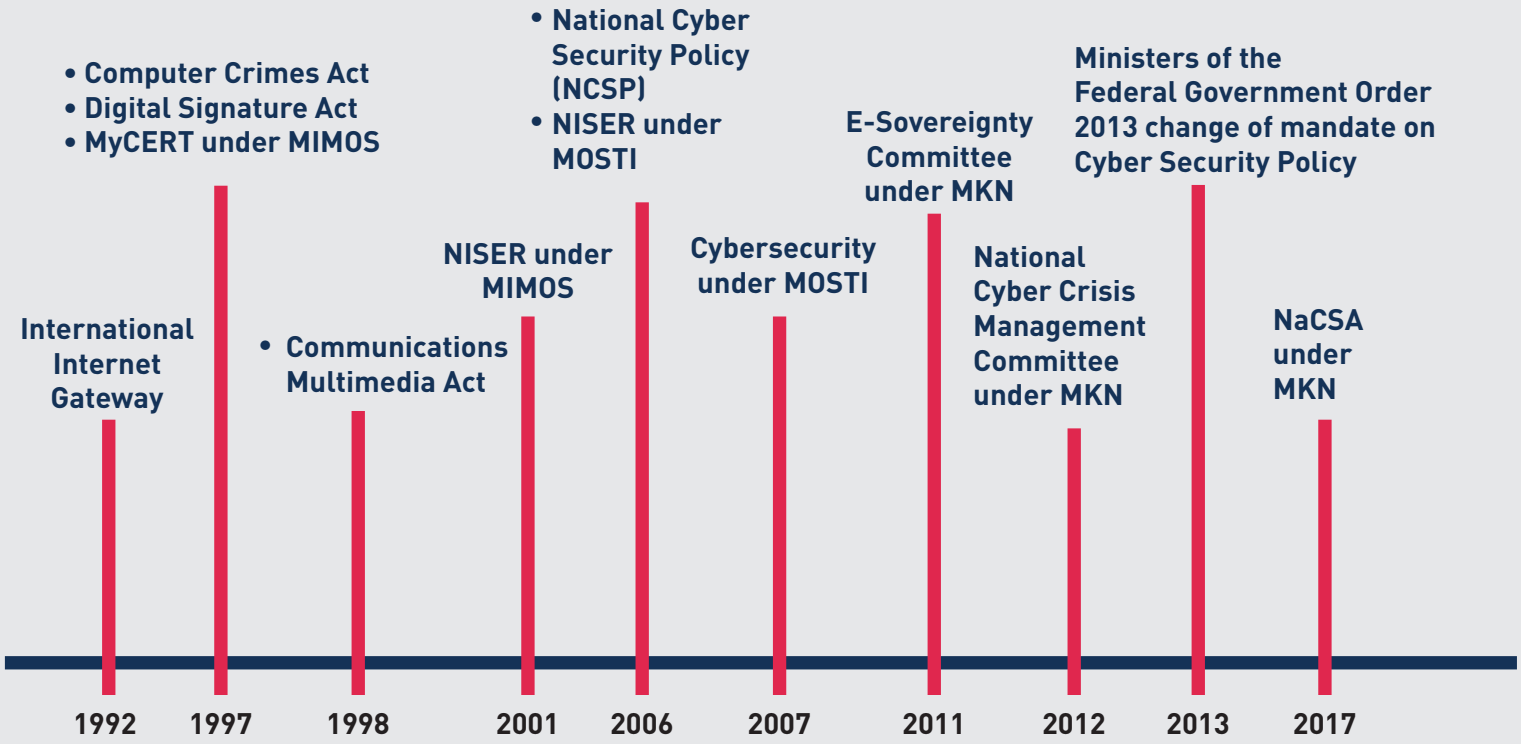
- Ensure R&D and innovation of Information and Communication Technology (ICT) solutions comply with cyber security standards or guidelines supported by test-bedding to achieve technology and infrastructure resiliency.

4. Talent

- Invest in quality and established security certification programmes that promote skills development in technical areas of cyber security.
- Establish cyber security as a vertical in public service to allow specialisation with career progression.
- Embed cyber security in ICT & engineering courses and introduce cyber security in non-technical courses.



Cyber security Risk-Based Ecosystem Towards Technology Resiliency



Timeline of National Cyber Security Development

SCIENCE OUTLōOK 2017

Converging Towards Progressive Malaysia 2050

Towards realising Malaysia's aspiration to become a developed nation status by 2020, advancing and mainstreaming STI at all levels and sectors is recognised as the key enabler to catalyse productivity, enhance competitiveness and promote inclusive growth. Science Outlook 2017 continues to provide an independent review equipped with evidence-based analysis, insights and recommendations pertaining to the national STI landscape based on six strategic thrusts of the current National Policy on Science, Technology and Innovation (NPSTI), 2013-2020.

STI Governance

This study observed that the STI Governance landscape reflects multiple layers of administration which leads to resource fragmentation, overlapping competencies with high risk of redundancy. A central coordinating body will strengthen the STI management cycle in leading the components of ideation, planning, implementation, monitoring and evaluation.

R,D&C

In terms of the Research, Development and Commercialisation (R, D & C) landscape, a large portion of Malaysia's R&D expenditure is allocated for applied research. Malaysia needs to invest further in experimental development while more researchers are needed in business enterprises towards strengthening and delivering value, based on our innovative capacity.

STI Talent

There is shortage in the uptake of STEM-related fields at secondary school level results in smaller number of enrolment in STEM-related subject at the tertiary level. Ideally, the delivery of STEM education demands transformation through enhancement of education modules as well as teaching pedagogy. The implementation of the Inquiry-Based Science Education (IBSE) approach championed by ASM is an excellent example.

Energising Industries

As a consequence of the moderate talent pool, the Energising Industries chapter reports that most business enterprises are lacking in innovative capacity, reflected by the fact that they acquire knowledge solely by adopting and adapting foreign technologies. Industries often focus on short-term economic gains, rather than investing in requisite R&D and adoption of technologies to move up the value chain.

STI Enculturation

A scientifically engaged society is very much needed to further benefit and transform Malaysia's competitiveness from consumers of technology to prosumers and innovators. The STI Enculturation chapter reports slight improvement in STI literacy among Malaysians. However, the level of STI enculturation is still not satisfactory and the contributing factors include low impact of enculturation programmes organised by various stakeholders from the quadruple helix, moderate number of visitors to STI related places and the low popularity of STI content in the media.

Strategic International Alliance

This chapter looks into how Science Diplomacy brings about collaborations, knowledge transfers and expert engagements. There is also a need to increase strategic planning to secure international funds for high profile projects and make Malaysia's voice heard globally where STI issues are concerned.

Science, Technology & Innovation Master Plan (2020 – 2030) Study

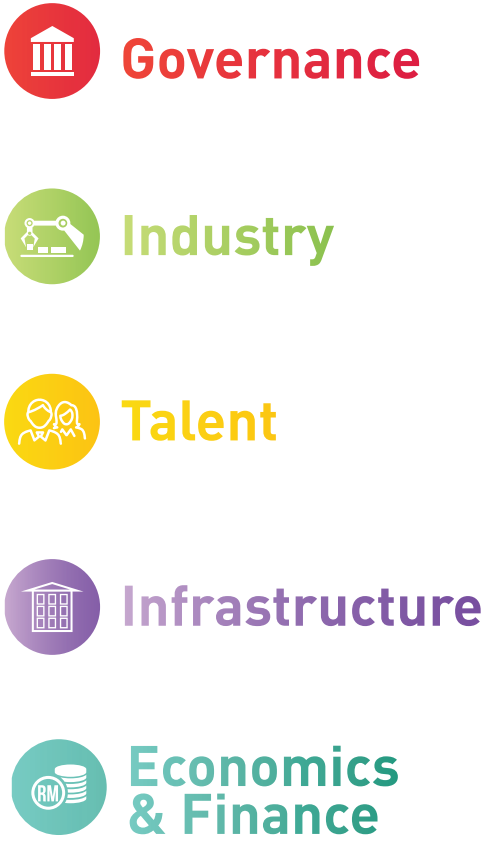
In July 2017, ASM was appointed by MOSTI to undertake the study on preparing the Science, Technology and Innovation Master Plan (STIMP) 2020 – 2030, following a decision of the National Science Council (NSC) in December 2016.

The ASM Council appointed Professor Dato' Dr Rahmah Mohamed FASc to lead the 18-month Study which will end in December 2018.
Five Focus Areas of Governance, Talent, Industry, Infrastructure and Economics & Finance, were identified and each Focus Area's Leaders selected from ASM Fellows and Associates.

The Project Director and the Working Group (WG) Leaders had 2 STIMP Steering Committee meetings to coordinate and resolve any questions arising from the Study TORs and Scope. The WGs in turn began having their meetings towards developing their WG's Scope and determining their strategies to achieving the overall objectives of the Study.

A STIMP portal was developed and launched on 1 October 2017 for use by all Working Group Leaders and Members where global and Malaysian reports were uploaded for their easy access.

On 20 October, the first deliverable of the Study, the Inception Report, was submitted to MOSTI. On 4 December 2017, Prof. Dato' Dr. Rahmah Mohamad FASc presented the STI MP Inception Report to the Technical Committee in MOSTI where it was approved.



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The STI MP Kick-Off Workshop was moderated by YM Tengku Mohd Azzman Shariffadeen FASc, Professor Dato' Dr Rahmah Mohamed FASc gave a scene-setting presentation to 52 participants comprised of ASM Fellows, YSN-ASM members and Associates. Academician Tan Sri Dr Omar Abdul Rahman FASc gave an overview of the elements of a national policy on STI and on the STI master plan. The Workshop objectives were:

(1) To clarify differences between STI MP 2020 -2030 Study and the formulation of NPSTI 2020 – 2030 Study; and
(2) To propose new objectives and scope of the Studies, if any.

Five Focus Area Leaders:

(i) Emeritus Professor Dr Nor Mohamad Mahadi FASc to lead the Governance Working Group (WG);
(ii) Professor Dato' Dr Mohd Jamil Ma'ah FASc to lead the Talent WG;
(iii) Professor Dr Abdul Rahman Mohamed FASc to lead the Industry WG;
(iv) Dr Zainal Arifin Ahmad FASc to lead the Infrastructure WG; and
(v) Senior Professor Dr Rajah Rasiah, ASM Associate, to lead the Economics & Finance WG.

calendar

In 2017, the following meetings were held:
* Briefing to Secretary General of MOSTI: 31 July
* Briefing to Minister MOSTI: 3 August
* Briefing to STIPAC: 11 September

* Briefing to Working Group Chairs:
  - Governance and Talent Working Group: 4 August
  - Economics & Finance Working Group: 18 August

Steering Committee Meetings
- 1st STI MP Steering Committee meeting: 25 September
- 2nd STI MP Steering Committee meeting: 27 October

Working Group Meetings:
- Governance Working Group: 8 August & 17 October
- Talent Working Group: 24 August
- Industry Working Group: 17 October
- Infrastructure Working Group: 17 November
- Economics & Finance Working Group: 26 October & 3 November

National Policy on Science, Technology and Innovation (NPSTI): Review and Formulation Study

MOSTI has mandated ASM to review the current NPSTI 2013-2020 and formulate the new NPSTI (2021-2030). This is in support of the government's aspiration to make Malaysia a high-income developed country through the mainstreaming of STI.

factsheet

- A steering committee was established and Professor Dato' Dr Awang Bulgiba Awang Mahmud FASc was appointed to chair the committee.
- Six Working Groups (WG), each dedicated to the six respective strategic thrusts of NPSTI were formed.

6 Strategic Thrusts (ST) of NPSTI are:

ST1: Advancing Scientific and Social Research, Development and Commercialisation
ST2: Developing, Harnessing and Intensifying Talent
ST3: Energising Industries
ST4: Transforming STI Governance
ST5: Promoting and Sensitising STI
ST6: Enhancing Strategic International Alliance

The project is divided into two phases. The first phase of the project is the review of NPSTI (2013-2020). This is to ascertain the current state of the nation's STI achievements and to evaluate the level of policy measures implementation in each strategic thrust.

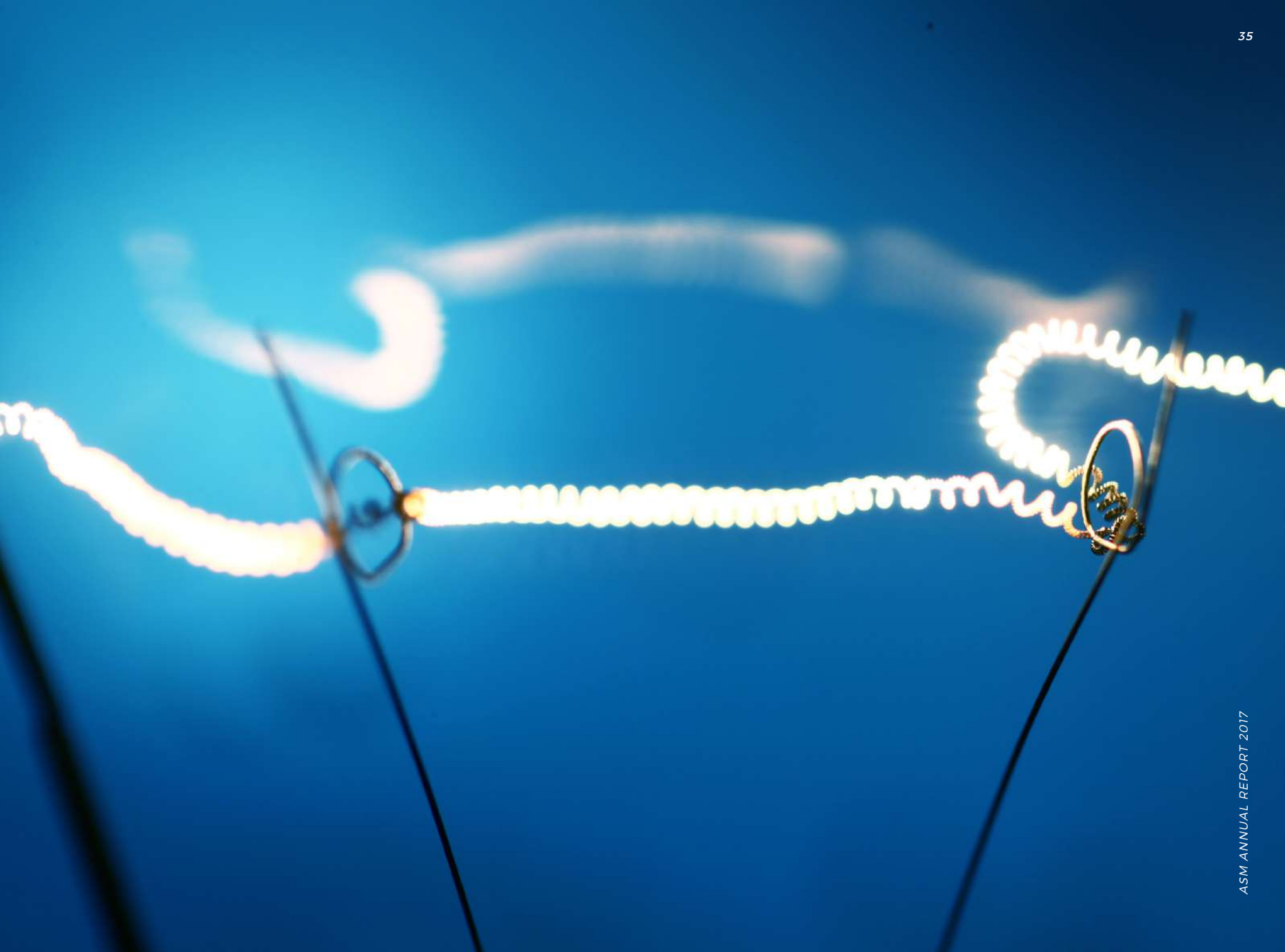
The second phase is to formulate a new NPSTI for the period of 2021 to 2030. This new policy will outline measures towards deploying STI effectively and mainstreaming STI for socio-economic development of the nation.

The development of the new NPSTI 2021-2030 will be in tandem with another study mandated to MOSTI by the National Science Council i.e. the formulation of the STI Masterplan (2020-2030). MOSTI had commissioned ASM to carry out the STI Master Plan to ensure consistency and alignment with the NPSTI.

factsheet

6 Thrusts Leaders were identified to lead each of the Strategic Thrust of the NPSTI:

ST1: Professor Dr Noorsaadah Abd Rahman FASc
ST2: Professor Ir Dr Noor Azuan Abu Osman FASc
ST3: Academician Tan Sri Datuk Dr Yusof Basiron FASc
ST4: Professor Dato' Dr Aishah Bidin FASc
ST5: Professor Dr Ahmad Ismail FASc
ST6: Professor Dato' Dr Ibrahim Che Omar FASc





Empowering the Scientific Community

Scientific community is empowered through capacity building, science consortium, gateway and consultative fora towards the enculturation of STI.

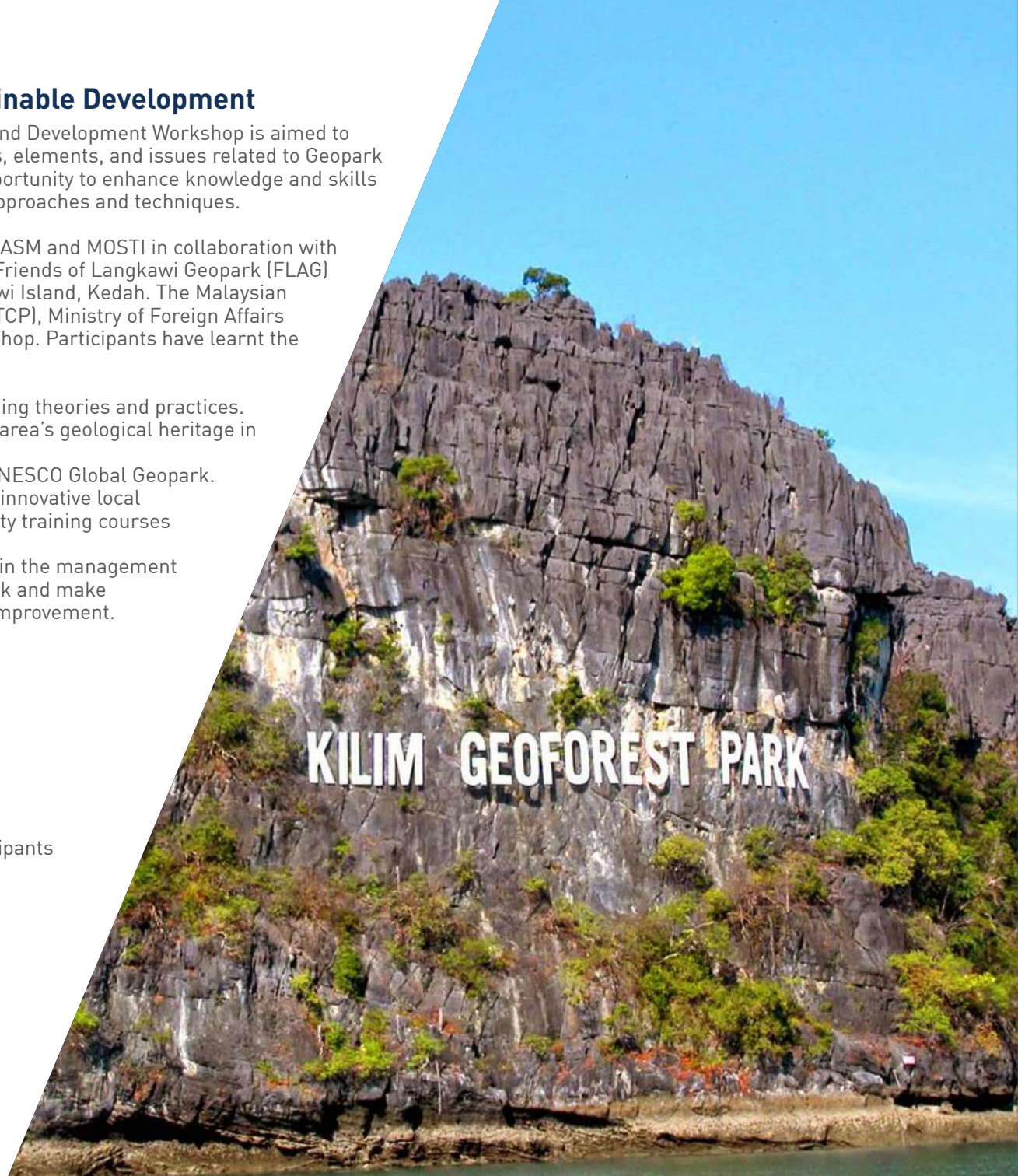
Talent Development

Natural Heritage for Sustainable Development

2017 MTCP Global Geopark Planning and Development Workshop is aimed to provide insights on theories, strategies, elements, and issues related to Geopark management. Participants had the opportunity to enhance knowledge and skills in the various Geopark Management approaches and techniques.

The 5-day workshop was organised by ASM and MOSTI in collaboration with Langkawi Research Centre (PPL) and Friends of Langkawi Geopark (FLAG) at Langkawi Research Centre, Langkawi Island, Kedah. The Malaysian Technical Cooperation Programme (MTCP), Ministry of Foreign Affairs Malaysia (MOFA), sponsored the workshop. Participants have learnt the following:

1. The fundamentals of Geopark including theories and practices.
2. Awareness of the importance of the area's geological heritage in history and society today.
3. How Malaysia manages Langkawi UNESCO Global Geopark.
4. The spillover effects and creation of innovative local enterprises, new jobs and high quality training courses through development of Geoparks.
5. Assessing and identifying shortfalls in the management of Langkawi UNESCO Global Geopark and make constructive recommendations for improvement.



factsheet

- **11** international and **16** local participants took part in the 2017 workshop.

- Date: 21 to 25 August 2017

Connecting Scientific Minds

ASM is a gateway for researchers of the nation to uplift their research to the international scientific community. Through this effort, Malaysian researchers can enhance their scientific network and findings. It is hoped that this initiative could highlight our researchers and their projects to gain international recognition.

67th Lindau Nobel Laureate Meeting

The Lindau Nobel Laureate Meeting is an inter-generational dialogue between the Nobel Laureates and the young scientists to expand their knowledge and enrich their experience whilst connecting with the global scientific community. Attending this prestigious meeting inspires them to have passion for discovery and scientific excellence. This year, the meeting was dedicated to the field of Physiology or Medicine.

This interaction increased their confidence and opened their minds, allowing them to share their knowledge and experiences with the Malaysian scientific community.

factsheet

Every year, around **600** to **700** young scientists from **65** to **70** countries are given the golden opportunity to meet Nobel Laureates on the island of Lindau, Germany.

Since 2004, Malaysia is an academic partner of the Lindau Council and the Foundation.



4

SUCCESSFUL APPLICANTS OF 2017

&



63

MALAYSIAN YOUNG SCIENTISTS WHO HAVE PARTICIPATED IN LINDAU NOBEL LAUREATE MEETING SINCE 2004

2017 Lindau Nobel Laureate Meeting Participants

Dr Ng Eng Poh - USM

Dr Khairulazhar Jumbri - UTP

Dr Sheela AP Chandren - UTM

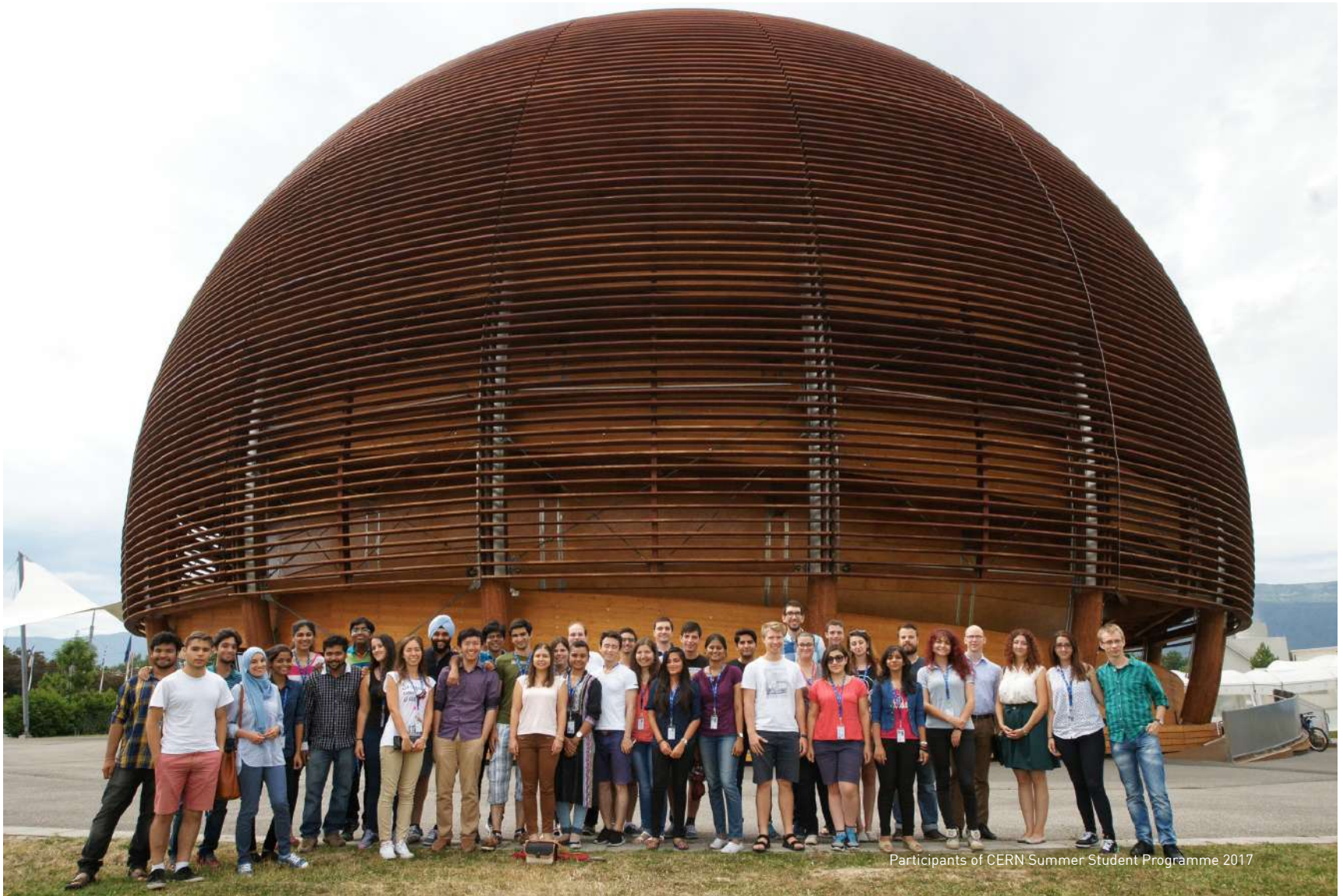
Dr Shahrul Ainliah Alang Ahmad - UPM

Plenary Lectures

- **Science Careers**
- **Current and Future Game Changers in Chemistry**
- **Ethics in Science**

CERN Summer Student Programme 2017

Selected Malaysian students in the fields of physics, computing and engineering were able to improve their skills and experience, with eight weeks of studentship in the 2017 CERN Summer Student Programme in Geneva, Switzerland. Throughout the programme, participants were involved in lectures, academic visits and was a part of the CERN family with projects that allowed them to work with supervisors.



