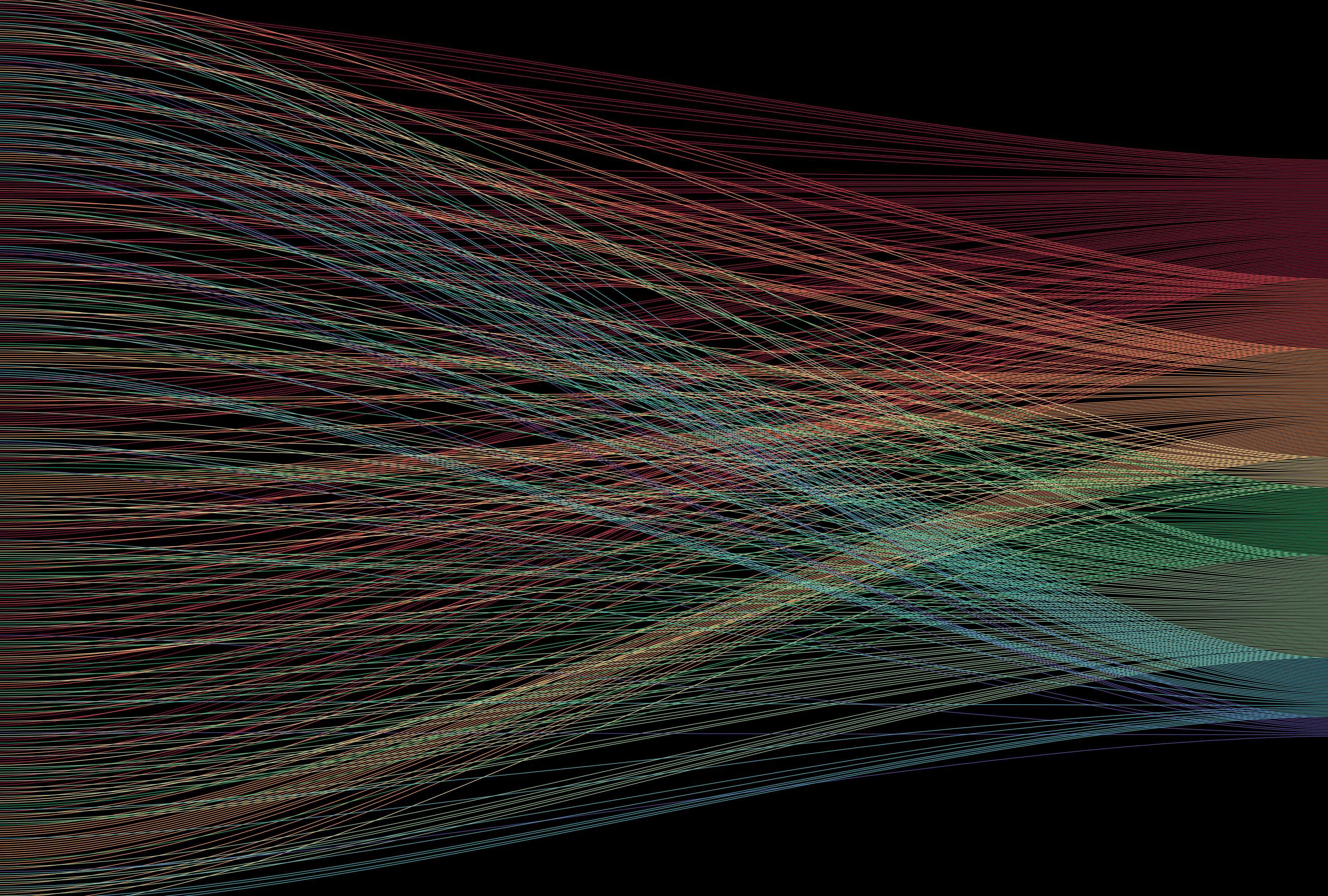




THOUGHT LEADER

2021 LAPORAN TAHUNAN
ANNUAL REPORT



COVER DESIGN CONCEPT

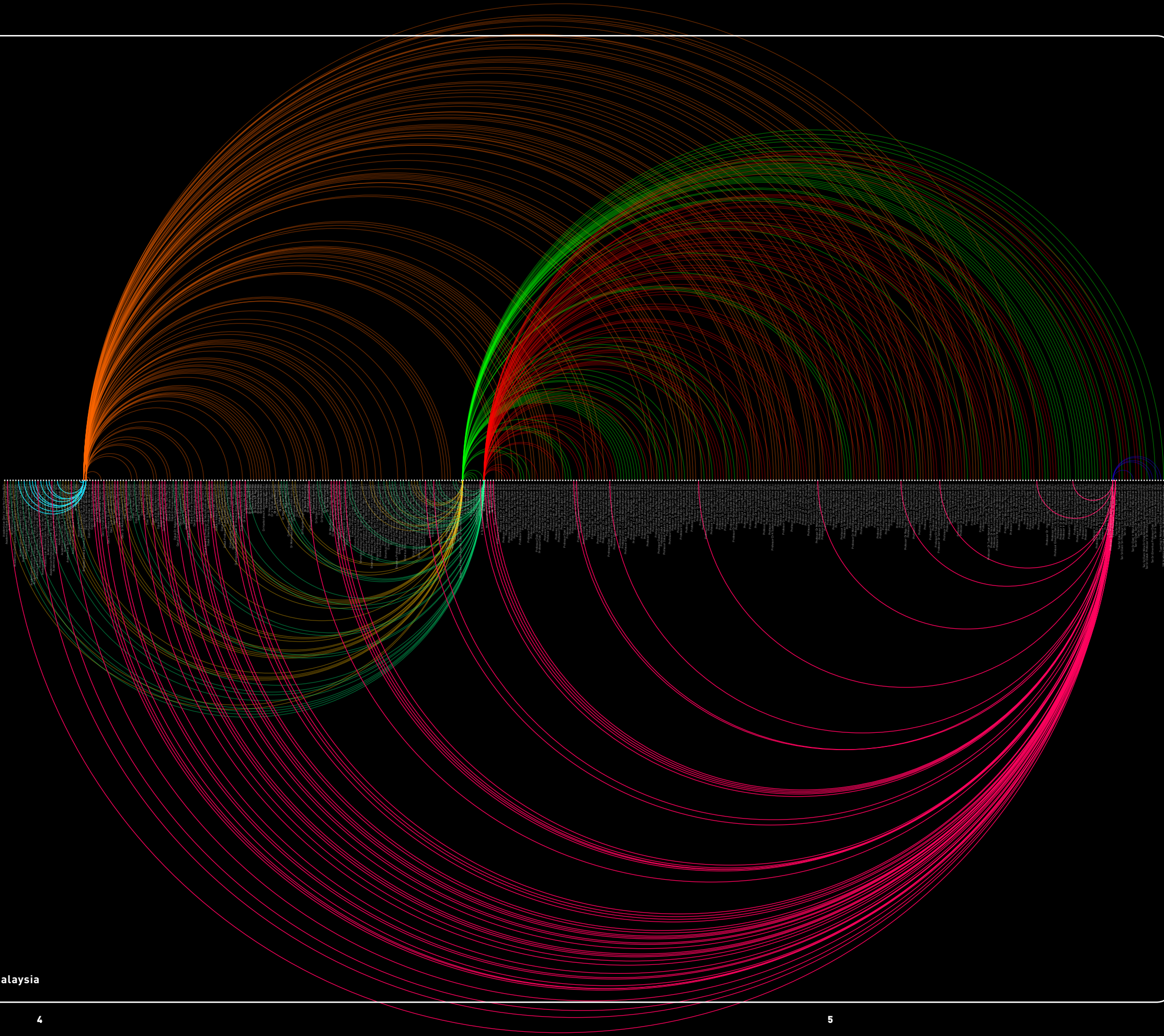
The Arc diagram featured on the cover of ASM's 2021 Annual Report depicts the infinite possibilities and potentialities of ASM as a Thought Leader providing endless flow of ideas and solutions to grand challenges for matters related to Science, Technology, Innovation and Economy (STIE). Each node represents an expert contributing within and beyond their fields together with other experts with shared values towards a common goal.



SCAN TO READ THE
DIGITAL VERSION
OF THIS REPORT



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OUR KEY DELIVERABLES

About ASM

VISION

A Thought Leader in Science, Technology, Innovation and Economy (STIE) towards a progressive, harmonious, prosperous, and sustainable society, nationally and internationally.

MISSION

To be a Thought Leader on STIE, nationally and internationally

To be the Advisory Body on national STIE policy and related matters

To be the Strategic Partner in STIE in Malaysia and globally

To advocate and make STIE a basis for economic development and societal well-being, locally and globally

To engage the public through STIE communication

GOALS

To become an independent Thought Leader on STIE, nationally and internationally

To become the trusted Advisory Body on national STIE policy and related matters

To become an influential Strategic Partner in STIE in Malaysia and globally

To become an impactful advocate and make STI a basis for economic development and societal well-being, locally and globally

To become an effective STIE communicator that attracts public engagement

PHILOSOPHY & VALUES

“Build Inside, Deploy Outside”

What we stand for,

Society-based:
placing STIE for societal benefits

Credible:
reliable, impactful, and timely

Independent:
track and provide input on systemic issues without fear or favour

Evidence-based:
ensure what we do is informed by the best available knowledge

Network-centric:
dynamic Knowledge Convergence Platform (as an organisation that connects people together leveraging on the high trust factor of its stakeholders)

Transparent:
open engagement and process

Impactful:
deploy new and better ways for impactful outcome

Action-oriented:
turn initiatives into workable solutions that bring about sustainable change

CORE FUNCTIONS

ASM strives to be the nation's Thought Leader for matters related to STI.

ASM is committed to pursuing excellence in the fields of SET for the benefit of all.

ASM STRATEGIES

Independent
Systematise ASM as an independent & impactful trailblazer in STIE

Influential
Expanding ASM's influence as a trusted partner at federal, state & global level

Sustainable
Securing sustainable resources for a progressive organisation towards supporting national interest

Agile
Enhancing organisational agility by practising good governance & professionalism

Nexus
Positioning ASM as preferred point of reference in all STIE matters

Proponent
Driving effective advocacy towards future-proof socio-economic sectors

Convene
Establishing effective science communication platforms with stakeholders at all levels federal, state & global level

12 ACTION PLANS



1 To maximize experts' involvement throughout national STIE planning in generating ideas, thoughts and knowledge



2 To intensify collaborations in strategic areas with sister academies & regional platforms



3 To undertake demonstration projects that can translate new ideas into action and build capacity with strategic partners to ensure sustainability



7 To systematise continuous monitoring & evaluation of STIE ecosystem



8 To set up a mechanism within ASM to generate revenue and ensure sustainable resources



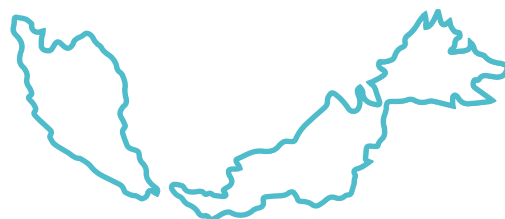
9 To imprint multipotentialite qualities among our talent by nurturing high level competencies and capabilities in multiple subjects



4 To upgrade organisational practices to adhere to national accreditation and international best practices



5 To assess & monitor organisational performance internally and externally to meet measurable outcomes and impact



6 To co-create high impact STIE initiatives at localities for transformation of socio-economic sectors



10 To enhance competency & skills of talent for future readiness through foresighting with inclusive participation from the quadruple helix



11 To support career advancement of young researchers towards instilling the "World Class, Outstanding, Winnable" (WOW) mindset



12 To create the ecosystem of open science, open access and open innovation through collaborative platforms for disruptive innovation

Foreword by President

EVER EXCELLENT, EVER VISIONARY

The Academy of Sciences Malaysia looks back proudly to 2021 as a year of achievements and a year of organisational reforms designed to yield even more excellent results. The year 2021 has materialised our capability to move progressively, focusing on undertakings to better society nationwide, particularly in the science, technology, innovation, and economy (STIE) segment. Despite the challenges, especially the COVID-19 pandemic, I am proud of how the Academy has responded and the significant outcomes we have achieved.

As we endured the pandemic, the Academy played a proactive role in the Malaysian COVID-19 response by joining the national discourse programmes: immunisation, vaccination, and task forces. The Academy had drafted the National COVID-19 Immunisation Programme (NIP) handbook in collaboration with the Ministry of Health and the Ministry of Science, Technology, and Innovation; then, the handbook was translated into several languages to increase understanding and acceptance by the society.

The efforts did not stop there. The Academy was also tasked to chair the Jawatankuasa Pembukaan Pusat Pemberian Vaksin (PPV) mobile drive-through and outreach for the COVID-19 Immunisation Task Force (CITF). We had developed the SOP for Ventilation for COVID-19 and the SOP for setting up COVID-19 PPV at Places of Worship. Our team of data scientists from YSN-ASM also designed the plan for Malaysian drive-through vaccination centres, which was rolled out nationwide.

I am delighted to make known that ASM's flagship report, Science Outlook 2020, is a trailblazing document on many fronts. The theme 'Unlocking the Future' is the first ASM report to include growth trajectory modelling and strategic foresight to future-proof Malaysia's STI policy development and implementation. Together with the inputs from our strategic partners and other relevant stakeholders, this is the first Science Outlook report that adopted the ecosystem approach to scan Malaysia's progress in the pillars of the economy, society, and environment within 30 years. To date, the report has been downloaded 1,194 times from 28 countries.

Academy of Sciences Malaysia continues to be the nation's STI purpose-driven agency under the purview of the Ministry of Science, Technology, and Innovation. In playing the role of the thought leader and changemaker, the re-establishment of the WEHAB++ committee (Water, Energy, Health, Agriculture, Biodiversity) displayed ASM's focus on Planetary Health and other cross-cutting issues to contribute effectively to the nation.

The re-establishment of the WEHAB++ committee will dive deep into exchanges of ideas and solutions related to Planetary Health. Following the previous reports and studies such as Science Outlook, Special Interest Groups (SIGs) on COVID-19, Zoonotic Diseases, Precision Biodiversity and Blue Economy, the Academy had curated the findings and presented a paper on the Planetary Health concept to Malaysia's High-Tech Nation Council on the 5th of November 2021. The paper was also accepted to be tabled at the National Science Council meeting in April 2022.

A significant milestone for ASM in 2021 is also evident in the work and policy collaboration with multiple ministries. The Academy has been appointed by MOSTI as a strategic partner to review and update the 2016 draft of the National Nanotechnology Policy and Strategy (NNPS) to develop NNPS 2021-2030. This review provides strategic direction and strengthens the national nanotechnology sector.

Aside from that, the Academy has been working closely with the Economic Planning Unit and the Ministry of Environment and Water (KASA) on the commission study of Water Sector Transformation 2040 (WST2040). As a strategic partner, ASM has been tasked to review and analyse current policies, undertake comparative strategy analysis/business models, study the potential of the nation's water sector industry, prepare a Transformation Strategy and Initiative Implementation Framework, undertake consultations with stakeholders and experts, and prepare a complete roadmap for the National Agenda on the WST2040.

Changemaker

Academy of Sciences Malaysia continues to be the nation's STI purpose-driven agency under the purview of the Ministry of Science, Technology, and Innovation. In playing the role of the thought leader and changemaker, the re-establishment of WEHAB++ committee displayed ASM's focus on Planetary Health and other cross-cutting issues to contribute effectively to the nation.

Professor Emerita Datuk Dr Asma Ismail FASc



Continuity of reaching out to extensive networking groups globally has always been on ASM's agenda. In adapting to the new norm, the Academy has organised a few breakthrough events to enhance interdisciplinary knowledge sharing, learning and collaboration between local scientists in Malaysia and worldwide. The YSN-ASM International Scientific Virtual Conference 2021 (ISVC) became one of the highlights that offered an inclusive platform to address national, regional, and global challenges through interdisciplinary collaboration within the ASEAN region.

ASM also partnered with the Mahathir Science Award Foundation in organising the International Conference on Tropical Sciences – Contribution to Sustainability (TropSc 2021) to continue the footprint of championing Planetary Health. The conference focuses on four themes: tropical architecture, tropical medicine, tropical agriculture, and tropical natural resource.

I am also proud to address that ASM's fellows have been recognised internationally. For 2021, we have our experts representing Malaysia as a member of the UNESCO Open Science Advisory Committee, a member of the World Health Organisation (WHO) Science Council and selected as a Fellow in The World Academy of Sciences (TWAS). The acceptance of our fellows shows how they can share values and wisdom with the global community on STIE.

In addition, ASM nurtured its relationship with its extensive network of partners throughout the year. The significant collaboration with other academy bodies will collectively synergise STI issues locally and globally. On the 6th of October 2021, the Academy signed a Memorandum of Understanding (MoU) for Scientific Collaboration in Research to foster STI collaboration with the Palestine Academy for Science and Technology (PALAST). Our Academy also strengthens its engagements in the effort to cultivate a better bond with different scientific bodies around the world. In April and July this year, we met virtually with the Bulgarian Academy of Sciences and Academy of Sciences Turkmenistan. The meeting delves into developing scientific ties between Malaysia and the two countries, where it would also see the possibilities for future cooperation in specific areas of science and innovation.

At the Academy, we are always looking to increase the capacity and capability of Malaysia's great minds to contribute to a better nation. ASM aspires to strengthen its mark as the thought leader nationwide. With 836 expert networks, the figure currently represents the biggest intellectual gathering in Malaysia under an agency. The Academy introduced the East Coast, Sabah, and Sarawak Chapters in 2021. This rounds up the coverage of ASM Chapters nationwide, along with the Northern and Southern Chapters.

Following the expansion of our chapters, various programmes had been carried out extensively to share our insights in the STIE field. The Academy had done about 241 activities throughout 2021 that covered programmes, webinars, workshops, and stakeholders' engagement. These activities have also made the Academy more visible to the public. The Academy's social media platforms have shown significant progress in how we connect with the community. This year, the Academy has close to 50,000 followers across all platforms, such as Facebook, Instagram, Twitter, YouTube, LinkedIn and TikTok.