Participants of CERN Summer Student Programme 2017

National STEM Centre

STEM Educators' Empowerment and Sculpting a Science Literate Society

High-skilled local STEM talents and a scientifically engaged society are among the key ingredients of a progressive nation driven by STI. Hence, a well-planned STEM talent development and enculturation initiatives are vital.

MOSTI in collaboration with ASM, MOE and MOHE embarked on the initiative to establish a National STEM Centre. The centre will become a professional development centre for STEM teachers and lab technicians to enhance their skills, capabilities and confidence in teaching science & mathematics as well as handling lab practical using inquiry-based learning. It will be well-equipped with STEM educational references and materials, and functions as a coordinating body for the national STEM agenda.

As an initiation, a workshop was organised by ASM in collaboration with the British Council. The workshop aims to determine a suitable model for the establishment of the centre based on the National STEM Learning Centre UK, as well as to gather input among STEM and STI stakeholders to develop an action plan for the centre.

The draft action plan was presented to YB Datuk Seri Panglima Wilfred Madius Tangau, Minister of Science, Technology and Innovation.

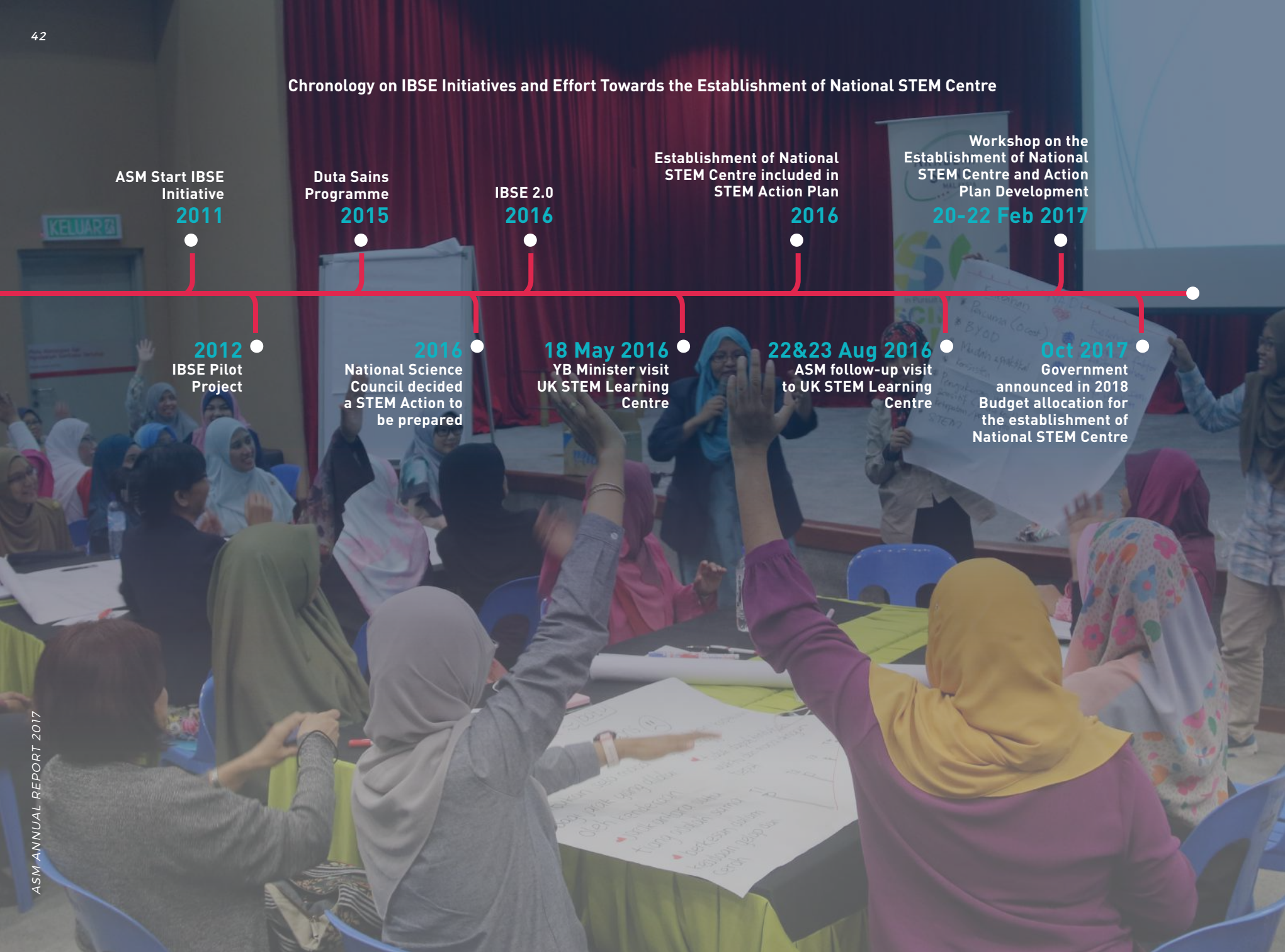
factsheet

- The British Council brought four experts from the National STEM Learning Centre UK to share their experience and expertise as well as to help facilitate the workshop discussion
- Topics discussed in the workshop:
  - Governance
  - Continuous Professional Development (CPD)



Mr Azrul Izham presenting the proposed action plan for the establishment of National STEM Centre to YB Minister of Science, Technlogy and Innovation

Chronology on IBSE Initiatives and Effort Towards the Establishment of National STEM Centre



Engagement

National Science Challenge 2017

As part of the Academy's ethos in promoting public understanding and awareness of STI and addressing the nation's need to boost interest in STEM, ASM in partnership with ExxonMobil Subsidiaries in Malaysia, and in collaboration with MOE, Majlis Amanah Rakyat (MARA), YSN-ASM, Japan Science and Technology Agency (JST) and Universiti Kebangsaan Malaysia (UKM) has organised the 2017 National Science Challenge (NSC).

NSC has seen tremendous evolution to become the number one science competition in Malaysia. This year, the students learnt how to communicate science, develop a commercial product from waste and experience hands-on activities and modules developed by YSN-ASM members and affiliates from UKM, Universiti Putra Malaysia (UPM), and Universiti Tecknologi Malaysia (UTM). The invaluable experience gained nurtures them to be future leaders.

The champion of this challenge won the Prime Minister's Challenge Trophy and a study visit to Stockholm, Sweden to witness the Nobel Prize Ceremony. Meanwhile, the runners-up had the opportunity to participate in the Sakura Science Exchange Programme in Japan.

This year, an invitational team joined the 16 state representatives during the Grand Final Science Camp. The China Association for Science & Technology (CAST) invited the team to participate in "Belt and Road" Teenager Maker Camp & Teacher Workshop in China.



11,625 students participated in the National Science Challenge Preliminary level



Perak
951



Sabah
606



Selangor
1,125



Terengganu
972



Kedah
816



Kelantan
414



Melaka
588



Negeri Sembilan
882



Perlis
144



Pulau Pinang
1,053



W.P Putrajaya
198



W. P Labuan
174



Johor
1,173



Sarawak
951



Pahang
897



W.P Kuala Lumpur
681

Inquiry Based Science Education (IBSE) 2.0

Under the 2016 - 2017 Inquiry Based Science Education Phase 2 (IBSE 2.0) initiative, the Academy has successfully trained 46 science teachers from the pilot schools including 11 science teachers from Sekolah Sri Bestari.

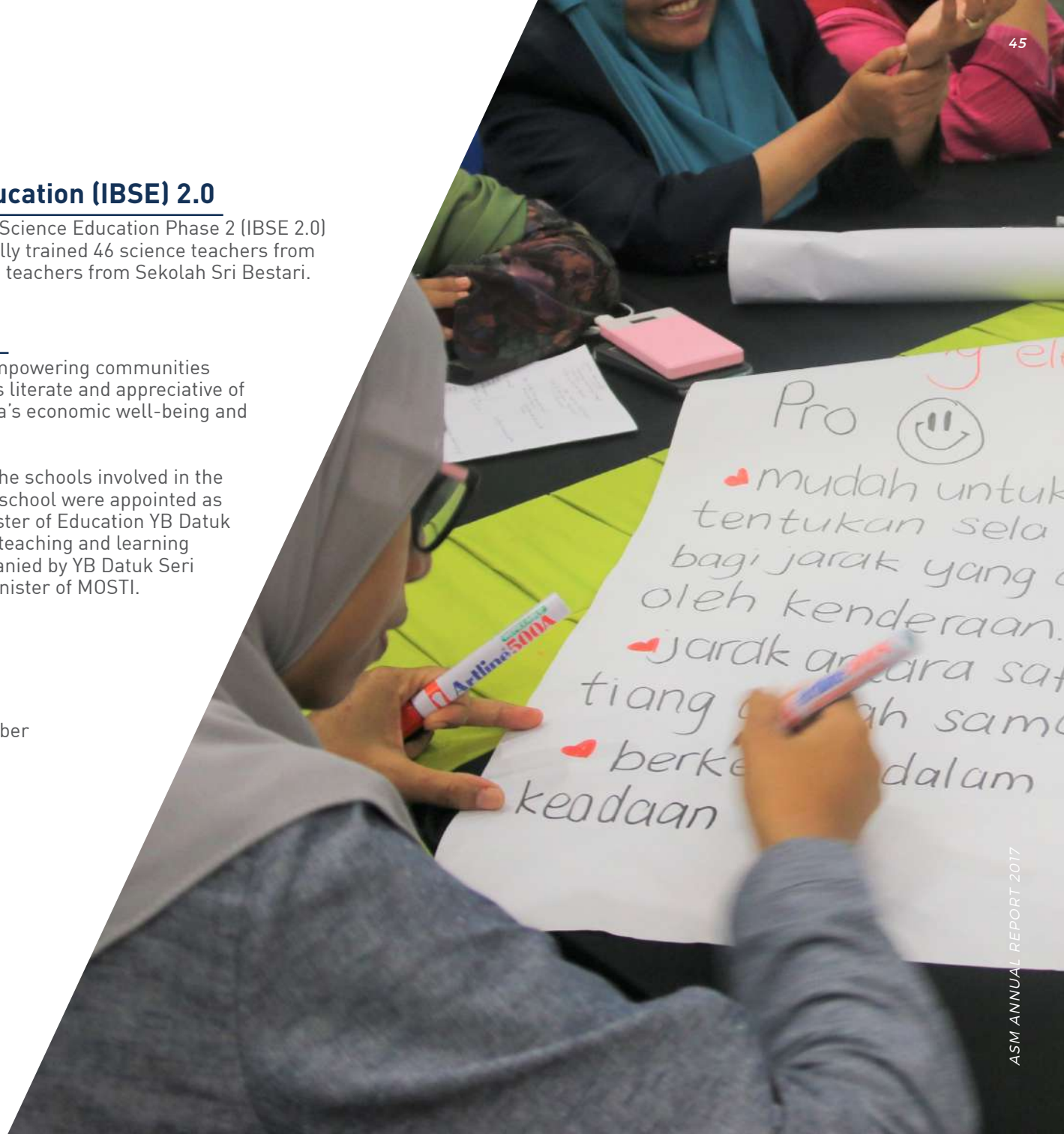
Duta Sains Tuaran – IBSE

Duta Sains Tuaran is continuously empowering communities through STI, creating a society that is literate and appreciative of STI. In turn, it contributes to Malaysia's economic well-being and improves the quality of life.

SK Mengkabong Tuaran was one of the schools involved in the programme; two teachers from that school were appointed as Duta Sains and trained in IBSE. Minister of Education YB Datuk Seri Mahdzir Khalid witnessed IBSE teaching and learning process in SK Mengkabong, accompanied by YB Datuk Seri Panglima Wilfred Madius Tangau, Minister of MOSTI.

factsheet

Duta Sains Tuaran were involved in:
- Karnival STI Tuaran held in March
- IBSE NICE'17 Carnival held in October



2017 Merdeka Meeting

The Merdeka Meeting, an extension programme to the annual Merdeka Award, convened its Laureates and Malaysian young scientists to foster scientific and mutual exchange between different generations through a one-day assembly. The format of the 2017 Merdeka Meeting was modelled after the annual Lindau Nobel Laureate meeting held in Germany.

A mentor-mentee relationship was established between the Laureates and young scientists that facilitated knowledge and experience sharing. Hence, they could work towards a shared vision to ensure the Malaysian scientific community is globally competitive.

The workforce of the future is in urgent need of skills and competencies in STEM, which is a requisite in cultivating a society of innovative prosumers.

- Professor Datuk Dr Halimaton Hamdan FASc

The reduced public interest in science has serious ramifications for Malaysia's progress as a developed nation. The public must be able to see a future in science, and should given opportunities to work in areas related to science. Additionally, the industry should bring the scientific community on board in the country's development projects, working together in providing solutions to real-world problems.

- Distinguished Professor Datuk Dr Harith Ahmad FASc

Participants should uncover new fields of research within their respective disciplines. They should also focus on research that has high growth value and high impact, particularly in energy, chemical engineering and medicine.

- Professor Dato' Ir Dr Wan Ramli Wan Daud FASc

Malaysia is not short of policies in science, technology and innovation and should have no problem in driving the science, technology and innovation (STI) agenda forward. That said, current policies lack a solid footing in implementation. The policies are also in favour of applied research, which will not help the country in developing the critical mass of fundamental research needed for Malaysia to bring the Nobel Laureate back to its shores.

- Professor Datin Paduka Dr Khatijah Mohd Yusoff FASc

factsheet

- **The ASM Southern Chapter** at Universiti Teknologi Malaysia (UTM) hosted this year's Merdeka Meeting.
- **Merdeka Award Laureates who attended:**
- Academician Tan Sri Dr Salleh Mohd Nor FASc
- Professor Datuk Dr Halimaton Hamdan FASc
- Distinguished Professor Datuk Dr Harith Ahmad FASc
- Professor Datuk Dr Ahmad Fauzi Ismail FASc
- Professor Datin Paduka Dr Khatijah Mohd Yusoff FASc
- Professor Dato' Ir Dr Wan Ramli Wan Daud FASc
- **13 young scientists have established a mentor-mentee relationship with the Laureates.**



Merdeka Award laureates with participants of 2017 Merdeka Meeting

Young Makers Programme 2017

Young Maker's Programme aims to enhance students' mastery of STEM subjects through problem-based and project-based learning that relies upon hands-on, often collaborative, learning experiences as a method for solving problems.

During the four-month programme, the students were exposed to soft skills and advanced knowledge in providing solutions with IoT in the four identified areas: agriculture, smart home, smart school/education, and healthcare solutions.

Programme Content

- August: A pre-bootcamp session that included a hands-on technical workshop on IoT.
- September to October: the first mentoring session on design thinking, talk on project management & presentation skills, mentoring session with project supervisor and project ideation.
- November: second mentoring session that included technical mentoring on project development and project evaluation; the whole programme ended with a Young Makers Closing Ceremony and Young Makers Mini Open Day.

factsheet

- **22** high schools with **88** students participated in this programme and more than **10** industry partners came on board to mentor and train these students.

Journey To Malaysia 2050 at the National Innovation & Creative Economy Expo (NICE) 2017

In its efforts to spur creativity and innovation among Malaysians, encourage commercialisation and fostering culture of STI, MOSTI organised the National Innovation and Creative Economy Expo 2017 (NICE'17).

ASM as the lead agency for the Knowledge Enrichment Cluster organised six flagship events that aligned with the theme of "Journey to Malaysia 2050". The events were designed to provide awareness, promote and visualise the future Malaysia in 2050 that will be driven by STI and also to emphasise the importance of preparing our STI capacity such as STI talents towards becoming a developed nation.

The showcase brought the visitors on a journey to the future through seven areas that feature how life in Malaysia would be like in the year 2050. Among the technologies exhibited, two future technologies that attracted visitor's attention the most were the hyperloop virtual reality (VR) simulation and 3D printing hub.

Other events such as IBSE Mini Carnival and Makers@NICE have attracted participation of students and families in its hands-on activities. The New Economy Collaborative Strategies Forum has successfully brought together members from the quadruple helix to understand the benefits of collaboration and the necessity of creating collaborative networks for successful demand-driven R&D and market-driven delivery system.

factsheet

- 12 to 16 October - Technology Park Malaysia.
- From the visitor's feedback survey done by MOSTI, **88.1%** of the respondents agreed that NICE'17 have increased their awareness on STI.
- **45** potential future technologies were exhibited in the Malaysia 2050 Showcase.
- **18** local and two international strategic partners were involved in the implementation of events under the Knowledge Enrichment Cluster.
- Malaysia 2050 Showcase attracted around 345,000 visitors to NICE'17.





Various activities and exhibits of NICE '17

Awards

Recognition

Awards and grants are important recognitions for scientists by encouraging scientists to conduct meritorious scientific research that may lead to inventions and solutions for local and global challenges. This also enables Malaysia to be strategically positioned in the global scientific arena. ASM draws upon the expertise of Fellows to serve as members of evaluation and monitoring panels for various awards and grants.

Mahathir Science Award

The Mahathir Science Award (MSA) is an award that celebrates excellent lifetime achievements in the fields of Tropical Sciences. The Award recognises scientist, organisation or institution worldwide for their impactful contribution and innovation towards solving problems in the tropics. The four categories of the Award are Tropical Agriculture, Tropical Architecture and Engineering, Tropical Medicine, and Tropical Natural Resources.

(2005 - 2017)

200 **Nominations** received from 30 countries

11 **Awardees** to date, with total prize worth **2,400,000**

Prize: **USD100,000,** a gold medal and a certificate

MAKNA Cancer Research Award

This research grant by the National Cancer Council (MAKNA) is awarded to young Malaysian researchers with an excellent track record of making beneficial contribution to cancer research. The award aims to encourage Malaysian young scientists' participation in finding a cure for cancer.

factsheet

- 2017 MAKNA Cancer Research Award recipients:
  - Conlathan a/l Ibau, Universiti Malaysia Perlis (UniMAP)
  - Dr Chin Siang Kue from Management & Science University (MSU)
  - Dr Abdullah Al-hadi Ahmad Fuaad, Universiti Malaya (UM)

(2005 - 2017)

574 applications received

50 awarded to date with total grants worth **RM1,621,410**

3 were awarded with a total grant worth **RM86,775** (2017)

Anugerah Saintis Muda Negara

This award by MOSTI is one of the categories under Anugerah Inovasi Negara (AIN). It recognises young Malaysian scientists less than 35 years of age for their contribution and achievement in research and development. The award aims to encourage excellence in creativity and contribution toward STI.

factsheet

- 2017 Anugerah Saintis Muda Negara was awarded to Dr Foo Keng Yuen from Universiti Sains Malaysia (USM).
- Prize: **RM20,000**, a commemorative plaque and a certificate.

Anugerah Juruteknologi Negara

MOSTI recognises technologists and semi-professional employees, such as technicians and laboratory assistants for their contribution and achievement in the field of science and technology. It also inspires and encourages them to excel in STI.

factsheet

- The 2017 Anugerah Juruteknologi Negara was awarded to Noor Azwan bin Ahmad from Universiti Teknologi Petronas (UTP).
- Prize: **RM10,000**, a commemorative plaque and certificate.

Bioeconomy Innovation Awards

Bioeconomy Innovation Awards (BIA) is an award by the Malaysian Bioeconomy Development Corporation Sdn Bhd. It recognises local universities and research institutions that have developed outstanding innovative solutions to tackle technical, social and/or environmental challenges. The 2017 BIA was conducted in conjunction with BioMalaysia 2017 with ASM Fellows as the Lead Judges for the categories as follows:

- Agriculture/Agro-based Industry
- Bio-Industrial Technology
- Healthcare and Wellness
- Green and Renewable Technology

Focus of the Awards' assessment was given to two main criteria: the most innovative and the most commercial-ready. One winner for each criterion was chosen for each category and another two trophies of Special Awards for Bioeconomy Innovation of the Year and Most Promising Innovation.

factsheet

- Prize: **Gold**, **silver** or **bronze medal** and a **certificate** for each winner

36 nominations received for the year 2017

Nominations for International Medals and Awards

Throughout the year, ASM has been invited to nominate illustrious candidates for several prestigious international medals and awards.

2017 Royal Society Medals and Awards

The Royal Society has a broad range of medals including premier awards, subject-specific awards and medals celebrating the communication and promotion of science. These work to recognise and celebrate excellence in science. The majority of the awards are open for nominations from Commonwealth countries for subject-specific medals.

2017 TUBA Academy Prizes

Turkish Academy of Sciences inaugurated the TUBA Academy Prizes in 2015. It recognises eminent scientists with original, leading and path breaking works in their fields. This year, ASM was invited to nominate scientists for the following categories:

- Basic and Engineering Sciences (for scientists with Turkish connection – work and/or study in Turkey)
- Health and Life Sciences
- Social Sciences and Humanities

2018 Tang Prize

Founded in 2012, the Tang Prize is an award by the Tang Prize Foundation. The biennial award is conducted with the aim to recognise and support ground-breaking research and development of significance to humanity in four major categories: Sustainable Development, Biopharmaceutical Science, Sinology and Rule of Law. ASM was invited to nominate scientists for the following categories:

- **Tang Prize in Sustainable Development** that recognises those who have made extraordinary contributions to the sustainable development of human societies.
- **Tang Prize in Biopharmaceutical Science** that recognises original biopharmaceutical or biomedical research that led to significant advances towards preventing, diagnosing and/or treating major human diseases.

factsheet

- Prize: **NT40 million**

2018 Abel Prize

The Abel Prize is an international award by the Norwegian Academy of Science that recognises contributions of extraordinary depth and influence to the mathematical sciences. The focus was given to outstanding work that resolves fundamental problems, creates powerful new techniques, introduces unifying principles and opens up new major fields of research.

factsheet

- Prize: **NOK6 million**

Newton-Ungku Omar Fund (NUOF)

The UK Government launched the Newton Fund to promote economic development and social welfare through joint collaboration with a current total of 18 partner countries. This partnership involves contribution of matching funds from both UK & partner countries. In Malaysia, the Newton Fund is branded as the Newton-Ungku Omar Fund (NUOF), after a well-known Malaysian scientist, Professor Datuk Dr Ungku Omar Ungku Ahmad.

Since its establishment in 2014, NUOF has been playing an imperative role to promote STI collaboration in Malaysia as an initiative under the Science to Action (S2A). Whilst the matching fund is provided by MIGHT as the funder, ASM participates as one of the Malaysian delivery partners of NUOF, other than MoE, MoHE, Malaysia Meteorological Depatment (METMalaysia), PlatCOM Ventures, National Hydraulic Research Institute Malaysia (NAHRIM), Agensi Pengurusan Bencara Negara (NADMA) and Agensi Inovasi Malaysia (AIM).

The activities covered under NUOF ranges from:
a) Growing capacities of the Malaysian science and innovation community through fellowships, mobility schemes and joint centres;
b) Forging research collaborations on development topics; and
c) Establishing innovation partners and challenge funds to develop innovative solutions on development topics.

As one of the local delivery partners, several type of activities are implemented by ASM throughout collaborations with five UK delivery partners as follows:

a) British Council

Provide grants for research workshop and visits which aimed to stimulate initial connections between early career researchers from UK and Malaysia and hence, to support the capacity building among them.



factsheet

- *Newton Researcher Links (Workshop Grants)*
  - Local call in 2017
    - **25** applications received
    - **6** new awardees (**2** awardees fully funded by Malaysia, **3** awardees fully funded by UK & **1** awardee is co-funded by both UK & Malaysia)
    - **18** awardees since 2015
    - Total amount of grants awarded is **£679,210** since 2015

- *Southeast Asia Regional Call in 2017 -*
  - **23** applications received
  - **1** awardee is co-funded by both UK & Malaysia
  - Total amount of grant awarded is **£31,700** in 2017

b) Royal Society, British Academy and Royal Academy of Engineering

Activities implemented under these partnerships covers ***natural sciences, social sciences & humanities, and engineering.*** Generally, there are two types of activities:

i. Newton Advanced Fellowships
Provide grants for training, collaboration and reciprocal visits with a partner in the UK to further develop the research strengths and capabilities of established researchers or their research groups.



factsheet

- *Advanced Fellowship in Natural Sciences*
  - Call in 2017:
    - **36** applications received
    - **4** new awardees (**3** co-funded by both Malaysia & UK, **1** fully-funded by UK)
  - **11** awardees since 2015
  - Total amount of grants awarded **£1,008,636** since 2015

- *Advanced Fellowship in Social Sciences & Humanities*
  - Call in 2017:
    - **6** applications received
    - **2** new awardees (**1** co-funded by UK & Malaysia, **1** fully-funded by Malaysia)
  - **8** awardees since 2015
  - Total amount of grants awarded **£496,977** since 2015

ii. Newton Mobility Grants
Provide grants for travel, subsistence and research expenses for visits to build lasting networks or strengthen emerging collaborations.

factsheet

- *Mobility Grants in Natural Sciences*
  - Call in 2017:
    - **48** applications received
    - **4** new awardees (all co-funded by both UK & Malaysia)
  - **9** awardees since 2015
  - Total amount of grants awarded **£105,012** since 2015

- *Mobility Grants in Social Sciences & Humanities*
  - Call in 2017:
    - **14** applications received
    - **3** new awardees (all co-funded by both UK & Malaysia)
  - **10** awardees since 2015
  - Total amount of grants awarded is **£90,213.90** since 2015

- *Mobility Grants in Engineering*
  - Last call was opened in 2016
  - **7** awardees since 2015
  - Total amount of grants awarded **£101,200** since 2015 (or in 2015-2016)

c) Medical Research Council UK

Provide grants for 2-year research projects that centres on relevance of Non-communicable Diseases (NCDs) such as cancer, obesity and heart disease.

factsheet

- *UK-Malaysia Bilateral Health Research Collaboration Programme in Non-Communicable Diseases*
  - Last call was opened in 2015
  - **12** awardees
  - Total amount of grants awarded **£4,632,625**

Overall, **76** awardees since 2015 with total amount of **£7,144,853.90** grants awarded.

Other activities under Newton-Ungku Omar Fund

The 2017 Newton Prize
The Newton Prize celebrates excellent Newton Fund research and innovation projects in support of economic development and social welfare in partnering countries, including Malaysia. Each Prize will be worth up to £200,000, and must be used to advance or develop existing Newton-funded work.

factsheet

- Among **150** Newton-Ungku Omar Fund projects in Malaysia, **43** Newton Prize applications were received and only **5** applications were shortlisted.

- Professor Phang Siew Moi FASc from University of Malaya and Dr Adrian Fisher from University of Cambridge have won the 2017 Newton Prize worth **£197,440**. Their project is titled "Integrating Algal Biophotovoltaics for Bioelectricity Production with Agro-industrial Wastewater Remediation using Tropical Algae".

Newton-Ungku Omar Fund Open Day
The Newton-Ungku Omar Fund Open Day was co-organised by MIGHT and the British High Commission Kuala Lumpur in Cyberjaya. More than **400** people attended and contributed to its accomplished aims - to increase awareness on NUOF and to deepen engagement with stakeholders and to showcase the successes of the fund's project.

Dasar Sains Teknologi dan Inovasi Negara (DSTIN) Flagship Programme and Special Allocation for Agencies under MOSTI

DSTIN Flagship Programme is a grant provided by MOSTI to fund research in areas identified to have an impact on the development of STI and aligned with the Government Transformation Programme (GTP) and the Economic Transformation Programme (ETP). Meanwhile, the Special Allocation for Agencies Under MOSTI is set up to fund research that is aligned with the New Economic Model (NEM).

ASM Fellows were granted the DSTIN Flagship Programme and Special Allocation for Agencies in 2014. The projects are currently on-going and will be completed in 2018.

factsheet

DSTIN Flagship Programme
Moving up the Value Chain and Environmentally Friendly Processes in silicon photovoltaic technology: Non-toxic Processes, Wafering and Crystal Growth.

Special Allocation for Agencies Under MOSTI
Development of Yeast System for Flavonoid Production.

Project Monitoring Team (PMT)

MOSTI mandated ASM to monitor the implementation of projects under the 9th and 10th Malaysia Plan (MP) since 2007. Project Monitoring Team (PMT) is responsible to evaluate and advice the progress of approved R&D projects under MOSTI. ASM Fellows along with experts in the field serves as PMT Panels. A total of 14 projects were successfully completed in 2017, following the shift to 11th MP.

factsheet

Three Flagship projects with total of **13** sub-projects are given extension until June 2018.

Programmme	Number of Projects	Meetings / site visits conducted in 2017
TechnoFund	10	13
Community InnoFund	3	2
Flagship	4	3
Total	17	18

ASM Fellows involved as PMT Panel: 21

Recognition

Harnessing the Nation's Top Scientific Minds

Malaysia has an abundance of research scientists that are able to contribute to the nation's economic growth and societal well-being. These research scientists have the potential to lead the way in implementing Malaysia's STI agenda. To recognise their talents and contributions, ASM initiated the Top Research Scientists Malaysia (TRSM).

TRSM identifies outstanding research scientists in various disciplines that have the potential to become exemplary. An online repository of these recognised scientific minds creates a hub for knowledge dissemination that can spur the growth of STI in Malaysia. Aside from being mentors to younger generation of scientists, the Top Research Scientists' expertise and experience can assist in national policy- and decision-making.



factsheet

- **13** scientists from various fields of science and technology have been recognised as TRSM in 2017.
- Total recipients since 2012: **133**
- Total recipients by discipline:
  - Mathematical, Physical & Applied Sciences: **7**
  - Chemical Sciences: **21**
  - Biological, Agricultural & Environmental Sciences: **34**
  - Engineering & Computer Sciences: **55**
  - Medical & Health Sciences: **16**

Gateway

Sustaining the Impact

The Young Scientist Network-Academy of Sciences Malaysia provides a platform for outstanding young scientists to collectively voice their opinions, be involved in policy making as well as to contribute to the nation. YSN-ASM members are the top young scientists in Malaysia who are committed towards improving the ecosystem and making a tangible impact to society.

The objectives of YSN-ASM are:

i) To represent the voice of young scientists
ii) To facilitate networking opportunities among young and senior scientists to exchange knowledge and experiences
iii) To engage young scientists to be involved in addressing national issues using scientific knowledge and technology through interdisciplinary approach
iv) To promote career in science as a viable choice for young people.

17 **New Members Selected**

19 **New Affiliates Selected**

22 **New Exco Members elected for the term 2017/2018**

9 **Working groups established**

YSN-ASM Working Groups

- Science Leadership
- Science Communication
- Science Intergrity
- Science Education
- Science Outreach
- Science Policy
- International Networking
- Science @Media
- National Science Challenge

To date, YSN-ASM comprises of 75 members and 66 affiliates.

Science Leadership

The aims of this working group (WG) is to promote research leadership and impactful research amongst YSN members and young scientists, by engaging with Malaysian researchers and providing a platform for networking. The WG had 7 events in partnership with ASM and various organisations to promote and reward research excellence through YSN Young Investigators Award and YSN Meet the Expert Sessions.

AKEPT Young Scholars Programme (AKEPT YSP)

AKEPT YSP is a year-long programme organised in collaboration with USM, AKEPT and YSN-ASM. This programme aims to develop related skills pertaining to future academics across various Malaysian higher education institutions and enhancing their related skills and capabilities as well as encouraging them to consider academia as their career pathway.

The participants received formal training in public speaking, presentation skills, academic writing, and generic skills related to research and being an academic. In addition, the participants have been under the guidance of a young academic in their respective disciplines through job shadowing and career mentoring.

YSN-ASM Mentor-Mentee Programme

This mentoring programme between ASM Fellows and YSN-ASM members and affiliates serves as a platform of thought sharing and initiating future collaborations in various scientific researches. Apart from establishing professional networking with ASM Fellows, the mentees also build a personal relationship with their mentors and receive motivation and support to conduct high quality research and develop their career.

Science Communication

The main objective of this WG is to promote public engagement in science via talks, videos and articles as well as provide training in science communication skills.

YSN-ASM Column in Majalah Sains (Bahasa Malaysia)
Suara Saintis Muda is an online column, dedicated for YSN-ASM to share YSN happenings and member's views on issues.
14 articles published to date, from 26 Dec 2016 – 30 Oct

Science Café KL in The Bee@Jaya One, PJ and The Bee @Publika, KL
5 talks given by YSN members to date, from Jan – Oct
- *8 Feb:* Science Café - Zebrafish-ing for Answers to Human Diseases Talk
- *15 March:* YSN-ASM Outreach: Science Café - Gazing into the Eyes in the Sky (Under a Thousand Satellites)
- *14 June:* Science Cafe - Stem Cells - Magic Pills of Repair & Rejuvenation

YSN-ASM Column in Scientific Malaysian (English)
This is another online column, dedicated for YSN-ASM.
1 article published to date, on 12 Apr

Science Integrity

The Science Integrity Working Group of YSN-ASM was established during the 2016 YSN-ASM Colloquium. The main purpose of this working group is to foster a culture of research integrity in Malaysia through its flagship programme, which is the YSN-ASM Responsible Conduct of Research (RCR) Programme. This programme serves the following functions:

- Collaborate with key stakeholders in the country and region to effectively promote RCR.
- Design and perform research to understand the state of RCR as well as identify strategies to effectively foster RCR in Malaysia and the region.
- Conduct RCR workshops to create awareness, provide knowledge and skills, and promote a culture of responsible science in the country and the region.
- Publish the first Malaysian RCR Educational Module. This module is developed to become a reference for readers as well as a teaching guide for individuals intending to introduce RCR to researchers and students in Malaysia.
- Create a pool of certified RCR trainers to ensure quality in the conduct of RCR workshops and increase the capacity of Malaysia to lead in the dialogue of RCR in the region.

RCR Education Module Workshop

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- This year, the programme conducted two workshops (2 - 5th April and 26 - 29 November) in collaboration with Akademi Kepimpinan Pendidikan Tinggi (AKEPT).
- The purpose of these workshops is to refine the Malaysian RCR Educational Module.
- The module is currently in the final review stage and projected to be published in the first quarter of 2018.

Thailand RCR Seminar
Dr Chai Lay Ching and Dr Chau De Ming conducted a half-day RCR workshop on Ethical Values and Responsibilities of Research and Research Data Management at the National Science and Technology Development Agency (NSTDA) of Thailand in conjunction with first national-level seminar in Bangkok that puts a spotlight on RCR.

YSN-ASM Responsible Conduct of Research (RCR) Meeting
6 – 7 March, ASM

Science Education

This WG aims on improving science education at school level to promote better teaching among teachers in order to increase students' enrolment in STEM. Members of this WG works to achieve this aim by promoting student-centred learning approach among STEM teachers by disseminating research findings and good practices.

Science Policy

This WG's main function is to promote policies that support science advancement through contributions in policy studies and stakeholder engagements.

The activities under this WG for 2017 are:

1. Stakeholders' Workshop 16 February at Kompleks Perbadanan Putrajaya
2. A meeting with YAB Prime Minister on 18 July on National Transformation 2050 (TN50)
3. YSN-ASM members were invited as panels for TN50 – Ministry of Higher Education with academics in Klang Valley area in continuation to the dialogue with the Prime Minister on TN50
4. Workshop on Internet of Vehicles (IoV) in Shanghai on 15 - 17 Septmber
5. Distinguished Lecture and Collaboration Series 3.0 (DLC3.0) from 2 to 3 November in UPM

Science@Media

This WG's main role is improving the dissemination of YSN efforts via social networks and the YSN website. In 2017, the members of the WG has produced the YSN Compendium.

Science Outreach

The aim of this WG is to increase societal engagement towards science.

Jom Masuk IPT - Sharing session workshop
11-12 March
Grand Borneo Hotel, Kota Kinabalu, Sabah

Putra Outreach Physics Series
17 – 19 February - SM Sains Teluk Intan , Perak
3 – 5 March - SM Sains Perempuan Seremban, Negeri Sembilan
21 – 23 April - SM Sains Selangor, Selangor

Back2School Programmes
2 February
SMK Sung Siew, Sandakan, Sabah

3 February
SMK Datuk Pengiran Galpam, Sandakan, Sabah

30 – 31 Mac
Maktab Rendah Sains MARA Kota Kinabalu, Sabah
1 – 2 April - SMK Ranau, Ranau, Sabah

Young Scientist Apprentice (YSA)
11-12 February
Sekolah Agama Menengah Tinggi Hishamuddin, Klang (SAMTH)

Microscale Chemistry: Small Tools Big Fun! Workshop
5 April - Ubon Ratchathani University, Thailand

Sime Darby World Environment Day 2017
9 May
Kuala Lumpur Performing Arts Centre (KLPAC)

STEM Day Iskandar Learning Festival 2017
20 July MITEC Masai, Johor Bahru

STEM Seminar SMK Abdullah Munshi 2017
28 April SMK Abdullah Munshi, Penang

Science Outreach Workshop 2017
11 July
Dewan Kompleks Cahaya, Universiti Sains Malaysia

Kuala Lumpur Engineering Science Fair (KLESF)
3-5 November
Mines International Exhibition Convention Centre (MIECC)

National Innovation and Creative Economy Expo 2017 (NICE '17)
12-16 October
Technology Park Malaysia

STEM Mentor-Mentee Programme 2017
14 November
Universiti Sains Malaysia

Underprivileged Kids Outreach Workshop 2017
30 July
Ramakrishna Ashram

15 October
Ru Yi Children's Home

YSN-ASM Outreach: Dialog Perancangan Kerjayaku Sempena Seminar Kemasukan Pelajar ke Institusi Pendidikan Tinggi by MOHE
11 February, Grand Riverview Hotel@Kelantan
18 February, Putra Regency@Perlis
25 February, Pinetree Hotel@Johor

YSN-ASM Outreach: Inaugural Lecture by Professor Ir Dr Mohd Zainal Abidin Ab Kadir - Lighting: A Bolt from the Blue
17 February, UPM

YSN-ASM Outreach: Dialog Perancangan Kerjayaku Sempena Seminar Kemasukan Pelajar ke Institusi Pendidikan Tinggi by MOHE
4 March, Vistana Hotel@Pulau Pinang
11 March, Grand Borneo Hotel@Sabah
18 March, Riverside Majestic Hotel@Sarawak
25 March, Nilai Spring Hotel@Negeri Sembilan

International Networking

This WG promotes greater international collaboration.

Calendar

International Corrosion Prevention Symposium for Research Scholars (CORSYM 2017)
3-4 May
UTP

AgriNano 2017
14-15 June
India

Global Women in Science and Technology (GWST) Conference
15-Jul
Yokohama Symposia

International Conference on Imaging, Signal Processing and Communication (ICISPC)
26-28 July
USM

15th Asian Conference on Transportation
31July – 4 Aug
Hotel Jen Penang

The i-Sihat 2017 Symposium
1-2 Aug
Kuala Lumpur, Malaysia

IIUM Engineering Congress 2017
8-9 Aug
IIUM, Gombak

International Conference on Advanced Material Characterisation Technique
16-17 Aug
Genting Highland

17th International Conference of Women Engineers & Scientists
4-7 Oct
India

ASEAN Science & Technology Week
17-18 Oct
Myanmar

2nd International Postgraduate Conference on Engineering Research
24-25 Oct
IIUM

South East Asia Global Innovation Challenge (SEA-GIC 2017)
28-Oct
UKM

Malaysian Congress of Toxicology 2017
5-6 Dec
Penang, Malaysia

IAP Science Education Programme (SEP)
6-9 February
Khartoum, Sudan

International Construction Week 2017 and Ecobuild SEA 2017
10-14 April
KLCC

i-Sihat Conference 2017
1-2 August
UKM

ASEAN SCRID Meeting
18 Oct
Myanmar

World Science Forum 2017
7-11 Nov
Jordan

APEC Workshop on Promoting Women and Girls' Participation in STEM
24-27 Oct
Taipei

Think 20 Summit: Global Solutions
28 – 31 May
Berlin



Reflection session during ASEAN SLP 2017

Championing Tropical Science

The Mahathir Science Award Foundation (MSAF) manages and administers the Mahathir Science Award. The Foundation recognises researchers whose work has generated new knowledge to solve problems in the tropics, resulting in continuous improvement to quality of life.

The Foundation carries out the annual MSA Laureate Week in the effort to raise awareness and position the award globally. Strategic partnerships and support from corporate and government sectors are welcomed.

The 2016 MSA was conferred to a group of researchers from the University of Queensland, Australia which consists of Professor Dr Erik Meijaard, Professor Dr Kerrie Wilson and Professor Hugh Possingham. They received the award under the category of Tropical Natural Resources for their roles as the global leader in sustainable natural resource planning and management. Through collaborations with government and other stakeholders, they have made a significant impact on threatened species management, fire policy, and terrestrial as well as marine reserve design.

factsheet

- The 2016 MSA Laureate Week was conducted from **30** October to 1 November 2017.

- 1 November 2017: Intellectual Discourse "Everything You Need to Know about not Planning Your Science Career".

- 1 November 2017: Public Lecture "Science In Sustainable Development".



Recipients of 2016 Mahathir Science Award

Consortia

National Science Consortium

National Science Consortium, as the focal point for inter-institutional and international collaboration, champions national concerted efforts in STI strategic areas.

National Centre for Particle Physics (NCPP)

The main functions of NCPP are to develop new knowledge in theoretical high energy and particle physics as well as collaborating with international experiments and research centres.

NCPP is working to explore areas of experimental particle physics research via national and international collaboration. Besides that, NCPP also promotes theoretical physics research while coordinating high energy and particle physics efforts. Furthermore, NCPP organises various activities such as conferences, lectures, workshops and outreach programmes.

Following are the main research areas under NCPP:
- Experimental and theoretical particle physics
- High energy physics
- General theory of relativity and gravitation
- Detector physics
- High energy and particle data analysis
- High performance computing

factsheet

Current international research collaborators:
- Deutsches Elektronen-Synchrotron (DESY)
- European Organization for Nuclear Research (CERN)
- High Energy Accelerator Research Organization (KEK)
- Osaka University

Imbak Canyon Rainforest Research and Training Programme (ICRRTP)

The ICRRTP is a collaboration between ASM, Yayasan Sabah, University College of Sabah Foundation (UCSF) and Universiti Malaysia Sabah (UMS) to promote excellence in research on the Imbak Canyon Conservation Area.

Among the objectives of ICRRTP is to enhance local capability and capacity in carrying out research in the ecology and biodiversity of Malaysian rainforests; it also aims to improve the knowledge on human dependence and impacts on the rainforest's diverse resources and ecological services.

factsheet

10 research areas have been identified under ICRRTP:
- Valuation of Altered Rainforest Ecosystem
- Genomics- and Informatics-Based Assessment of Biodiversity Status
- The Role of Corridor Connectivity In Rainforest Ecosystem
- Indicator Species for Climate Change and Health of Rainforest Ecosystem
- Deforestation, Biodiversity and Newly Emerging Diseases
- The Resilience of Post Logging Communities In Borneo
- Hydrogeomorphological and Climatic Dynamics of a Changing Rainforest Ecosystem
- Rainforest Educational Media Centre
- Forest Taxonomy
- Forest Dynamics & Phenology

Malaysia Institute for Innovative Technology (NanoMITe)

NanoMITe is a global research consortium consisting of 38 top-level nano-scientists from world-class academic institutions and centers of excellence from United States, Germany, Canada, China and Malaysia with extensive expertise in the field.

NanoMITe is a global platform for research to develop and strengthen local capability and capacity on nanotechnology. It drives nanotechnology-based industry for economic growth and societal well-being. It works hand-in-hand with the Government's implementation of Distributive Economy by focusing on active local and global participation of world-class nano-scientists. Ultimately, NanoMITe promotes science, research culture and knowledge economy.

The Annual NanoMITe Symposium was held at UPM for researchers to present the progress of their projects. It was held in conjunction with the International Symposium on Applied Engineering and Sciences (SAES2017). Some of the notable speakers are Professor Joseph Brain from Harvard and Dr Rezal Khairi Ahmad, the CEO of NanoMalaysia Bhd.

factsheet

NanoMITe has **19** projects under these five flagship programmes:
- Programme 1: Energy by UTM
- Programme 2: Wellness, Medical and Healthcare by UM
- Programme 3: Food and Agriculture by UPM
- Programme 4: Electronics, Devices and Systems by UKM
- Programme 5: Environment by USM

Projects under NanoMITe were funded by MOHE.

Mainstreaming **STI Agenda** Globally

In shaping international science policy, ASM has been actively involved in various areas such as public health, environmental management, future planning, science education and sustainable development.









ASEAN 2050 Forum: Fourth Industrial Revolution

Fourth Industrial Revolution infuses the human, machine and technology capabilities that will impact the economy, socio-economy and livelihood of humankind. The Fourth Industrial Revolution will be able to resolve many problems such as the lack of skilled labour, fossil fuel dependability and job opportunities through collaborative economy.

The ASEAN 2050 Forum: Fourth Industrial Revolution serves as a platform of discussion and sharing of thoughts related to said global trend. Forum panels comprising leaders from government sector, industry and academia in ASEAN gathered to share their views on how to strengthen the younger generation of ASEAN to develop a Fourth Industrial Revolution ecosystem based on the STI capabilities of each country. The ASEAN 2050 Forum is divided into three sessions: Knowledge Intensiveness, Leadership and Collaborative Strategies.

The objective of this forum is to establish an ASEAN Foresight Alliance for data sharing and best practices towards the ASEAN Community 2025 vision that carries the theme "One Vision, One Identity, One Community". The alliance is aimed to form a group of expertise in ASEAN region that could contribute towards the long-term vision of ASEAN 2050.

13
Countries

450
Participants

15
Panellists

ASEAN Science Leadership Programme (SLP) 2017

ASM organised ASEAN SLP 2017 to empower young ASEAN researchers with leadership skills and to promote cohesion and collaboration between them to shape a collective ASEAN research and innovation agenda. ASEAN SLP witnessed the attendance of all 10 ASEAN countries plus Timor Leste. Participants were equipped with various tools critical for effective leadership. Apart from that, they also initiated collaborative projects with their counterparts. Participants showcased their cultural identity during the Gala dinner to strengthen the ASEAN spirit.

Among the main outcomes of the ASEAN SLP 2017:

- To develop an online-based ASEAN Young Scientists Network Platform.
- To organise a Science for Children (I LAB Science project) outreach programme that focuses on developing modules to promote STEM amongst school children in the region.
- To introduce an ASEAN RCR programme that will promote scientific integrity through the promotion of knowledge and awareness.
- To create a common platform for sharing of research resources and facilities among ASEAN countries.
- To establish National Young Academies (NYA) in countries that currently do not have NYAs with the support from Global Young Academy (GYA).
- To crystallise the role of ASEAN Network of Young Scientists in positioning ASEAN as a global player in science leadership.

- The ASEAN SLP is initiated based on Africa Science Leadership Program, which is developed jointly by the University of Pretoria (South Africa) and the GYA and is supported by the Robert Bosch Foundation (Germany).

- ASM hosted this year's ASEAN SLP in collaboration with the AKEPT, MOHE, MOSTI, NSTDA and The World Academy of Sciences Young Affiliates Network (TYAN).

- The Vietnam Young Academy (VYA) will host the 2018 ASEAN SLP.

- **35** participants; **7** return cohorts, **28** new fellows.

- **2** UK trainers from KnowInnovation UK.

- **5** established NYA.



Most **Obese** in the Region

ASM organised the International Obesity Workshop in partnership with UK's Academy of Medical Sciences. It seeks to achieve a more coherent and consistent response to the health implications that arise from obesity.

Scientists from various fields pertaining to health and nutrition have been invited to provide their expert views on obesity: its prevalence, the causes and how it weighs down on the individuals as well as the nation as a whole. Subject matter experts also gave their considerations on how health systems are responding through the prescription of effective programmes to curb and treat health issues. The convergence of local and international subject matter experts also shed light on the current landscape of obesity in their respective countries, in order to share knowledge and identify gaps that can be utilised to better manage obesity and related health issues.

The workshop summarised the current global obesity crisis. It also identified several barriers and challenges in tackling obesity encountered in Malaysia. Possible solutions to these issues include better coordination mechanisms, improving research uptake, understanding the key barriers, addressing psychosocial factors, focusing on innovation and changing the mindset of the public and politicians.

At the end of the two-day workshop, a plenary feedback session was held with the co-chairs of the Obesity Workshop. This session combined all findings from the breakout sessions to identify short- and long-term actions:





Short Term

1. Highlight to government that tackling obesity has to be a cross-ministry commitment requiring direction and monitoring at high level.

2. Review the existing ASM obesity taskforce to ensure the objectives of this group are still relevant.

3. Promote a holistic view in tackling obesity as well as its complications.

4. Allocating adequate resources through a dedicated fund for obesity programmes, interventions and research.

Long Term

1. Frame obesity reduction explicitly as an integral part of the national development agenda through the 12th Malaysia Development Plan 2020-2025.

2. Develop good quality data that should be collected periodically, and disaggregated for appropriate and timely interventions.

3. Encourage policy makers to consider stronger policies to incentivise healthier dietary, physical and mental lifestyles.

International **Obesity Workshop** 2017

69 Scientists and subject matter experts participated in this workshop

16 Speakers led the workshop

11 Malaysian Speakers

5 International Speakers


great !!
ideas
share
go!

Communicating Science

ASM communicates its programmes and studies in an attractive and captivating format to reach out to all our stakeholders.

ASM emphasises the importance of communicating science in a manner that is easily understood by the general public. Scientific facts and findings should be conveyed in a way that is not only engaging but is also faithful to the evidence.

ASM organises multiple programmes and conducts various studies across all fields of STI. These efforts are imperative to elevate the nation's STI agenda. ASM packages its programmes and studies in an attractive and captivating format to be disseminated for all. In addition to the publications and promotional materials, ASM also utilises the media as a channel to ensure that the nation is well informed on matters relating to STI.

Publication

Advisory Reports

- National Integrated Water Resources Management Plan Strategies and Road Map, Volume 2 – Appendices
- The Blueprint for Fuel Cell Industries in Malaysia
- Strategic Plan for Integrated River Basin Management (IRBM) in Malaysia
- Strategies to Enhance Water Demand Management in Malaysia
- Science & Technology Foresight Malaysia 2050
- Envisioning Malaysia 2050 Foresight Narrative
- Cyber Security: Towards a Safe and Secure Cyber Environment

Position Papers

- A Study on the Status and Issues on Integrated River Basin Management (IRBM) in Malaysia
- Sustainable Mining: Case Study for Bauxite Mining in Pahang

Monograph

- Ensuring a Better Water Future for Malaysia by Academician Tan Sri Dato' Ir Shahrizaila Abdullah, BE(Mal), PEng, FIEM, FASc

Scientific Book

- "SCIENCE MATTERS" A Collection of Published & Unpublished Opinions

Annual Report 2016

ASM Science Journal

- 18 articles

ASEAN Journal on Science and Technology for Development

- 17 Articles

ASM online publications are now available at https://issuu.com/asmpub

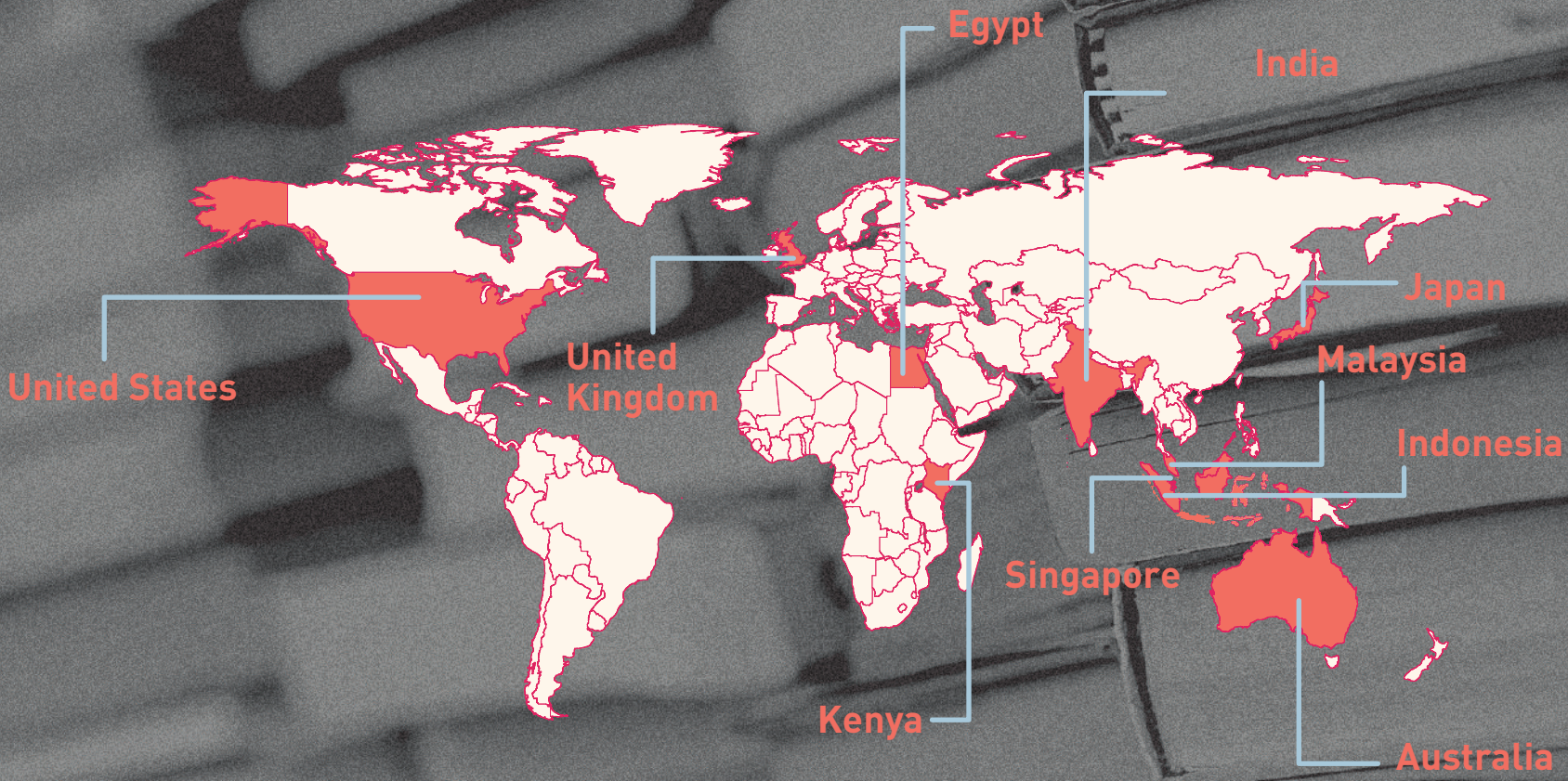
Statistics

59,176
Impressions

7,809
Reads

Readers Around the World

Top 10 Countries

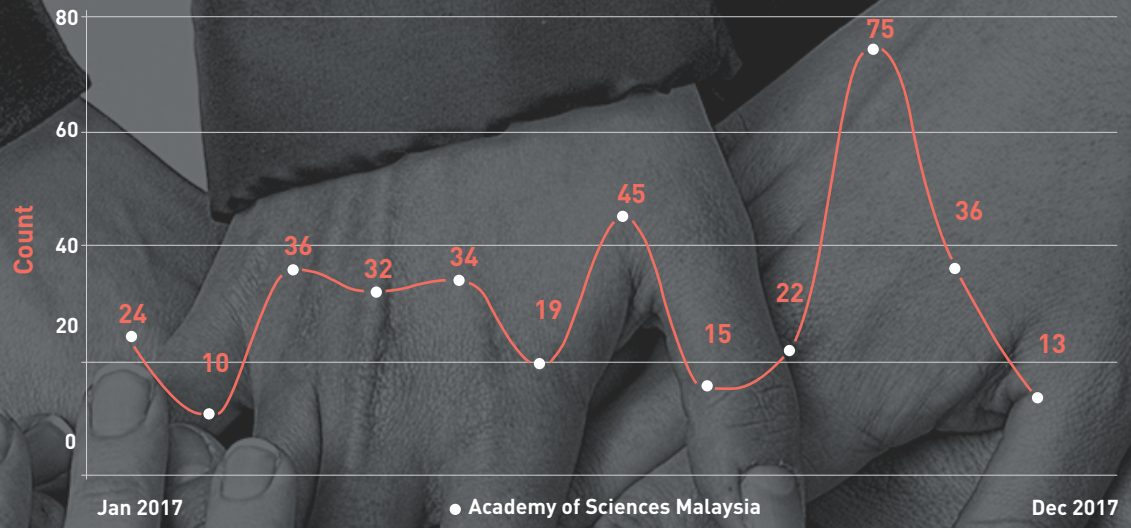


Media Engagements

The Media is the largest platform to effectively share science related matters to the public. Active science communication, through news and programs, contribute in building a science-encultured society. Instilling scientific literacy in the community is a major focus to maintain a competitive edge in a world of disruptive technologies.