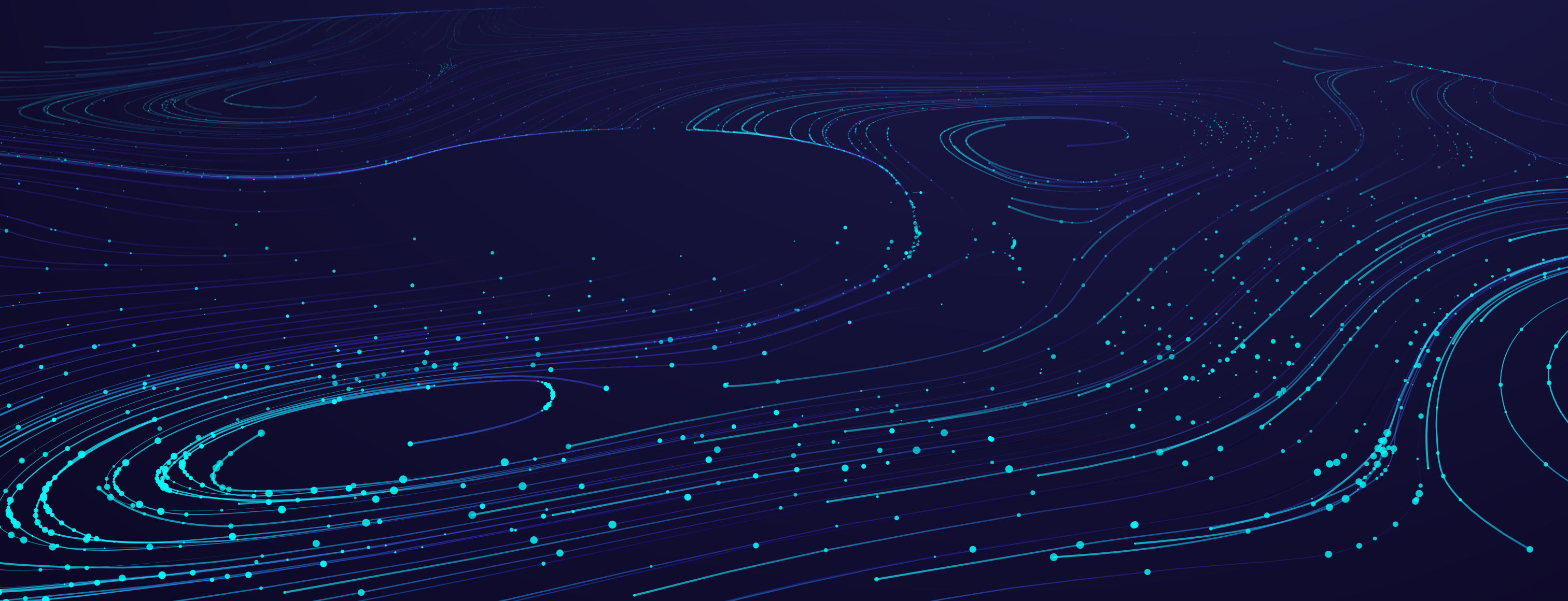
From the inaugural strategic plan drafted 13 years ago, the Academy has made a lot of progress and received many praises for the work that we had done. The Academy's journey now continues as it focuses on the second strategic plan for 2021 to 2025, in which the Academy aspires to play a crucial role in pushing for advancement and elevating itself as a changemaker, guided by the WOW mindset (World-class, Outstanding and Winnable).

This strategic plan will focus on five new missions and five new goals to achieve the vision, with a national and international concentration on three STIE impact areas (economic development, societal well-being, and environmental sustainability). I am confident that our Expert Network (Senior Fellows, Fellows, TRSM, Associates, and YSN-ASM) will whole-heartedly give their experience and ability to this cause.

Building on ASM's excellent achievements in 2021, let us continue to strive for greater heights and have more memorable successes in the future

Professor Emerita Datuk Dr Asma Ismail FASc.

CORPORATE GOVERNANCE



ASM Council together with the ASM Management is committed to improve ASM’s Corporate Governance through best practices. This year, ASM has updated several policies and procedures relevant to financial management, which includes asset management.

ASM Council

The ASM Council established under the Academy of Sciences Malaysia Act 1994 is the decision-making body of ASM. It is responsible to carry out the 14 functions of the Academy as well as manage the Academy’s affairs. The Council is responsible to ensure that ASM remains an independent and credible body in championing matters of science, technology, innovation and economy that are of national importance. The Council also administer the ASM Fund.

Composition and Selection of ASM Council

The membership of ASM Council comprises 16 members which includes The President, Vice-President, Secretary-General, Honorary Treasurer and 12 Ordinary Council Members.

ASM President is appointed from among Fellows for a three-year term by the SPB Yang di-Pertuan Agong based on the recommendation of the Minister of Science, Technology and Innovation. ASM President is eligible to be reappointed for the second term, provided that the person does not hold the position for six consecutive years.

Besides the ASM President, the other Council members are nominated from among Fellows to be elected at the Annual General Meeting. Fellows elected for the position of Vice-President, Secretary-General, Honorary Treasurer and 12 Ordinary Council Members are eligible to serve the position for two years. At the end of their term, they are also eligible to be re-nominated for the same position, provided the person does not hold the same position for four consecutive years. The balance of out-going and in-coming members provides sustainability and opportunity to Fellows to take part in the leadership role at ASM while ensuring the continuity of ASM policies.

Hence, ASM Council comprise of Fellows of the Academy.

Each year, a number of Council positions will fall vacant and new members will be elected to fill the position at the Annual General Meeting. The balance of out-going and in-coming members provides sustainability and opportunity to Fellows to take part in the leadership role at ASM while ensuring the continuity of ASM policies.

COUNCIL MEMBERS

1) PROFESSOR EMERITA DATUK DR ASMA ISMAIL FASc
President

2) PROFESSOR DATO’ IR DR A. BAKAR JAAFAR FASc
Vice-President

3) DATUK PROFESSOR DR AWG BULGIBA AWG MAHMUD FASc
Secretary-General

4) DATIN PADUKA SETIA DATO’ DR AINI IDERIS FASc
Honorary Treasurer

5) ACADEMICIAN TAN SRI DATO’ IR TS AHMAD ZAIDEE LAIDIN FASc

6) ACADEMICIAN PROFESSOR DATO’ DR KHAIRUL ANUAR ABDULLAH FASc

7) PROFESSOR DATO’ DR AHMAD IBRAHIM FASc

8) PROFESSOR DR AHMAD ISMAIL FASc

9) DR HELEN NAIR FASc

10) PROFESSOR DATO’ DR JAFRI MALIN ABDULLAH FASc

11) ACADEMICIAN PROFESSOR DATIN PADUKA DR KHATIJAH MOHD YUSOFF FASc

12) PROFESSOR DR MAHENDHIRAN SANGGARAN NAIR FASc

13) DR MOHAMAD KAMAL HJ HARUN FASc

14) PROFESSOR DR NOORSAADAH ABD RAHMAN FASc

15) EMERITUS PROFESSOR DR PHANG SIEW MOI FASc

16) PROFESSOR DR YVONNE LIM AI LIAN FASc



Conflict of Interest

Council Members are required to declare their involvement, directly or indirectly in any of the agenda tabled to ASM Council. Should a Council member declare their conflict of interest, the respective person will be required to abstain from the decision-making process and remain absent for the duration of the respective agenda. This will be recorded in the minutes of meeting.

Role of President and CEO

The roles and responsibilities of the President and Chief Executive Officer (CEO) are demarcated. President is the Leader of ASM and leads ASM Council in determining ASM's direction, policies, principles and stand, and the activities. President also leads discussions on all matters that are brought to the attention of Council. President together with other EXCO members ensures that all Council decisions are translated into executive actions. ASM President carries out the duties on a pro bono basis during the term of his/her appointment and is not salaried by ASM.

Whereas CEO is the chief controlling officer of ASM and is responsible to lead ASM Management and oversee the overall administration matters. CEO's role includes strategising and translating Council decision into executive actions based on ASM's existing strategies, policies and procedures. CEO is appointed by ASM Council and is a civil servant salaried by ASM.

Council Meetings and Members Attendance

ASM Council Meetings are to be chaired by ASM President will discuss matters that requires approval, deliberation and notification. Following are reports presented at ASM Council Meetings:

- 1) Minutes of Executive Committee Meeting (EXCO)
- 2) Report of Finance Committee
- 3) Report of Science, Technology and Innovation Policy Advisory Committee (STIPAC)
- 4) Report of Membership Committee
- 5) Report of Audit Committee
- 6) Report on KPI for ASM and Ministry

Besides the above-mentioned reports, ASM Management also tables proposals for ASM to carry out new programmes or studies for the Council's approval, as well as update on the on-going program or studies.

This year, the ASM Council has convened all its five meetings online. Following are the dates of the meetings:

- 143rd Meeting 11 March 2021
- 144th Meeting 15 April 2021
- 145th Meeting 15 July 2021
- 146th Meeting 30 September 2021
- 147th Meeting 9 December 2021

The attendance of Council members in 2021 meetings is provided as follows:

| Council Members | Number of Meetings Attended | Percentage of Attendance |
|--|-----------------------------|--------------------------|
| Professor Emerita Datuk Dr Asma Ismail FASc | 5 | 100% |
| Professor Dato' Ir Dr A. Bakar Jaafar FASc | 5 | 100% |
| Datuk Professor Dr Awg Bulgiba Awg Mahmud FASc | 5 | 100% |
| Datin Paduka Setia Dato' Dr Aini Ideris FASc | 5 | 100% |
| Academician Tan Sri Dato' Ir Ts Ahmad Zaidee Laidin FASc | 4 | 80% |
| Academician Professor Dato' Dr Khairul Anuar Abdullah FASc | 1 | 20% |
| Professor Dato' Dr Ahmad Ibrahim FASc | 5 | 100% |
| Professor Dr Ahmad Ismail FASc | 5 | 100% |
| Dr Helen Nair FASc | 5 | 100% |
| Professor Dato' Dr Jafri Malin Abdullah FASc | 5 | 100% |
| Professor Datin Paduka Dr Khatijah Mohd Yusoff FASc | 5 | 100% |
| Professor Dr Mahendhiran Sanggaran Nair FASc | 5 | 100% |
| Dr Mohamad Kamal Hj Harun FASc | 5 | 100% |
| Professor Dr Noorsaadah Abd Rahman FASc | 5 | 100% |
| Emeritus Professor Dr Phang Siew Moi FASc | 5 | 100% |
| Professor Dr Yvonne Lim Ai Lian FASc | 5 | 100% |

Council members are not paid any remuneration apart from the meeting allowances when they attend the Council meetings. Meeting allowances paid are at RM750 per meeting to ASM President while other members are paid RM500 per meeting.

Availability of Information

Council Members are provided online access to the meeting documents at least three days prior to the meetings. Each member is required to study the documents and agenda provided before the meeting for an effective meeting. The Council Meeting document consists of at least the following matters:

- Minutes of the last meeting
- Committee Reports requiring Council's approval
- Report on ASM programme and studies

Annual General Meeting

The 26th Annual General Meeting which was held online on 24 April 2021 was attended by 224 Fellows. The Meeting endorsed the minutes of 25th AGM and approved the Financial Statements ending 31 December 2020 and the 2020 Annual Report to be tabled at the Parliament. Subsequent to this, the 2020 Annual Report together with the Financial Statements ending 31 December 2020 was presented and approved at Dewan Rakyat on 23 March 2022 and Dewan Negara on 28 March 2022.

Besides that, the 26th AGM elected 29 new Fellows for the year 2021 and in-coming Council Members for the term 2021-2023. Following are details of elected nominees:

Newly Elected Council Members

Secretary General

- Datuk Professor Dr Awg Bulgiba Awg Mahmud FASc

Honorary Treasurer

- Datin Paduka Setia Dato' Dr Aini Ideris FASc

ASM Council Members

- Academician Tan Sri Dato' Ir Ts Ahmad Zaidee Laidin FASc
- Dr Helen Nair FASc
- Professor Dato' Dr Jafri Malin Abdullah FASc
- Academician Professor Datin Paduka Dr Khatijah Mohd Yusoff FASc
- Professor Dr Mahendhiran Sanggaran Nair FASc
- Dr Mohamad Kamal Hj Harun FASc
- Professor Dr Noorsaadah Abd Rahman FASc
- Emeritus Professor Dr Phang Siew Moi FASc

Newly Elected Fellows



Biological, Agricultural and Environmental Sciences

- Professor Dr Ahmad Zaharin Aris FASc
- Professor Dato' Dr Aileen Tan Shau Hwai FASc
- Professor Dr Amin Ismail FASc
- Professor Datuk Wira Dr Raha Abdul Rahim FASc
- Dr Ramli Othman FASc
- Professor Dr Rosli Md Illias FASc
- Professor Dr Wan Kiew Lian FASc



Chemical Sciences

- Professor Dr Azman Hassan FASc
- Professor Dr Ishak Ahmad FASc
- Dr Shahidah Mohd Shariff FASc
- Professor Dr Teh Geok Bee FASc



Engineering Sciences

- Dato' Ir Hanapi Mohamad Noor FASc
- Professor Ir Dr Mohd Azlan Hussain FASc
- Professor Ir Dr Mohd Sapuan Salit @ Sinon FASc
- Professor Ir Dr Suzana Yusup FASc
- Professor Ir Ts Dr Zainuddin Abd Manan FASc



Mathematics, Physics and Earth Sciences

- Professor Dr Sidek Ab Aziz FASc



Information Technology and Computer Sciences

- Professor Dato' Ts Dr Aziz Deraman FASc



Medical and Health Sciences

- Professor Ts Dr Cheah Yoke Kqueen FASc
- Professor Dr Fong Mun Yik FASc
- Professor Dr Lau Yee Ling FASc
- Professor Dr Maznah Dahlui FASc



Science & Technology Development and Industry

- Professor Dr Aziz Arshad FASc
- Professor Dr Rahinah Ibrahim FASc
- Mr Teoh Lay Hock FASc
- Professor Dr Zakiah Ahmad FASc



Social Sciences and Humanities

- Professor Ts Dr Ooi Keng Boon FASc
- Distinguished Professor Dato' Dr Rajah Rasiah FASc
- Professor Dr Sarinah Low Abdullah @ Low Wah Yun FASc

President announced at the 26th AGM, the appointment of two ASM Fellows as Senior Fellows. The appointment is made by ASM Council based on recommendation from a Special Panel. The newly appointed Senior Fellows for the year 2021 are as follows:

- Academician Emeritus Professor Dr Cheong Soon-Keng FASc in recognition of his leadership in medical education and research, particularly in Hematology and stem cell transplantation.
- Academician Professor Datin Paduka Dr Khatijah Mohd Yusoff FASc in recognition of her outstanding contributions in innovative scientific research, particularly in Newcastle disease virus (NDV).

ASM Committees

ASM Council establishes various committees such as working committees, task forces and Special Interest Group to carry out its programmes and studies. As such, ASM Council holds the authority to establish a committee and appoint its Chairperson.

Each committee is represented by members of ASM Expert Network especially ASM Fellows. This year, there were 36 committees, 47 task forces being established by ASM Council. The ASM Council also reviews the performance of its committees from time to time and closes the committees which has completed its task.

Executive Committee (EXCO)

The Executive Committee (EXCO) is responsible to monitor and oversee ASM's affairs and to support the implementation of ASM functions. The EXCO is often referred to by ASM Management for urgent approval and advise in managing ASM's day-to-day operations. The Committee also deliberates and review programme proposals and draft ASM policies prior to tabling the paper to ASM Council for approval.

The EXCO consist of the President, Vice-President, Secretary General dan Honorary Treasurer, who convenes at least four times per year. The EXCO meetings are chaired by the ASM President.

Finance Committee

The Finance Committee is responsible for overseeing the planning, implementation and monitoring of procedures, system and financial reporting related to ASM's finances.

The functions of Finance Committee comprise the following:

- Arrange and control ASM's finances
- Consider and endorse the estimated yearly budget and seek the Council's approval
- Review and endorse the yearly Financial Statements and seek the Council's approval
- Provide advice related to investment
- Review the investments performance reports of ASM Funds
- Approve finance- and accounts-related policies and recommend the adoption of government circulars if relevant to ASM
- Approve the disposal request of ASM assets and debt write-offs

The Finance Committee is chaired by the Honorary Treasurer and consists of at least six members from among Fellows. The Finance Committee convenes at least six times a year.

Audit Committee

The Audit Committee is established to improve ASM's internal control and to strengthen ASM's management and governance. The chair of the Audit Committee is appointed by the ASM Council. The Committee comprises four other members and convenes at least four times a year.

The Audit Committee establishes yearly audit activities, which include audit charter, and conduct study on the capacity and effectiveness of ASM internal control. The Committee reports to the ASM Council should any malpractice is found and requires action.

Membership Committee

The Membership Committee is chaired by the Vice-President with at least eight members, including the Secretary General. The Committee is responsible for overseeing the selection process of new Fellows and appointment of Associates. Besides that, the Committee is also responsible to manage the matters of membership affairs.

This Committee is required to convene at least twice a year to recommend suitable nominees for consideration as Fellows and Associates for ASM Council's approval.

Science, Technology and Innovation Policy Advisory Committee (STIPAC)

The Science, Technology and Innovation Policy Advisory Committee (STIPAC) coordinates, consolidates and evaluates study proposals or reports prepared by the study committees. STIPAC ensures that all recommendations put forward by ASM are positioned to fulfil the nation's importance. All proposal papers or study reports must be approved by STIPAC before they are submitted to relevant ministries.

The STIPAC meetings are chaired by the President with at least 12 members. STIPAC members consist of chairs or representatives of eight Disciplines and several other strategic and relevant committees. STIPAC meetings convene at least four times a year.

ASM Management

The ASM Management comprises staff from the Higher Management Group (1%), Management and Professional Group (67%) and the Support Group (32%). The Management team are civil servants appointed and salaried by ASM. Nine percent of ASM staff are permanent appointees, while 91% are appointed under the Contract of Services (CoS) scheme. Thirty-seven analysts, 30 executives and 32 support staff carries out ASM’s studies and programmes, administration, and finances.

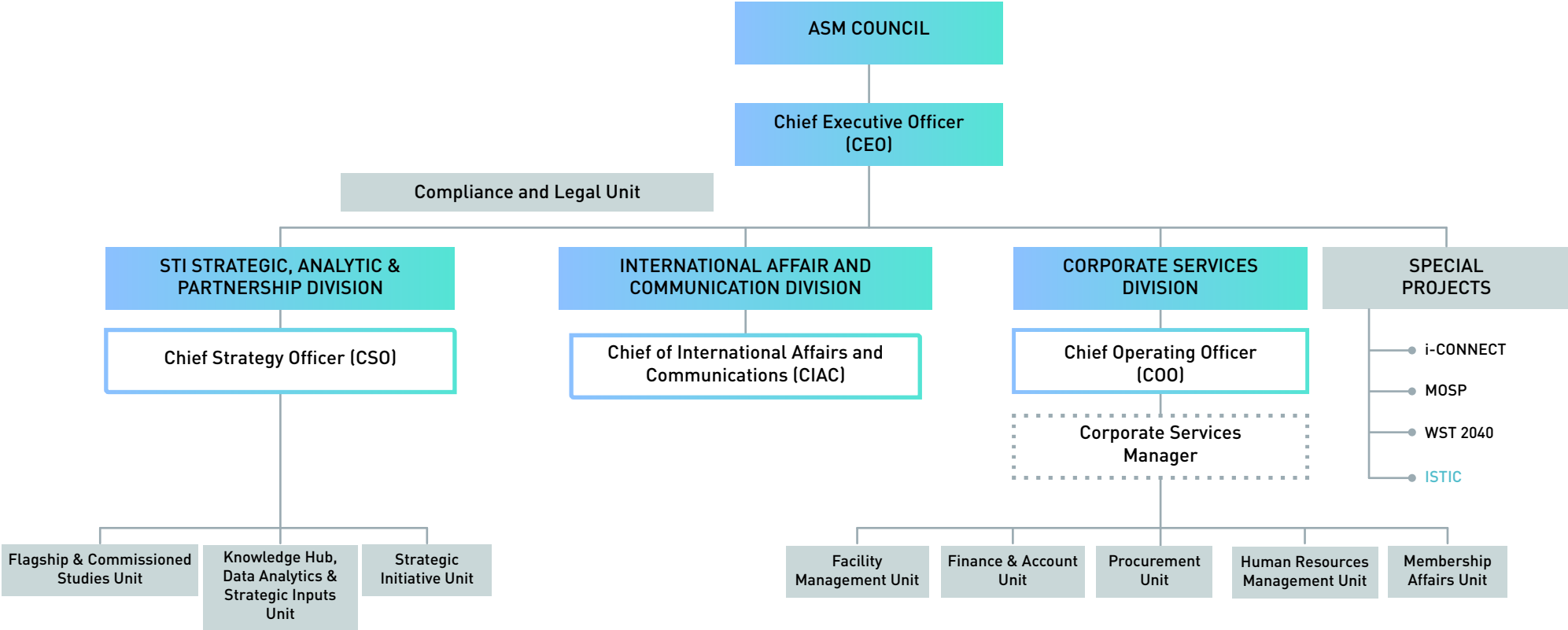
The ASM organisation structure was restructured this year, establishing three divisions headed by a Chief Officer each. The CEO is assisted by these Chief Officers to regulate, monitor and manage ASM’s operations.

The STI Strategic Studies, Analytics and Partnership Division engages multiple stakeholders to carry out strategic studies and programmes. The recommendation from the studies on various STIE topics were presented to the Government for adoption. Meanwhile, STIE programmes are implemented to bring science and technology closer to the nation.

The International Affairs and Communication Division

is responsible for fostering and maintaining communication with national and international stakeholders. The division carries out these responsibilities via ASM’s various programmes and initiatives. ASM leverages on various platforms and media to curate its content for all.

The Corporate Services Division supports other divisions and units in implementing ASM activities. This division is responsible towards the management of ASM administration, finances, procurements, assets and facilities, human resources and membership affairs.



- | | | | |
|--------------------------|-------------------------|--------------------------|----------------------------|
| 1 Hazami Habib | 5 Norsuhada Adnan | 9 Najib Mohd Idris | 13 Jagdish Kaur Chahil |
| 2 Nitiavathy Karunaharan | 6 Anis Adilla Mohd Arif | 10 Saiful Suhairi Suarni | 14 Nur Dayana Razmi |
| 3 Seetha Ramasamy | 7 Dharshene Rajayah | 11 Dr Hoh Chin Chin | 15 Dr Sheril Rizal Vincent |
| 4 Azri Mohamad Saleh | 8 Hazrul Liki | 12 Norazwa Musiran | 16 Nur Hanisah Ismail |

From the Desk of CEO



The year 2020, has taught us to build our resilience and embrace uncertainty. 2021 was even more challenging as expectation to adapt and strive against the challenges were high. Nevertheless, the ASM Management team ushered the year with confidence.

Funding and Operations

ASM recorded an income of RM18.96 million for the year 2021.

ASM receives an annual operating grant for its office operations, supplies and staff emolument. This year, we received operating grant of RM10.74 million which also included allocation for ASM office maintenance. With this allocation, ASM managed to conduct repairing works of electrical, piping, air conditioning and air ventilation at ASM office located at Matrade Tower and Jalan Tun Ismail.

Apart from that, ASM also managed eight commissioned studies entrusted by five ministries or agencies with grant value of RM11.4 million. For full report on ASM financial performance, read page 110.

Programmes and Activities

I am proud to report that the Management team has successfully completed its planned programmes despite challenges of post covid. We continued to organise programmes and activities virtually. Although we missed meeting our members of Expert Network and stakeholders in person, the virtual programmes have certainly reached larger audience and had ripple effect impacts.

The launching of the MySTIE 10-10 in 2020 required active engagements with various stakeholders. Thus, ASM conducted 128 engagements on 10-10 MySTIE with federal & state governments, agencies, IHLs of both public & private, industries, professional bodies, corporates, and NGOs.

In 2021, Governments around the world raced against time to provide vaccine, to as many people as possible to save lives in the fastest possible time. We are honoured to be given the opportunity to work with the Malaysian Government in the National COVID-19 Immunisation Programme (PICK). ASM mobilised eight data scientists to provide data analytics to the PICK Committee for an effective implementation of PICK programme throughout the Nation. We were also involved in five initiatives under PICK namely, for *Pusat Pemberian Vaksin* (PPV) as well as development of SOP for places of worship, ventilation, drive through PPVs and PPVs for people with disabilities.

Apart from this, ASM has also worked on 13 collaboration programmes with the partnership of 14 various organisations which includes ministries and Institution of Higher Learning (IHLs)

I am also proud to inform that ASM achieved all planned Key Performance Index for the year registered under the Outcome Based Budgeting for MOSTI. Following is a snapshot of our achievements:



View page 165 for full list of programmes.

STRATEGIC INPUT



INITIATIVES & ACTIVITIES



MEDIA COVERAGE & OUTREACH



A year of transformation

ASM drafted its 3rd Strategic Plan for 2021-2025. The newly crafted strategic plan paves the way for ASM to be a change maker. Thus, the coming years promises progressive and exciting times for ASM.

ASM Management has persisted in finding creative approaches to translate the knowledge of ASM Expert Network in an easily understandable manner. We managed to set up a studio named Prisma Studio to produce creative works such as podcast, video recordings, live streaming of ASM programmes and photo shoots. I am assured that with this facility, ASM will be able to produce quality in-house production to communicate the work of ASM to general public especially the young.

We also upgraded ASM accounting system to SAGA GRP 9.0. ASM Management is optimistic that with the new system, we will be able to produce accurate, timely and reliable analysis and reports for effective decision making.

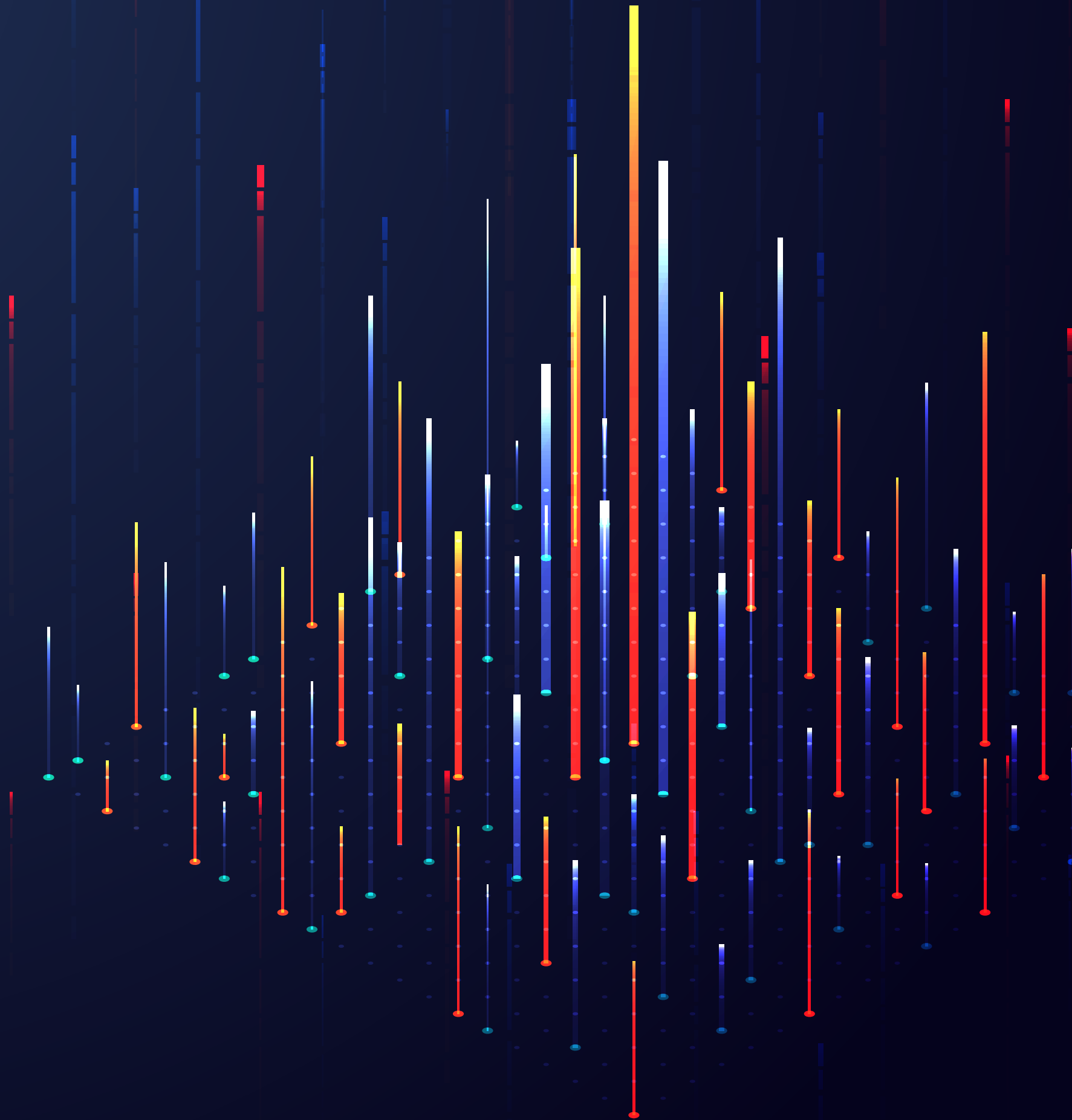
Besides, ASM also extended its office premise at Matrade tower providing a more conducive workspace for the management team which includes more rooms for discussions and meetings.

Appreciation

Finally, I would like to extend my deepest appreciation to ASM President and Council Members for their guidance and leadership provided to the Management team. I thank members of ASM Expert Network who have stayed committed with ASM throughout our journey, enabling ASM to achieve its goals.

I am also grateful to the support of enthusiastic and talented ASM team and facilitation provided by colleagues at the ministries. I am confident that ASM will continue to progress making a difference at both national and international level.

**VOICE OF
REASON**

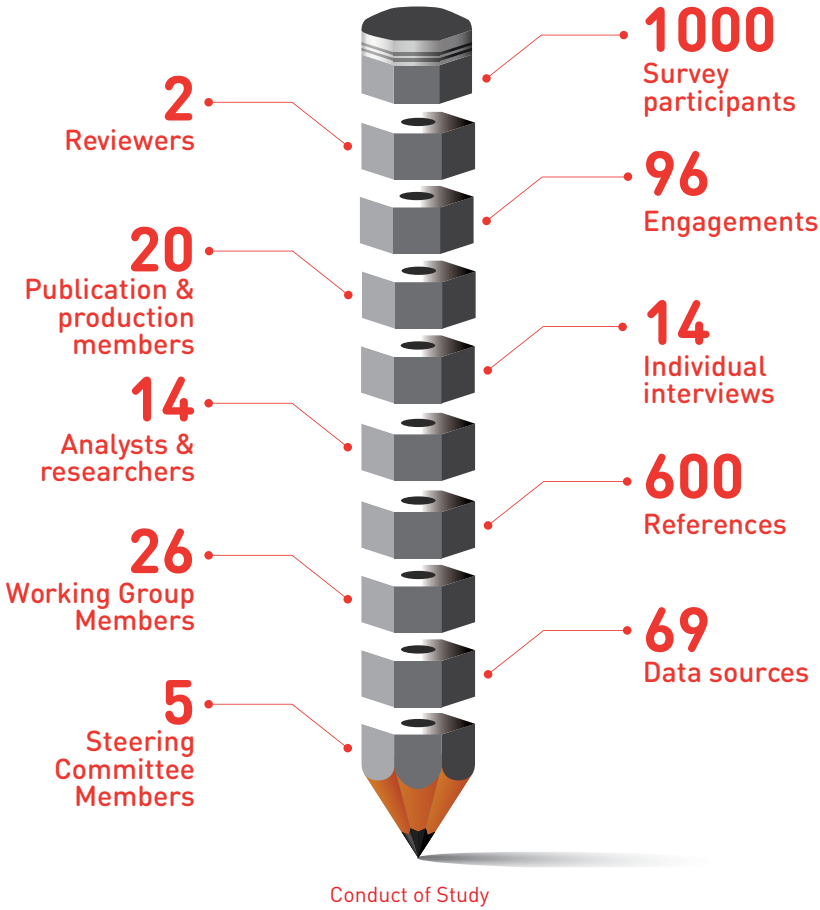


SCIENCE OUTLOOK 2020: UNLOCKING THE FUTURE

The Science Outlook studies takes stock of our successes and understanding the gaps of Malaysia's STI landscape through a comprehensive, independent data-driven analyses and benchmarking. The findings of these studies provide an understanding on how to increase STI proficiency and to transform the coordination of STI policies as part of the efforts to mainstream STI at all levels in the country.

The Science Outlook 2020 – Unlocking the Future (SO2020), is a shift away from the mould of previous editions in that it documents the progress and development of Malaysia's STI Ecosystem over the last 30 years since the declaration of Vision 2020 in 1991.

This third edition was made possible through various engagements with stakeholders. Data sets obtained also enabled forecasting the nation's growth trajectory towards becoming a high-income nation by 2030, as envisaged by the Shared Prosperity Vision 2030 (SPV 2030).



Unlocking The Future

- 1

Strengthening STIE ecosystem to support Whole-of-Government and Whole-of-Society approach towards global competitiveness and sustainable development.
- 2

To institutional strategic foresighting to create a vibrant, agile and responsive STIE ecosystem to set the future direction for the sustainable development of the country.
- 3

To establish infostructure as a basic utility and incorporate STIE-driven infrastructure to transition society and enterprises towards embracing the knowledge-based digital economy and services.
- 4

To nurture future-ready talent to generate new sources for socio-economic growth and sustainable development.
- 5

To foster a culture of knowledge sharing and strategic collaborations to strengthen local and global STIE knowledge networks in niche areas.

The progress and development are viewed through three Impact Pillars, which are aligned to the national and international targets and aspirations. The Impact Pillars view the impact of STI over 30 years of Malaysia's development in terms of economic vibrancy, societal well-being, and environmental sustainability. Several gaps were identified in Malaysia's STI ecosystem that continue to prevent the fulfilment of STI initiatives to move the nation towards becoming an innovation- and knowledge-led economy.

Inconsistent STI planning has led to a stunted socio-economic and environmental development of the country. Malaysia needs to set STI priorities and directions across multiple agencies and economic sectors in a focus manner; these can no longer remain fragmented. The governance for STI and socio-economic development must be transparent, accountable, and well-coordinated between the Federal and State authorities. As such, this study proposes cross-cutting recommendations that are holistic, dynamic, and ecosystem-centric for Malaysia to step out of the middle-income trap.



10-10 MySTIE Framework

Since the 10-10 MySTIE Framework’s launch in December 2020, ASM has been working continuously towards increasing awareness and understanding by engaging with ministries, state governments, agencies, private sectors, academia, and civil societies. With consistent and synergistic effort from stakeholders, the adoption of the 10-10 MySTIE Framework is hoped to create a systematic approach for Malaysia to be competitive and innovative in the science and technology domain.

10-10 MySTIE Framework being featured in the 12th MP’s eleventh chapter titled Boosting Digitalisation and Advanced Technology. This indicates that ASM’s input was regarded with high value.

Through more than 130 stakeholder engagements including 10 international engagements in the past year, the 10-10 MySTIE Framework has been adapted, implemented and incorporated in 9 position papers, 4 joint ministerial task forces, 6 strategic studies for new policy formulation and national plans; with a visibility of

The 10-10 MySTIE Framework was showcased at the Malaysia Pavilion during Dubai Expo 2020. In expanding its global outreach, ASM collaborated with MOSTI and Malaysian Green Technology & Climate Change Corporation (MGTC) to curate the content for the international trade and business exhibition showcase.

Additionally, Malaysia was showcased as one of the case studies on best practices related to foresighting in the United Kingdom government’s “Features of Effective Systemic Foresight in Governments around the World” study.

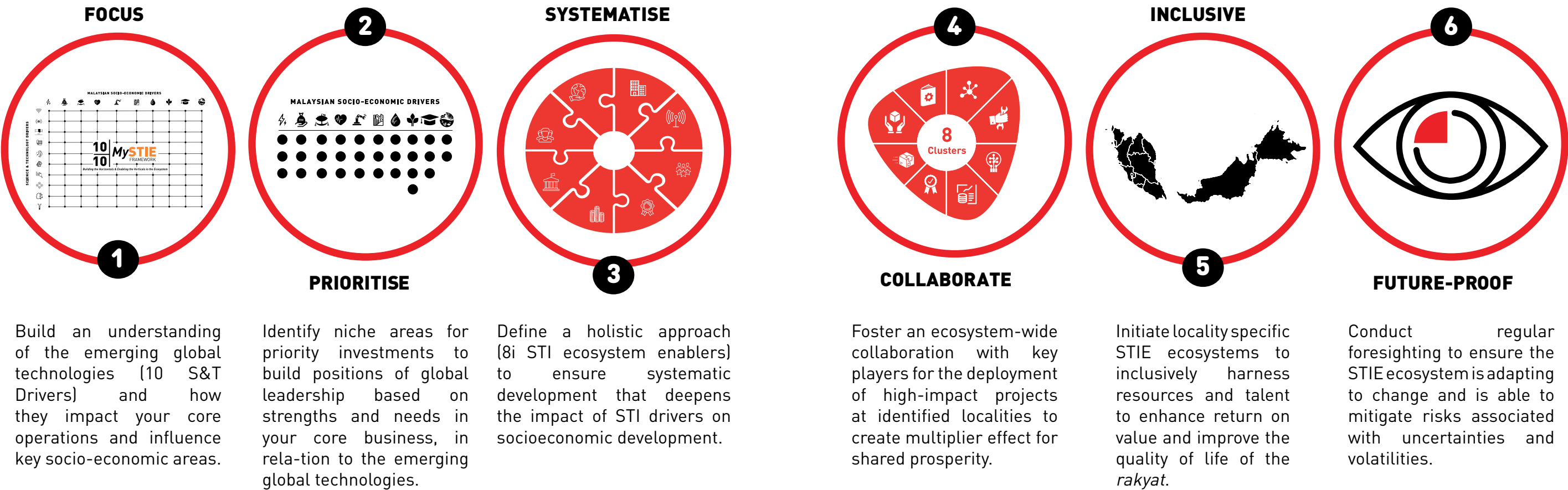
Using the whole of government and society approach, the Framework is intended to boost Malaysia’s global competitiveness by ensuring that STIE development will enhance socioeconomic growth. In achieving these goals, ASM has reached out to pave the next steps by bringing the 10-10 MySTIE to the ground. State governments are now incorporating the Framework in its planning and implementing activities for regional prosperity. With STIE, ASM believes that no part of the community will be left behind as we transition into a sustainable, progressive, prosperous, and harmonious developed nation.