ASM engages the media to publish news related to ASM activities. In 2017, ASM was covered in 361 news online across various publishers.

ASM in the News



Top Sources







International Affairs

ASM elevates the scientific collaboration in bringing principles and application of science diplomacy to the attention of both research and diplomatic communities with the goal of addressing common issues.

International Affairs

The strength of ASM's International Affairs (IA) lies within the network of 51 science academies and 22 international STI organisations all around the globe. ASM has been actively representing Malaysia at the international level that enables ASM to play a bigger role in strategising our nation's scientific agenda to be mainstreamed globally.

ASM connects what has been learnt globally and channel it to national stakeholders. IA aims to position more Malaysian researchers and scientists as experts to represent Malaysia; facilitates and develops bilateral and multilateral STI cooperation by identifying strategic partners; to connect the Malaysian scientific community at international level; as well as showcasing the nation's R&D in the global arena.

ASM has been actively involved in several InterAcademy Panel (IAP) platforms namely IAP for Health and IAP for Science Education Programme with ASM fellows holding position in both platforms. Since 2015, the Academy has been electing Fellows from the Social Sciences and Humanities discipline. To date we have 5 Social Scientists and for the first time, this year, ASM has been appointed to sit in a Social Science International Advisory Panel as an expert in Science for Poverty Eradication Committee formed by IAP. Apart from that, among 33 member countries, Malaysia has been selected to chair the programme committee of the International Institute of Applied Systems Analysis (IIASA) starting 2018 to 2020. The Academy has also become the founding member of International Silk Road of Academy of Sciences (ISRAS).

In 2017, ASM has hosted several international forum that brings new international partners. ASM has collaborated with the Academy of Medical Sciences, United Kingdom in organising the International Obesity Workshop and with ASEAN countries in organising ASEAN 2050 Forum: The Fourth Industrial Revolution which attracted 450 participants. Among the strategic interventions that has been put forward by ASM is to form the ASEAN Foresight Alliance and ASEAN Network of Young Scientist. It is hoped through this alliances, ASEAN could strategise our 2050 journey to build a shared vision towards a prosperous, harmonious and sustainable region.

factsheet

The InterAcademy Panel: The Global Network of Science Academies (IAP) is a global network consisting of over 106 national science academies. Founded in 1993, its stated goal is to help member academies advise the public on the scientific aspects of critical global issues.



International Meetings

World Economic Forum (WEF 2017)
17 – 20 January
Davos, Switzerland

The 3rd Meeting of the AASSA Expert Group for the IAP Project on "Food and Nutrition Security and Agriculture (FNSA)"
6 – 9 February
New Delhi, India

IAP SEP Global Council Meeting
8 February
Khartoum, Sudan

9th APEC Policy Partnership on STI Meeting
18 – 21 February
Nha Thrang, Vietnam

AASSA – SCJ Workshop on "Role of Science for Inclusive Society"
1 – 3 March
Tokyo, Japan

AASSA – INSA Workshop on "Effects of Climate Change on Sustainable Agriculture and Nutrition Security in Asia"
16 – 17 March
New Delhi, India

The 2nd Plenary Meeting of the IAP Project on "Food and Nutrition Security and Agriculture"
2 -5 April
Halle, Germany

10th APEC Policy Partnership on STI Meeting
11 – 13 May
Ho Chi Minh, Vietnam

ASEAN – U.S. Science and Technology Fellowship Meeting
31 May – 2 June
Jakarta, Indonesia

The Commonwealth Science Conference 2017
13 – 16 June
Singapore

90th IIASA Council Meeting
19 – 20 June
Vienna, Austria

IAP SEP International Forum on Science Education
2 – 5 July
Beijing, China

The 6th ASEAN Plus Three Junior Science Odyssey (APT JSO)
10 – 15 July
Hanoi, Vietnam

Smart Cities in APEC Region
18 August
Ho Chi Minh, Vietnam

3rd Asian Innovation Forum
28 – 29 August
Seoul, Korea

2017 Euro-Asia Economic Forum and International Congress on Science & Technology Innovation of International Silk Road Academy of Sciences (ISRAS)
21 – 26 September
Beijing, China

AASSA – NAST PHL International Symposium on "Best Practices in Translational Research For Social Development, " in conjunction with the AASSA Executive Board Meeting 2017
28 – 29 September
Tagaytay City, Philippines

Indian Ocean Rim Association (IORA) Innovation Exposition
28 – 29 September
New Delhi, India

14th Science & Technology in Society Forum
1 – 3 October
Kyoto, Japan

IAP for Health Executive Committee Meeting
2 October
Trieste, Italy

IAP for Health Executive Committee Meeting in conjunction with the Young Physician Leaders Programme (YPL) and the World Health Summit
12 – 17 October
Berlin, Germany

Joint Meeting ICSU-ISSC/ICSU GA
21-28 October
Taipei, Taiwan

91st IIASA Council Meeting
12 – 14 November
Vienna, Austria

4th Innosight Workshop: Design for a Circular Economy
14 – 18 November
Taipei, Taiwan

8th International Conference of Foresight
29 November – 1 December
Tokyo, Japan

IAP Science for Poverty Eradication Committee (SPEC) Conference
9 – 10 December
Beijing, China

26
International Meetings
Represented by ASM

ASM Representatives in International Committees

Global Science and Innovation Advisory Council (GSIAC)
Professor Datuk Dr Asma Ismail FASc (President)

Association of Academies and Societies in Asia (AASSA)
Academician Professor Dato' Dr Khairul Anuar Abdullah FASc
Vice President of AASSA

Inter Academy Medical Panel (IAMP)
Academician Distinguished Professor Datuk Dr Looi Lai Meng FASc
Executive Committee of IAP for Health

Inter Academy Panel (IAP)
Professor Datuk Dr Asma Ismail FASc (President)

International Council for Science (ICSU)
Professor Ir Dr Ahmad Faizal Mohd Zain FASc

International Institute for Applied Systems Analysis (IIASA)
Professor Datuk Dr Asma Ismail FASc (President)

Network of Academies of Sciences in the Islamic Countries (NASIC)
Professor Datuk Dr Asma Ismail FASc (President)

Science Council of Asia (SCA)
Professor Dato' Ir Dr A. Bakar Jaafar FASc

Academy of Sciences in Developing World (TWAS)
Professor Datuk Dr Asma Ismail FASc

IAP-Science Education Programme (IAP-SEP)
Academician Dato' Ir Lee Yee Cheong FASc
Chairman of IAP-SEP

Network of ASEAN Sciences Academies (NetASA)
Professor Datuk Dr Asma Ismail FASc (President)

IAP Science for Poverty Eradication Committee (IAP SPEC)
Professor Dato' Dr Aishah Bidin FASc
Expert IAP SPEC

International Silk Road Academy of Sciences
Professor Datuk Dr Asma Ismail FASc (President)

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Representatives

ICSU Regional Office for Asia and the Pacific

The ICSU Regional Office for Asia and the Pacific (ICSU ROAP) had an eventful year with many significant events. ICSU ROAP's agreement with the Government of Malaysia was renewed for another five years, ensuring that the regional office will continue to be hosted by ASM until 2021.

The most significant event of the year was the merger of the International Council for Science (ICSU) and the International Council for Social Science (ISSC). The merger agreement took place at a landmark joint meeting in Taipei, during which national and union members voted overwhelmingly in favour for the merger. The merger would form a single global entity called the International Science Council, which brings together the current members of ICSU and ISSC, uniting the social and natural scientific community. Its mission will be to serve as the global voice of science, providing leadership in catalysing, incubating and coordinating international action on issues of major public concern. Most global priority issues cannot be dealt with by the social or natural sciences alone. As such, the unified science council will champion all the sciences and their role in responding to today's global challenges. The organisation will be formally launched at a founding General Assembly to be held in Paris in 2018.

The Regional Committee for Asia Pacific, which is responsible for promoting the objectives and activities of ROAP and provides scientific advice and support, met twice this year, once in Kuala Lumpur and the other in Hong Kong. During the meeting in Hong Kong, the committee members had the opportunity to interact with the Regional Committee of the Digital Belt and Road Programme spearheaded by China.

ICSU ROAP continues to champion the area of natural hazards and disaster risk. This year saw greater collaboration with the Integrated Research on Disaster Risks International Centre of Excellence Taipei (IRDR ICoE-Taipei), with the organisation of the Advanced Institute on Knowledge Based Actions for Disaster Risk Reduction (AI-KBA) and Advanced Institute in Disaster Risk Reduction with Systems Approach for Slow-Onset Climate Disasters (AI-SOCD). The main aim of these AIs is to provide young to mid-career practitioners, researchers and policy makers in Asia and the Pacific region with enhanced understanding, skills and practical knowledge in disaster risk reduction. Participants from a wide range of backgrounds from various countries were selected. After the completion of each AI, the participants were invited to submit a multi-country, multi-disciplinary research project for seed grants funded by IRDR ICoE-Taipei. The competition saw the selection of four projects to be funded. This enhances the efforts of ICSU ROAP and IRDR ICoE-Taipei in promoting inter-disciplinary collaboration between scientists, policy makers, communities and other stakeholders in solving the problems of disaster risks. Besides that, ROAP's Steering Group on Natural Hazards and Disaster Risks (SGNHDR) continues to promote the eponymous scientific study in the Asia-Pacific region through members' participation and contribution at key international events.

On the priority area of Urban Health and Wellbeing, ICSU ROAP's Science Planning Group on Epigenetics was set up to review the epigenetic landscape and its effects on urban health. The group has produced an interdisciplinary plan on the consequence of rapid urbanisation and its effects on epigenetics. Besides that, the group also organised meetings and seminars with universities in Cambodia and Sri Lanka to increase awareness on the importance of epigenetics.

In the area of science for policy, this year saw ROAP become the hub for the Asia Chapter International Network for Government Science Advice (INGSA). The Chapter aims to promote a robust Asian science advice ecosystem, building regional and inter-regional networks of science advice practitioners. It also acts as a supporting mechanism for policy makers within the region.

Under the new directorship, the Regional Office is looking to increase the visibility of the Office by implementing a sharper focus on science for policy and vice versa in all priority areas. The Office also seeks stronger engagements with Least Developed Countries (LDCs) and to increase the participation of youth in its programmes.

factsheet

- Professor Emerita Datuk Dr Mazlan Othman FASc was appointed as the new Director of ICSU ROAP, taking over from the Founding Director, Professor Emeritus Dr Mohd Nordin Hasan FASc.

- The ICSU-ISSC merger brings together **40** international scientific unions and associations, and more than **140** national and regional organisations such as academies and research councils.

List of Activities

2nd Workshop to Strengthen Scientific Advisory Capacities for Disaster Risk Reduction
16-17 January
Taipei, Taiwan

2nd Meeting of Science Planning Group on Epigenetics (SPGE)
6-7 February
Bali, Indonesia

7th Steering Group on Natural Hazards and Disaster Risks Meeting
21-22 March
KL, Malaysia

Advanced Institute on Knowledge-based Actions for Disaster Risk Reduction (AI-KBA)
17-21 April
Taipei, Taiwan

3rd Meeting of Science Planning Group on Epigenetics (SPGE)
5-6 June
Phnom Penh, Cambodia

Advanced Institute on Disaster Risk Reduction with Systems Approach for Slow-Onset Climate Disasters (AI-SOCD)
10-14 July
Taipei, Taiwan

23rd ICSU Regional Committee Meeting
17-18 July
KL, Malaysia

8th Steering Group on Natural Hazards and Disaster Risks Meeting
20-21 October
Taipei, Taiwan

ICSU General Assembly
21-24 October
Taipei,Taiwan

ICSU & ISSC Joint Assembly
25-26 October
Taipei, Taiwan

Belmont Forum Asia Pacific Information Day
27-28 October
Taipei, Taiwan

4th Meeting of Science Planning Group on Epigenetics
6-9 November
Colombo, Sri Lanka

Sustainability Initiative in the Marginal Seas of South and East Asia (SIMSEA) Meeting
20-21 November
KL, Malaysia

24th ICSU Regional Committee Meeting
7-8 December
Hong Kong

14
Activities

International Science, Technology and Innovation Centre for South-south Cooperation (ISTIC)

To fulfil its primary objective of building capacity in STI management for developing countries, ISTIC as a UNESCO Category II Centre continues to implement a number of programmes in Malaysia and in other countries.

The highlight for ISTIC this year is the 3rd Biennial Conference on Women in Science, Technology and Innovation: Innovative Solutions by Women in STI for UN Sustainable Development Goals. The Conference built on the Resolutions made in the 2nd International Conference in 2015, focusing on practical solutions by Women in STI. It aimed to showcase successful innovations in STI by women, as well as sharing experiences on how to achieve Goal #5 of the United Nation's Sustainable Development Goals (SDG).

The Conference focused on five themes: Education and Culture; Science and Health; Engineering and Technology; Social Innovation and Entrepreneurship; as well as SDG and Youth. The Conference brought together prominent and successful women, all experts in their own fields who talked about their innovations, the impact on the community and suggestions on how the SDGs can be achieved.

In addition, ISTIC signed an Memorandom of Understanding (MOU) with two Chinese strategic partners, which are the International Knowledge Centre for Engineering Sciences and Technology under the auspices of UNESCO (IKCEST) and the International Centre for Engineering Education under the auspices of UNESCO (ICEE).

factsheet

- ISTIC collaborated with **19** organisations in **2017**.
- The 2017 programmes have benefited **180** participants from **38** countries in Asia and the Pacific, Arab States, Africa, Latin America & Caribbean and North America and Europe regions.
- ISTIC's programmes benefited **36** countries out of a total of **134** G77 countries.



3rd Biennial International Conference on Women in STI attracted participants from 30 countries

List of Activities

Training Workshop on Technology-based Entrepreneurship for Developing Countries
25 - 28 April, Isfahan, Iran

3rd Biennial International Conference on Women in Science, Technology and Innovation: Innovative Solutions by Women in STI for UN Sustainable Development Goal 2016-2030
15 - 16 May, Kuala Lumpur, Malaysia

Training Workshop on Big Data for Developing Countries
15 - 18 May, Kuala Lumpur, Malaysia

International Training Programme on STI Policy and Management for Developing Countries (ITPS)
31 July - 4 August, Kuala Lumpur, Malaysia

Training Workshop on Computer Science Education
23 - 27 October, Kuala Lumpur, Malaysia

2017 KISTEP-ISTIC S&T Innovation Policy Training Program for High Level Policy Makers
13 – 17 November, Seoul, Korea

6
Activities



Gatherings

Knowledge generation often comes from gathering of minds to enable learning, networking, content-creation and sharing. ASM hosted various intellectual discourses throughout the year and to date it has been very receptive in achieving our objectives.

Gatherings



The quarterly IdeaXchange session is a platform for the scientific community and ASM members in particular to exchange ideas, discuss interdisciplinary matters and debate on topical issues pertaining to STI. Since its inception in 2011, ASM has organised 27 sessions of IdeaXchange.

24th IdeaXchange
31 March
- Introduction of the YSN-ASM Mentor Mentee Programme
- Introduction to Blockchain and its Disruptive Potential by Mr Abdul Fattah bin Mohamed Yatim, MIEM (the IEM Council Member – Multimedia Representative)

25th IdeaXchange
24 July
- How Scientific Research Can Support Stingless Beekeeping by Dr Tim Heard, Research Scientist CSIRO
- Colony Multiplication and Management of Stingless Bees to Provide Crop Pollination Services and Honey Production in Brazil by Dr Cristiano Menezes, Researcher of Bee Biology and Bee Management at the Brazilian Agricultural Research Corporation (EMBRAPA)

26th IdeaXchange
24 August
- Malaysia 2050: The Critical Harmony Factor by Academician Tan Sri Emeritus Professor Datuk Dr Omar Abdul Rahman FASc

27th IdeaXchange
5 December
- Knowledge Content in Key Economic Sectors in Malaysia by Professor Dr Mahendhiran S. Nair, Vice-President (Research & Development), Monash University Malaysia
- Panel Discussion on Fourth Industrial Revolution: Malaysia Perspective Moderator: Academician Tan Sri Datuk Dr Ir Ahmad Tajuddin Ali FASc

Panellists:
1. YM Tengku Datuk Dr Mohd Azzman Shariffadeen FASc, Vice-President, ASM
2. Professor Dr Mahendhiran S. Nair, Vice-President (Research & Development), Monash University Malaysia
3. Mr Johan Mahmood Merican, Deputy Director General (Human Capital), Economic Planning Unit (EPU)
4. Mr Jacob Lee, Council Member & Chairman Industry 4.0 Committee, Federation of Malaysian Manufacturers (FMM)

















Membership

Eminent scientists, engineers and technologists play a key role in ASM's strategic studies and programmes.

Governance & Membership

The ASM Council consist of 16 Fellows led by a President that was appointed by Seri Paduka Baginda Yang di-Pertuan Agong and 15 members elected at AGM. The Council meets five times a year and provides leadership and policy direction. To ensure the Academy's business is managed effectively between Council meetings, the Executive Committee (EXCO) meets four times a year. The EXCO Meetings are trusted to provide advice to the management on day-to-day operations. The Finance Committee meets six times a year to monitor funds management and oversee financial performances.

The 22nd Annual General Meeting held on 22 April 2017 gathered 122 ASM Fellows. Fellows approved the 2016 Annual Report, financial statements ending 31 December 2016 and the appointment of external auditors. At the meeting, ASM Council members for the term 2017-2019 were elected; one Honorary Fellow and 26 New Fellows were also elected alongside the newly appointed Senior Fellow.

The membership of the Academy is made up of eminent scientists, engineers and technologists. Members make vital contributions to the Academy's advisory work by being a part of various committees and adding value to the Academy's programmes. They also serve in panels responsible for awarding scientific and scholarly projects.

Honorary Fellows

To date, six individuals have been recognised as Honorary Fellows and this recognition is made for those who have been actively involved in Malaysia's STI development.

Senior Fellows

Appointment as Senior Fellows is a recognition given to Fellows who have made outstanding individual contributions and exhibited leadership both nationally and internationally. The appointed Senior Fellows are entitled to be addressed as "Academician".

Fellows

The Academy elects Fellows based on their scientific and scholarly achievements. Fellows of the Academy are elected for life through rigorous selection process at the discipline group level and the final election process takes place during the Annual General Meeting.

Recognising the equally important role of social sciences in national growth, the Academy added two new discipline groups: Information Technology and Computer Sciences as well as Social Sciences and Humanities.

The new Fellows and Senior Fellows were conferred during a ceremony held on 2 November 2017.

2017 Senior Fellow

ASM conferred Academician Tan Sri Ir Dr Ahmad Tajuddin Ali FASc, in recognition of his leadership and perseverance in strengthening the field of science, engineering and technology through strong collaboration between industry and scientific fraternity as well as strengthening ASM as a Thought Leader in STI. Currently, the Academy has 28 Senior Fellows.

2017 Fellows

Medical and Health Sciences

Professor Datuk Dr A. Rahman A. Jamal FASc
Professor Dr Lim Shen-Yang FASc
Professor Dr Shamala Devi K.C. Sekaran FASc
Professor Dr Thong Meow Keong FASc
Professor Dr Tunku Kamarul Zaman Tunku Zainol Abidin FASc
Professor Dr Yvonne Lim Ai Lian FASc

Engineering and Computer Sciences

Professor Dr Azmi Mohd Shariff FASc
Professor Dato' Ir Dr Mohd Saleh Jaafar FASc
Dr Leong Kok Hoong FASc
Professor Ir Dr Ramesh Singh FASc
Ir Dr Zuhairi Abd Hamid FASc

Biological, Agricultural and Environmental Sciences

Associate Professor Dr Chan Kok Gan FASc
Professor Dr Mohd Hair Bejo FASc
Emeritus Professor Dr Nor Muhammad Mahadi FASc
Professor Dr Rofina Yasmin Othman FASc
Professor Dr Sheila Nathan FASc

Mathematics, Physics and Earth Sciences
Professor Dr Faidz Abd Rahman FASc
Professor Dr Md. Rahim Sahar FASc
Professor Dr Mohd Salmi Md. Noorani FASc

Chemical Sciences
Brig. General Emeritus Professor Datuk Dr Kamarudin Husin FASc
Datin Dr Sri Nurestri Abd Malek FASc

Science & Technology Development and Industry
Dr Ahmad Kushairi Din FASc
Dato' Dr Jalaluddin Harun FASc
Emeritus Professor Datuk Dr Shad Saleem Faruqi FASc
Emerita Professor Dato' Dr Siti Zuraina Abdul Majid FASc
Dr Zainal Ariffin Ahmad FASc

The newly elected Fellows are encouraged to deliver Fellows Lecture within their field of expertise to the public and scientific community.
2017 Fellows' Lecture
- Quantum and Optical Revolution by Professor Dr C.H Raymond Ooi FASc, Fellow 2015

Associates

As the nation's thought leader, ASM needs a pool of diverse experts that represents the full spectrum of scientific and scholarly endeavours. Hence, the ASM Council appointed Associates, for a two-year term to fulfil the increasing interdisciplinary nature of knowledge demand and represent the ASM at external meetings, contribute and involve in various studies and committees. By end of 2017, the Academy comprised of 44 Associates.



In Memoriam

Professor Dr Sharifah Bee O.A. Abd Hamid FASc

29 April 1958 – 29 January 2017

Professor Dr Sharifah Bee Abd Hamid was a respected leader with a strong proven track record in catalyst and nanomaterial design. Her research, leadership and mentoring have played a leading role in opening worldwide interest in Catalytic Nanomaterials with attractive properties. She has contributed directly and indirectly to the development of Malaysia's knowledge-based economy, manpower development, and scientific advancement in energy as well as water security.

Born in Kedah in 1958, Professor Sharifah Bee graduated with a Bachelor's Degree in Chemistry from Ohio State University, USA in 1982. She continued her studies at UKM, where she obtained her MSc in Catalysis in 1989, then moving to University Namur, Belgium, where she obtained her DSc in Catalysis in 1993. From 1987 to 1994, she was the Head of Catalysis Unit in PETRONAS. She later moved to Leverhulme Centre for Innovative Catalysis, UK, where she played the role of research coordinator for Alkane Activation, as well as Master Program by mixed mode in Catalysis from 1995 until 2000. As a corollary, she was handpicked by the Malaysian higher authority to come back and contribute to nation building. She joined UM in 2001 as an academic staff. Later, she demonstrated her ability to build-up a research laboratory in the field of Catalysis and Nanotechnology called COMBICAT (2001-2006), which then formalised to a research centre called NANOCAT. NANOCAT is an internationally well-recognised centre with the mission to be the world leader in "catalysis and nanoscience" coining sustainability resources and green technology.

Professor Dr Sharifah Bee is an inventor of 16 granted patents in Malaysia, USA, Europe and Japan for innovative methodology in catalyst design and synthesis. She published more than 235 ISI publications with numerous citations. Her research activities spans from fundamental aspects to engineering aspects and to applied technologies, clearly showing the highly interdisciplinary character of Professor Sharifah Bee's research. Her strong record of success in garnering research grants as close to RM80 million from national and international organisations in 15 years is unprecedented.

Based on her innovative thought and scientific knowledge, she has received multiple awards from national universities and research organisations. Internationally, she was awarded Who's Who in the World (2010), Kuwait-Wooden Door (2014), and Elsevier-Atlas (2015). In 2014, she received the TRSM recognition and was elected as an ASM Fellow in 2015.

She strongly believed that the potential of her research collaborations, publications and technology investment outputs would benefit the nation. Her knowledge, passion and vision will be greatly missed.

Al-fatihah.



Professor Dr Sharifah Bee O.A. Abd Hamid FASc
29 April 1958 - 29 January 2017

Giving to Science

Endowment Fund

MOSTI Minister, YB Datuk Seri Panglima Wilfred Madius Tangau launched the ASM Endowment Fund on 13 December 2016. The fund aims to build an independent fund to support programmes and initiatives for the growth of science in the country. The focus areas of the fund are:

1) STEM Education
2) Enculturation of STI

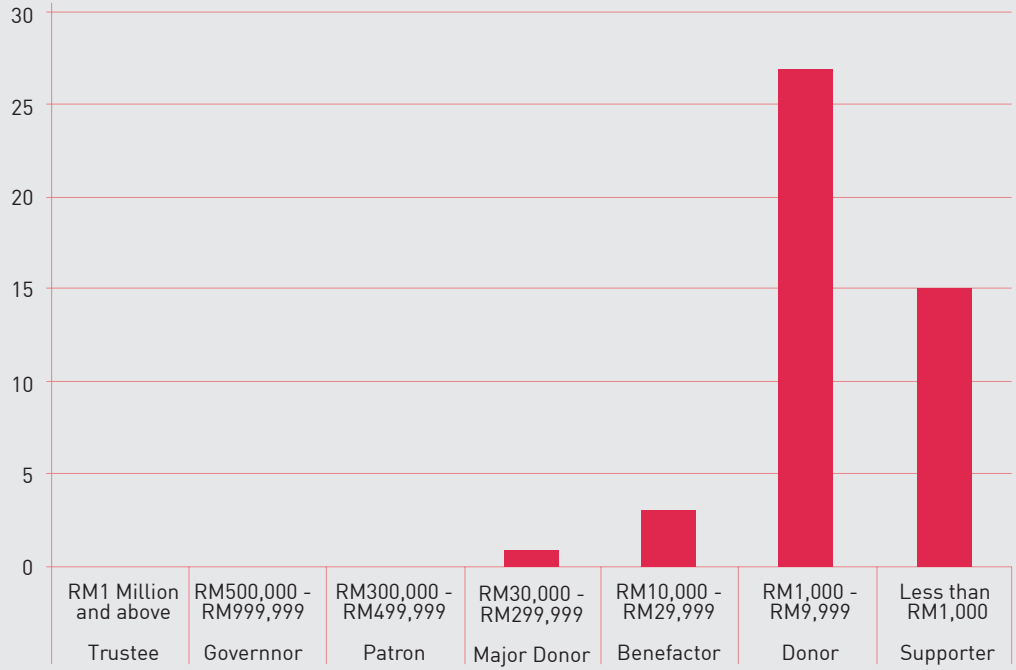
The priorities of the fund are focused towards research and development, awareness and promotion, scholarships, fellowships, awards as well as mentor-mentee programme.