7,000
downloads

14,000
readers

57
countries

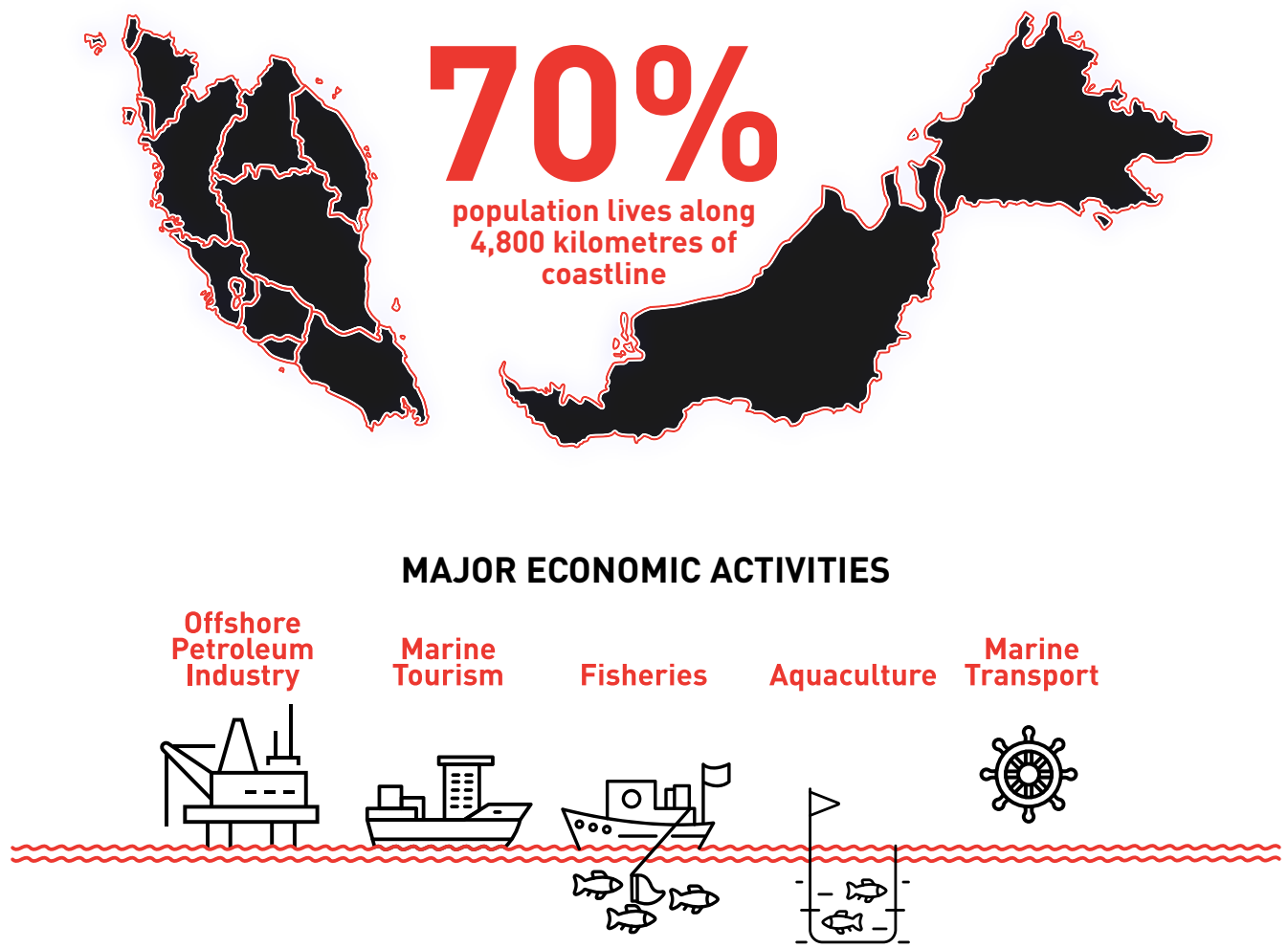
The 10-10 MySTIE implementation mechanism comprises six steps:



Sustainable Ocean Economy

Blue Economy promotes sustainable economic growth, social inclusion as well as preserving and improving human well-being, social equity and ensuring environmental sustainability of the oceans and coastal areas. Every year, Blue Economy generates a revenue of about USD 3 to 6 trillion globally.

Malaysia possesses an extensive coastal and marine areas of 614,159 square kilometres, almost twice its landmass and the size of its Exclusive Economic Zone (EEZ) alone is 453,186 square kilometres. Being a country with abundance natural resources, Malaysia has a huge potential in leveraging these advantages of the Blue Economy for its economic value and prospects.



A sustainable ocean economy emerges when economic activity is in balance with capacity of ocean ecosystems to support this activity while remaining resilient and healthy.

Economic Activity + Ocean Ecosystem Capacity + Resilient and Healthy Ecosystem =
Sustainable Ocean Economy

Restoration of Tasik Chini

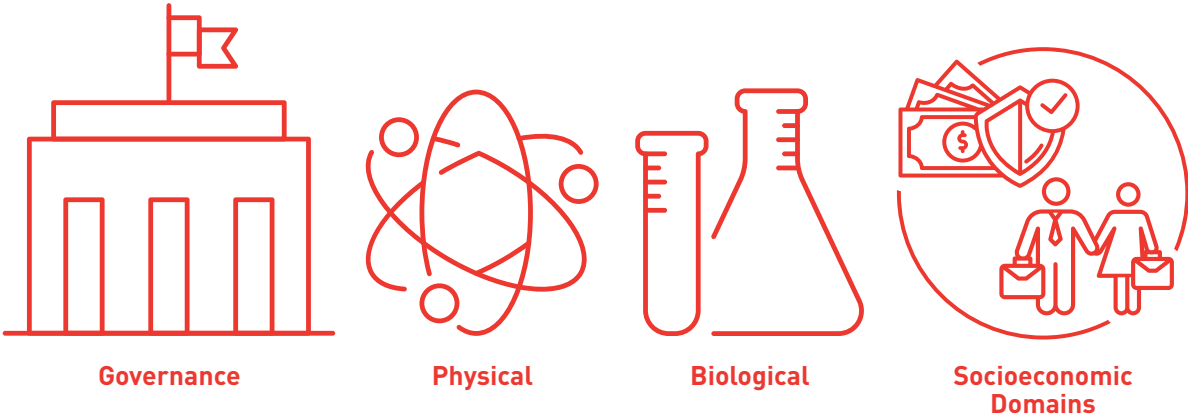
The sustainability of the Tasik Chini Basin (TCB) and Tasik Chini Biosphere Reserve (TCBR) is crucial to support various ecosystem services including recreation, biodiversity conservation, carbon storage, water quality protection, wetlands conservation, flood control as well as local climate regulation. However, TCB & TCBR are continuously and increasingly threatened by human activities, leading to significant deterioration of their conditions.

Professor Dato’ Dr Mohd Tajuddin Abdullah FASc was appointed to lead the Task Force on Tasik Chini. The Task Force will prepare a strategic advisory paper to restore TCB and TCBR ecosystem as well as recommend strategic governance intervention measures necessary for their sustainability.

Study objectives:

- 1** To evaluate related governance instruments on TCB.
- 2** To review and determine the impacts to socioeconomic sustainability due to the threats and risks of existing and planned development for TCB.
- 3** To diagnose the extent of environmental damage (water & soil) with rapid assessment techniques.
- 4** To recommend appropriate restoration approaches to accelerate recovery process.
- 5** To provide a brief review on the ecosystem & biodiversity status in TCB.

For this, four study scopes have been outlined in the discussion on TCB and TCBR sustainability;



Expected to be completed by August 2022, the recommendations from this Strategic Advisory Report will use STI to complement existing initiatives to positively influence plans related to TCB and TCBR and to pave a way for development without sacrificing our environment.

Special Interest Group (SIG) on COVID-19

The COVID-19 pandemic has hugely impacted the world and was declared a public health emergency. It has caused an exceptional socioeconomic impact and changed the lives of 7.8 billion people globally.

Following this, the ASM SIG on COVID-19 chaired by Professor Dr Rosnah Mohd Zain FASc was established to tackle the pandemic at a national level.

In its efforts to facilitate public understanding as well as to provide accurate information on the pandemic, the SIG has published several factsheets and expert reviews that addressed various facets of COVID-19 such as diagnostics, epidemiology, therapeutics, and vaccines in an understandable and digestible format.

In addition, the SIG also prepared a Position Paper on COVID-19 that analysed and identified the strengths and weaknesses of the current procedures in handling the pandemic as well as to provide strategic recommendations to prepare for future outbreaks.

Recommendations from Position Paper on COVID-19:

1. Outbreak Preparedness & Response

- Prepare and develop Malaysia's Strategy for Emerging Diseases and Public Health Emergencies (MySED) III.
- Establish the National Policy and Guideline on National Mobilisation of Resources During Public Health Emergency.
- Integrate public and private healthcare through healthcare system reform.
- Review existing pharmaceutical antiviral stockpiling practices and consider stockpiling other high-demand pharmaceuticals.
- Sustainable funding for stockpiling of essential drugs and items.
- Enhance the Field Epidemiologist Training Program in the MOH.
- Establish Independent Scientific Advisory Group of Expert (SAGE) during Public Health Emergencies.
- Implement Infectious Disease Outbreak Management – Go Back to the Basics.
- Digitalise Public Health Functions and Response.
- Enhance and strengthen public health frontliners for outbreak investigation and response.
- Improve national laboratory capacity and response to major outbreaks.
- Speed up Industry 4.0 Transformation in manufacturing and labour-intensive industries.
- Review policies on unskilled foreign workers to reduce health security risks.
- Develop policies on strategic industries for National Health Security Agenda (NHSA).

1 Expert Review

11 Factsheet

3 Focus Group Discussion
22 Participants

1 Survey

1 Follow-up Questionnaire

2. Socioeconomic Sectors

a. Governmental support for SMEs

- Reduce bureaucratic processes
- Transparency and oversight on cash transfers
- Review internal procedures and regulations to facilitate digital adoption
- Referral system for loans as alternative
- Ministry of Human Resources mediation
- Facilitate business registration

b. SMEs

- Review Business Models
 - i. Adopt new technologies to enhance operational efficiency
 - ii. Improve risk management
 - iii. Implement cashless payments
 - iv. Formalise SMEs in the informal sector
 - v. Implement high occupational health and safety standards
 - vi. SMEs must stay informed with government announcements
- Education
 - i. Enhance internet accessibility and connectivity
 - ii. Prepare for online teaching and learning
 - iii. Salvage private higher learning institutions
 - iv. Implement new policies under the era of pandemic
- Tourism
 - i. Target Tourism – improving worthiness
 - ii. Comply with set risk
 - iii. Smart Tourism

c. Artificial Intelligence (AI) and Big Data Analytics (BDA) Applications

- Capacity and capability building
- Enhance collaboration and data sharing
- Digital Transformation

Ensuring Malaysia's Resilience Against Zoonotic Diseases

Evidence suggests that COVID-19 is a zoonosis, an infectious disease that is transmitted from animals to humans. This illness appears to be one of the worst zoonotic diseases we have faced in the 21st century. It is crucial and timely for Malaysia to fortify its resilience against zoonoses. We need proactive approach that integrates different models of disease management into one framework to prepare for impending outbreaks and future pandemics.

ASM SIG on Zoonosis chaired by Professor Dato’ Dr Mohd Hair Bejo FASc has prepared a Position Paper that addressed zoonoses issues and provide strategic recommendations to ensure Malaysia’s resilience against zoonotic diseases.

Currently, Malaysia does not have an overarching policy on zoonosis and a consolidated legal framework that provides a concerted direction for the many initiatives. Existing collaborations that target zoonotic disease management should be aligned for a well-coordinated and effective management of impending outbreaks. Moving forward, Malaysia needs to focus on being resilient and agile through the adoption of effective, integrated control measures and prevention strategies to face different kinds of pandemics in the future.

As such, the 8i ecosystem model was used to analyse the issues and gaps in Malaysia’s zoonoses landscape. The interplay of S&T drivers with medical and healthcare as well as environment and biodiversity socioeconomic drivers as outlined in the 10-10 *MySTIE* Framework will lead to new technology-based, innovative solutions to realise a dynamic and agile ecosystem toward increasing Malaysia’s resilience and agility.

The recommendations are comprehensive and well-coordinated actions to tackle the root causes of zoonoses. Vaccine development, genome banking as well as data sharing platforms were recommended to ensure integrated and synergistic strategies. Comprehensive data arising from integrated, real-time surveillance and monitoring should enable valuable analytics and foresighting toward preventing zoonoses.

Strategic Recommendations from the study:



Ecosystem and Governance

- Strengthen ecosystem and governance
- Enhance the robustness of laws, policies and regulations pertaining to zoonoses
- Revise the Pandemic Preparedness Plan



Research and Development

- Form an inventory of studies in Malaysia concerning zoonoses
- Cluster experts from zoonotic field according to focus areas
- Create a platform for information and data sharing
- Utilise Open Science approach to enhance data sharing and research
- Enhance vaccine development
- Incorporate zoonoses in research and development through STI



Environmental Factors

- Improve surveillance to identify wildlife illegal trading or poaching hotspots for better enforcement
- Develop a national level database for environmental genomic and metagenomic data



Capacity and Capability Development

- Develop capacity through multi-faceted processes for a sustainable and transformative workforce
- Increase the capacity of veterinary related programmes
- Increase workforce positions as well as improving infrastructures and equipment
- Strengthen partnerships amongst academic institutions, government, and non-government organisations
- Inculcate wildlife disease knowledge at all levels



Biosafety and Biosecurity Management

- Safeguard the storage, transfer, and handling of pathogens
- Establish a system to manage biosafety and biosecurity risks
- Adopt a top-down approach on laboratory biosafety and biosecurity risk management

[COMMISSIONED STUDIES]

Strengthening of Environmental Governance (SEG) in Malaysia

The Ministry of Environment and Water (KASA) appointed ASM as a strategic partner to address the weaknesses in environmental governance in the country by identifying the best legal-institutional arrangement options.

The study calls for the formation of the Federal-State Commission for the Environment (MyFSCE) with the support from various River Basin Authorities or Inter-State River Basin Authorities (RBAs or I-SRBAs) established by the State Governments and various State Environment Enforcement Agencies.

The Task Force concluded that the establishment of a standalone Ministry for the Environment would be insufficient to solve a fragmented governance and all the environmental problems in the country. At the same time, the limited jurisdiction of Department of Environment (DOE) would impede the efforts to enhance environmental governance in Malaysia. The study however, strongly recommends strengthening the enforcement functions of all the other environmental-related agencies at the Federal and State levels.

The study was led by Professor Dato’ Ir Dr A. Bakar Jaafar FASc with 44 Task Force Members comprising of ASM Expert Network and distinguished environmental champions.

[COMMISSIONED STUDIES]

Formulation of the RDICE Roadmap

The formulation of the Research, Development, Innovation, Commercialisation and Economy (RDICE) Roadmap is a study commissioned by MOSTI. The study is co-chaired by Professor Datuk Wira Dr Raha Abdul Rahim FASc and En Jaffri Ibrahim.

This study aims to produce a Roadmap for a holistic and vibrant research, development, innovation, and commercialisation (RDIC) ecosystem through seamless aligning of science, technology, and innovation (STI) to economic planning and goals. This Roadmap will enhance demand-driven research and development, and market-driven delivery system for high tech and high value outcomes as well as improving Malaysia’s global competitiveness.



Completion

This study is set for completion in June 2022.

[COMMISSIONED STUDIES]

Roadmap for The National Agenda on Water Sector Transformation 2040 (WST2040)

ASM as the strategic partner of the Economic Planning Unit (EPU) of the Prime Minister’s Office has undertaken the roadmap for the national agenda on WST2040 development study for 20 months, starting from May 2020 to December 2021, with a mission to transform the water sector from an economic enabler into a dynamic economic sector that contributes to the national GDP and also to ensure water security and sustainability for every Malaysian. WST2040 will be achieved through its twin objectives:

- 1) Water security and sustainability
- 2) Water as an economic opportunity

A total of 87 strategies, 601 targets and 601 KPIs are to be implemented over the next four Malaysia Plans (MP), starting with 106 immediately implementable projects in the 12th MP. It is envisioned that if the potential of the water sector is fully optimised by transforming the water sector and water ecosystem, Malaysia will be able to achieve a value-add of RM13.3billion, contributing as much as 0.46% to the national GDP by 2040, as compared to a value-add of RM4.5billion, and a contribution of 0.32% in 2019. However, this transformation can only be possible with knowledge, technology and ultimately, a developed and sound water ecosystem that is sustainable, effective and holistic.

The WST2040 study addressed eight additional sub-sectors as follows

- Advocacy, Awareness, Capacity Building and Public Participatory Platforms (**AACB**)
- Integrated Water Sector Data and RDIC Centre (**IWSDC**)
- IR 4.0 in the various Water Sub-sectors (**IR4.0**)
- Water-Food-Energy-Nexus (**WFE Nexus**)
- Virtual Water and Water Footprint (**VW&WF**)
- Climate Change Impact and Adaptation (**CCIA**)
- Alternative Water Financing (**AWF**)
- Water as an Economic Sector (**WES**)



[COMMISSIONED STUDIES]

National Biotechnology Policy 2.0 (NBP 2.0)

This policy was built upon the previous National Biotechnology Policy 2005-2020. It aims to further develop national biotechnology industry, to transform Malaysia into a progressive, prosperous, inclusive, and sustainable high-tech bio-innovation nation by 2030. ASM led by Professor Emeritus Dato’ Dr Rahmah Mohamed FASc, reviewed the current ecosystem and provided evidence-based recommendations to revive the biotechnology industry.

The study outlined strategic directions of the national biotechnology ecosystem with;



[COMMISSIONED STUDIES]

Enhancement and Harmonisation of National Nuclear Technology Policy (DTNN) 2021-2030

ASM partnered with MOSTI and Agensi Nuklear Malaysia (Nuklear Malaysia) to enhance and harmonise the National Nuclear Technology Policy 2021-2030 (DTNN), led by Academician Tan Sri Dr Ir Ahmad Tajuddin Ali FASc. This policy envisions Malaysia as a leading nation in peaceful uses of nuclear science and technology in line with the UN SDGs by 2030.

Through this policy, Malaysia will be able to harnesses nuclear science, technology and engineering advancement for economic development, knowledge generation and societal well-being. It is designed to leverage nuclear technology assets and knowledge accumulated over time, as well as to identify crucial next generation nuclear technology applications to realise new growth opportunities in Malaysia.

DTNN guides Malaysia to create a vibrant nuclear technology ecosystem. It was formulated through extensive consultations with key stakeholders in co-creating the socioeconomic impact of nuclear technology across multiple sectors.

The policy has outlined three Key Foundations namely Legislation, Regulation & Standards (3S – Safety, Security & Safeguards), Communication, Education & Public Awareness (CEPA) and Future Preparedness with;



[COMMISSIONED STUDIES]

National Robotics Roadmap

Malaysia’s gross domestic product (GDP) grew moderately compared to the East Asia and Pacific region since 2001. Although the manufacturing and services sector contributes almost 79% of GDP, the adoption of high technology in both sectors remains low, at 37% and 20% respectively.

To accelerate Malaysia’s GDP growth, several transformations that address the current challenges are required:

Current challenges that inhibit Malaysia’s GDP growth are:

- Labour productivity growth hovers around 1.8% compared to the 3.6% average of developed countries; we are lagging behind.
- Percentage of low-skilled foreign workers has increased from 34% in 2010 to 46% in 2019. Almost half of Malaysia’s low-skilled workers are of foreign origin.
- There are about 2 million foreign labourers (minimum wage ~RM 1,100/month/worker) resulting in an outflow of around RM2.2 billion per month (RM26.4 billion per year).
- Malaysia’s population will rise to 40 million by 2050; people aged above 65 will increase from 5% to 16.3% in 2050.
- Malaysia is not excluded from unprecedented global crises and pandemics. To date, COVID-19 has resulted in 32,114 deaths.

Robotics is a key technology to address these challenges and catalyst for Malaysia’s aspirations. It will work hand in hand with artificial intelligence (AI) and Internet of Things (IoT) as well as other emerging technologies to advance thenation.