In 2017, the total accumulated fund received from contributors is RM171,856.

ASM Artscience Fund
ASM has initiated the ArtScience Fund scheme that aims to bridge the gap between Arts and Sciences. The projects envisioned under the ArtScience Fund must strengthen the field of artistic research at the interface of Arts and Sciences.

ASM Artscience Prize
In recognition of the amalgamation of Arts and Sciences, the ArtScience Prize was set up as a programme under the ArtScience Fund. The Prize recognises outstanding creations in the nation's fields that integrate the Arts and Sciences. The Prize is open to all Malaysians. The nomination must feature an integration of the Arts and Sciences fields of knowledge. A minimum amount of RM20,000 is to be awarded to one Prize winner.

ASM as the organiser of the Prize would be honoured to connect and get in touch with those who are interested to become collaborators and sponsors for this Prize.



Contributors consist of the following:

ASM Fellows	Private Entities	ASM Staff
39 persons	1 company	6 persons




2015
RM33,276,704
RM36,981,677
RM3,704,973
2016
RM26,811,747
RM32,235,041
RM5,423,294
2017
RM43,700,522
RM42,450,630
RM1,249,892
Income
Expenditure
Surplus
Deficit

Financial Statements

The financial statements of ASM gives an overview of its financial results, financial performance and cash flows.

LAPORAN KETUA AUDIT NEGARA
MENGENAI PENYATA KEWANGAN
AKADEMI SAINS MALAYSIA
BAGI TAHUN BERAKHIR 31 DISEMBER 2017

Laporan Mengenai Penyata Kewangan

Pendapat

Penyata Kewangan Akademi Sains Malaysia telah diaudit oleh wakil saya yang merangkumi Penyata Kedudukan Kewangan pada 31 Disember 2017 dan Penyata Prestasi Kewangan, Penyata Perubahan Dalam Aset Bersih, Penyata Aliran Tunai serta Penyata Perbandingan Bajet Dan Sebenar bagi tahun berakhir pada tarikh tersebut, ringkasan polisi perakaunan yang signifikan dan nota kepada penyata kewangan seperti dinyatakan pada muka surat 3 hingga 19.

Pada pendapat saya, penyata kewangan ini memberikan gambaran yang benar dan saksama mengenai kedudukan kewangan Akademi Sains Malaysia pada 31 Disember 2017 dan prestasi kewangan serta aliran tunai bagi tahun berakhir pada tarikh tersebut selaras dengan piawaian pelaporan kewangan yang diluluskan di Malaysia dan Akta Akademi Sains Malaysia 1994 (Akta 524).

Asas Kepada Pendapat

Saya telah melaksanakan pengauditan berdasarkan Akta Audit 1957 dan *The International Standards of Supreme Audit Institutions*. Tanggungjawab saya dihuraikan selanjutnya di perenggan Tanggungjawab Juruaudit Terhadap Pengauditan Penyata Kewangan dalam laporan ini. Saya percaya bahawa bukti audit yang diperoleh adalah mencukupi dan bersesuaian untuk dijadikan asas kepada pendapat saya.

Kebebasan dan Tanggungjawab Etika Lain

Saya adalah bebas daripada Akademi Sains Malaysia serta telah memenuhi tanggungjawab etika lain berdasarkan *The International Standards of Supreme Audit Institutions*.

Maklumat Lain Selain Daripada Penyata Kewangan dan Laporan Juruaudit Mengenainya

Majlis Akademi Sains Malaysia bertanggungjawab terhadap maklumat lain dalam Laporan Tahunan. Pendapat saya terhadap penyata kewangan Akademi Sains Malaysia tidak meliputi maklumat lain selain daripada Penyata Kewangan dan Laporan Juruaudit mengenainya dan saya tidak menyatakan sebarang bentuk kesimpulan jaminan mengenainya.

Tanggungjawab Majlis Terhadap Penyata Kewangan

Majlis bertanggungjawab terhadap penyediaan penyata kewangan Akademi Sains Malaysia yang memberi gambaran benar dan saksama selaras dengan piawaian pelaporan kewangan yang diluluskan di Malaysia dan Akta Akademi Sains Malaysia 1994 (Akta 524). Majlis juga bertanggungjawab terhadap penetapan kawalan dalaman yang perlu bagi membolehkan penyediaan penyata kewangan Akademi Sains Malaysia yang bebas daripada salah nyata yang ketara, sama ada disebabkan fraud atau kesilapan.

Semasa penyediaan penyata kewangan Akademi Sains Malaysia, Majlis bertanggungjawab untuk menilai keupayaan Akademi Sains Malaysia untuk beroperasi sebagai satu usaha berterusan, mendedahkannya jika berkaitan serta menggunakannya sebagai asas perakaunan.

Tanggungjawab Juruaudit Terhadap Pengauditan Penyata Kewangan

Objektif saya adalah untuk memperoleh keyakinan yang munasabah sama ada penyata kewangan Akademi Sains Malaysia secara keseluruhannya adalah bebas daripada salah nyata yang ketara, sama ada disebabkan fraud atau kesilapan, dan mengeluarkan Laporan Juruaudit yang merangkumi pendapat saya. Jaminan yang munasabah adalah satu tahap jaminan yang tinggi, tetapi bukan satu jaminan bahawa audit yang dijalankan mengikut *The International Standards of Supreme Audit Institutions* akan sentiasa mengesan salah nyata yang ketara apabila ia wujud. Salah nyata boleh wujud daripada fraud atau kesilapan dan dianggap ketara sama ada secara individu atau agregat sekiranya boleh dijangkakan dengan munasabah untuk mempengaruhi keputusan ekonomi yang dibuat oleh pengguna berdasarkan penyata kewangan ini.

Sebagai sebahagian daripada pengauditan mengikut *The International Standards of Supreme Audit Institutions*, saya menggunakan pertimbangan profesional dan mengekalkan keraguan professional sepanjang pengauditan. Saya juga:

a. Mengenal pasti dan menilai risiko salah nyata ketara dalam penyata kewangan Akademi Sains Malaysia, sama ada disebabkan fraud atau kesilapan, merangka dan melaksanakan prosedur audit yang responsif terhadap risiko berkenaan serta mendapatkan bukti audit yang mencukupi dan bersesuaian untuk memberikan asas kepada pendapat saya. Risiko untuk tidak mengesan salah nyata ketara akibat daripada fraud adalah lebih tinggi daripada kesilapan kerana fraud mungkin melibatkan pakatan, pemalsuan, ketinggalan yang disengajakan, representasi yang salah, atau mengatasi kawalan dalaman.

b. Memahami kawalan dalaman yang relevan untuk merangka prosedur audit yang bersesuaian tetapi bukan untuk menyatakan pendapat mengenai keberkesanan kawalan dalaman Akademi Sains Malaysia.

c. Menilai kesesuaian dasar perakaunan yang diguna pakai, kemunasabahan anggaran perakaunan dan pendedahan yang berkaitan oleh Majlis.

d. Membuat kesimpulan terhadap kesesuaian penggunaan asas perakaunan untuk usaha berterusan oleh Majlis dan berdasarkan bukti audit yang diperoleh, sama ada wujudnya ketidakpastian yang ketara berkaitan dengan peristiwa atau keadaan yang mungkin menimbulkan keraguan yang signifikan terhadap keupayaan Akademi Sains Malaysia sebagai satu usaha berterusan. Jika saya membuat kesimpulan bahawa ketidakpastian ketara wujud, saya perlu melaporkan dalam Laporan Juruaudit terhadap pendedahan yang berkaitan dalam penyata kewangan Akademi Sains Malaysia atau, jika pendedahan tersebut tidak mencukupi, pendapat saya akan diubah. Kesimpulan saya dibuat berdasarkan bukti audit yang diperoleh sehingga tarikh Laporan Juruaudit.

e. Menilai sama ada keseluruhan persembahan termasuk pendedahan penyata kewangan Akademi Sains Malaysia memberi gambaran yang saksama.

Saya telah berkomunikasi dengan Majlis, antaranya mengenai skop dan tempoh pengauditan yang dirancang serta penemuan audit yang signifikan termasuk kelemahan kawalan dalaman yang dikenal pasti semasa pengauditan.

Laporan Mengenai Keperluan Perundangan dan Peraturan Lain

Berdasarkan keperluan Akta Akademi Sains Malaysia 1994 (Akta 524), saya juga melaporkan bahawa pada pendapat saya, rekod perakaunan dan rekod lain yang dikehendaki Akta untuk disimpan oleh Akademi Sains Malaysia telah disimpan dengan sempurna menurut peruntukan Akta.

Hal-hal Lain

Laporan ini dibuat untuk Majlis dan bukan untuk tujuan lain. Saya tidak bertanggungjawab terhadap pihak lain bagi kandungan laporan ini.

(ZIRAWATI BINTI HJ. KADIR)
b.p. KETUA AUDIT NEGARA
MALAYSIA

PUTRAJAYA
13 APRIL 2018

Academy of Sciences Malaysia

PENYATA PRESIDEN DAN BENDAHARI KEHORMAT AKADEMI SAINS MALAYSIA

Kami, **PROFESSOR DATUK DR. ASMA BINTI ISMAIL F.A.Sc** dan **DATUK DR. ABDUL RAZAK BIN MOHD ALI F.A.Sc,** yang masing-masing merupakan Presiden dan Bendahari Kehormat AKADEMI SAINS MALAYSIA (ASM) dan juga Ahli-Ahli Majlis, dengan ini menyatakan bahawa, pada pendapat Majlis ASM, Penyata Kedudukan Kewangan, Penyata Prestasi Kewangan, Penyata Perubahan Aset Bersih, Penyata Aliran Tunai dan Penyata Perbandingan Bajet dan Sebenar ASM berserta dengan nota-nota didalamnya adalah disediakan mengikut Piawaian Perakaunan Sektor Awam Malaysia bagi memberikan pandangan yang benar dan saksama mengenai kedudukan kewangan ASM pada 31 Disember 2017 dan hasil kedaliannya serta perubahan kedudukan kewangan bagi tempoh yang berakhir pada tarikh tersebut.

Bagi pihak Majlis

PROFESSOR DATUK DR. ASMA BINTI ISMAIL F.A.Sc
Presiden
Akademi Sains Malaysia

Bagi pihak Majlis

DATUK DR. ABDUL RAZAK BIN MOHD ALI F.A.Sc
Bendahari Kehormat
Akademi Sains Malaysia

KUALA LUMPUR, MALAYSIA

Tarikh : 06 APR 2018

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SAINS UNTUK MASYARAKAT / TRANSFORMASI

Academy of Sciences Malaysia

PENGAKUAN OLEH KETUA PEGAWAI EKSEKUTIF KE ATAS PENGURUSAN KEWANGAN AKADEMI SAINS MALAYSIA

Saya, **HAZAMI BINTI HABIB**, No. K/P 660619-08-5516 pegawai utama yang bertanggungjawab ke atas pengurusan kewangan AKADEMI SAINS MALAYSIA (ASM), dengan ikhlasnya mengakui bahawa Penyata Kedudukan Kewangan, Penyata Prestasi Kewangan, Penyata Perubahan Aset Bersih, Penyata Aliran Tunai dan Penyata Perbandingan Bajet dan Sebenar ASM berserta dengan nota-nota didalamnya, mengikut sebaik-baik pengetahuan dan kepercayaan saya, adalah betul, dan saya membuat ikrar ini dengan sebenarnya mempercayai bahawa ianya adalah benar dan atas kehendak-kehendak Akta Akuan Berkanun 1960.

Sebenarnya dan sesungguhnya diakui oleh penama di atas di Kuala Lumpur, Malaysia

HAZAMI BINTI HABIB

Pada : 06 APR 2018

Di hadapan saya,

PESURUHJAYA SUMPAH
No: W465
Nama: KAPT.(B) JASNI BIN YUSOFF
MALAYSIA

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SAINS UNTUK MASYARAKAT / TRANSFORMASI

STATEMENT OF FINANCIAL POSITION
as at 31 December 2017

	Note	2017 RM	2016 RM As Restated
ASSETS			
Current Assets			
Cash and Cash Equivalents	3	57,528,367	81,200,977
Debtors	4	853,311	1,148,149
Other Current Assets	5	900,354	997,498
Total Current Assets		**59,282,032**	**83,346,624**
Fixed Assets			
Property, Plant and Equipment	6	376,716	550,242
Total Fixed Assets		**376,716**	**550,242**
Total Assets		**59,658,748**	**83,896,866**
Liabilities			
Current Liabilities			
Creditors	7	7,980,691	11,187,075
Employee Benefits	8	153,246	-
Total Current Liabilities		**8,133,937**	**11,187,075**
Long Term Liabilities			
Deferred Grant	9	48,499,882	71,022,676
Employee Benefits	8	225,139	190,311
Total Long Term Liabilities		**48,725,021**	**71,212,987**
Total Liabilities		**56,858,958**	**82,400,062**
Net Assets		**2,799,790**	**1,496,804**
Net Assets/Equity			
Operational Fund	10	1,652,074	403,004
Endowment Fund	11	171,856	60,100
Project Fund	12	920,240	977,050
Capital Reserve Fund	13	55,620	56,650
Total Net Assets/Equity		**2,799,790**	**1,496,804**

STATEMENT OF FINANCIAL PERFORMANCE
for year ended 31 December 2017

	Note	2017 RM	2016 RM As Restated
INCOME			
Non-Exchangeable Transactions	14	42,811,772	25,469,243
Exchangeable Transactions	15	299,485	310,199
Other Income	16	589,265	1,032,305
Total Income		**43,700,522**	**26,811,747**
EXPENSES			
Emoluments		602,760	713,763
Services and Supplies		6,197,905	5,482,648
Contribution and Fixed Charges		3,344,786	4,679,439
Employee Benefits	8	188,074	155,936
Others Expenses		282,643	171,403
Doubtful Debts		19,472	-
Depreciation of property, plant and equipment	6	198,410	216,504
Science Programme Expenses		31,616,580	20,815,348
Total Expenses		**42,450,630**	**32,235,041**
Surplus /(Deficit) for the year		**1,249,892**	**(5,423,294)**

STATEMENT OF CHANGES IN NET ASSETS

for year ended 31 December 2017

	Note	Operational Fund	Endowment Fund	Project Funds	Capital Reserve Fund	Total
		RM	RM	RM	RM	RM
Balance as at 1 January 2016 - As stated Earlier		5,826,298	50,000	1,090,633	57,680	7,024,611
Income in 2016		-	-	-	-	-
Amortization of Development Grants		-	-	-	-	-
Lease payments					(1,030)	(1,030)
Deficit for the year		(5,413,194)	-	-	-	(5,413,194)
Expenses for 2016		-	-	(113,583)	-	(113,583)
Balance as at 31 December 2016 - As stated Earlier		413,104	50,000	977,050	56,650	1,496,804
Adjustments		(10,100)	10,100	-	-	-
Balance as at 31 December 2016 - As restated		403,004	60,100	977,050	56,650	1,496,804
Income in 2017		-	111,756	-	-	111,756
Lease payments		-	-	-	(1,030)	(1,030)
Surplus for the year		1,249,892	-	-	-	1,249,892
Expenses for 2017		-	-	(56,810)	-	(56,810)
Adjustment		(822)	-	-	-	(822)
Balance as at 31 December 2017		**1,652,074**	**171,856**	**920,240**	**55,620**	**2,799,790**

CASH FLOW STATEMENT
for year ended 31 December 2017

	2017 RM	2016 RM As Restated
CASH FLOWS FROM OPERATING ACTIVITIES		
Surplus / (Deficit) for the year	1,249,892	(5,423,294)
Adjustments:		
Depreciation of property, plant and equipment	198,410	222,222
Interest from Short Term Deposits, Fixed Deposits & Investments	(299,485)	(310,199)
Adjustments from Property and Equipment Write off	-	(5,718)
Profit of disposal	-	(4,800)
GST adjustment	(5,053)	-
Fixed Deposit Interest adjustment	4,231	-
Surplus / (Deficit) before changes of working capital	1,147,995	(5,521,789)
Deficit / (Surplus) In Receivables	391,982	(1,314,013)
(Deficit)/ Surplus In Payables	(3,018,310)	2,717,566
Net cash from Operating Activities	**(1,478,333)**	**(4,118,236)**
CASH FLOWS FROM INVESTMENT ACTIVITIES		
Income from sale of Property, Plant & Equipment	-	5,000
Purchase of Property and Equipment	(24,884)	(41,297)
Interest Received	299,485	310,199
Net cash from Investment Activities	**274,601**	**273,902**
CASH FLOWS FROM FINANCING ACTIVITIES		
Project Fund	(56,810)	(113,583)
Capital Reserve Fund	(1,030)	(1,030)
Endowment Fund	111,756	10,100
Deferred Grant	(22,522,794)	(3,044,475)
Net cash used in Financing Activities	**(22,468,878)**	**(3,148,988)**
(DECREASE) IN CASH AND CASH EQUIVALENTS	(23,672,610)	(6,993,322)
CASH AND CASH EQUIVALENTS AT BEGINNING OF THE FINANCIAL YEAR	81,200,977	88,194,299
CASH AND CASH EQUIVALENTS AT END OF THE FINANCIAL YEAR	57,528,367	81,200,977
CASH AND CASH EQUIVALENTS		
Fixed Deposits	56,779,778	79,006,012
Cash and Bank Balances	748,589	2,194,965
	57,528,367	**81,200,977**

STATEMENT OF COMPARISON BUDGET AND ACTUAL

for year ended 31 December 2017

	Budget Amount		Actual Amount	Budget Variance
	Actual RM	Final RM	RM	RM
RECEIPTS				
Government Grant	11,471,239	13,106,990	11,584,900	(1,522,090)
Interest Income	-	466,100	299,485	(166,615)
External contributions	1,357,092	2,718,891	9,730,512	7,011,621
Other Income	-	600,000	589,265	(10,735)
	12,828,331	**16,891,981**	**22,204,162**	**5,312,181**
PAYMENTS				
Emoluments	4,852,187	5,252,187	602,760	(4,649,427)
Services and supplies	7,630,019	9,105,493	17,245,844	8,140,351
Assets	10,500	-	24,884	24,884
Contribution and Fixed Charges	20,000	2,500,000	3,344,786	844,786
Employee Benefits / Rewards	-	-	-	-
Others Expenses	315,625	34,300	282,643	248,343
	12,828,331	**16,891,981**	**21,500,917**	**4,608,936**
NET RECEIVABLES / (PAYMENT)	**(0)**	**0**	**703,245**	**703,245**

NOTES TO THE FINANCIAL STATEMENTS
for the year ended on 31 December 2017

1. GENERAL INFORMATION

a) Main Activity

The Academy of Sciences Malaysia (ASM) was established under the 524 Act. The main objective of ASM is to pursue, encourage and enhance excellence in the fields of science, engineering and technology, for the development of the nation and benefit of mankind.

b) This Financial Statements are presented in Malaysian Ringgit currency (MYR).

c) ASM Financial Statements for the year ended 31 December 2017 was presented and approved by ASM Council on 6 April 2018.

2. ACCOUNTING POLICIES

a) Basis of Preparation of Financial Statements

The Financial Statements of ASM is prepared under the conventional historical cost complying with the Malaysian Public Sector Accounting Standards (MPSAS) issued by the Accountant General's Department.

This Financial Statements is the second Financial Statements prepared based on MPSAS. ASM has adopted MPSAS before the actual effective date as stated in Note 2(b) of the Financial Statements. Previously, ASM Financial Statements was prepared based on Public Entity Reporting Standards (PERS).

b) Early adoption of MPSAS

ASM has adopted the following MPSAS for the Financial Statements for the year ended 31 December 2016. The actual effective date is:-.

			Effective Date
MPSAS 1	-	Presentation of Financial Statements	1 January 2017
MPSAS 2	-	Cashflow Statements	1 January 2017
MPSAS 3	-	Accounting policies, changes in accounting, estimates and errors	1 January 2017 1 January 2017
MPSAS 17	-	Property, Plant and Equipment Provisions,	1 January 2017
MPSAS 19	-	Contingent Liabilities and Contingent Assets	
MPSAS 20	-	Related Party Disclosures	1 January 2017
MPSAS 24	-	Presentation of Budget Information in Financial Statements	1 January 2017
MPSAS 25	-	Employee Benefits.	1 January 2017
MPSAS 30	-	Financial Instruments: Disclosure	1 January 2017
MPSAS 33	-	First-time Adoption of Accrual Basis MPSAS	1 January 2017

Income Recognition

Income from Non Exchangeable Business Transactions

Non exchangeable business transactions will be recognised as an asset when there is future economic benefits or potential services that is predicted to be channelled to the entity and it is a result from a historical event as well as the true value of asset can be exchanged reasonably. Non exchangeable business transactions recognised as asset shall be recognised as income except for liability that is also being recognised for the same transaction as delayed transaction in the Financial Statements. When the obligations towards liabilities are met, the entity shall reduce the liabilities amount and recognise the income amount as equivalent to the amount reduced.

i. Government Grants which are not subjected to a specific future performance terms such as the operating grant are recognised as income in the Financial Statements.

ii. Funding received for programmes/ projects with duration of less than a year is recognised as income within the same year. Whereas, funding for implementing development programme/ projects more than a year, the receivables will be debited into the respective Project Fund and the access of the receivable from the expenditures is recognised as income for the respective year when the project term or durations expires. Vice versa, if there is additional expenses beyond the amount received, then this amount shall be recognised as ASM expenses.

iii. Deferred Grant is access of income or allocation received after expenses made within the respective year, which is then, brought forward to the following year to bear the expenses of program/ project in the following year (programme/ project with duration more than one financial year).

Income from Exchangeable Transactions

Income from exchangeable transactions are recognized when there are possibilities for future economy or potential services which may be channelled to the entity and the benefits can be measured and realized.

i. Income derived from interest and other investment

Income derived from fixed deposits is recognized based on current exchange rates taking into considerations of effective return of investment. The return of investment on asset is the profit rate required to discount the future incoming cash flow expectation throughout the life expectancy of the respective asset to be equalized with the brought forward value of the asset.

Income derived from interest gained from conventional deposit and investment are recognised on the accrual basis.

Other Revenue/ Income

i. Income from rental is recognized when it is received in accordance with the rental agreement.

ii. Other incomes are recognized when services are provided.

c) Property, Plant and Equipment

Property, Plant and Equipment are stated at a cost less than accumulated depreciation.

Depreciation for Property, Plant and Equipment are calculated based on a straight line basis over their accumulated useful life at the following rates:-

Land (leasehold)	**According to lease period**
Office Renovation	10%
Motor Vehicles	20%
Office Equipment	20%
Computers	20%

Lease land owned valuated at RM 61,800.00 was obtained on 21 June 2012 with lease period of 60 years and yearly payment of RM 1,030.00 is required to be paid on 7th January of each year.

Property, Plants and Equipment listed in the inventory are in good conditions with value of RM1,000 or more per unit.

Full depreciation is subjected on the same year of purchase of the Real Estate or equipment. Net balance of each Real Estate and equipment shall not be valued less than RM1.00.

d) Impairment of Property and Equipment

The net book value of ASM property and equipment is analysed on the date which account is prepared to determine the existence of impairment on the property and equipment. If there are evidences of impairment which could be recouped and the value is lesser than the net book value, then the net book value of the respective real estate or equipment will be reduced to the value which the property or equipment could be obtained again.

The amount (known as the impairment value of property and equipment) will be recorded as expenditure and in the profit and loss statement of the year.

e) Financial Instrument

Financial Instrument stated in the Financial Statements include fixed deposits, cash in hand and bank balances, debtors and creditors. The accepted financial instruments are stated in the Financial Statements accounting policies separately.

i. Receivables

Receivables are stated at estimated realisable value. Bad debts are written off when they are identified. Doubtful debts are provided for unpaid debts over a period of three years.

ii. Payables

Payables are stated at cost which is the fair value of the payments and services rendered.

iii. Objectives and Financial Risk Management Policies

The ASM objectives and Financial Risk Management Policies is to ensure sufficient or adequate financial resources to carry out its operational development, while managing its financial risks including credit risk, interest rate risk, non-performing loan risk, liquidity and cash flow risks.

iv. Credit Risks

ASM credit risks are from receivables. These accounts are monitored from time to time via existing internal procedures and actions are taken against outstanding debts.

v. Interest Rate Risks

ASM maintains a fixed cash and fixed deposits to meet working capital requirements. The risk exists due to fluctuations of interest rate in the market.

vi. Liquidity and Cash Flow Risks

ASM manages its payable and receivable transactions and collection of debts from clients that has reached the maturity period meticulously to maintain its liquidity and cash flow.

f) Cash and Cash Equivalents

Cash and Cash Equivalents comprise of cash in hand, bank balances and fixed deposits.

g) Employee Benefits

i. Short Term Employee Benefits

ASM as a Federal Statutory Body is governed by employment regulations set by the Public Service Department (PSD). The short-term employee benefits outlined by the PSD are basic salaries, fixed allowances, variable allowances, and various leaves including annual leave, medical benefits and insurance.

Wages, salaries, allowances and statutory contributions are recognized as expenditure of the year in which the services rendered by the respective ASM employee.

Statutory Contribution Plan

ASM contributes to the Employees' Provident Fund (EPF) and the Employees' Retirement Fund for its employees in accordance with the scheme chosen. The contributions are recognized as expenditure in the Income Statements when incurred. ASM contributes 17.5% for pension scheme, 11% for Employees' Provident Fund (EPF) and 4% for Employees' Provident Fund (EPF) for employees of 60 years of age and above on a monthly basis.

The contributions are recognized as expenditure in the Income Statements when incurred.

h) Employee Long-Term Benefits

Permanent Employees

For ASM permanent employees, whether they choosed pension scheme or the EPF will receive a reimbursement for annual leave (GCR) upon their retirement. This reward is based on the Service Circular issued by the Public Service Department and adopted by ASM.

Reimbursement of annual leave (GCR) is calculated based on the following formula:

1/30 x Number of leave up to a maximum of 150 days x salary + fixed final remuneration received

(subject to maximum limit of 150 days).

Contract Employees
ASM provides gratuity payment for contract employees. Gratuity is paid upon completion of employment contract satisfactory. The gratuity is one month salary (excluding the allowances) for each year of service. Gratuity is calculated based on the following formula:

Salary (excluding allowance) x month of service / 12

The maximum limit of reimbursement of annual leave for contract employees is six days.

In addition, ASM uses circulars relevant to employees' benefits or rewards which are adopted by ASM Council, including the Public Service circulars from time to time.

i) Taxation
ASM is exempted from income tax under Section 44 (6) of the Income Tax Act 1967, pursuant to a tax exemption letter dated 2 March 1996 from the Inland Revenue Board of Malaysia (LHDN) with LHDN's reference number 01/35/42/51/179-6.4357 obtained from Director General of Inland Revenue Board of Malaysia.

j) Goods and Services Tax (GST)
The implementation of Goods and Services Tax took effect on 1 April 2015. ASM registered with the Royal Malaysian Customs Department on 29 December 2014 with reference number 001836703744.

k) Budget Information
The annual budget is prepared on a cash basis. As the Financial Statements are prepared on an accrual basis, a Budget and Actual Comparison Statement is disclosed separately. The statement is prepared using the basis of annual budget prepared and only refers to operational budget

The budget tabled is on behalf of ASM only. This budget has been approved by ASM Council.

3. CASH AND CASH EQUIVALENTS

	2017 RM	2016 RM
ASM		
Fixed Deposit	9,531,034	7,179,315
Short Term Deposit	109,515	504,544
Cash and bank balances	366,933	1,940,080
	10,007,482	9,623,939
Research, Development & Commercialization Fund (R,D & C)		
Fixed Deposit	47,139,229	71,322,153
Cash and bank balances	381,656	254,885
	57,528,367	81,200,977

4. DEBTORS

	2017 RM	2016 RM
Debtors	853,311	1,148,149
	853,311	1,148,149

5. OTHER CURRENT ASSETS

	2017 RM	2016 RM
Advances	22,668	9
Receivables	942,591	1,042,922
Less: Provision for Doubtful Debts	(64,905)	(45,433)
	900,354	997,498

6. PROPERTY, PLANT AND EQUIPMENT

	Office Renovation	Vehicles	Office Equipment	Computer	Land Leasehold	2017	2016
	RM	RM	RM	RM	RM	RM	RM
COST							
As at 01 January 2017	3,732,914	477,148	888,459	460,049	61,800	5,620,370	5,751,673
Additional				24,884		24,884	41,297
Disposal / Classification						-	(172,600)
As at 31 December 2017	3,732,914	477,148	888,459	484,933	61,800	5,645,254	5,620,370
ACCUMULATED DEPRECIATION							
As at 01 January 2017	3,610,160	408,378	698,795	347,641	5,154	5,070,128	5,026,024
Additional	20,651	31,738	96,954	48,035	1,032	198,410	222,222
Disposal / Classification						-	(178,118)
As at 31 December 2017	3,630,811	440,116	795,749	395,676	6,186	5,268,538	5,070,128
BOOK VALUE							
As at 31 December 2017	102,103	37,032	92,710	89,257	55,614	376,716	-
As at 31 December 2016	122,754	68,770	189,664	112,408	56,646	-	550,242
Depreciation for the year end 31 December 2016	24,068	32,854	106,104	58,164	1,032	-	222,222

7. CREDITORS

	2017 RM	2016 RM
General Creditors	1,379,742	1,452,654
Audit Fees	7,470	7,467
	1,387,212	1,460,121
Interest of R,D & C	6,593,479	9,726,954
	7,980,691	11,187,075

Interest of *Research, Development & Commercialisation Fund (R,D&C)* are the derived from R,D&C provisions deposited in fixed deposits which are payable to the government.

8. EMPLOYEE BENEFITS

	2017 RM	2016 RM
Current liabilities	153,246	-
Non-current liabilities	225,139	190,311

Provision of employees benefits has been allocated RM378,385.00 in the following years.

	RM	RM
Year 2014 and previous year	30,940	30,940
Year 2015	3,435	3,435
Year 2016	155,936	155,936
Year 2017	188,074	-
	378,385	190,311

9. DEFERRED GRANT

Programs in implementation are as follows:-

	2017 RM	2016 RM
Pameran Islam	-	1,455,000
Brain Gain	-	1,540,814
Study on Rare Earth	207,707	207,707
Asean Science Journal	28,201	31,784
MOSTI Social Innovation (MSI) - Duta Sains	211,305	2,746
MOSTI Commercialisation Conference Exhibition (MCCE)	2,000	2,000
Project Monitoring Team R,D&C	66,789	199,676
DSTIN Flagship	486,400	1,020,000
Bibliometrik	48,000	48,000
Newton Ungku Omar Fund (NUOF)	3,490,490	4,893,387
Top STEM Talent Malaysia (TSTM)	750,000	-
NPSTI	848,305	-
STI Master Plan	764,150	-
Science Outlook	516,468	-
	7,419,815	9,401,114
R,D&C	41,080,067	61,621,562
	48,499,882	71,022,676

The Deferred Grant is a provision for the 'special programme' entrusted to ASM by MOSTI which covers a period of more than one accounting period.

10. OPERATIONAL FUND

Operational Fund is as follows:-

	2017 RM	2016 RM As Restated
As at 01 January	403,004	5,826,298
Surplus/(Deficit) for the year	1,249,892	(5,413,194)
Adjustment	(822)	(10,100)
As at 31 December	1,652,074	403,004

11. ENDOWMENT FUND

The Endowment Fund is as follows:-

	2017 RM	2016 RM As Restated
As at 01 January	60,100	50,000
Current year receivables	111,756	-
Current year expenses	-	-
Adjustment	-	(10,100)
As at 31 December	171,856	60,100

The Endowment Fund is established to receive contributions or donations for ASM activities.

12. PROJECT FUND

The Project Fund is as follows:-

	2017 RM	2016 RM
As at 01 January	977,050	1,090,633
Current year expenses	(56,810)	(113,583)
As at 31 December	920,240	977,050

Projects included in the Project Fund are the Tenth Malaysia Plan (10MP), the Ninth Malaysia (9MP) and the Eight Malaysia Plan (RMK-8) Projects.

	2017 RM	2016 RM
Malaysian Antarctica Research Program and International Programme	1,016	1,016
Scientific Expedition	96,898	96,898
National Nobel Laureate Programme and Scientific Advancement Grant Allocation (SAGA)	561	561
Publications	1,248	1,248
Science Education and National Science Quiz	711,883	737,115
S&T Management Training Programme	95,568	127,146
Mega Science Framework II	13,066	13,066
Balance as at 31 December	920,240	977,050

13. CAPITAL RESERVE FUND

The Capital Reserve Fund is as follows:-

	2017 RM	2016 RM
Balance as at 1 Jan 2017	56,650	57,680
Leasehold Land	-	-
	56,650	57,680
Deduct:		
Lease Payment	1,030	1,030
Balance as at 31 December 2016	55,620	56,650

The Capital Reserve Fund represents the cost of leasehold land acquired on 21 June 2012 with a lease term of 60 years. The lease payment is made annually at a rate of of RM1,030.00.

14. NON EXCHANGEABLE TRANSACTION

	2017 RM	2016 RM
Operating Grant	11,584,900	7,000,000
Development Grant	31,226,872	18,469,243
	42,811,772	25,469,243

15. EXCHANGEABLE TRANSACTION

	2017 RM	2016 RM
Current Account Interest	5,561	9,779
Fixed Deposit Interest	293,924	300,420
	299,485	310,199

16. OTHER INCOME

	2017 RM	2016 RM
Other Receivables	70,452	257,235
Registration Fee for Training	123,813	182,960
Program Management Fee	330,000	532,110
Rental	65,000	60,000
	589,265	1,032,305

17. EMPLOYEES INFORMATION

The total number of ASM employees on 31 December 2017 is 71 (31.12.2016: 70).

18. RELATED PARTY DISCLOSURES

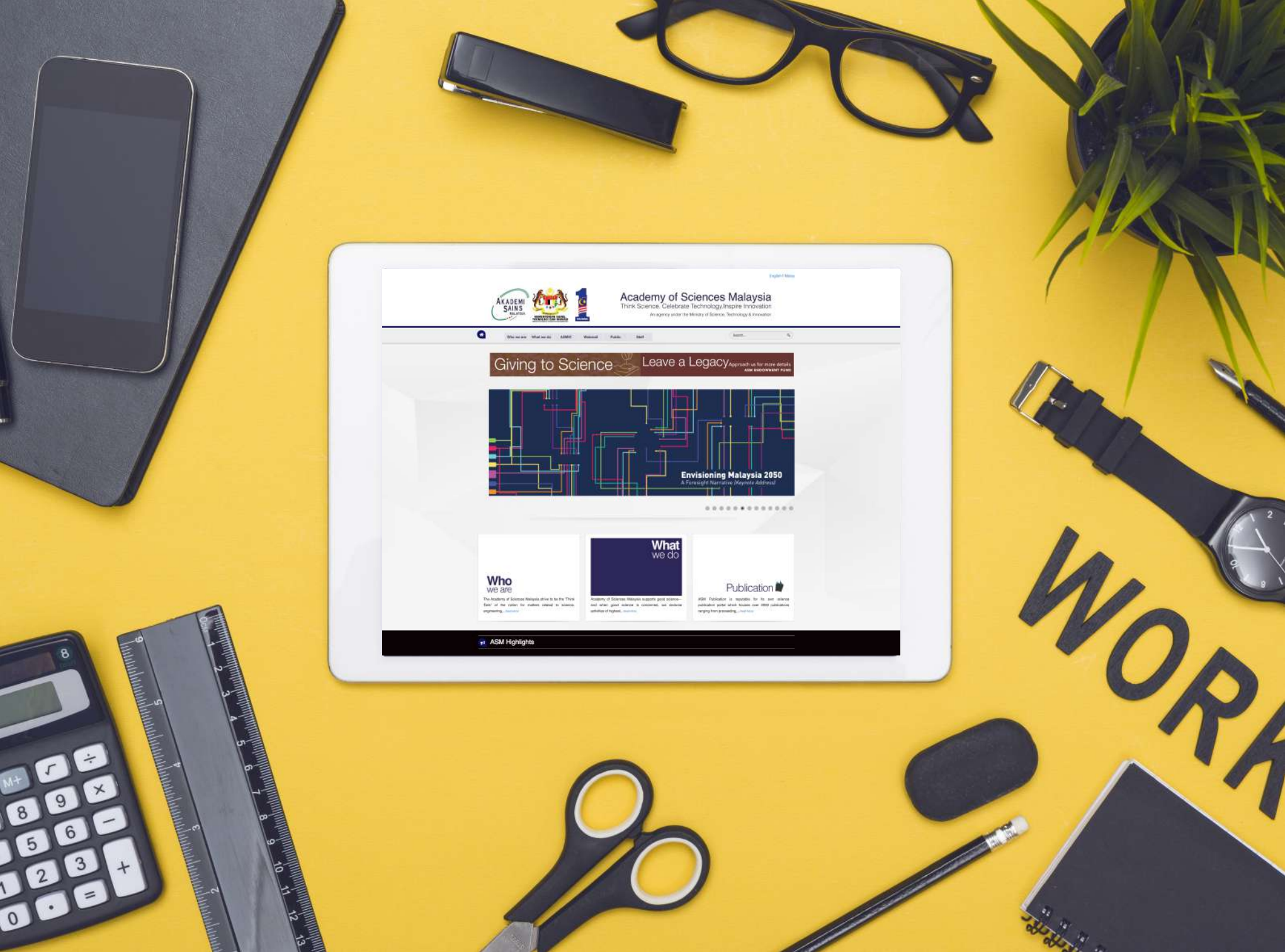
	2017 RM	2016 RM
ASM Council Member		
Total ASM Council Member Allowances	37,500	40,000
Others Key Management Personnel		
Short-term benefits	200,410	201,523

Council members include the President and other members of the Council. Included in other key management personnel is the Chief Executive Officer who has the authority and responsibility for planning, directing and controlling the activities of ASM either directly or indirectly.

19. COMPARATIVE FIGURES

During the financial year, ASM reclassified the following comparatives to comply with the current financial year's presentation:

	As Stated Earlier 2016 RM	As Restated 2016 RM
Statement of Financial Position		
NET ASSET/EQUITY		
Operational Funds	413,104	402,182
Endowment Fund	50,000	60,100
Financial Performance Statement		
INCOME		
Non Exchangeable Transaction	25,479,343	25,469,243


Academy of Sciences Malaysia
Think Science. Celebrate Technology.Inspire Innovation
Giving to Science
Leave a Legacy
Envisioning Malaysia 2050
A Foresight Narrative (Keynote Address)
Who we are
What we do
Publication
ASM Highlights

Tell Me More

Get to know the driving force of ASM and its activities.

Council Members 2017-2018

President
Professor Datuk
Dr Asma Ismail FASc
2017 – 2019
Medical and Health
Sciences



Vice-president
YM Tengku Datuk
Dr Mohd Azzman
Shariffadeen FASc
2016 - 2018
Engineering
and Computer
Sciences



Secretary General
Academician Tan Sri
Dato' Ir
Ts Ahmad Zaidee
Laidin FASc
2017 – 2019
Engineering
and Computer
Sciences



Honorary Treasurer
Datuk Dr Abdul Razak
Mohd Ali FASc
2017 - 2019
Science & Technology
Development and
Industry





Professor Dato' Ir
Dr A. Bakar Jaafar FASc
2016 - 2018
Engineering and Computer Sciences



Professor Ir Dr Ahmad Faizal
Mohd Zain FASc
2016 - 2018
Engineering and Computer Sciences



Datuk Ir (Dr)
Abdul Rahim Hashim FASc
2017 – 2019
Engineering and Computer Sciences



Professor Dato' Dr Awg Bulgiba
Awg Mahmud FASc
2016 - 2018
Medical and Health Sciences



Ir Ts Choo Kok Beng FASc
2017 - 2019
Science & Technology Development and Industry



Academician Professor Dato'
Dr Khairul Anuar Abdullah FASc
2017 – 2019
Medical and Health Sciences



Professor Datuk
Dr Halimaton Hamdan FASc
2017 - 2019
Chemical Sciences



Professor Datin Paduka
Dr Khatijah Yusoff FASc
2016 - 2018
Biological, Agricultural and Environmental Sciences



Academician Distinguished
Professor Datuk
Dr Looi Lai Meng FASc
2017 – 2019
Medical and Health Sciences



Academician Emerita Professor
Datuk Dr Mazlan Othman FASc
2017 – 2019
Science & Technology Development and Industry



Professor Dato'
Dr Rahmah Mohamed FASc
2016 - 2018
Biological, Agricultural and Environmental Sciences



Datuk Fadilah Baharin FASc
2017 – 2019
Science & Technology Development and Industry

ASM Representative in National Committee

National Science Council
Professor Datuk Dr Asma Ismail FASc (Member)
President, ASM

ASM Discipline Groups

Medical and Health Sciences
Academician Professor Dato' Dr Khairul Anuar Abdullah FASc (Chairperson)
Professor Datuk Dr Awg Bulgiba Awg Mahmud FASc (Alternate Chair)

Engineering and Computer Sciences
Professor Dato' Ir Dr A. Bakar Jaafar FASc (Chairperson)
Datuk Ir (Dr) Abdul Rahim Hashim FASc (Alternate Chair)

Biological, Agricultural and Environmental Sciences
Dr Helen Nair FASc (Chairperson)
Professor Dato' Dr Mohamed Shariff Mohamed Din FASc (Alternate Chair)

Mathematics, Physics and Earth Sciences
Academician Professor Dato' Ir Dr Chuah Hean Teik FASc (Chairperson)
Professor Dato' Dr Rosihan Mohamed
Ali FASc (Alternate Chair)

Chemical Sciences
Emeritus Professor Dato' Dr Laily Din FASc (Chairperson)
Professor Dr Yang Farina Abdul Aziz FASc (Alternate Chair)

Science & Technology Development and Industry
Dato' (Dr) Ir Andy Seo Kian Haw FASc (Chairperson)
Ir Ts Choo Kok Beng FASc (Alternate Chair)

Working Committees & Task Force

ASM Governance Working Committees

Finance and Investment Committee
Datuk Dr Abdul Razak Mohd Ali FASc
(Honorary Treasurer)

Audit Committee
Datuk Dr Mohd Basri Wahid FASc

Membership Committee
YM Tengku Datuk Dr Mohd Azzman Shariffadeen FASc
(Vice-President)

Publication Committee
Academician Tan Sri Dato' Ir Ts Ahmad Zaidee Laidin FASc
(Secretary General)

ASM Science Journal Editorial Board
Professor Datin Paduka Dr Khatijah Mohd Yusoff FASc

ASEAN Journal on Science & Technology for Development (ASEAN J.Sc. Technol. Dev.) Editorial Board
Emeritus Professor Dato' Dr Md. Ikram Mohd Said FASc

ASM Building Committee
Datuk Dr Abdul Razak Mohd Ali FASc
(Honorary Treasurer)

Task Force on ASM Act Review
Academician Tan Sri Dato' Ir Ts Ahmad Zaidee Laidin FASc

ASM Endowment Fund Committee
Datuk Dr Mohinder Singh S. Sucha Singh FASc

Disciplinary Committee for the Top Management Group
Academician Tan Sri Dato' Ir Ts Ahmad Zaidee Laidin FASc
(Secretary General)

Disciplinary Appeal Committee for the Top Management Group
YM Tengku Datuk Dr Mohd Azzman Shariffadeen FASc
(Vice-President)

Investigation Committee
Professor Dato' Dr Roslan Abd-Shukor FASc

ASM Chapters

Northern Chapter
Professor Dr Abdul Rahman Mohamed FASc

Southern Chapter
Professor Datuk Dr Ahmad Fauzi Ismail FASc

ASM Programme Committees

Science Awards Steering Committee
Academician Tan Sri Dato'
Ir Ts Ahmad Zaidee Laidin FASc
(Secretary General)

Task Force on ArtScience Prize
Ar Hijjas Kasturi FASc

Flagship Project Monitoring Team
Emeritus Professor Dato'
Dr Md. Ikram Mohd Said FASc

MAKNA Cancer Research Award Vetting Panel
Professor Datin Paduka
Dr Khatijah Mohd Yusoff FASc

Top Research Scientist Malaysia (TRSM) Selection Panel
Academician Tan Sri Datuk
Dr Yusof Basiron FASc

Top Research Scientists Malaysia (TRSM) Monitoring Committee
Professor Dr Noorsaadah Abd Rahman FASc

Dr Ranjeet Bhagwan Singh Medical Research Trust Fund Programme Steering Committee
Academician Distinguished Professor Datuk
Dr Looi Lai Meng FASc

YSN Membership Selection Panel
YM Tengku Datuk Dr Mohd Azzman
Shariffadeen FASc
(Vice-President)

Newton-Ungku Omar Fund (NUOF) Committee for Programmes with British Council
Emeritus Professor
Dato' Seri Mashkuri Yaacob FASc

Newton-Ungku Omar Fund (NUOF) Committee for Programmes with Royal Society, British Academy and Royal Academy of Engineering
Academician Tan Sri Dato'
Ir Ts Ahmad Zaidee Laidin FASc

Newton-Ungku Omar Fund (NUOF) Committee for Programmes with Medical Research Council UK
Academician Distinguished Professor Datuk
Dr Looi Lai Meng FASc

S&T and Industry Linkages Committee
Ir Ts Choo Kok Beng FASc

ASM Science Education Committee
Academician Datuk Dr Abdul Aziz S.A. Kadir FASc
Professor Dr Ahmad Ismail FASc
(Alternate Chair)

Joint-Steering Committee on National Centre for Particle Physics (NCPP)
Emeritus Professor Dato'
Dr Muhammad Yahaya FASc

Joint-Steering Committee on National Centre for Nanomite
Professor Datuk Dr Halimaton Hamdan FASc

Task Force for the Establishment of National Centre for Material Sciences
Academician Emeritus Professor Dato' Dr V.G. Kumar Das Govinda Panicker FASc

Task Force for the Establishment of National Centre for Scientific Enterprise and Quran
Professor Tan Sri Dato'
(Dr) Dzulkifli Abdul Razak FASc

Task Force for the Establishment of Medical and Health Research Council
Academician Distinguished Professor Datuk
Dr Looi Lai Meng FASc

National Science Challenge Steering Committee
Professor Dr Yang Farina Abdul Aziz FASc
Professor Dr Noorsaadah Abd Rahman FASc

Imbak Canyon Rainforest Research & Training Programme Task Force
Academician Tan Sri Dr Salleh Mohd Nor FASc

Duta Sains Steering Committee
Professor Datin Paduka
Dr Khatijah Mohd Yusoff FASc

Malaysian Technical Corporation Programme (MTCP) Organising Committee
Emeritus Professor Dato'
Dr Ibrahim Komoo FASc

Joint Steering Committee on Science Media Centre Malaysia (SMCM)
Professor Dr Mohd Basyaruddin
Abdul Rahman FASc

ASM Studies Committees

Science, Technology and Innovation Policy Advisory Committee(STIPAC)
Professor Datuk Dr Asma Ismail FASc
(President)

Science Policy Sub-Committee under STIPAC
YM Tengku Datuk Dr Mohd Azzman Shariffadeen FASc
(Vice-President)

Committee on Water
Dr Ir Salmah Zakaria FASc

Task Force on Water and Agriculture
Datuk Ir Mohd Adnan Mohd Nor FASc

Task Force on Water Policy and Legislation – Adaptive Capacity
Professor Dr Joy Jacqueline Pereira FASc

Task Force on Integrated Urban Water Management
Dr Low Kwai Sim FASc

Task Force on Socio-economic Impacts of El Nino in Malaysia
Professor Dr Low Pak Sum FASc

Disaster Risk Reduction (DRR) Research Alliance Committee
Professor Dr Joy Jacqueline Pereira FASc

Science Outlook Committee
Professor Datuk Dr Halimaton Hamdan FASc

Working Group on Emerging Science, Engineering and Technology (ESET)
Datuk Ir (Dr) Abdul Rahim Hashim FASc

Special Interest Group on Precision Medicine Initiative for Malaysia
Professor Datuk Dr A. Rahman A. Jamal FASc

Joint Task Force on Industry 4.0 National Policy Write-Up
Academician Tan Sri Datuk Ir Dr Ahmad Tajuddin Ali FASc

Working Group on Erosion and Sedimentation
Datuk Dr Abdul Razak Mohd Ali FASc

Task Force on Local and Transboundary Haze
Professor Dato' Ir Dr A. Bakar Jaafar FASc

Task Force on Solutions for Haze Pollution in Southeast Asia
Professor Dato' Ir Dr A. Bakar Jaafar FASc

Task Force on Cybersecurity
Dr Mohamed Awang Lah FASc

Task Force on Sustainable Mining
Professor Dato' Dr Azizan Abu Samah FASc &
Academician Datuk Fateh Chand FASc (Co-chair)

Envisioning Malaysia 2050' Foresight Initiative
YM Tengku Datuk Dr Mohd Azzman Shariffadeen FASc
Academician Professor Emerita Datuk Dr Mazlan Othman FASc (Co-chair)

STI Master Plan 2020 – 2030
Professor Dato' Dr Rahmah Mohamed FASc (Project Director)

Review of the National Policy on Science, Technology and Innovation (NPSTI) 2013-2020
Professor Dato' Dr Awg Bulgiba Awg Mahmud FASc (Project Director)

Special Interest Group on Machine Learning
YM Tengku Datuk Dr Mohd Azzman Shariffadeen FASc

Task Force on Science of Halal Initiatives in Malaysia
Academician Tan Sri Dato' Ir Ts Ahmad Zaidee Laidin FASc

ASM Activities

JANUARY

Knowledge Sharing Session: What's Next - Transformation National 2050 (TN50)
6 January, ASM

Science Outlook 2017: 3rd Steering Committee Meeting
9 January, ASM

MITI 2017 Brainstorming Session - Smart Community
10 January, MITI

Selection Meeting: Dr Ranjeet Bhagwan Singh Research Grant 2016
12 January, ASM

Mesyuarat Penyelarasan Pertandingan National Science Challenge 2017
12 January, ASM

Strategic Planning Workshop: Research and Development Commercialization Innovation (RDCI) - The Way Forward Redesiging Higher Education
12 January, MOHE

Interview: Market Trends and Technology in Malaysia
13 March, ASM

7th Integrated Urban Water Management Task Force Meeting
16 January, ASM

Joint Steering Committee Meeting of National Centre for Particle Physics
16 January, ASM

Talk by Prof Simon Croft from London School of Tropical Medicine and Hygiene
19 January, ASM

ASM Integrated Lake Basin Management Meeting
20 January, ASM

Foresight Initiative Study: Multifaith Engagement Workshop
23 January, IKIM

Presentation on Mega Science
24 January, MOSTI

Science Outlook 2017: R,D&C and STI Governance Joint Meeting
25 January, ASM

Science Outlook 2017: STI Talent 3rd Working Group Meeting
25 January, ASM

Special Council Meeting
25 January, ASM

ASM Science Awards Steering Committee Meeting
2017 Royal Society Medals and Awards
25 January, ASM

Briefing on National Transformation 2050 (TN50) Malaysia 2050 Smart Communities
26 January, MATRADE

1st Meeting of Task Force for the Establishment of National STEM Centre
26 January, ASM

FEBRUARY

NEO Expert Group Engagement Meeting: E-HEALTH
2 February, ASM

NEO Expert Group Engagement Meeting: FINTECH
3 February, ASM

ASM Science Journal Editorial Board Meeting
6 February, ASM

Bengkel Satu Dekad Penubuhan Universiti Penyelidikan: Kajian Impak
7 February, ASM

Science Outlook 2017: Energising Industries 3rd Working Group Meeting
8 February, ASM

118th Finance Meeting
10 February, ASM

6th ASM Task Force on Cyber Security Meeting
14 February, ASM

27th ASM Water Committee Meeting
15 February, ASM

Program Bengkel Penyediaan Kerangka TN50
18 February, Sabah

National STEM Center Establishment Workshop
20 – 22 February, ASM

Chemical Sciences Vetting Committee Meeting
23 February, ASM

Medical and Health Sciences Vetting Committee Meeting
24 February, ASM

Senior Fellows Meeting
27 February, ASM

Mathematics, Physics and Earth Sciences Vetting Committee Meeting
27 February, ASM

Integrated Urban Water Management Workshop
28 February, ASM

S&T Development and Industry Vetting Committee Meeting
28 February, ASM

55th Exco Meeting
28 February, ASM

MARCH

Biological, Agricultural and Environmental Sciences Vetting Committee Meeting
1 March, ASM

1st ASM Endowment Fund Committee Meeting
1 March, ASM

Engineering and Computer Sciences Vetting Committee Meeting
2 March, ASM

Galaxy Exchange Programme Tech Talk: TN50 & Malaysia 2050 - Foresight Initiative
2 March, MOSTI

Perjumpaan bersama YB Menteri Belia dan Sukan berkaitan Program Transformasi Nasional 2050 (TN50)
2 March, KBS

ASM Science Journailsm Workshop
6 – 8 March, ASM

Membership Committee Meeting
8 March, ASM

18th STIPAC Meeting
9 March, ASM

123rd Council Meeting
9 March, ASM

Ministry of Finance Visit to ASM
14 March, ASM

Medical and Health Science Discipline Group Meeting
15 March, ASM

Ekspresi Negaraku
18 March, Dataran Putrajaya

2017 NSC Questions Development Workshop
18 March, Grand Seasons Hotel@Kuala Lumpur

119th Finance Meeting
24 March, ASM

Konvensyen Usahawan Wanita -TN50
25 March, KL Getaway

Special Panel Meeting for Appointment of Senior Fellow(s) for 2017
28 March, ASM

2017 2nd Membership Committee Meeting
29 March, ASM

Workshop on the National Centre for Particle Physics
29 March, ASM

Meeting with BERNAMA for Science Media Centre
30 March, ASM

Mesyuarat Jawatankuasa NICE'17 Kerja Kluster Knowledge Enrichment Bil. 1
30 March, ASM