ASM was mandated by MOSTI to develop the National Robotics Roadmap (NRR) 2021-2030 for Malaysia’s robotics development and agendas. In relation to this, the ASM Task Force on Robotics was led by Professor Ir Dr Khairul Salleh Mohamed Sahari and consists of experts from academia, industry and research institute.

NRR 2021-2030 was specially formulated to strengthen Malaysia as a robotics USER by increasing the adoption of robotics technology and building Malaysia’s capacity and capabilities as a robotics developer. Envisioning Malaysia to become a regional robotics hub in Services, Agriculture and Manufacturing by 2030, the roadmap highlighted three high-impact sectors and five strategic thrusts as key pillars, accompanied by 19 strategies and 24 initiatives.

[COMMISSIONED STUDIES]

Review of the Environmental Quality Act 1974

The review of the Environmental Quality Act 1974 (EQA1974) is a project commissioned by KASA. ASM was tasked to identify gaps and provide recommendations to strengthen the existing environmental laws.

The steering committee, led by Academician Professor Emeritus Tan Sri Dr Zakri Abdul Hamid FASc has proposed provisions to address the gaps in the law, weakness in its implementation, transparency, access to information and fragmented environmental governance. This shifts the current environmental management approach from reactive approach to precautionary approach.

The revised Act will be submitted by KASA and ASM to the Attorney General’s Chambers in November 2022.

[COMMISSIONED STUDIES]

Hydrogen Economy and Technology Roadmap (HETR)

A Hydrogen Economy envisions hydrogen as a clean, low-carbon energy resource to meet the world’s energy needs, replacing traditional fossil fuels and forming a substantial part of a clean energy portfolio. Like all other renewable energies, hydrogen falls under the category of carbon neutral energy, but the inherent inclusivity of hydrogen makes it beneficial to industry players. Following that, MOSTI is developing a Hydrogen Economy and Technology Roadmap (HETR) to strategically position Malaysia in the highly lucrative global hydrogen ecosystem, where the global green hydrogen market has been projected to reach USD 189.19 billion in 2050. As strategic partner for this roadmap, ASM acts as the advisor to evaluate and analyse current policies, develop governance structure, and organise consultation meeting with experts and stakeholders.

The Hydrogen Economy is seen as a feasible solution to Malaysia’s economic struggles due to the tremendous economic potential brought about by the Global Hydrogen Ecosystem. Undoubtedly, hydrogen economy has the inclusivity to empower economic, environment, social well-being aligning to the 12th MP and the big agenda of Carbon Neutrality by 2050.

This study was chaired by Dr Rezal Khairi Ahmad (Nano Malaysia Berhad), continuing from the SIG on Hydrogen Economy in 2020, HETR is championed by MOSTI’s National Nanotechnology Centre (NNC) with NanoMalaysia Berhad (NMB) as its strategic partner, in collaboration with NanoVerify Sdn. Bhd. (NVSB), Malaysian Green Technology and Climate Change Centre (MGTC) and ASM.



Completion

This study is set for completion in June 2022.

Strategic Inputs to the Government

Technology Commercialisation Accelerator (TCA): Forging Local Innovation Ecosystems for a High-Tech Nation to give rise to Innovation STI-Based Enterprises

TCA was proposed to jump-start wealth creation through disruptive local innovations, capitalising on demand-driven R&D and market-driven delivery system approach. It serves the role as a catalyst, enabler, and convener of innovation to:

- Spearhead economic-oriented research
- Bridge research and technology commercialisation
- Nurture industry-ready talent

As a follow-through to the presentation to the High-Tech Nation Council on 17 December 2020, ASM presented the enhanced proposal entitled Forging Local Innovation Ecosystems for a High-Tech Nation through TCA at the NSC meeting. The proposal’s objective was to obtain the mandate from NSC for the institutionalisation of TCA to drive nation’s competitiveness as a High-Tech Nation. NSC agreed that impactful public-private partnership for Research, Development, Commercialisation, and Innovation (R,D,C&I) has been a long-standing structural issue in Malaysia.

Efforts were then forged to institutionalise TCA through the establishment of Malaysian Research Accelerator for Technology and Innovation (MRANTI) in November 2021. It was established through the merger of two agencies under MOSTI namely, Technology Park Malaysia (TPM) and the Malaysian Global Innovation and Creativity Centre (MaGIC) to accelerate Malaysia towards becoming an innovation-driven economy.

Malaysia Science Endowment (MSE): Harnessing Alternative Financing Tools to Sustainably Power R&D Activities

The Malaysia Science Endowment (MSE) was proposed to develop mechanisms for collaborative STIE networks and sourcing alternative financing sources. The establishment of MSE is necessary to support new STI institutional governance. Funds will be disbursed through the Research Management Unit (RMU), MRANTI or strategic delivery partners in identified priority areas.

In addition, MSE promotes and forges international partnerships for RDCI with regional, international, and multilateral funding programmes for STI across the globe. These partnerships would attract fund to tackle complex socioeconomic and environmental challenges that Malaysia faces as well as based on the nation’s priority areas.

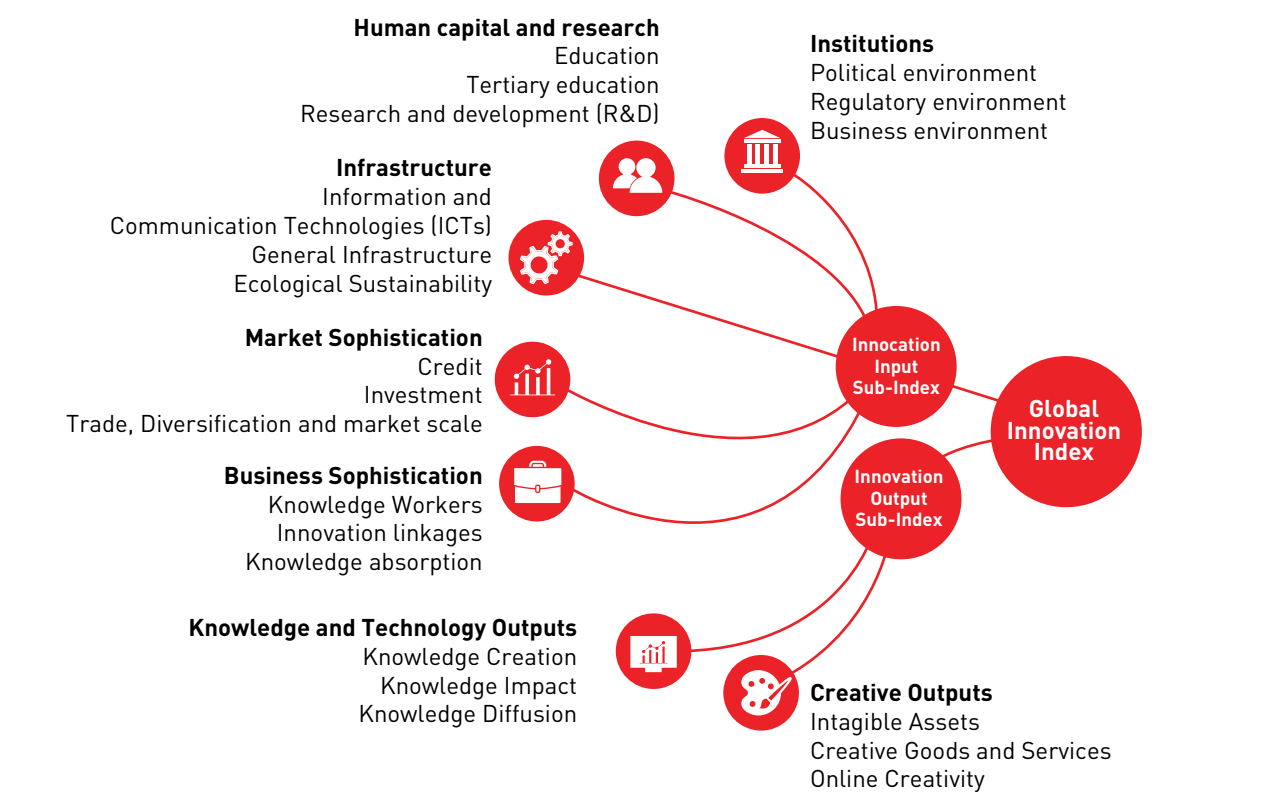
The establishment of MSE is one of the 10 “Leapfrogging Programmes” under the National Science, Technology, and Innovation Policy (NPSTII) 2021-2030. Subsequently, the Cabinet of Malaysia had tasked ASM as the implementing agency to work closely with MOSTI to lay out the groundwork for its establishment in 2022.

Inter-Agency Committee on Global Innovation Index (GII) Monitoring

MOSTI through Malaysian Science and Technology Information Centre (MASTIC) established an Inter-Agency Committee on Global Innovation Index Competitiveness Monitoring in December 2020 to systematically improve Malaysia’s performance in the upcoming editions of the Global Innovation Index (GII) reports.

Establishment of this Committee is also in-line with the target set in the 12th Malaysia Plan to elevate Malaysia’s position to be among the Top 20 nations in the GII by 2025. Currently, the GII 2021 reports that Malaysia is ranked 36 out of 132 countries; this is a decline from the position recorded in the GII 2020 report (33 out of 131 countries). Based on ASM’s analysis, there is no consistent little improvement in our performance to reach Top 20 Innovative Economies over the past ten years.

Within this Committee, MOSTI identified seven strategic partners to monitor Malaysia’s performances in the even pillars as listed in the GII report. ASM has been assigned to monitor the progress within the Human Capital and Research Pillar. This Working Group Committee is was led by Professor Dr Yvonne Lim Ai Lian FASc.

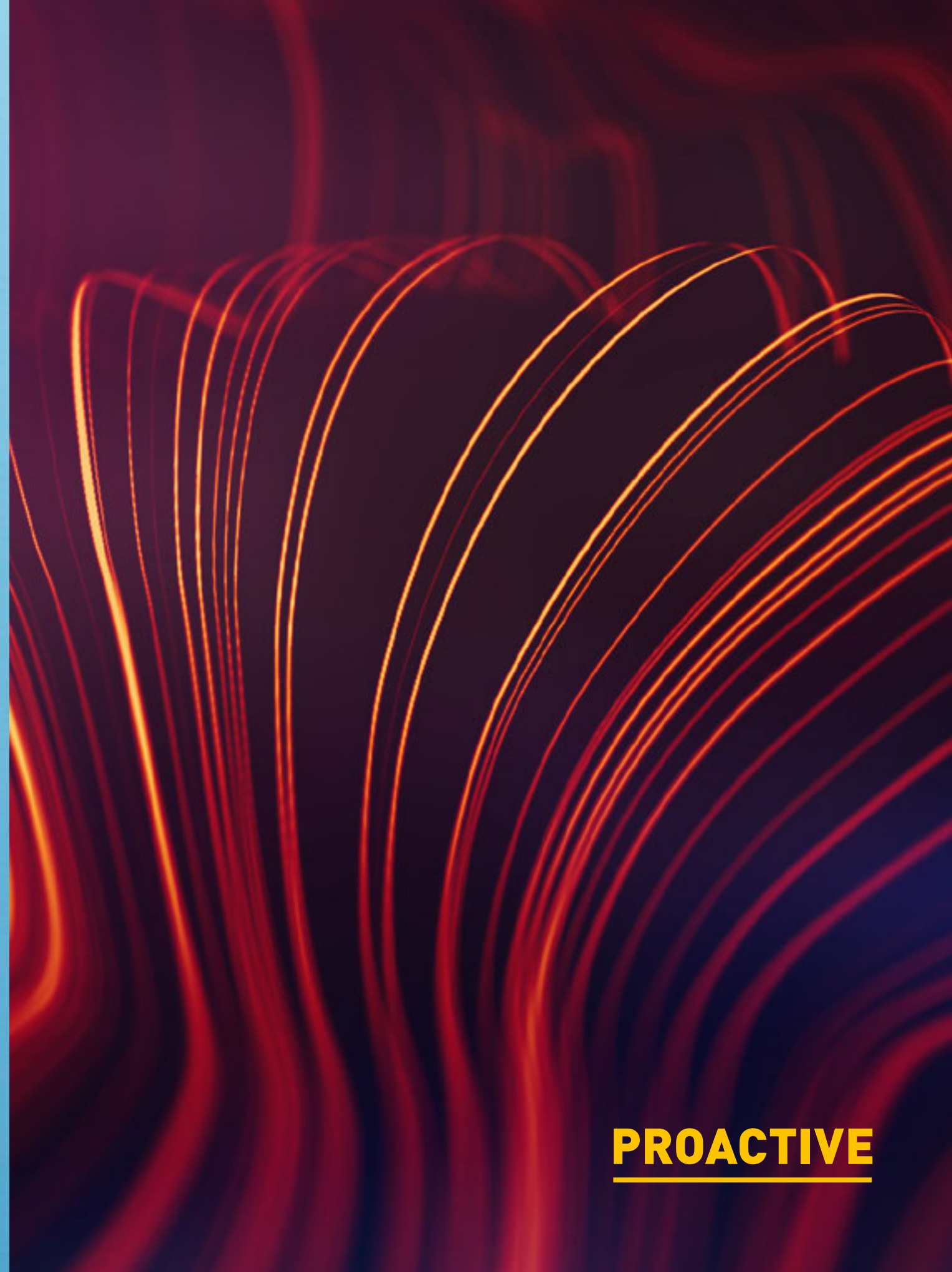


Framework of the Global Innovation Index 2021

Several meetings and stakeholder engagements were held throughout 2021 to identify short-, medium- and long-term strategies to improve Malaysia’s score and ranking towards being among the Top 20 Nations by 2025. The Working Group Committee on Human Capital and Research has achieved its milestone in reporting strategies and initiatives towards improving Malaysia’s GII scores and ranking which was set for year 2021. The next direction will be set by the Steering Committee of MOSTI.

Restore and Reconnect Biodiversity, Health and Climate Change for Planetary Health

ASM had presented the paper on Restore and Reconnect Biodiversity, Health and Climate Change for Planetary Health at the High Tech Nation Council (HTNC) chaired by YB Dato' Sri Dr Adham Baba, Minister of Sciences, Technology and Innovation on 24 November 2021. The paper was presented by the ASM President, Professor Emerita Datuk Dr Asma Ismail FASc based on the findings from several ASM studies namely, Strategic Paper on Precision Biodiversity, Zoonosis-Ensuring Malaysia's Resilience Against Zoonotic Diseases, Position Paper on Covid-19 and Science Outlook 2020-Unlocking the Future. The recommendations of the paper were approved by HTNC to develop an integrated National Planetary Health Action Plan (PTKPN) driven by science, technology, innovation and economy (STIE) to mainstream planetary health in all national policies and plans through a whole-of-nation approach in addressing ecosystem changes, biodiversity, human health and climate change for sustainable development.



Learning to Transform Data into Valuable Information

Introduction to data analytics training

To empower ASM in the field of data science, ASM have taken on the request from Federal Department of Town and Country Planning Malaysia (PLANMalaysia) to provide data analytics training to their officers.

The training was held via Zoom from 11 August until 25 August 2021. This training was attended by 14 participants (10 from PLANMalaysia and 4 from ASM) from different departments of the organisations, working on different projects and assignments.

Five modules were delivered on foundational data analytics skills such as data driven thinking, gathering and preparation of the data and generating insight.

01

Module 1: Data-driven Thinking

In Module 1, participants get an introduction to data analytics and its role in business decisions. They learn how to define the use case, identify problems to know the suitable data and analysis. Participants also learn how to do data storytelling and understand big data analytics environment.

02

Module 2: Preparing for Data

Module 2 is to explain what and how is data preparation process including data inventory & wrangling, data cleansing, data manipulation and data modelling.

03

Module 3: Knowing Your Data

In Module 3, participants start applying the fundamentals in advanced analytics and learn how to get insights using an Excel dashboard. The topics include descriptive analytics, correlation and regression, diagnostic analytics and how to visualise in Excel dashboard.

04

Module 4: Data Storytelling

Module 4 is to get participants started with hands-on activities. They learn how to express their story using data and visualisation tools such as Tableau. The topics include storytelling with data, best practices with data storytelling, introduction to Tableau, basic charts, visual analytics, dashboard and geospatial visualisation.

05

Module 5: Capstone

This final module is to get participants to apply all the findings and skills they have learned from previous modules. Participants will start to identify suitable use case, problem statement, identify analysis and analytics approach to the use case. Participants will do data preparation and modelling to build visualisation and insights.

At the end of the programme, more than 50% of the attendees have a better understanding of data analytics. More than 40% of the attendees rated as very satisfied with the overall module and program.

The Second Edition of The Malaysian Code of Responsible Conduct In Research (MCRCR)

With abundance of research in universities and research institutes, it is important to ensure all research are carried out with the greatest integrity. Thus, National Committee on Research Integrity (NCRI) was established and endorsed by the National Science Council to not only educate and nurture the researchers from research entities and institutions, but also to increase the awareness of the best practices to the media and the public.

In realizing this, Malaysian Code of Responsible Conduct in Research (MCRCR) had been established to inculcate ethics and accountability in performing research. This guideline provides a comprehensive, robust, and contextually appropriate standard to be followed by the researchers. Thus, researchers will be well informed on how to align to the best practices in concurrence with international standards and practice, yet congruent with local ethical and cultural milieu and legal requirements.

In aligning with this, MCRCR handbook had been published and with the addition of a new content, the 2nd edition of the MCRCR handbook was officially launched during the opening ceremony of YSN-ASM International Scientific Virtual Conference (ISVC) on 29 March 2021 by YB Datuk Hj Ahmad Amzad bin Hashim, Deputy Minister of Science, Technology and Innovation. He emphasized the importance of integrity among local researchers and how the MCRCR code will aids to enhance science governance in Malaysia via transparency and accountability in research & development (R&D).

In addition to the book, MCRCR Committee also provided the MCRCR training for all researchers at public and private IHLs, research institutes (RIs) and agencies/bodies/research centres. 2021 marked another milestone for the committee with the development of online course of MCRCR that can be access via openlearning.com. This will enable easy access for researchers from all around Malaysia to attend the course at their own convenience.



Scan the QR code to read the module



2021 National Science Challenge: Caring for Nature Through Science

STI advancements has brought about massive improvements to the economy and quality of life. With the theme 'Caring for Nature Through Science', this year's NSC challenged students to be innovative, and creative in coming up with ingenious solutions in three areas: agriculture & environment, climate change, and public health. This year, NSC upped the ante with industrial involvement by collaborating with Collaborative Research in Engineering, Science and Technology (CREST) and Malaysian Society for Microbiology. The finalists were mentored by the industrial experts. A series of workshops provided by CREST were attended by the finalists, teaching them design thinking.

The Grand Final was held virtually on 9 October 2021, graced by the MOSTI Minister, YB Dato' Sri Dr Adham Baba. Although it was held online, the momentum of the competition was still felt between the finalists. During the competition, finalists were required to answer an online quiz on physics, biology and mathematics and pitched their project prototypes. Kolej Yayasan Saad, Melaka was crowned the Champion for the third time in NSC's history. They brought home the Prime Minister's Challenge Trophy, RM 6,000 ASM-NSC Educational Award, a laptop, and a certificate of achievement.