24th IdeaXchange
31 March, ASM

APRIL

Malaysian RCR Education Workshop 1
2 – 5 April, AKEPT

2017 NSC with ExxonMobil
3 April, ASM

Blockchain Meeting
3 April, ASM

TV9 Interview with Ir Dr Salmah Zakaria FASc
5 April, ASM

7th MSAF Audit Committee Meeting
5 April, ASM

124th Council Meeting
6 April, ASM

Technical and Financial Monitoring Meeting of TechnoFund Project
7 April, ASM

Lawatan Turun Padang Unit KPI MOSTI Ke ASM
10 April, ASM

2017 International Construction Week
10 – 14 April, KL Convention Centre

Meeting with EPU TN50
11 April, ASM

7th Meeting of Task Force on Cyber Security
11 April, ASM

2017 NSC Committee Meeting
12 April, ASM

Forum on Impact of Haze on Human Health in Malaysia
15 April, ASM

Halal Science Strategic Planning Workshop 1.0
18 April, ASM

3rd Audit Committee Meeting
18 April, ASM

NEO Meeting with CREST
18 April, ASM

Meeting on Bioeconomy Awards 2017
19 April, ASM

Science Outlook 2017: R,D&C Meeting with Chairperson
20 April, ASM

15th MSAF Board of Trustee Meeting
20 April, ASM

Meeting with Clarivate Analytics
20 April, ASM

22nd Annual General Meeting
22 April, ASM

Science Outlook 2017: STI Talent Pre-Workshop
20 April, ASM

YB Minister MOSTI Visit to SK Bandar Tasik Kesuma on IBSE
27 April, ASM

MAKNA Announcement Ceremony
27 April, ASM

Science, Technology and Industry Linkage (STIL) in Malaysia Dialogue Session
28 April, ASM

MAY

Presentation at MITI Industry 4.0 Workshop
2 May, MITI

TRSM Monitoring Committee Meeting
2 May, MITI

Karnival STI Tuaran
2 – 14 May, Tuaran@Sabah

Imbak Canyon Management Committee Meeting
2 May, Shangri-la Tanjung Aru Resort@Sabah

ASM Endowment Fund Committee Meeting 2/2017
4 May, ASM

Affiliated Outreach Program Southern: Sains Masa Hadapan Karnival TN50
6 May, Kota Tinggi

Sending Off 2016 NSC Finalists for Sakura Exchange Programme
14 May, Sama Sama Hotel

Halal Malaysia Lab Meeting
15 – 16 May, MITI

STI Master Plan and Review of the National Policy on STI (NPSTI) Studies Meeting
16 May, ASM

120th Finance Meeting
19 May, ASM

2017 National Science Challenge Preliminary Level
22 – 25 May, ASM

Open Access Talk
23 May, ASM

Affiliated Outreach Southern Program: Scientist Back to School
24 May, Sultan Ibrahim Girl School@Johor Bahru

Lawatan Kerja MOE dan MOSTI ke Tuaran, Pekan Nabalu dan Lokos, Sabah(TBD)
26 May, Sabah

SIG Machine Learning Meeting
26 May, ASM

56th Exco Meeting
29 May, ASM

Kick-Off Workshop for STI Master Plan 2020-2030 Study and the Review of the National Policy for STI (NPSTI) 2012-2020 and Formulation of the NPSTI 2020-2030
30 May, ASM

JUNE

Neutral Entity for Fintech in Islamic Finance (NEO) Meeting
1 June, ASM

Tuaran Foresight Study Consultation Team Meeting
2 June, ASM

Induction Session to New Fellows
6 June, ASM

6th MSAF Annual General Meeting & 16th Board of Trustees Meeting
14 June, ASM

19th STIPAC Meeting
15 June, ASM

Science Outlook 2017: STI Talent Meeting with Chairperson
19 June, Kota Tinggi

NEO Meeting with Islamic Fintech Alliance
19 June, ASM

Courtesy visit by Australian Academy of Science
19 June, ASM

2nd MSA Search Committee Meeting
20 June, ASM

Selection Meeting for IAP for Health Young Physician Leaders Programme
21 June, MAHSA University

Meeting with the Islamic Banking & Finance Institute Malaysia (IBFIM)
21 June, ASM

JULY

1st Selection Committee ASEAN SLP 2017
4 July, ASM

NEO Fintech for Islamic Finance Meeting
5 July, ASM

2017 NSC Negeri Sembilan Level
5 July, USIM

2017 NSC Putrajaya Level
5 July, UKM

2017 NSC Kuala Lumpur Level
5 July, UM

5th Task Force Meeting on NCMS
6 July, ASM

125th Council Meeting
7 July, ASM

2017 NSC Terengganu Level
10 July, UMT

2017 NSC Pulau Pinang Level
11 July, USM

2017 NSC Pahang Level
12 July, IIUM

2017 NSC Kedah Level
12 July, AIMST University

2017 NSC Johor Level
12 July, UTM

2017 NSC Perlis Level
13 July, UNIMAP

Science Outlook 2017: STI Enculturation Meeting with Chairperson
13 July, ASM

121st Finance Meeting
14 July, ASM

TN50 Roundtable Dialogue between YAB PM and Malaysian Scientists
18 July, PMO

2017 NSC Selangor Level
18 July, UPM

2017 NSC Melaka Level
19 July, UTeM

2017 NSC Sarawak Level
19 July, Swinburne University

2017 MSA Tropical Agriculture Group Meeting
20 July, ASM

Mega Science 3.0 Presentation to MOTAC
20 July, MATIC

Meeting with British Council
21 July, ASM

25th IdeaXchange
24 July, ASM

Newton-Ungku Omar Fund Open Day
25 July, MIGHT

2017 NSC Labuan Level
26 July,

2017 NSC Kelantan Level
26 July, UMK

1st Publication Committee Meeting
26 July, ASM

Affiliated Outreach Southern Program: Iskandar Learning Festival
26 July, Masai@Johor

2017 NSC Perak Level
27 July, UTP

3rd MSA Search Committee Meeting
27 July, ASM

2017 TRSM Selection Panel Evaluation Meeting
27 July, ASM

National STEM Movement Mentor-Mentee Workshop
28 July, ASM

Science Journalism Malaysia Webinar Session
31 July, ASM

AUGUST

ASM Science Awards Steering Committee: 2018 Tang Prize, 2017 MSA, 2018 Abel Prize
1 August, ASM

4th Audit Committee Meeting
1 August, ASM

57th Exco Meeting
1 August, ASM

2017 NSC Sabah Level
3 August, SMK Tandek

3rd Science Journal Editorial Board Meeting
7 August, ASM

Meeting with TEDxKL
8 August, ASM

Science Outlook 2017: STI Governance Meeting with Chairperson
8 August, Kota Tinggi

2017 NSC Science Camp
11 – 16 August, UKM

2017 NSC Teachers IBSE Workshop
13 – 15 August, ASM

Science Outlook 2017: Energising Industries 4th Working Group Meeting
16 August, ASM

2017 NSC Semi Final
17 August, UKM

2017 NSC Grand Final
18 August, BTP Bukit Kiara

2017 ASM-MTCP Global Geopark Planning & Development Workshop
21 – 25 August, Langkawi

Monitoring Meeting of Flagship Projects: FP1213E037
23 August, ASM

26th Ideaxchange
24 August, ASM

2018 ASM Tang Prize Selection Meeting
29 August, ASM

NUOF Evaluation Meeting: Mobility Grants & Advanced Fellowships (Natural Sciences)
30 August, ASM

1st NPSTI Steering Committee Meeting
30 August, ASM

SEPTEMBER

STEM Apps Challenge 2017
1 – 30 September, UTM Skudai

NUOF Evaluation Meeting: Mobility Grants & Advanced Fellowships (Social Sciences & Humanities)
4 September, ASM

ASM Science Awards Steering Committee
6 September, ASM

ASEAN Science Leadership Programme 2017
7 – 11 September, AKEPT

Meeting with AMIC
12 September, ASM

126th Council Meeting
14 September, ASM

MSA Evaluation Committee Meeting
14 September, ASM

Chemical Sciences Discipline Group Meeting
18 September, ASM

S&T Development and Industry Discipline Group Meeting
20 September, ASM

Science Outlook 2017: STI Governance Meeting with Chairperson
21 September, ASM

TN50x Dialogue with YB Minister of MOSTI
26 September, ASM

Science Outlook 2017: 4th Steering Committee Meeting
26 September, ASM

Science Outlook 2017: Meeting with SO17 Chairperson
25 September, ASM

Science Outlook 2017: STI Talent Workshop
26 September, ASM

NUOF Evaluation Meeting: Researcher Links (Workshop Grants)
28 September, ASM

122nd Finance Meeting
29 September, ASM

OCTOBER

International Joint Workshop on Obesity
2 – 3 October, Majestic Hotel

2nd Joint Steering Committee Meeting on NCPP
3 October, ASM

Science Outlook 2017: Strategic International Alliance 4th Working Group Meeting
3 October, ASM

2nd ASM Publication Committee Meeting
4 October, ASM

Junior Makers Bootcamp 2017
5 – 8 October, sains@USM

68th Lindau Nobel Laureate Selection Committee Meeting
9 October, ASM

SIG Machine Learning Meeting
10 October, ASM

2017 MSA Evaluation Committee Meeting (Tropical Architecture & Engineering)
10 October, ASM

National Innovation Conference and Exhibition (NICE)
12 – 16 October, TPM

58th Exco Meeting
23 October, ASM

ASM Fellows' Lecture: Quantum & Optical Revolution from Excellent Research Institutions by Professor Dr Raymond Ooi FASc
25 October, UTAR

Membership Committee Meeting
26 October, ASM

2016 MSA Laureate Week
30 October – 1 November, Sunway University

2016 MSA Presentation Ceremony & Networking Business Luncheon
31 October, Sunway Resort Hotel & Spa

NOVEMBER

2017 Conferment of ASM Fellowship & Announcement of the 2017 Top Research Scientists Malaysia
2 November, Marriot Putrajaya Hotel

ASEAN 2050 Forum: 4th Industrial Revolution
2 – 3 November, Marriot Putrajaya Hotel

Kuala Lumpur Engineering Science Fair 2017 (KLESF)
3 – 5 November, MINES

Imbak Canyon Management Committee Meeting
6 November, Shangri-la Tangjung Aru Hotel

5th Audit Committee Meeting
6 November, ASM

ASM Task Force Meeting on the Imbak Canyon Rainforest Research & Training Programme (ICRRTP)
9 November, ASM

Membership Committee Meeting
10 November, ASM

STEM Workshop: Communication Drawing
13 November, ASM

NanoMITe Symposium
14 – 15 November, UPM

FMM Water Conference -Institutional Management of Water Resources - Strategies and Roadmap
19 November, Royal Chulan Hotel

STEM Movement Meeting
22 November, ASM

NPSTI Meeting with MOSTI
23 November, ASM

Review and Formulation NPSTI Study Meeting
24 November, ASM

MyCDNeT Steering Committee Meeting
24 November, ASM

2nd Taskforce Meeting on the ASM ArtScience Prize
24 November, ASM

Malaysian RCR Education Workshop 2
26 – 29 November, AKEPT

123rd Finance Meeting
28 November, ASM

Science Outlook 2017: 5th Steering Committee Meeting
29 November, ASM

DECEMBER

NUOF Evaluation Meeting: Regional Researcher Links (Workshop Grants) 2017
5 December, ASM

27th Ideaxchange
5 December, ASM

2017 NSC Stockholm Visit
5 – 12 December, Sweden

Science Outlook 2017: Draft Final Report discussion with SO17 Chairperson
5 December, ASM

20th STIPAC Meeting
6 December, ASM

2017 MAKNA Cancer Research Awards Selection Meeting
6 December, ASM

IAP-SEP Fusion of OBOR Civilisation Curriculum Design Workshop
11 - 15 December, ISTIC

2nd NPSTI Steering Committee Meeting
14 December, ASM

Workshop on Asean Plus Three Junior Science Odyssey (APTJSO)
14 December, ASM

17th MSAF Board of Trustees Meeting
14 December, ASM

Seminar on Imbak Canyon Rainforest Research & Training Programme (ICRRTP)
19 December, ASM

Welcome Home 2017 NSC Champion and Sending off SBPI Batu Rakit
16 December, Mandarin Oriental Hotel

STEM Mentor Mentee Awards Meeting
29 December, ASM

Honorary Fellows

1995
Tun Dr Mahathir Mohamad
Former Prime Minister of Malaysia

2005
Tun Abdullah Ahmad Badawi
Former Prime Minister of Malaysia

2009
Tun Ahmad Sarji Abdul Hamid
Former Chief Secretary to the Government

2010
Nobel Laureate Professor Lee Yuan Tseh
Nobel Laureate 1986 (Chemistry)

2011
Tan Sri Dato' Seri Law Hieng Ding
Former Minister of the Ministry of Science, Technology and Environment Malaysia

2014
Dato' Sri Mohd Najib bin Tun Abdul Razak
Prime Minister of Malaysia

Senior Fellows

1999
- Academician Emeritus Professor Tan Sri Datuk Dr Haji Omar Abdul Rahman FASc
- Academician Dato' Ir Lee Yee Cheong FASc
- Academician Emeritus Professor Tan Sri Datuk Dr Augustine Ong Soon Hock FASc

2001
- Academician Tan Sri Dato' Dr Mohd Rashdan Haji Baba FASc

2002
- Academician Emeritus Professor Dr Yong Hoi Sen FASc
- Academician Tan Sri Dato' Seri Ir Shamsuddin Abdul Kadir FASc

2004
- Academician Tan Sri Dr Salleh Mohd Nor FASc

2005
- Academician Distinguished Professor Datuk Dr Looi Lai Meng FASc

2006
- Academician Tan Sri Dr M. Jegathesan FASc

2007
- Academician Datuk Dr Abdul Aziz S.A. Kadir FASc

2008
- Academician Tan Sri Ir Hj Shahrizaila Abdullah FASc

2009
- Academician Tan Sri Dr Ahmad Mustaffa Babjee FASc

2010
- Academician Emeritus Professor Dato' Dr V.G. Kumar Das Govinda Panicker FASc
- Academician Emeritus Professor Tan Sri Dato' Dr Syed Jalaludin Syed Salim FASc

2011
- Academician Tan Sri Dato' Ir Ts Ahmad Zaidee Laidin FASc
- Academician Emeritus Professor Dato' Dr CP Ramachandran FASc
- Academician Professor Dato' Ir Dr Chuah Hean Teik FASc

2012
- Academician Dr C. Devendra FASc
- Academician Datuk Fateh Chand FASc
- Academician Dr Ho Chee Cheong FASc

2013
- Academician Dr Chia Swee Ping FASc
- Academician Tan Sri Datuk Dr Yusof Basiron FASc

2014
- Academician Datuk Ir Hong Lee Pee FASc
- Academician Professor Dato' Dr Khairul Anuar Abdullah FASc

2015
- Academician Emeritus Professor Tan Sri Dato' Sri Dr Zakri Abdul Hamid FASc
- Academician Emeritus Professor Dato' Dr Lam Sai Kit FASc

2016
- Academician Emerita Professor Datuk Dr Mazlan Othman FASc

2017
- Academician Tan Sri Datuk Ir Dr Ahmad Tajuddin Ali FASc

Fellows

MEDICAL AND HEALTH SCIENCES

* Academician Distinguished Professor Datuk Dr Looi Lai Meng FASc
* Academician Tan Sri Dato' Dr M. Jegathesan FASc
Academician Emeritus Professor Dato' Dr C.P. Ramachandran FASc
Academician Professor Dato' Dr Khairul Anuar Abdullah FASc
Academician Emeritus Professor Dato' Dr Lam Sai Kit FASc
* Professor Dr Mak Joon Wah FASc
* Datuk Dr Hussein Awang FASc
* Emeritus Professor Dato' Dr Khalid Abdul Kadir FASc
* Tan Sri Dato' Dr Yahya Awang FASc
Tan Sri Dato' Dr Abu Bakar Dato' Suleiman FASc
Tan Sri Dato' Seri Haji Musa Mohamad FASc
Emeritus Professor Dato' Paduka Dr Mustaffa Embong FASc
Emeritus Professor Puan Sri Datin Dr Wan Nafisah Hj. Nik Mohd Adeeb FASc
Emeritus Professor Dato' Dr Hashim Yaacob FASc
Professor Dr Yap Sook Fan FASc
Emeritus Professor Dr Cheong Soon-Keng FASc
Professor Datuk Dr Asma Ismail FASc
Professor Dato' Dr Anuar Zaini Md Zain FASc
Professor Dr Victor Lim Kok Eow @ Azman Lim FASc
Senior Professor Dato' Dr Khalid Yusoff FASc
Emerita Professor Dr Tan Sri Dato' Wira Dr Sharifah Hapsah bt Syed Hasan Shahabudin FASc
Emeritus Professor Dr Mohd Ismail Noor FASc
Tan Sri Datuk Dr Mohd Ismail Merican FASc
Professor Dr Cheah Phaik Leng FASc
Dr Mary Jane Cardosa FASc
Emeritus Professor Dr Boo Nem Yun FASc
Professor Dr Subramaniam Krishnan FASc
Professor Dato' Dr Jafri Malin Abdullah FASc
Professor Dato' Dr Goh Khean Lee FASc
Professor Dr Adeeba Kamarulzaman FASc
Professor Dr Rosnah Mohd Zain FASc
Professor Dr Rahmah Noordin FASc
Emeritus Professor Dato' Dr Ikram Shah Ismail FASc
Emeritus Professor Dato' Dr Lian Chin Boon FASc
Tan Sri Professor Dr Mohd Amin Jalaludin FASc
Professor Dato' Dr Tan Chong Tin FASc
Professor Dr Norazmi Mohd Nor FASc
Dr Salmaan Hussain Inayat Hussain FASc
Professor Dato' Dr Awg Bulgiba Awg Mahmud FASc
Emeritus Professor Dr Khor Geok Lin FASc
Professor Dr Mustafa Ali Mohd FASc
Professor Datuk Dr Rohana Yusof FASc
Professor Datuk Paduka Dr Wan Azman Wan Ahmad FASc
Professor Dr Jamunarani S. Vadivelu FASc
Dr Teo Soo Hwang FASc
Professor Dr Balbir Singh Mohan Singh FASc
Datuk Dr Lokman Hakim Sulaiman FASc
Professor Dr Sazaly Abu Bakar FASc
Professor Dr Suresh Kumar P.Govind FASc
Professor Dr Zhari Ismail FASc
Professor Dato' Dr Balwant Singh Gendeh FASc
Professor Dr Lee Way Seah FASc
Professor Dr Mary Anne Tan Jin Ai FASc
Professor Dr Wan Ariffin Bin Abdullah FASc
Professor Datuk Dr A. Rahman A. Jamal FASc
Professor Dr Lim Shen-Yang FASc
Professor Dr Shamala Devi K.C. Sekaran FASc
Professor Dr Thong Meow Keong FASc
Professor Dr Tunku Kamarul Zaman Tunku Zainol Abidin FASc
Professor Dr Yvonne Lim Ai Lian FASc

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FASc

ENGINEERING SCIENCES

* Academician Dato' Ir Lee Yee Cheong FASc
* Academician Tan Sri Dato' Ir Haji Shahrizaila Abdullah FASc
Academician Tan Sri Dato' Ir Ts Ahmad Zaidee Laidin FASc
Academician Datuk Ir Hong Lee Pee FASc
* Dato' Dr Muhammad Ridzuan Haji Salleh FASc
Ar. Hijjas Kasturi FASc
Dato' Dr Mohd Ariffin Hj Aton FASc
Ir Dr Ting Wen Hui FASc
Professor Dato' Ir Dr A. Bakar Jaafar FASc
Emeritus Professor Dato' Wira Ir Dr Mohammad Noor Hj Salleh FASc
Emeritus Professor Dato' Ir Abang Abdullah Abang Ali FASc
Emeritus Professor Tan Sri Dato' Sri Ir Dr Sahol Hamid Abu Bakar FASc
Professor Dr Mohd Ali Hashim FASc
Professor Dato' Dr Goh Sing Yau FASc
Tan Sri Datuk Professor Ir Dr Mohd Zulkifli Tan Sri Mohd Ghazali FASc
Professor Dr Tan Hong Siang FASc
Datuk Ir Dr Ow Chee Sheng FASc
Dato' Ir Dr Gue See Sew FASc
Dr Ir Salmah Zakaria FASc
Professor Dr Zahari Taha FASc
Datuk A. Rahman Abdullah FASc
Tan Sri Dato' Sri Ar. Hj Esa Mohamed FASc
Professor Dato' Seri Ir Dr Zaini Ujang FASc
Professor Dr Shah Nor Basri FASc
Professor Dr Nasrudin Abd Rahim FASc
Tan Sri Ir Syed Muhammad Shahabudin FASc
Tan Sri Dato' Ir Omar Ibrahim FASc
Professor Ir Dr Ahmad Faizal Mohd Zain FASc
Professor Dr Ahmad Fauzi Ismail FASc
Dato' Sri Professor Ir Dr Judin Abdul Karim FASc
Professor Ir Dr Wan Abu Bakar Wan Abas FASc
Dato' Ir Mohd Yusof Ibrahim FASc
Ir Dr Ruslan Hassan FASc
Professor Dr Zulkifli Yusop FASc
Professor Dato' Ir Dr Wan Ramli Wan Daud FASc
Professor Datuk Ir Dr Mohd Jailani Mohd Nor FASc
Professor Dr Hanafi Ismail FASc
Professor Dr Abd Halim Shamsuddin FASc
Professor Dr Abdul Latif Ahmad FASc
Professor Dr Hamdani Saidi FASc
Professor Dato' Dr Kamaruzzaman Sopian FASc
Datuk Ir Mohd Adnan Mohd Noor FASc
Datuk Ir Abdul Rahim Hj Hashim FASc
Professor Dato' Ir Dr Badrulhisham Abdul Aziz FASc
Professor Dato' Dr Burhanuddin Yeop Majlis FASc
Ir Lalchand Gulabrai FASc
Professor Dr Abdul Rahman Mohamed FASc
Professor Dato' Ir Dr Abdul Wahab Mohammad FASc
Professor Dr Ewe Hong Tat FASc
Datuk Professor Dr Mohd Ruddin Ab Ghani FASc
Professor Ir Dr Noor Azuan Abu Osman FASc
Dato' Ir Lim Chow Hock FASc
Professor Dato' Ir Dr Mahyuddin Ramli FASc
Professor Dr Mohamed Ibrahim Abdul Mutalib FASc
Professor Dr –Ing. Ir Renuganth Varatharajoo FASc
Professor Dr Azmi Mohd Shariff FASc
Dr Leong Kok Hoong FASc
Professor Dato' Ir Dr Mohd Saleh Jaafar FASc
Professor Ir Dr Ramesh Singh FASc
Ir Dr Zuhairi Abd Hamid FASc

Note: Names marked '*' are Foundation Fellows & Names in **bold** are 2017 Fellows

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BIOLOGICAL, AGRICULTURAL AND ENVIRONMENTAL SCIENCES

* Academician Emeritus Professor Dr Yong Hoi Sen FASc
* Academician Tan Sri Dr Salleh Mohd Nor FASc
* Academician Tan Sri Dato' Dr Ahmad Mustaffa Babjee FASc
* Academician Emeritus Professor Tan Sri Dato' Dr Syed Jalaluddin Syed Salim FASc

Academician Dr C. Devendra FASc

* Academician Emeritus Professor Tan Sri Dato' Sri Dr Zakri Abdul Hamid FASc
* Emeritus Professor Datuk Dr Abdul Latif Ibrahim FASc
* Emeritus Professor Dr Chin Hoong Fong FASc

Dr Francis S.P. Ng FASc
Professor Dr Mak Chai @ Mak Lian Fong FASc
Professor Dr Ho Yin Wan FASc
Professor Dr Koh Chong Lek FASc
Emeritus Professor Dr Mohd Nordin Hj Hasan FASc
Dr Rajanaidu Nookiah FASc
Emeritus Professor Dato' Dr Sheikh Omar Abdul Rahman FASc
Emeritus Professor Dr Muhamad Awang FASc
Emeritus Professor Dato' Dr Mohamed Mahyuddin Mohd Dahan FASc
Dato' Dr Yeang Hoong Yeet FASc
Emeritus Professor Dato' Dr Abdul Latiff Mohamad FASc
Datuk Dr Ghazally Ismail FASc
Emeritus Professor Dato' Dr Hj Mohamed Abdul Majid FASc
Dr Helen Nair FASc
Professor Dr Soh Aik Chin FASc
Professor Datin Paduka Dr Khatijah Mohd Yusoff FASc
Dr Lim Boo Liat FASc
Dr Tan Swee Lian FASc
Professor Dr Yap Thoo Chai FASc
Professor Datin Paduka Dr Aini Ideris FASc
Dr Heong Kong Luen FASc
Professor Dr Phang Siew Moi FASc
Dr Ravigadevi Sambanthamurthi FASc
Dato' Dr Sim Soon Liang FASc
Professor Dato' Dr Azizan Abu Samah FASc
Dato' Dr Hashim Abd Wahab FASc
Professor Dr Mohd Sanusi Jangi FASc
Professor Dr Low Pak Sum FASc
Dr Chan Ying Kwok FASc
Professor Dato' Dr Mohamed Shariff Mohamed Din FASc
Professor Datin Dr Faridah Hanum Ibrahim FASc
Dato' Dr Makhdzir Mardan FASc
Dr Harikrishna Kulaveerasingam FASc
Professor Dr Wickneswari Ratnam FASc
Dr Tan Keng Hong FASc
Professor Dr Normah Mohd Noor FASc
Datuk Seri Lim Chong Keat FASc
Professor Dato' Dr Hj Ibrahim Che Omar FASc
Professor Dato' Dr Mohd Tajuddin Abdullah FASc
Professor Dr Fatimah Md Yusoff FASc
Dr Saw Leng Guan FASc
Professor Dr Ng Wing Keong FASc
Professor Dr Jinap Selamat FASc
Professor Dr Shamsuddin Jusop FASc
Professor Dr Tan Soon Guan FASc
Dato' Dr Abd Latif Mohmod FASc
Professor Dr Agamutu a/l Pariatamby FASc
Professor Dr Abdul Manaf Ali FASc
Datuk Dr Abdul Rahim Nik FASc
Professor Dato' Dr Mazlin Mokhtar FASc
Professor Dato' Dr Mohd Azmi Mohd Lila FASc
Dr Rahimatsah Amat FASc
Professor Dato' Dr Rahmah Mohamed FASc
Professor Dr S.Vikineswary Sabaratnam FASc
Professor Dr Ahmad Ismail FASc
Dr Ahmad Parveez Ghulam Kadir FASc
Dr Chow Keng See FASc
Professor Dr Mohd Ali Hassan FASc
Dr Rajinder Singh Harminder Singh FASc
Associate Professor Dr Chan Kok Gan FASc
Professor Dr Mohd Hair Bejo FASc
Emeritus Professor Dr Nor Muhammad Mahadi FASc
Professor Dr Rofina Yasmin Othman FASc
Professor Dr Sheila Nathan FASc

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MATHEMATICS, PHYSICS AND EARTH SCIENCES