PARTICIPANTS INFO: **2,124** students **35%** Male **65%** Female



16-18 JULY
PRELIMINARY LEVEL



706 Teams

24 JULY - 22 AUGUST
STATE LEVEL



80 Teams

1 - 25 SEPTEMBER
SEMI FINAL



20 Teams

9 OCTOBER
GRAND FINAL



5 Teams



Online Quiz



Video competition & Biology, Chemistry and Physics (BCP) Challenge



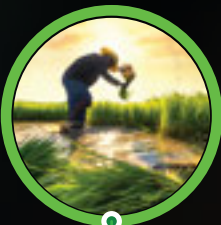
Virtual Bootcamp



Quiz & Pitching

International Conference on TropSc™ 2021

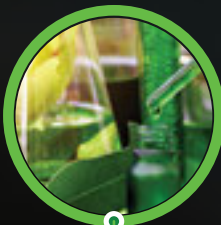
The inaugural International Conference on Tropical Sciences (TropSc) jointly organised by the Mahathir Science Award (MSA) Foundation and ASM was held from 25 to 27 October 2021.



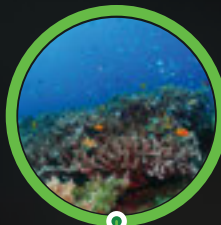
TROPICAL AGRICULTURE



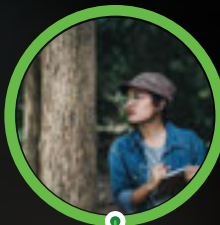
TROPICAL ARCHITECTURE & ENGINEERING



TROPICAL MEDICINE



TROPICAL NATURAL RESOURCES



YOUTH RESILIENCE, CLIMATE CHANGE AND OPEN SCIENCE

The virtual conference provided a platform to bring together stakeholders to position the Tropics in the context of global development and identify needed interventions by the government, private sectors, and academia to advance the region in planetary health approach. At the end of the conference, a communique with the main messages of the conference was presented by the Chair. It is also a call for greater focus on the challenges of the Tropics.

The conference was generously supported by platinum sponsor - the International Science Council Regional Office for Asia and the Pacific (ISC-ROAP), and thematic sponsors -Sunway University and Tenaga Nasional Berhad (TNB). In addition, 15 strategic partners consisting of universities, research institutions, corporations and individuals supported the conference.

48

Countries

26

Sessions

70

Speakers

954

Participants



Conference

25-27 October 2021

Minggu Sains Negara (MSN)

The theme for the fourth Minggu Sains Negara (MSN) organised by MOSTI this year is “Science for Health”. The programmes was organised from 1-7 April 2021, ASM organised four programmes in-conjunction with MSN 2021 virtually.

Four programmes that captured public interest in STEM organised by ASM;



- Science Café titled Universe of STEM has featured three YSN-ASM speakers: Dr Nurbiha A. Shukor, Dr Nur Adlyka Ainul Annuar, and Associate Professor Dr Ho Wai Shin.



- Rocket Science talk delivered by Ts Dr Hanafi Azami.



- Inquiry Based Science Education (IBSE) workshop involving 16 STEM teachers which were nominated by the National STEM Centre. The participants were trained by two YSN-ASM trainers: Dr Siti Fathiah Masre and Dr Loo Keat Wei with YSN-ASM IBSE modules titled *Gen Inovasi Kehidupan* and *Begitulah Sang Suria*.



- Webinar on “Towards a Fairer and Healthier Tropics”, in collaboration with MSAF.

4 Programmes 715 Views

Programmes

1 Science Café

1 Research Synergy Sharing

1 IBSE Training

1 MSAF Webinar

ALANGKAH art@science™ Virtual Exhibition

The ASM ArtScience™ Prize was organised for the first time in 2020 to recognise talents and creative works from the growing community of the artist-scientists.

In conjunction with this, ASM launched an ArtScience™ Virtual Exhibition on 8 November 2021 in collaboration with Maybank Foundation and Balai Seni Visual Negara. This exhibition showcased thirteen shortlisted works of the ASM ArtScience™ Prize 2020 on a virtual platform.

ALANGKAH which is the Malay expression equivalent to inducing awe was selected as the theme to represent the exhibition. It depicts an awe-inspiring realm while observing the ArtScience™ works that had been creatively depicted as being in the digital realm of a brain.

The 2021 ArtScience™ Virtual Exhibition can be visited at <http://www.maybankfoundation.com/mbfvr/alongkah/>.

Viewers can immerse themselves in a world of art, science, and metaphor through a collection of digital interactive exhibition. They can explore all the thirteen artworks by exploring the labyrinth of the brain onscreen.

In conjunction with the exhibition launch, ASM organised the second episode of its ArtScience™ Webinar Series on Transcending the Arts and Sciences, entitled: "Exploring the International Landscape of ArtScience". This webinar featured local and international speakers who discussed the multifaceted ArtScience scene across an international landscape.

13 ArtScience
Work Exhibited

8,927 Engagement



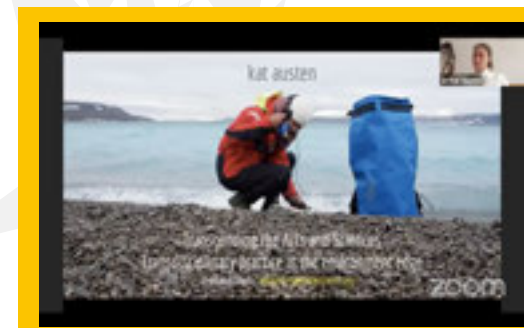
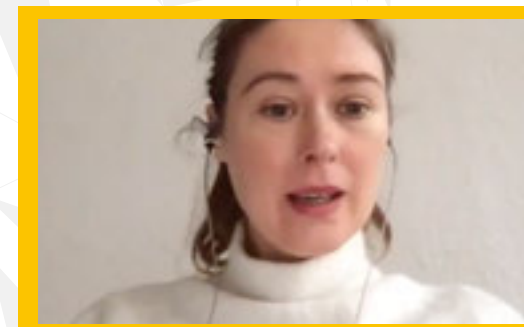
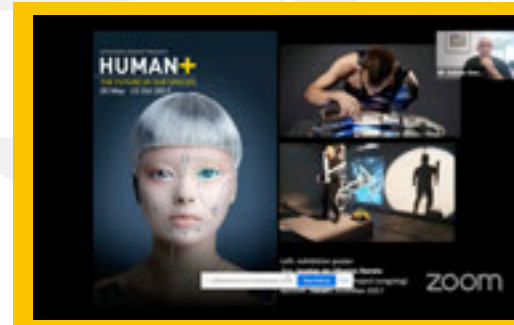
Scan QR
to visit
the
virtual
exhibition

art@science™ Webinar Series on Transcending the Arts and Sciences

The 2021 ArtScience™ Transcending Arts and Sciences Webinar Series celebrated the individuals' perspective and perception on the merging of Arts and Science. This webinar aims to cultivate the appreciation of arts towards acculturation of science, consequently, build a community that explores ArtScience. The first episode of this webinar series also featured the juries and winners of ASM ArtScience™ 2020 Prize.

There were two sessions to this webinar: first, the panellists' perspective was given in expressing ArtScience through their works; then, two jury members shared their insights on the evaluation process of ArtScience™ 2020 Prize.

The winner of the 2020 ASM ArtScience™ Prize, Dr Ahmad Hanif Ahmad Baharudin and his team had placed art and science elements in their work titled "Digital-Tropical Breathing the Waves". Meanwhile, the Rising Star Award Winner, Dr Roopesh Sitharan and his team had chosen to utilise Artificial Intelligence (AI) through their project titled "Artificial Autonomy and the Question of Subjectivity in AI".



Top Research Scientists Malaysia (TRSM)

Through the Top Research Scientists Malaysia (TRSM) initiative, prominent Malaysian research scientists who are active and have outstanding achievements and contributions in R&D will be recognised. The online repository of the recognised scientists is a hub for knowledge dissemination that spurs STIE growth in Malaysia. Malaysia's STIE development is growing rapidly, and these prominent Malaysian research scientists play a huge responsibility in its socio-economic development.

Hence, Malaysian leading scientists has made valuable efforts to change the landscape of STIE through their disruptive research and drive Malaysia through an innovation-led economy in achieving high-tech nation status by 2030.

5,816 registered users
as of 2021

133 total active TRSM
recipients

5,452 completed researcher's
data and information

22 TRSM recipients
in 2021

Active TRSM Recipients by Discipline Group:

| | | |
|---|----|---|
|  | 20 | Biological, Agricultural and Environmental Sciences |
|  | 9 | Chemical Sciences |
|  | 67 | Engineering Sciences |
|  | 12 | Information Technology and Computer Sciences |
|  | 9 | Mathematics, Physics and Earth Sciences |
|  | 11 | Medical and Health Sciences |
|  | 2 | Science & Technology Development and Industry |
|  | 2 | Social Sciences and Humanities |

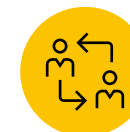
Young Scientists Network-Academy of Sciences Malaysia (YSN-ASM)

The Young Scientists Network-Academy of Sciences Malaysia (YSN-ASM) has developed and nurtured the resilience and agility of prominent young scientists in implementing, advancing, and creating awareness of science in the community. YSN-ASM bridges institutions, industries, and organisations to implement impactful programmes and other engagements throughout the year, virtually and physically. At its standing members of 225, YSN-ASM is proud to represent the young voices that are committed to educate society on STIE.

In line with YSN-ASM's Strategic Plan 2018-2021, this pool of talented young scientists is actively involved in research collaborations, policy consultation, and other activities at the national and international levels. Throughout its nine years of operations, YSN-ASM has reached a significant milestone by having strategic collaborations with other prestigious entities in championing STI. YSN's credibility was proven when organisations such as L'Oréal-UNESCO, Petrosains, Merck Sdn Bhd, National STEM Centre, and Palestine Young Academy chose to collaborate with YSN-ASM. This momentum needs to be sustained to achieve higher impact and visibility in the society.



104 YSN-ASM
Members



121 YSN-ASM
Affiliates

YSN-ASM Strategic Plan 2018-2021 as follows



SP1: Researchers Empowering
young researches as strategic partners and agents of changes in shaping the national research agenda.



SP2: Researchers Ecosystem
Fostering integrity and research excellence support network throughout the ecosystem.



SP3: Progressive Society
Building a progressive society that embraces STI as a way of life.



SP4: Glocalisation
Playing a prominent role in international local alliances to tackle national and global challenges.

Activities

YSN-ASM Chrysalis Award 2021 - Take Flight: Transformation Above and Beyond PhD

Chrysalis Award is one of YSN-ASM’s flagship programmes. This award is organised specially for young researchers in their final year of PhD to empower and align them to the Malaysian STI ecosystem. This leadership programme provides the opportunity for them to gain relevant transferable skills and fortify their networking with outstanding local scientists. The programme features a series of online skills development workshops. These young researchers were also given the opportunity to obtain a gainful placement at prestigious fellowships or internships.

Several of these young researchers’ aspirations in building their career were materialised through their involvement in Chrysalis Award. The 2020 Chrysalis Award finalist Dr Tan Li Vern successfully embarked on his career as a researcher at Vitrox Corporation Berhad. In the same year, two other finalists Dr Wan Arif Aziz Japar and Dr Lam Jia Yong have been selected to participate in 2022 Global Young Scientists Summit. This shows that the Chrysalis Award is a programme that allows talented researchers with enormous potential to gain a foothold in the global arena.



1ST PLACE

Leong Wai Heong
PhD in Applied Science
(Environmental Sciences)
HiCoE Centre for Biofuel and
Biochemical Research
Universiti Teknologi PETRONAS

FIRST PLACE WINNER:

38 Number of applicants

10 Workshops;
•1 ice-breaking session
•1 Pitching Briefing Workshop
•1 Sharing of the Previous Winners

13 Talks
Workshops & Sharing Sessions

Science Café

As one of YSN-ASM’s signature programmes, this programme presents fascinating science topics to the comfort of Malaysians’ home through Facebook Live. This programme has expanded its accessibility by having newer offshoots like Science Café Penang and Johor alongside the main Science Café conducted in Kuala Lumpur.

8 Science Café KL

7 Science Café Penang and Johor

3,300 Facebook Views

2021 YSN-ASM Virtual Colloquium - Science: The Nation’s Hope for a Better Tomorrow.

The 2021 YSN-ASM Virtual Colloquium was conducted from 10 to 12 December 2021 to reinforce YSN-ASM’s influence and visibility as a young scientists’ platform. In anticipation of its 10-year anniversary in 2022, YSN-ASM members brainstormed various impactful programmes that align with ASM’s Strategic Plan 2021-2025.

During the Colloquium, an MoU signing ceremony has formalised ties between ASM, Petrosains Sdn Bhd, and Merck Sdn Bhd. This ceremony highlights a continuous collaboration between these strategic partners to materialise opportunities of achieving common goals in supporting ASM’s vision to become a changemaker in the STIE landscape.

Junior Science Artist Competition

The Junior Science Artist Competition is a drawing competition that was organised from 7 September to 15 October 2021. This competition encourages children to express their creativity and innovative ideas through art. With the theme “After Pandemic, My Future with Science and Technology”, this competition engaged primary school students to show how the pandemic changed their perspective of science and technology in shaping their dreams.



Winners Category A (7-9 Years Old)

1st **Jarrell Chong Yan Shen**
St. Joseph’s Private Primary School

2nd **Fan Candice**
SJK (C) Keh Seng Melaka

3rd **Anushri A/P Logendran**
SK Taman Perling



Winners Category B (10-12 Years Old)

1st **Mak Yu Dern**
SJK (C) Chung Hwa 1

2nd **Teo Zhao Qian**
SJK (C) Cheng Siu 1

3rd **Chin Hay-Ly**
SJK (C) Pei Chai Kuantan

63 | Number Of Participants

Malaysia Grand Challenge (MGC) Symposium

The Malaysia Grand Challenge (MGC) Symposium was conducted from 9 to 18 November 2021 for YSN-ASM members and affiliates to promote interdisciplinary research collaborations and create a fertile research ecosystem. The symposium aimed to promote impactful and high-quality research in line with the 10-10 MySTIE and the development of 30 niche areas. Following this, 174 YSN-ASM researchers benefited from this symposium and had better understanding should they interested to apply for MOSTI’s MGC Grant.

Collaboration with International Parties

This year, YSN-ASM has initiated a collaboration with the Palestine Young Academy, formalised with an MoU signing in October 2021 to foster STI collaboration between the young scientists network.


YSN-ASM (as of December 2021)

70 Members


34 New Members

103 Affiliates


33 New Affiliates



19.9% ↑
5,833 (2021)



39.8% ↑
955 (2021)



21.2% ↑
6,217 (2021)

YSN-ASM International Scientific Virtual Conference (ISVC)

The inaugural YSN-ASM International Scientific Virtual Conference (ISVC) 2021 held from 30 March to 1 April 2021 aims to:

- Provide a platform for interdisciplinary knowledge sharing, learning and collaboration between local and international scientists.
- Identify emerging research niches/areas that the global research community should champion to address local needs and global challenges.
- Develop strategies to improve capacity and access to resources to harness the potential of the global research community.
- Promote sustainable research leadership among emerging researchers in the country.

With “Resilient in the New Norm” as a recurring theme across six tracks, the virtual conference has gathered numerous accomplished researchers around the world. ASM Honorary Fellow and Nobel Laureate Professor Dr Lee Yuan Tseh was the plenary speaker on the opening day, sharing his thoughts on the topic “Survival of Humanity on Earth”. Professor Lee highlighted the importance of collective global efforts to curb the effects of climate change as well reminding the younger generation to focus on being good scientists and work together to produce impactful research for society.

Apart from that, a panel discussion was held on the topic “COVID-19 Pandemic Transformed the Way the World Does Science Together and the Way Forward” that gathered four researchers from different regions of the world. Despite unprecedented challenges, all of them agreed that scientists are now doing research by adapting nimbly with the new norm. The pandemic also showed that science communication plays a crucial part in educating the public.

There were Young Investigator Awards given within the six conference tracks; selected young speakers presented their research to be evaluated for this award. This award resonates with YSN-ASM’s ethos to nurture more young promising researchers. The conference plans to organise its second edition in 2023.

427 Total Participants **367** Total Submitted Abstracts

| | | | |
|------------------------|-----------------------|-------------------------|-----------------------|
| 414 Malaysia | 6 Palestine | 1 Indonesia | 1 German |
| 1 India | 6 Pakistan | 1 Philippines | 1 Singapore |



**WINNERS OF THE YOUNG INVESTIGATOR AWARD
TRACK A: HEALTH AND WELLBEING**

Winner: Vincent Tee Wei Shen
First Runner-up: Norazirah Mat Nayan
Second Runner-up: Shamini Chandran



TRACK B: BUSINESS ECONOMICS

Winner: Shangeetha Sukumaran
First Runner-up: Suliadi Firdaus Sufahani
Second Runner-up: Yusliza Jamalut



TRACK C: ENGINEERING AND ENERGY TRANSITION

Winner: Nabilla Mohamad
First Runner-up: Charya Sendanayake
Second Runner-up: Arwinder Singh



TRACK D: SOCIAL SCIENCES AND HUMANITIES

Winner: Manraj Singh Cheema
First Runner-up: Tan Gek Siang
Second Runner-up: Muhammad Zamir Othman



TRACK E: ENVIRONMENTAL SCIENCES AND INFORMATION TECHNOLOGY

Winner: Sheela Chandren
First Runner-up: Fuad Mohamad
Second Runner-up: Keng Teck-Ee



TRACK F: AGRICULTURE AND FOOD SECURITY

Winner: Ranjetta Poobathy
First Runner-up: Aemi Syazwani Abdul Keyon
Second Runner-up: Farahani Azam



COLLABORATION

Generating Equitable Wealth for The Nation with 4IR

EPU collaborated with MOSTI to launch the National Fourth Industrial Revolution (4IR) Policy. In conjunction with the launch, ASM organised a panel session titled “4IR: Equitable Wealth Creation Game Changer” that discussed issues, challenges, and opportunities related to governance, industries, talents, socio-economy and the youth’s role in 4IR.

Topics of Panel Discussion:

The Government’s Direction & Support for 4IR – Dato’ V Valluvan Veloo
Innovation & Industry in the 4IR – Dr David Lacey
Talent & Skills for Innovation in the 4IR – Datuk Ir Ts Dr Siti Hamisah Tapsir
Socio-Economic Transformation in the 4IR Era – Professor Mahendhiran Nair FASc
People’s Needs & Expectation on 4IR & Future of Malaysia – Mr Jufitri Joha

Date:
1 July 2021

Moderator:
Dr Rezal Khairi
Ahmad

UNEP-ASM Dialogue & Workshop on Sanitation

The United Nations Environment Programme (UNEP) organised a Virtual Forum on Sanitation for Environment and Well-Being in conjunction with the United Nations World Toilet Day 2021 from 18 to 19 November 2021.

The forum was conducted to raise awareness on the importance of having proper household sanitation, the impact of sanitation in relation to the environment and well-being of humans as well as finding creative and innovative ways to improve sanitation systems. This event also empowers and educates local communities on preserving the natural environment for future generations.

With the theme of “A Toilet for a Home”, this forum called on government leaders, NGOs, industries, investors, and academics to come together in raising awareness on the emerging issues related to wastewater management and sanitation provision. Ir Dr Salmah Zakaria FASc, who is also on the ASM Water Committee, represented Malaysia as a panellists in the forum.

Masterclass with Philip Kotler

Malaysia’s participation in Dubai Expo 2020 initiated the efforts towards making Malaysia’s branding known the world over. MOSTI and ASM proudly kickstarted the Marketing and Branding 5.0 MySTIE initiative through the very first Masterclass with Philip Kotler, the Father of Modern Marketing.

This masterclass received tremendous support from students in business and marketing courses, technopreneurs and entrepreneurs from small-medium businesses, and start-ups in various fields, such as education and medical & health sciences.

This event introduce five trend: data-driven marketing, predictive marketing, contextual marketing, augmented marketing, and agile marketing. The masterclass provided insights on new-age marketing and marketing technologies for humanity. This is a collaborative effort to prepare entrepreneurs in Malaysia on marketing and branding 5.0. In the future, various stakeholders will be engaged to realise Malaysia’s branding.

It was attended by:

435⁺⁺ Attendees
via Zoom

2,300 Facebook
viewers

Virtual International Halal Sciences Conference 2021 (Vihasc21)

The International Institute for Halal Research and Training (INHART) of International Islamic University of Malaysia (IIUM) organised its first Virtual International Halal Science Conference (VIHASC) from 13 to 14 July 2021. This conference is a dedicated knowledge and technology dissemination platform for researchers and practitioners in Halal Science towards creating a sustainable halal industry, alongside encouraging and developing fruitful R&D collaboration among participating industries and research institutions. ASM as a co-organiser promoted the conference’s activities and enlisted ASM Fellows as reviewers for papers submitted to conference.

3 Keynote
Speakers

4 Invited
Speakers

32nd International Invention, Innovation & Technology Exhibition (ITEX 2021)

The International Invention, Innovation and Technology Exhibition (ITEX) is an annual event that exhibits various inventions and products to the S&T community. The exhibition was held at the Kuala Lumpur Convention Centre from 13 to 14 December 2021 with ASM as a supporter of this event. ITEX 2021 is a platform for entrepreneurs, investors, manufacturers and industry experts to share their inventions and seek out potential investors.

ITEX 2021 is a goldmine of knowledge, with industry experts expounding the latest in the technology world. Various exhibition included the latest and greatest in automation, biotechnology, materials, and medical & health. This impactful event enabled participants to gain new knowledge on relevant topics and stay updated on the latest trends within the industry.

UCSI - APEC Sustainable Coastal Cities Symposium

UCSI University collaborated with Asia-Pacific Economic Cooperation (APEC) to organise the APEC Sustainable Coastal Cities Symposium from 24 to 26 November 2021. The symposium featured six panels that discussed possible solutions, best practices and the role of non-governmental organisations, community, public-private partnerships as well as technology and innovation to create sustainable coastal cities.

The symposium also witnessed the launch of APEC Sustainable Coastal Cities Research Consortium. The consortium is a concerted effort to engage academic representatives among APEC economies as well as non-members in tackling challenges of self-supporting coastal cities such as on climate change, marine debris and supporting marine ecosystems. ASM’s involvement as a co-organiser aligns with its goal of achieving sustainability in science.



Link to website/
programme/any
related materials:
[https://
apeccoastalcities.
eventx.io/main-lobby](https://apeccoastalcities.eventx.io/main-lobby)

The symposium was attended by more than

200[↑] Participants
from **16** Countries

Dubai Expo 2020

Malaysia: Your Global Innovation Partner

Malaysia’s participation in Dubai Expo 2020 was punctuated with a forum titled Malaysia: Your Global Innovation Partner, which was held on 14 October 2021.

The forum delved into how the Malaysian RDCIE ecosystem will be supercharged through systemic changes over the next decade. MOSTI has set the tone for the next decade through the launch of three national initiatives, namely the National Policy for Science, Technology, and Innovation (NPSTI) 2021-2030; the 10-10 MySTIE Framework; and the Malaysia Grand Challenge.

The scene is ripe for international innovators, investors, and industry captains to collaborate with their Malaysian counterparts to realise mutually beneficial goals through collaborative networks, knowledge hubs in the region while leveraging on the rich supply of resources in the region. The diverse panel unpacked the opportunities within the Malaysian RDCIE landscape and how it can take on an international flavour towards increasing innovation performance in Malaysia and the region.

INFOGRAPHIC

The Forum was moderated by Ben Ibrahim with Puan Hazami Habib (ASM CEO), Mr Jaffri Ibrahim (CREST CEO) and Dr David Lacey (OSRAM Director of R&D) serving as the panellists.

Knowledge Exchange



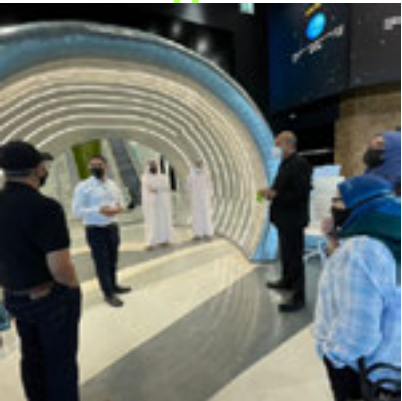
The Malaysian delegation paid an official visit to the Dubai Electricity and Water Authority (DEWA) to learn about their ongoing R&D in solar energy technology and water management integration system, which is implemented in Dubai for national resource management.




The Dubai Expo 2020 witnessed an exchange of knowledge between Dr Nagulendran Kangayatkarasu (Deputy Sec Gen of MOSTI) and Puan Hazami Habib (ASM CEO) with the representatives from China. They shared their insights on a project to explore Mars as well as hydrogen-powered cars.



Puan Hazami Habib (ASM CEO) also had the opportunity to meet HE Mohammad Dansanta Rumi, Ambassador of Nigeria in Dubai to explore how a Malaysia-Nigeria collaboration could potentially build competitiveness in the start-up ecosystem.





National Science Day Forum on Future of Science, Technology, Innovation & Economy (STIE) - Impacts on Education, Skills and Work

The Malaysian Nature Society (MNS) collaborated with ASM and the Malaysian Scientific Association (MSA) to organise a forum titled “Future of Science, Technology, Innovation & Economy (STIE): Impacts of Education, Skills and Work” in conjunction with the National Science Day on 10 November 2021.

The forum was moderated by Professor Dr Ahmad Ismail FASc, Chairman of MNS. The forum featured prominent panelists to elaborate on their respective topics:

1. 10-10 Malaysia Science, Technology, Innovation and Economy (10-10 MySTIE) Framework and Talent Development - Professor Datuk Dr Asma Ismail FASc, ASM President
2. The Importance of Education for Environmental Conservation and Protection - Academician Tan Sri Dato’ Seri Dr Salleh Mohd Nor FASc, ASM Senior Fellow and MSA Council Member
3. Future STEM Talent for the Nation - Professor Dato’ Dr Mohd Jamil Maah FASc, ASM Fellow & Director of Centre for Foundation Studies in Science, Universiti Malaya

The discussion focused on aligning STEM education with the 10-10 MySTIE drivers, improving innovation skills, and work opportunities following global trends while coordinating with the country’s needs. It also focused on how Malaysia can be more agile for the future, navigate rapid technology advancements as well as adopt more sustainable practices to deliver value for the people.

It is important for science to be humanised, and for local technologies to be powered by indigenous technology for the nation to move forward. The forum emphasised the need to increase job creators in the future, especially among youths. Hence, inspiring innovation with the right set of skills among the younger generation is imperative.



Transcending Artscience Cultures with The National Art Gallery

The ASM ArtScience™ Initiative partnered with the National Art Gallery to participate in the Asia-Europe Meeting (ASEM) Cultural Festival on 26 November 2021. This international event was organised by the Asia-Europe Foundation (ASEF) together with the European Union and Ministry of Culture and Fine Arts of Cambodia (MCFA).

The event showcased ArtScience-based programmes in Asia and Europe, particularly in Malaysia, Indonesia, the United Kingdom and Netherlands. Through this event, ASM ArtScience™ and the National Art Gallery had conducted an online webinar. Six prominent panellists who are experts in combining the elements of art and science in their works were invited for the discussion during the webinar session.

The panellists are as follows:

- Noa Haim – Designer Founder of Paperaesthetics Collective (Netherlands)
- Venzha Christ - Director of Indonesia Space Science Society, ISSS (Indonesia)
- Dr Hanif Baharin - Member of Di8it Collective and Winner of the ASM ArtScience 2020 Prize (Malaysia)
- Ng Chor Guan - Sound Artist, Toccata Studio (Malaysia)
- Dr Emmanuel Tseklevs- Co-Director of Future Research Institute, Lancaster University and Convenor of the Health SIG of the Design Research Society, UK/Greece (United Kingdom)

The ASM ArtScience™ Initiative’s involvement in the ASEF Cultural Festival is important to increase the visibility of the Art and Science concept in the region. The event provided an opportunity for participants to expand their network among the international speakers and to identify initiatives around the world within the field of art and science. Moving forward, ASM ArtScience™ Initiative will collaborate further with these artist-scientists to produce impactful artsience-based actions in problem solving.

MAKNA Cancer Research Award (MCRA)

Malaysian scientists have significantly contributed to effective early cancer detection and advancing personalised cancer treatment. Their significance discoveries is a result of years of fundamental research and observations.

To maintain the pace of cancer-related research, the National Cancer Council (MAKNA) has tremendously encouraged Malaysian young researchers for the past 21 years with a funding opportunity called MAKNA Cancer Research Award (MCRA). As a strategic partner for this award, ASM has lent its Expert Network as Vetting Panel during the MCRA selection process. Besides identifying and connecting the experts, ASM also provides an online application platform through the ASM Awards and Recognition System and Database to accept MCRA applications.

Partnering with MAKNA has given ASM the capability to explore cancer research in relation to the three national STIE niche areas: digital health, precision medicine, and clinical trial hub for developing countries. The three niche areas are identified under the medical and healthcare of socio-economic drivers in the 10-10 MySTIE framework. The research awarded by MAKNA will not only lead the young researchers towards great value propositions in making their scientific breakthroughs, but their findings will also align with the national STIE agendas.

Infographic (2005 – 2021)

818 applications received
63 awardees to date with total grants worth RM 1,821,235.00
3 were awarded with a total grant worth almost RM 30,000 each

Malaysian Commercialisation Year (MCY) Audit Committee 2021

ASM Fellow has been invited by MOSTI to be involved as the Chairman of Audit Committee of MCY Award since 2017. Professor Dato’ Dr Mohamed Shariff Mohamed Din FASc was appointed as the Chairman of Audit Committee due to his expertise and experience in this field. MCY is an annual event organised by MOSTI to boost innovation and commercialization activities in all sectors in Malaysia. This initiative has helped to increase the visibility of local R&D products, technologies and services to enter the global market, and thus, strengthening Malaysia’s position in the competitive market. This year, there are six Award categories which are:

- 1. Emerging Innovator Award
- 2. Commercial Deal Award
- 3. Research & Business Partnership Award
- 4. Research Entrepreneur Award
- 5. Social Entrepreneur Award
- 6. Supreme Award

360

R&D products

Technologies

Services

were commercialised up to 2020

Internet Connectivity through The Wireless Bridging System

In the pandemic era, having an internet access is no longer a luxury but a necessity for many reasons, including online schooling and education. However, many rural areas in our country do not have internet connectivity, negatively impacting the community’s quality of life, especially school children who were unable to join online classes.

With that in mind, ASM together with Associate Professor Dr Muhammad Ramlee Kamarudin, the Top Research Scientists Malaysia Recipient from Universiti Tun Hussein Onn Malaysia (UTHM) and an expert in 5G/6G Antennas for Wireless Communications Systems, has come up with a simple solution to provide internet connectivity in rural areas. The simple and inexpensive technology is called “Frugal Internet Connectivity” and it uses a wireless bridging system. This approach extends the internet accessibility and connectivity from a main internet facility to rural areas. Further discussions are under way to bring this technology to urban areas for the underprivileged segment of the population.

ASM and UTHM in cooperation with the Ministry of Rural Development and TM One will be implementing the Proof-of-Concept of this technology on a small scale to 5-8 houses with different configurations in Kampung Kuala Pajam, Beranang Selangor from February until June 2022.

It was attended by 435 people via Zoom plus more than 2,300 Facebook viewers.

INFOGRAPHIC

8 stakeholder engagements in 2021

The 2021 Dr Ranjeet Bhagwan Singh (RBS) Memorial Lecture and Announcement of the 2021 RBS Research Grant Recipients

As the world was bombarded with news related to COVID-19, particularly about vaccines, society has gradually adapted to a new way of living. Thus, it is important to be equipped with the right knowledge about vaccines. In conjunction with the current situation, this year's RBS Memorial Lecture held on 29 July 2021 was proud to have vaccinology expert Dr Peter John Hotez to share his knowledge and experience on COVID-19 Vaccines aptly titled "Science vs Antiscience".

In addition to the Memorial Lecture, the 2021 RBS Research Grant Recipients was also announced:

2 RBS Grant Award Winners

Dr Chai Wai Yeeng

Project Title:

Investigation of PTPN11 as Therapeutic Target and PTPN11 Inhibitors as Therapies for Oral Cancer

Grant received:

RM49,490.00

Dr Saw Shier Nee

Project Title:

Early Detection of Intrauterine Growth Restriction Foetus Using Artificial Intelligence

Grant received:

RM20,400.00

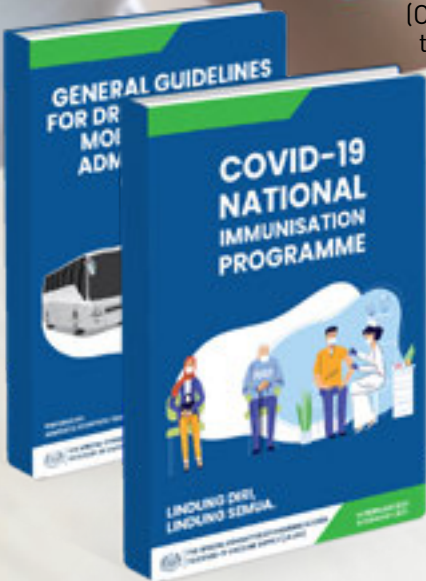
ASM in National COVID-19 Immunisation Programme (NIP)

ASM has been working closely with MOSTI and MOH to ensure that the immunisation programme follows the most stringent scientific process with regards to the roll-out. ASM has published the National COVID-19 Immunisation Programme (NIP) handbook in collaboration with MOH and MOSTI, which was launched by the YAB Prime Minister in February 2021.

In the effort to expediate the vaccination roll-out, the Academy mooted the idea of drive-through vaccination centres after doing a benchmark analysis of global practices such as what's being carried out at the Arizona State Farm Stadium in the United States. The ASM data scientists which consists of YSN-ASM members developed the plan for Malaysian drive-through vaccination centres, which been implemented throughout the country. The team also developed the SOP for the establishment of mobile and outreach vaccination centres in collaboration with National Heart Institute, MOH, MOSTI, Malaysian National Security Council, the Ministry of Defence, and other stakeholders nationwide.

ASM data scientist team assisted in with carrying out the modelling, forecasting the distribution of vaccines and projecting the target under the National COVID-19 Immunisation Programme (NIP). The two models that the team developed were the outdoor vaccine modelling; which focuses on the flow on vaccine exercises conducted outdoors, the estimation of daily completion, and estimation of completion of the program according to the targeted population. Besides that, the vaccine throughput modelling focuses on daily throughput KPI for each state based on vaccine supply record, target population, availability of vaccine administration centre and vaccination completion target. In addition to creating the two models, the team analysed the risk, R rate while also assisting CITF in the smooth administration of the throughout the NIP.

The Academy has also been tasked to chair the Establishment of Mobile, Drive-through and Outreach Committee VAC for CITF (COVID-19 Immunisation Task Force). The committee developed the SOP for Ventilation for COVID-19 and the SOP for setting up COVID-19 PPV at Places of Worship.

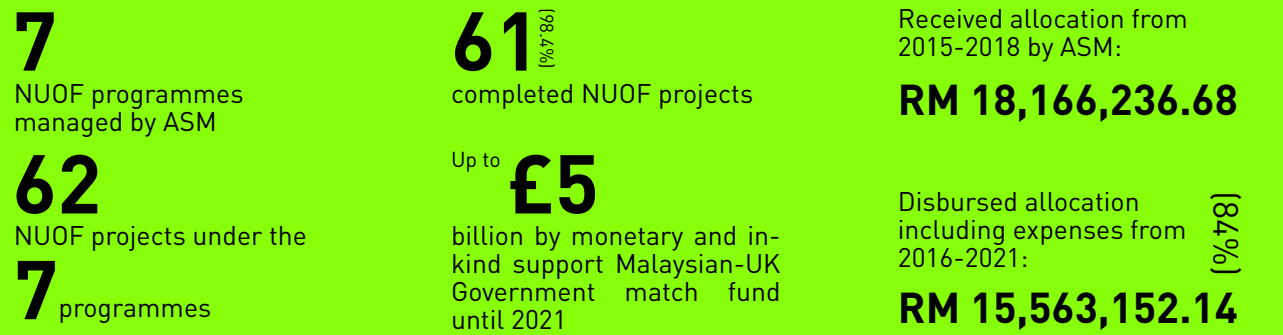


Newton-Ungku Omar Fund (NUOF)

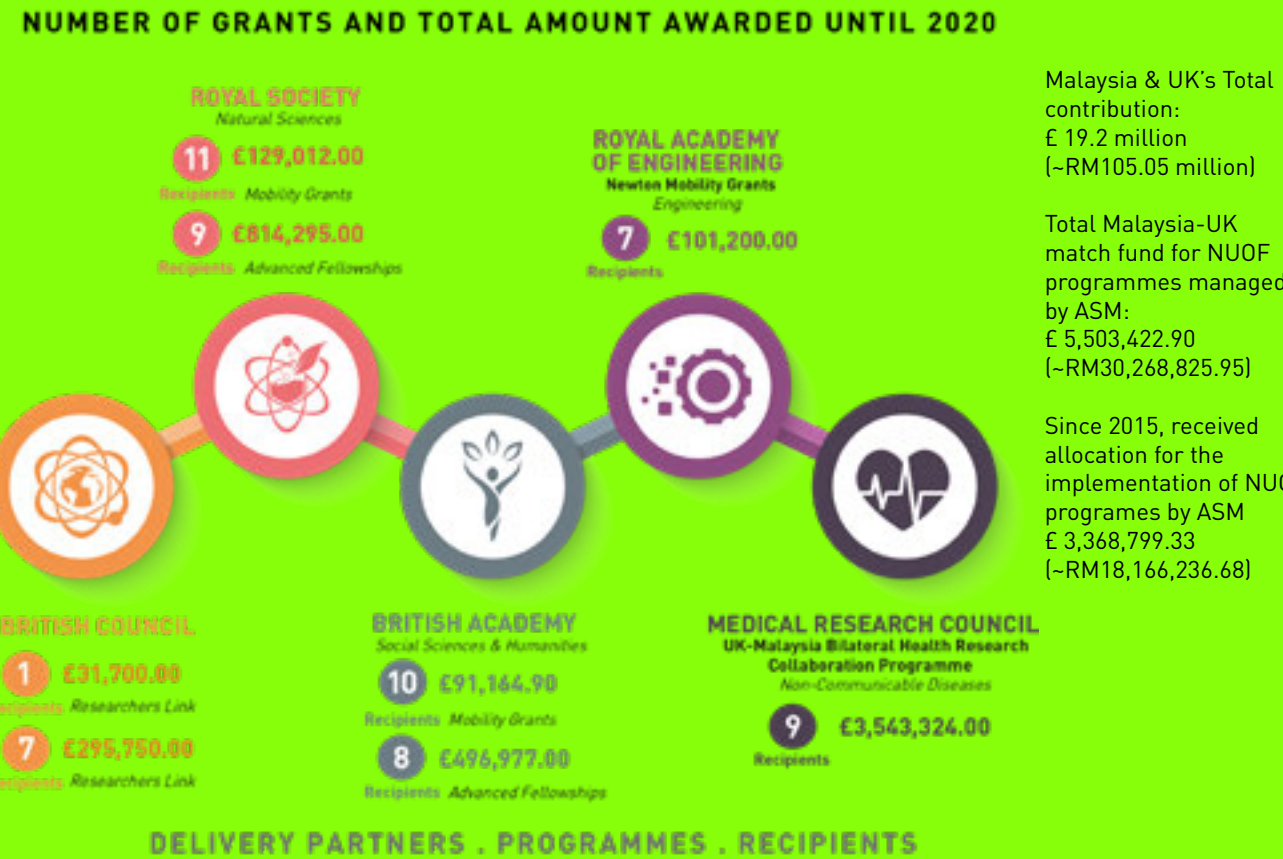
NUOF programmes develop research network among multi- and inter-disciplinary researchers through the integration of STIE knowledge by addressing the socio-economic issues in Malaysia and the UK. The execution of NUOF programmes has come to an end with the completion of 61 projects with only one terminated project.