* Academician Datuk Fateh Chand FASc
Academician Professor Dato' Ir. Dr Chuah Hean Teik FASc
Academician Dr Chia Swee Ping FASc
* Dato' Dr Chatar Singh FASc
* Academician Tan Sri Datuk Ir. Dr Ahmad Tajuddin Ali FASc
* Emeritus Professor Dato' Dr Mohd Sham Mohd Sani FASc
* Dato' Dr R. Ratnalingam FASc
Emeritus Professor Dr Shaharir Mohamad Zain FASc
Emeritus Professor Dato' Dr Hassan Said FASc
Emeritus Professor Dato' Dr Ibrahim Komoo FASc
Dr Bahrom Sanugi FASc
Distinguished Professor Datuk Dr Harith Ahmad FASc
Professor Dr Kurunathan Ratnavelu FASc
Professor Dr Tou Teck Yong FASc
Emeritus Professor Dato' Dr Muhammad Yahaya FASc
Dr Lim Ming Huat FASc
Emeritus Professor Dr Wong Chiow San FASc
Professor Dato' Dr Roslan Abd Shukor FASc
Professor Dato' Dr Rosihan Mohamed Ali FASc
Emeritus Professor Dr Lim Koon Ong FASc
Emeritus Professor Dr Fun Hoong Kun FASc
Professor Dr Ong Seng Huat FASc
Professor Dr Abdul Halim Shaari FASc
Professor Dr Felix Tongkul FASc
Professor Dr Fredolin Tangang FASc
Professor Dr Mohd Shafee'a Leman FASc
Professor Dr Joy Jacqueline Pereira FASc
Professor Dr Wan Ahmad Tajuddin Wan Abdullah FASc
Emeritus Professor Dato' Dr Kamel Ariffin Mohd Atan FASc
Dr Mazlan Madon FASc
Dr Low Kwai Sim FASc
Professor Dr Norani Muti Mohamed FASc
Professor Dr Ng Kwan Hoong FASc
Dato' Dr Yap Kok Seng FASc
Pofessor Dato' Dr Mohd Yusof Hj Othman FASc
Professor Dr Ishak Hashim FASc
Professor Dr Raymond Ooi Chong Heng FASc
Dr Selliah Paramananthan FASc
Professor Dr Ramesh T. Subramaniam FASc
Professor Dr Zainuriah Hassan FASc
Professor Dr Faidz Abd Rahman FASc
Professor Dr Md. Rahim Sahar FASc
Professor Dr Mohd Salmi Md. Noorani FASc

Note: Names marked '*' are Foundation Fellows & Names in **bold** are 2017 Fellows

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FASc

CHEMICAL SCIENCES

*Academician Tan Sri Datuk Dr Augustine Ong Soon Hock FASc
*Academician Emeritus Professor Dato' Dr V.G. Kumar Das FASc
Academician Dr Ho Chee Cheong FASc
Emeritus Professor Dr Ng Soon FASc
Datuk Dr Mohinder Singh S. Sucha Singh FASc
Dr Goh Swee Hock FASc
Professor Datuk Dr Halimaton Hamdan FASc
Emeritus Professor Dato' Dr Md. Ikram Mohd Said FASc
Dr Lee Chnoong Kheng FASc
Datuk Dr Sukiman Sarmani FASc
Dato' Dr Choo Yuen May FASc
Professor Dr Ibrahim Abdullah FASc
Professor Dato' Dr Muhammad Idiris Saleh FASc
Dr Lai Yoong Wong FASc
Professor Dr Lee Soo Ying FASc
Professor Datin Dr Zuriati Zakaria FASc
Professor Dr Loh Teck Peng FASc
Professor Dr Rauzah Hashim FASc
Professor Dato' Dr Mohd Jamil Maah FASc
Professor Dr Ng Seik Weng FASc
Emeritus Professor Dato' Dr Laily Din FASc
Professor Dr Bohari Mohd Yamin FASc
Professor Dr Lee Hian Kee FASc
Professor Dr Yang Farina Abdul Aziz FASc
Professor Dato' Dr Musa Ahmad FASc
Professor Dr Noorsaadah Abd Rahman FASc
Professor Dr Lim Yau Yan FASc
Professor Dr Mohd Basyaruddin Abdul Rahman FASc
Professor Dr Taufiq Yap Yun Hin FASc
Emeritus Professor Dato' Dr Wan Md Zin Wan Yunus FASc
Professor Dr Md Pauzi Abdullah FASc
Professor Dr Mohamad Kamal Hj Harun FASc
Professor Dr Wan Ahmad Kamil Che Mahmood FASc
Professor Dr Zanariah Abdullah FASc
Brigadier General Emeritus Professor Datuk Dr Kamarudin Husin FASc
Datin Dr Sri Nurestri Abd. Malek FASc

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FASc

SCIENCE & TECHNOLOGY DEVELOPMENT AND INDUSTRY

* Academician Tan Sri Datuk Dr Omar Abdul Rahman FASc
* Academician Tan Sri Dato' Dr Mohd Rashdan Haji Baba FASc
* Academician Datuk Dr Abdul Aziz Sheikh Abdul Kadir FASc
  Academician Tan Sri Datuk Dr Yusof Basiron FASc
  Academician Emeritus Professor Datuk Dr Mazlan Othman FASc
* Tan Sri Dato' Ir Wan Abdul Rahman Hj Wan Yaacob FASc
  Tan Sri Datuk Yong Poh Kon FASc
  Tan Sri T. Ananda Krishnan FASc
  Datuk Alladin Hashim FASc
  Tuan Haji Ir Mohamed Zohari Mohamed Shaharun FASc
  Datuk Dr Saharan Haji Anang FASc
  Dato' Dr Ong Eng Long FASc
  Emeritus Professor Dr Jalani Sukaimi FASc
  Dato' Dr Abdul Razak Mohd Ali FASc
  Dato' Ir Lai Pin Yong FASc
  Datuk Dr Soon Ting Kueh FASc
  Datuk Dr Mohd Basri Wahid FASc
  Professor Dato' Dr Ahmad Ibrahim FASc
  Datuk Dr Ahmad Tasir Lope Pihie FASc
  Tan Sri Professor Dato' (Dr) Dzulkifli Abdul Razak FASc
  Dato' Dr Samsudin Tugiman FASc
  Dr Wan Abdul Rahaman Wan Yaacob FASc
  Dr Kalyana Sundram P Manickam FASc
  Dr Kamarudin Ab. Malek FASc
  Datuk Dr Salmiah Ahmad FASc
  Dato' (Dr) Ir Andy Seo Kian Haw FASc
  Datuk Fadilah Baharin FASc
  Dr Amir Hashim Md. Yatim FASc
  Ir Ts Choo Kok Beng FASc
  Datuk Dr Mohd Yusoff Sulaiman FASc
  Mr Goh Peng Ooi FASc
  Dr Ahmad Hezri Adnan FASc
  Dr Ahmad Kushairi Din FASc
  Dato' Dr Jalaluddin Harun FASc

Note: Names marked '*' are Foundation Fellows & Names in **bold** are 2017 Fellows

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INFORMATION TECHNOLOGY AND COMPUTER SCIENCES

* Academician Tan Sri Dato' Seri Ir Shamsuddin Abdul Kadir FASc
* YM Tengku Datuk Dr Mohd Azzman Shariffadeen FASc
* Emeritus Professor Dato' Ir Dr Mohd Zawawi Ismail FASc
Emeritus Professor Dato' Dr Tan Wang Seng FASc
Datuk Dr Mohamed Arif Nun FASc
Dr Mohamed Awang Lah FASc
Dr Mohamad Zahran Dato' Sheikh Abdul Halim FASc
Dr Zaharin Yusoff FASc
Emeritus Professor Dato' Dr Ir Zainul Abidin Md Shariff FASc
Emeritus Professor Dato' Seri Mashkuri Hj Yaacob FASc
Emeritus Professor Dr Tengku Mohd Tengku Sembok FASc
Professor Dato' Dr Halimah Badioze Zaman FASc
Professor Ir Dr Ahmad Fadzil Mohamad Hani FASc
Professor Dr Abdullah Gani FASc
Professor Dr Borhanuddin Mohd Ali FASc
Professor Dr Zainab Abu Bakar FASc

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SOCIAL SCIENCES AND HUMANITIES

Professor Dato' Dr Aishah Bidin FASc
Dato' Dr Sharifah Maimunah Syed Zin FASc
Emeritus Professor Datuk Dr Shad Salem Faruqi FASc
Emerita Professor Dato' Dr Siti Zuraina Abdul Majid FASc
Dr Zainal Ariffin Ahmad FASc

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FASc

Note: Names marked '*' are Foundation Fellows & Names in **bold** are 2017 Fellows

Associates

Datuk Ir Abdul Kadir Mohd Din
Dr Anida Yusoff
Associate Professor Dr Asan Gani Abdul Muthalif
Dr Berhaman Ahmad
Ir C. Kamalesen a/l Chandrasekaran
Dr Chong Ju Lian
Dr Elia Godoong
Associate Professor Dr Fatin Aliah Phang Abdullah
Associate Professor Ir Dr Goh Hui Hwang
Dr Goh Pei Sean
Dr Hamzah Tangki
Dato' Ir Haji Hanapi Mohamad Noor
Associate Professor Ir Dr Haslenda Hashim
Dr Hasrinah Hasbullah
Associate Professor Dr Homathevi Rahman
Associate Professor Dr Jamilah Mohd Salim @ Halim
Associate Professor Dr Juhana Jaafar
Professor Dr Khairiyah Mohd Yusof
Professor Dr Khor Cheng Seong
Professor Ir Dr Lim Yun Seng
Professor Dr Madzlan Aziz
Professor Dr Manickam Ravichandran
Associate Professor Dr Ir Marlinda Abdul Razak
Associate Professor Dr Mimi Haryani Hassim
Ir Mohamed Haniffa Abdul Hamid
Associate Professor Dr Mohd Azlan Jayasilan Abdul Gulam Azad
Associate Professor Ir Dr Mohd Fadhil Md Din
Dr Mohd Firdaus Abdul Wahab
Associate Professor Dr Mohd Hafiz Dzarfan Othman
Ir Mohmad Asari Daud
Associate Professor Dr Muzaimi Mustapha
Professor Dr Rajah Rasiah
Mr Rushdi Abdul Rahim
Associate Professor Dr Shahrina Md Nordin
Associate Professor Dr Engr Solehuddin Shuib
Associate Professor Dr Suzana Yusup
Ir Dr Tan Chee Fai
Dr Umi Marshida binti Abdul Hamid
Dr Wan Amir Nizam Wan Ahmad
Dr Yap Sau Wai
Associate Professor Dr Yazrina Yahya
Associate Professor Dr Zainura Zainon Noor
Associate Professor Dr Zaiton Abdul Majid
Dr Zati Sharip

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Associates

TRSM recipients of 2017

Associate Professor Dr Cheah Yoke Kqueen
Professor Dr Cheong Sok Ching
Professor Dr Chua Kek Heng
Ir Dr Leong Wai Yie
Professor Dr Mohamed Ridza Wahiddin
Professor Ir Dr Mohd Azlan Hussain
Professor Dr Mohd Nordin Adlan
Professor Dr Mohd Rafii Yusop
Associate Pofessor Dr Mohd Yunus Abd Shukor
Professor Dr Nor Hadiani Ismail
Professor Dr Shaliza Ibrahim
Professor Dr Yeap Guan Yeow
Professor Dr Zainal Arifin Ahmad

13
Recipients

133
Recipients
2012 - 2017

YSN-ASM Members

2017/18 YSN-ASM EXCO MEMBERS

Chairperson
Professor Dr Abhimanyu Veerakumarasivam

Vice Chairperson
Dr Chai Lay Ching

Secretary General
Dr Mohd Ghows Mohd Mohd Azzam

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Working Groups

Science Integrity
Chair : Dr Chau De Ming
Co-chair : Dr Thahira Begum

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Co-chair : Dr Norazharuddin Shah Abdullah

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Chair : Dr Oon Chern Ein
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Co-chair : Associate Professor Dr Siti Fauziah binti Toha @ Tohara

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Co-chair : Dr Pasupuleti Visweswara Rao

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Co-chair : Associate Professor Dr Ong Boon Hoong

National Science Challenge
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Co-chair : Dr Mohd Firdaus Abdul Wahab

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Associate Professor Dr Cheah Yoke Kqueen
Professor Dr Cheong Sok Ching
Associate Professor Dr Haslenda Hashim
Associate Professor Dr Huda Abdullah
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YSN Members

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Professor Dr Liong Min Tze
Professor Dr Lee Keat Teong
Associate Professor Dr Mimi Haryani binti Hassim
Associate Professor Chan Kok Meng
Dr Normi Mohd Yahaya
Associate Professor Dr Tan Kar Ban
Associate Professor Dr Ahmad Zaharin Aris
Professor Dr Leong Chee Onn
Dr Michael Ling King Hwa
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Professor Ir Dr Mohd Zainal Abidin Ab Kadir
Professor Ir Dr Sharifah Rafidah Wan Alwi
Associate Professor Dr Zainovia Lockman
Dr Cheah Pike See
Professor Dr Lee Yeong Yeh
Associate Professor Dr Ahmad Taufek Abdul Rahman
Professor Ir Dr Chin Nyuk Ling
Associate Professor Ir Dr Leong Wai Yie
Professor Dr M. Iqbal bin Saripan
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Professor Dr Denny Ng Kok Sum
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Associate Professor Dr Sreeramanan Subramaniam
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Associate Professor Dr Mohd Hafiz Dzarfan Othman
Associate Professor Dr Nirmala Bhoo Pathy
Dr Chan Chee Seng
Dr Lai Chin Wei
Associate Professor Dr Ooi Boon Seng
Associate Professor Ir Dr Aduwati Sali
Associate Professor Dr Asrul Akmal Shafie
Associate Professor Dr Wan Azlina Wan Ab Karim Ghani
Associate Professor Dr Rosdiadee Nordin
Dr Ng Sing Muk
Associate Professor Dr Asrulnizam Abd Manaf
Dr Mohd Sukor Su'ait
Associate Professor Dr Yumi Zuhanis Has-yun Hashim
Dr Lim Jeng Shiun
Dr Oon Chern Ein
Associate Professor Dr Abdul Rahim Othman
Associate Professor Dr Teh Su Yean
Ir Dr Poh Kiat Ng
Dr Chia Yoke Yin
Associate Professor Dr Oi Boon Hong @ Ong Boon Hoong
Dr Faisal Ali Anwarali Khan
Dr Ho Wai Shin
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Dr Chai Lay Ching
Dr Chau De Ming
Dr Mohd Ghows Mohd Azzam
Dr Yap Wing Fen
Dr Lee Khai Ern
Dr Afnizanfaizal Abdullah
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Dr Juan Joon Ching
Dr Kenny GL Woon
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Dr Lionel In Lian Aun
Associate Professor Dr Nik Fadzly Nik Rosely
Dr Oh Pei Ching
Dr Puan Chong Leong
Dr Shahiron Shahidan
Associate Professor Dr Siti Fauziah binti Toha @ Tohara
Dr Tee Kok Keng
Dr Wahizatul Afzan Azmi

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Members

YSN-ASM Affiliates

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Dr Emilia Abd Malek
Dr Chan Soon Choy
Dr Mohana Sundaram Muthuvalu
Dr Lee Hooi Ling
Dr Mohd Bakri Bakar
Mr Shawn Keng Teck Ee
Dr Yam Wai Keat
Dr Wan Hanna Melini Wan Mohtar
Dr Radha Kodiappan
Dr Adrian Ng Kwok Wen
Dr Choi Sy Bing
Dr Kazuhide Shaun Okuda
Dr Razinah Sharif
Dr Siti Sarah Othman
Dr Wendy Yeo Wai Yeng
Dr Mas Jaffri Masarudin
Dr Noralafiza Yunus
Dr Azham Bin Zulkarnain
Dr Chew Bee Lynn
Dr Chuah Candy
Dr Faye Siew Hui Chong
Dr Lee Khai Ern
Dr Leow Chiuan Herng
Dr Leow Chiuan Yee
Dr Nethia Mohana Kumaran
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Dr Norhayati Abdullah
Dr Nur Fareisha Bt Md Hashim
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Associate Professor Dr Show Pau Loke
Associate Professor Dr Suhairul Hashim
Dr Sumathi Sethupathi
Dr Tan Cheng Siang
Mr Ooi Ghee Chien
Dr Manraj Singh Cheema
Dr Sharifah Sakinah Syed Alwi
Dr Tham Chau Ling
Dr Carmen Goh Kar Mun
Dr Eddie Chia Suet Lin
Dr Mohd Firdaus Abdul Wahab
Dr Noor Syamilah Zakaria
Dr Norazharuddin Shah Abdullah
Dr Wan Chang Da
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Dr Farrah Aini Dahalan
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Dr Nur Faeza Abu Kassim
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Dr Ng Siew Kit
Associate Professor Dr Juhana Jaafar
Dr Lim Seng Joe
Associate Professor Wan Fatma Zuharah Wan Mustapha
Dr Nadiah Ghazali

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Affiliates

ASM Management

Chief Executive Office

Hazami Habib
Chief Executive Officer (CEO)
Norazirah Ramli
Personal Assistant to CEO

Special Projects Unit

Norazwa Musiran
Special Projects Officer
Katrina Wong Suen Nee
Special Projects Officer

Internal Audit, Integrity & Quality Unit

Anis Adilla Mohd Arif
Internal Audit Executive

Bureau of International Affairs

Nina Azrah Razali
Executive
Nurhanani Zainuddin
Executive

STI Strategic Studies Unit

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Jagdish Kaur Chahil
Senior Analyst
Dr Tan Shu Ying
Senior Analyst
Nur Zuriany Zaki
Analyst
Shaneeta Visuvanathan
Analyst
Loh Chia Hur
Analyst
Mohd Ikhwan Abdullah
Analyst
Muhammad Syazwan Alauddin
Analyst
Ratnamalar Rajasingam
Analyst
Noraina Jamal Rashid
Analyst
Muhammad Haikal Hikmal Hazam
Analyst
Mohamad Akmal Mahmud
Analyst
Sazarul Aini Sabot
Assistant Executive

STI Strategic Programmes Unit

Amirul Ikhzan Amin Zaki
Head, Talent Development and Recognition
Nur Dayana Razmi
Head, Research and Collaboration
Hendy Putra Herman
Head, Talent and Collaborative Network
Asna Asyraf Saedon
Executive
Alia Samsudin
Executive
Engku Sharmila Engku Ab Latif
Executive
Usha Narayanansamy
Executive
Syazwani Ramli
Executive
Edzdiani Sharmeen Mohar
Executive
Nasihah Sakinah Halig
Executive
Nor Farahin Mohamed Jamin
Science Officer (Project Monitoring Team)
Rabiatuladawiyah Abdul Rahman
Science Officer (Project Monitoring Team)
Norehan Kadir
Clerk

Science Communication Unit

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Nazmi Lao
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Executive (Graphic Designer)
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Executive (Editor)
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Executive (Corporate Communication)
Lydia Hong Wen Xin
Executive (MOSTI)
Muhammad Syafiq Mohamad Shafiee
Assistant Executive (Corporate Communication)

IT Infrastructure & Support

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Executive
Ahmad Khudri Abd Razak
Assistant Executive

Research Fellow & Research Assistant

P. Loganathan
Research Fellow
Najihah Ismail
Siti Noor Syafiqah Ismail
Tengku Nor Amalina Raja Abd.llah
Nur Atiqah Ab Latif
Yogabalan Kumaran
Nik Nur Aimi Syahirah Nik Adnan

Corporate Services Division

Seetha Ramasamy
Manager (Corporate Services Division)

Human Resource Unit

Nur Shafawaty Ahmad
Assistant Executive (Human Resource)
Suhaila Sabri
Assistant Executive (Human Resource)
Murni @ Zahani Ariffin
Clerk (Human Resource)

Membership Unit

Norlina Hussin
Executive (ASM Membership)
Siti Noor Madiha Mansor
Executive (ASM Membership)
Nurul Azleen Ahmad Kamil
Assistant Executive (ASM Membership)
Musliha Asha'ari
Assistant Executive (ASM Membership)

Event & Logistic Unit

Natrah Rafiqah Mohd Jalil
Executive
Norain Farhana Ahmad Fuaad
Executive
Muhammad Zakwan Shah Shahrudin
Assistant Executive
Mohd Zefri Mohd Zulkefli
Assistant Coordinator
Mohamad Fathorossoim Al-Sani Abdullah Sani
Assistant Coordinator
Mohd Arshad Abdullah Zawawi
Assistant Coordinator

Finance & Accounts Unit

Rosmaniza Abdul Rahman
Senior Accountant
Nurul Ain Asyimah Mohammad
Accountant
Nur Idayu Abd Aziz
Assistant Accountant
Nurhani Zawani Posari
Assistant Accountant
Nur Adilah Rahim
Assistant Accountant
Nor Hayati Johan
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Facility Management Unit

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Executive
Siti Maslinda Basiron
Assistant Executive
Mohd Zairi Mansor
Senior Clerk
Rohani Mohd Yusop
Clerk
Rusli Othman
Assistant Operation
Muhammad Saiful Bahri Wan Din
Assistant Operation
Khairul Nisak Alias
Receptionist
Mohd Zuhairi Zakbar
Driver
Muhammad Sulaimi Sulaiman
Driver

Other Organisations

The International Council for Science Regional Office for Asia and the Pacific (ICSU ROAP)

Academician Professor Emerita Datuk Dr Mazlan Othman FASc
Director
Tengku Sharizad Tengku Chik
Senior Science Officer
Mohd Hizamdin Jaafar
Senior Admin Officer
Ahmad Sufyan Mohamed Aslam
Science Officer

The International Science, Technology and Innovation Centre Central for South-south Cooperation (ISTIC)

Dato Dr Samsudin Tugiman FASc
Chairman
Dato' Dr Sharifah Maimunah Syed Zin FASc
Director
Zarmila Salmi Sabot
Admin Officer
Abdul A'dzim Abd Rashid
Science Officer
Mohd Irza Pairuz Zamri
Science Officer
Mohd Azim Noor
Information Technology Officer
Shareeza Shaari
Driver


VIRTUALISATION
THEREAFTER
2036-2050



Meet the team!

Acronyms

AI – Artificial Intelligence
AI-KBA – Advanced Institute on Knowledge Based Actions for Disaster Risk Reduction
AIM – Anugerah Inovasi Malaysia
AIN – Anugerah Inovasi Negara
AI-SOCD – Advanced Institute in Disaster Risk Reduction with Systems Approach for Slow-Onset Climate Disasters
AKEPT – Akademi Kepimpinan Pendidikan Tinggi
AMIC - Aerospace Malaysia Innovation Centre
ASEAN – Association of Southeast Asian Nations
ASM – Academy Sciences Malaysia
AVE – Advertising Value Equivalent
BIA – Bioeconomy Innovation Award
BNM – Central Bank of Malaysia
CAST – Chinese Association for Science & Technology
CERN - European Organization for Nuclear Research
DESY – Deutsches Elektronen-Synchrotron
DLC – Distinguished Lecture and Collaboration
DSTIN – Dasar Sains, Teknologi dan Inovasi Negara
ESET – Emerging Science, Engineering and Technology
ETP – Economic Transformation Programme
EXCO – Executive Committee
FLAG – Friends of Langkawi Geopark
GTP – Government Transformation Programme
GYA – Global Young Academy
HDC – Halal Industry Development Corporation
HLTF – High Level Task Force
IA – International Affairs
IBSE – Inquiry-based Science Education
ICEE – International Centre for Engineering Education under the auspices of UNESCO
ICRRTP – Imbak Canyon Rainforest Research and Training Programme
ICSU – International Council for Science
ICSU ROAP – ICSU Regional Office for Asia and Pacific
ICT – Information and Communication Technology
IKCEST – International Knowledge Centre for Engineering Sciences and Technology under the Auspices of UNESCO
INGSA – International Network for Government Science Advice
IoT – Internet of Things
IoV – Internet of Vehicles
IRBM – Integrated River Basin Management
ISSC – International Council for Social Science
ISTIC – International Science, Technology and Innovation Centre for South-south Cooperation
IUFM – Integrated Urban Flood Management
IUWM – Integrated Urban Water Management
JST – Japan Science and Technology Agency
KEK – High Energy Accelerator Research Organization
KKMM – Ministry of Communication and Multimedia
LDC – Least Developed Country
MAKNA – National Cancer Council
MARA – Majlis Amanah Rakyat
METMalaysia – Malaysian Meteorological Department
MGI – McKinsey Global Institute
MiGHT – Malaysian Industry-Government Group for High Technology
MIMOS – Malaysian Institute of Microelectric System
MITI – Ministry of International Trade and Industry
MKN – Majlis Keselamatan Negara
ML – Machine Learning
MOE – Ministry of Education Malaysia
MOF – Ministry of Finance
MOFA – Ministry of Foreign Affairs
MOH – Ministry of Health
MOHE – Ministry of Higher Education
MOHR – Ministry of Human Resource
MOSTI – Ministry of Science, Technology and Innovation
MoU – Memorandum of Understanding
MP – Malaysia Plan
MPN – National Council of Professors
MSA – Mahathir Science Award
MSAF – Mahathir Science Award Foundation
MSU – Management & Science University
MTCP – Malaysian Technical Cooperation Programme
MyCERT - Malaysian Computer Emergency Response Team
NACSA – Agensi Keselamatan Siber Negara
NADMA – Agensi Pengurusan Bencana Negara
NAHRIM – National Hydraulic Research Institute of Malaysia
NanoMITe – Malaysia Institute for Innovative Technology
NCPP – National Centre for Particle Physics
NCSP – National Cyber Security Policy
NEM – New Economic Model
NEO – New Economic Opportunities
NIC – National Innovation Council
NISER – National ICT Security & Emergency Response Centre
NPSTI – National Policy on Science, Technology and Innovation
NSC – National Science Challenge
NSTDA – National Science and Technology Development Agency
NUOF – Newton-Ungku Omar Fund
NYA – National Young Academies
PMT – Project Monitoring Team
PPL – Langkawi Research Centre
PPP – Public-private Partnership

R&D – Research and Development
R,D&C – Research, Development and Commercialisation
RCR – Responsible Conduct of Research
RCR ICoE – Integrated Research on Disaster Risks International Centre of Excellence
RDI – Research, Development and Innovation
S&T – Science and Technology
S2A – Science to Action
SAES – Symposium on Applied Engineering and Sciences
SDG – Sustainable Development Goals
SEANDRR – South-East Asia Network for Drought Risk Reduction
SGNHDR – Steering Group on Natural Hazards and Disaster Risks
SICML – Special Interest Group on Machine Learning
SLP – Science Leadership Programme
SME – Small Medium Enterprise
ST – Strategic thrust
STEM – Science, Technology, Engineering & Mathematics
STI – Science, Technology, Innovation
STIMP – Science, Technology & Innovation Master Plan
TN50 – Transformasi Nasional
TRSM – Top Research Scientists Malaysia
TVET – Technical and Vocational Education and Training
TWG – Technical Working Group
TYAN – The World Academy of Sciences Young Affiliates Network
UCSF – University College of Sabah Foundation
UKM – Universiti Kebangsaan Malaysia
UM – Universiti Malaya
UMS – Universiti Malaysia Sabah
UNESCO – United Nations Educational, Scientific and Cultural Organisation
UniMAP – Universiti Malaysia Perlis
UPM – Universiti Putra Malaysia
USM – Universiti Sains Malaysia
UTM – Universiti Teknologi Malaysia
UTP – Universiti Teknologi Petronas
VYA – Vietnam Young Academy
WG – Working Group
YSN – Young Scientist Network
YSN-ASM – Young Scientist Network-Academy of Sciences Malaysia
YSP – Young Scholars Programme

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