To measure the impact of NUOF projects managed by ASM, a NUOF Impact Analysis Workshop was organised to collect the output and outcomes of NUOF projects from the recipients. Aside from showing a good degree of satisfaction among recipients, the collaboration with the UK researchers also give Malaysian researchers the exposure, advanced knowledge and technology through the trainings and reciprocal visit to UK's institutions.

The collaboration between Malaysian and the UK Researchers through NUOF projects supports the capacity building of both countries' researchers and benefits the research findings through patent filling. Collaborations also serve as the baseline to develop policies and enhance current research practices and technology processes.



Proposed figures on the overall NUOF programmes managed by ASM



Mahathir Science Award (MSA) Evaluation & Selection Process 2021

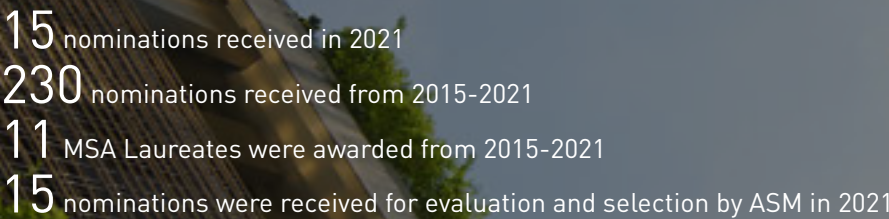
The Mahathir Science Award (MSA) is the world's most prestigious science award for tropical sciences, and bestowed on any scientists, institution or organization worldwide in recognition of their contributions and innovations towards solving problems in the tropics through science and technology.

As such, this extends beyond the boundaries of Malaysia in order to encourage excellence in tropical science that will accord direct benefits to countries in the tropics and indirectly to the global community in the fields of:

- Tropical Agriculture
- Tropical Architecture and Engineering
- Tropical Medicine
- Tropical Natural Resources

The 2021 MSA was open to Tropical Agriculture and Tropical Architecture and Engineering category. ASM has been entrusted by the MSAF to carry out the evaluation and selection process of the MSA since its establishment in 2005. The 2021 evaluation and selection process of the Winner was carried out from 15 March until 8 April 2021. No winner was selected for the 2021 MSA.

Infographic



SPECIAL PROJECT



Malaysia Open Science Platform

Training of Trainers (Series I, II and III, PLANMalaysia, UNESCO)

The Training of Trainers Programme (ToT) equips future data stewards with applicable competencies, expertise, and skills in Open Science and Data Stewardship. Besides that, this programme also provides an upskilling opportunity for existing librarians, researchers, research managers and anyone in the research field. By the end of the training, MOSP aims to produce 200 trained data stewards from various research institutions, ministries, and universities in Malaysia. By the end of the training programme, MOSP have successfully trained 231 data stewards nationally.

MOSP has subscribed OpenLearning as a platform to conduct the training. There are two courses offered in this training, which are:

Course 1:
Open Science Skills

40 hours

Registered participants must complete both courses to become a trained data steward.

Series I 2020
21 September 2020 to 3 January 2021

56 trained data stewards

Course 2:
Data Stewardship

80 hours

Series II 2021
16 March 2021 to 31 August 2021

106 trained data stewards

Series III 2021/2022
1 November 2021 to 1 March 2022

42 trained data stewards

ASM Data Scientists Training with PLANMalaysia
5 July 2021 to 31 October 2021

13 trained data stewards

ASM Data Stewardship Training with UNESCO
16 March 2021 to 31 August 2021

14 trained data stewards

Common Challenges:

- Commitment issues
 - o Participants often say that they have time constraints as they are working full-time job at their institutions while joining the training.
 - o MOSP Team addressed this by having catch-up session with the participants, accommodating their requests to have some extra few days to complete the training, and regular check-ups with their progress.
- Open Science and Data Stewardship are new topics
 - o It can be challenging to train people, especially the Data Stewardship Course because it can be quite technical. Also, this knowledge seems theoretical and distant to our research culture, so it is interesting to find ways to display real-world applications.
 - o This allows MOSP to discover several Open Science and Data Stewardship practices and projects that have been implemented in Malaysia and share it with the participants.

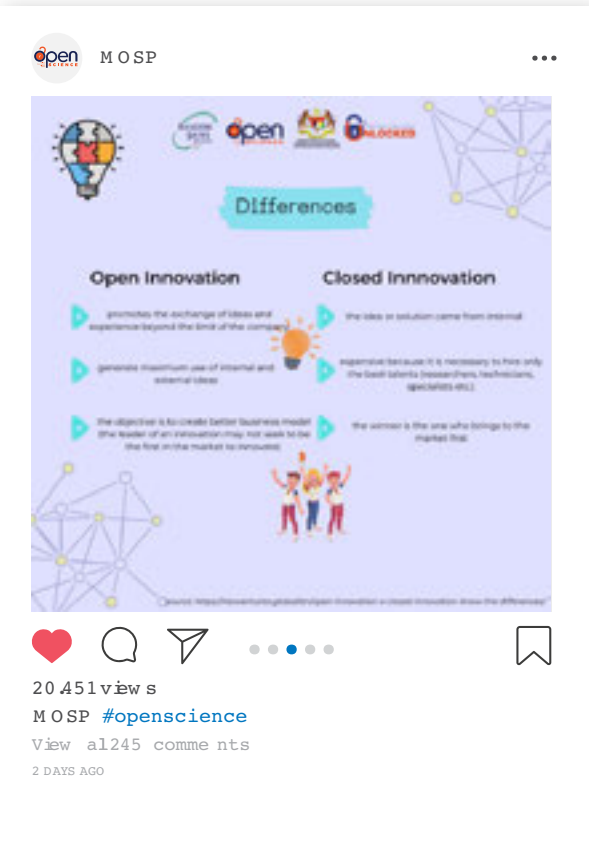
UNLOCKED Campaign

UNLOCKED is MOSP’s first campaign to create awareness. The monthly campaign started in September 2021, on the topic of Citizen Science. The campaign’s objective is to educate the public about Open Science components via social media. The campaign is held with notes and quizzes held fortnightly, which are released on the second and fourth week of the month on MOSP’s Facebook Page.

The winners of this campaign will be issued an e-certificate of participation and interesting prizes each month.



Example of notes posted for the campaign on the topic of Open Innovation (December 2021)



Open Science Webinar

An Open Science Webinar was organised on 11 January 2021 to kickstart the year involving researchers, librarians and research managers from Malaysia Association of Research Managers and Administrators (MyRMA) and MOSP. MOSP initiatives and the global landscape of MOSP pilot initiatives, intergovernmental efforts towards promoting Open Science globally, and efforts towards developing policies and guidelines on Open Science in Malaysia were discussed.

- Moderator: Professor Dr Abrizah Abdullah, the Malaysia Open Science Alliance’s Head of Capacity Building and Awareness Working Group.
- Panellists:
 - o Academician Professor Emerita Tan Sri Dr Mazlan Othman FASc
 - o Professor Dr Noorsaadah Abd Rahman FASc
 - o Professor Datuk Dr Rohana Yusof

MOSP in the Media

A promotional video was produced and posted on ML Studio’s social media platforms such as YouTube, Twitter, and Instagram on 8 December 2021. This three-minute video has approximately 10,800 viewers on FB and 8,000 viewers on YouTube so far.

<https://www.youtube.com/watch?v=AeywjOeESGU>
<https://mlstudios.my/2021/12/08/data-hasil-penyelidikan-universiti-disimpan-di-mana/>

MOSP was featured on RTM’s Selamat Pagi Malaysia on 2 August 2021, where Professor Dr Noorsaadah Abd Rahman, Chairperson of Malaysia Open Science Alliance briefly described the MOSP pilot project and its benefits and impact to society. This media appearance has greatly helped MOSP build awareness, with a total viewership approaching 1.5 million.



Advancing Science in Southeast Asia Web Conference 2021

On 25 October 2021, the Southeast Asia Network for Open Science (SEANOS) organised a web conference titled “Advancing Science in Southeast Asia Web Conference 2021”. The morning session carried the topic “How to Produce Research That Has Impact, Credibility, and Quality, as well as How to Utilise Existing Infrastructure in The Region”.

MOSP conducted a live discussion for Malaysia in the afternoon. This session was conducted in a forum format and was delivered in Bahasa Malaysia. The forum centred on how to overcome the problems as well as addressing current issues in doing research in Malaysia. Ideas and solutions compiled during the session were documented and submitted to SEANOS in January 2022 for them to use when drafting a policy.

- Morning Session Representatives:
- Academician Professor Emerita Tan Sri Dr Mazlan Othman FASc
 - Professor Emeritus Tan Sri Dr Zakri Abd Hamid FASc
 - Puan Hazami Habib, ASM CEO

- Afternoon session Moderator and panelists:
- Professor Ismanizan Ismail, a member of Malaysia Open Science Alliance
 - Dr. Zainul Akmar Zakaria, Associate Professor, Department of Bioprocess and Polymer Engineering, Faculty of Chemical and Energy Engineering, Universiti Teknologi Malaysia.
 - Prof Dr Kamisah Osman, Head of Science Education Module, Professor Centre of Innovation in Teaching & Learning, Universiti Kebangsaan Malaysia.
 - Dr Siti Sarah Othman, YSN-ASM Member, Faculty of Biotechnology and Biomolecular Science, Universiti Putra Malaysia.

Malaysia Open Science Forum 2021

MOSP was approached by Wiley to collaborate for a forum on Open Science on 25 August 2021. This forum featured researchers and librarians to share about their perspectives and roles as well as their institutions involvement in Open Science. This programme provided an opportunity to learn how other library and faculty leaders are supporting researchers in their Open Science journey.

Malaysian Collaborative Network for Disruptive Innovation (i-Connect)

i-Connect facilitates Malaysian industries to leverage on science and technology to develop innovative home-grown products and solutions to pursue new economic opportunities in emerging global markets. The initiative does this while nurturing the growth of conducive innovations ecosystems based on collaborative networks.

Neutral Entities and Founding Members

Five Neutral Entities have been appointed to orchestrate the collaborative network for four sectors. Each Neutral Entity appointed Founding Members that represents the quadruple helix (industry, government, researchers, and civil society) to provide valuable strategic knowledge and leadership experience for the creation of demand-driven R&D projects to disrupt the incumbent markets.

i-Connect Projects

Based on the shared vision, strategic inputs and advice from the Founding Members, the Neutral Entities formulated a strategic plan for their sectors that comprised key focus areas, technology roadmap and problem statements. These problem statements were broadcasted to industry players and researchers in Malaysia in order to translate the gaps into projects.

This year, five projects have been endorsed by ASM with a total project cost of RM13.88 million with a contribution of RM7.31 million from the industry, which is more than 50% of the project’s total cost. ASM was appointed as the Implementing & Monitoring Agency under the Strategic Research Fund (SRF-APP).

Memorandum of Understanding (MoU) Signing Ceremony with Futurise Sdn Bhd (Futurise)

An MoU between ASM and Futurise was signed during a ceremony held on 9 April 2021. The MoU links ASM’s i-Connect with Futurise’s open innovation platform called Futurity. This platform shall be a stepping stone for i-Connect to digitalise the programme’s implementation.

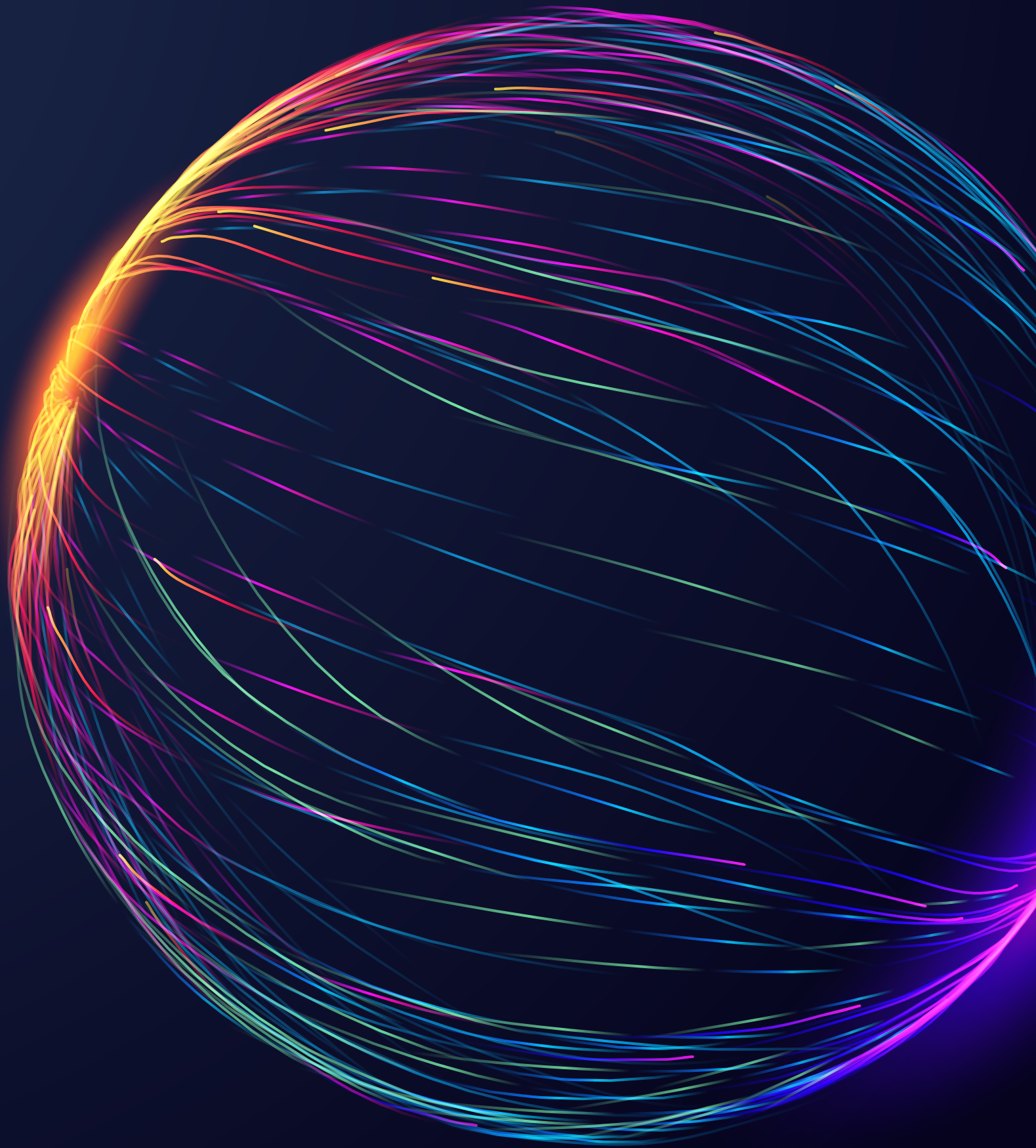


Memorandum of Understanding (MoU) Signing Ceremony with Malaysian Global Innovation & Creativity Center (MaGIC)

An MoU between ASM i-Connect programme and MaGIC as the lead secretariat of National Technology and Innovation Sandbox (NTIS) initiative was signed. Besides facilitating project execution between each of these organisations, this MoU enables ASM members to be on the advisory panel for NTIS, while MaGIC’s representative can serve as Founding Members under any sector of i-Connect.



INFLUENCER



Bureau of International Affairs

ASM-AAAS-TWAS Regional Course on Science Diplomacy 2021

The COVID-19 pandemic is “a wake-up call” for science diplomats to address a range of issues in which science, technology, and the society are tightly intertwined. Timely and pressing issues informed and addressed by scientific expertise, such as the COVID-19 pandemic and climate change, illuminate the urge for nations to collaborate across boundaries.

ASM, the American Association for the Advancement of Science (AAAS) and The World Academy of Sciences (TWAS) recognised the significance of Science Diplomacy in these trying times. This workshop was the first of its kind held in the East and Southeast Asian region. This was a unique opportunity for ASM to partner with AAAS and TWAS, two leading organisations that specialised in teaching science diplomacy and training young scientists.

The course trained scientists and policymakers in science policy and fostered the necessary connections powered by science diplomacy to address key issues. It encompasses scientific evidence and understanding that informs policy, diplomatic efforts that work toward scientific collaboration among nations and the international relations fostered by scientific collaboration.

The three main aspects that were stressed throughout this course were:

- (i) Science in Diplomacy
- (ii) Diplomacy for Science
- (iii) Science for Diplomacy

The course concluded that, to effectively convince policymakers of the significance of current issues, those engaged in science diplomacy must be credible, relevant, and legitimate. The course also encouraged its participants to get involved with their own country’s academy of science, with their country’s policymakers, as well as with their fellow alumni of science diplomacy courses.

- The Regional Course on Science Diplomacy was held from 16 to 19 March 2021.
- Although the course focused on science diplomacy in the Asia-Pacific region, it brought together 56 scientists and policymakers from 29 countries across Asia, Africa, and the Americas.
- 33 speakers and moderators facilitated the event from across multiple continents.

AASSA Climate Change and Health Project

The relationship between climate change and health is complex, and it is imperative to understand these complexities to formulate policies that can mitigate the effects of climate change, especially in developing nations where the effects on health will be felt the most, owing to the vulnerable population groups in these countries. Evidently, there is a need to explore the topic to ensure that adequate and timely strategies are used to prevent and mitigate the effects of climate change on human health.

As part of the InterAcademy Partnership (IAP) Climate Change and Health (CCH) Project, The Association of Academies and Societies of Sciences in Asia (AASSA) has recently published the regional report on ‘The Imperative of Climate Action to Promote and Protect Health in Asia’. The AASSA Working Group on CCH was led by Academician Emeritus Professor Dato’ Dr Khairul Anuar Abdullah FASc, the President of AASSA. ASM led the AASSA’s Working Group on CCH to organise a series of regional workshops to clarify the regional focus areas and make a regional analysis for CCH. The workshops involved experts from 16 Asia and Oceania countries to formulate science-based recommendations.

The report touches on how climate change has affected the spatio-temporal, socio-economic, and political variations within Asia and Oceania. It recognises that geographical areas that lack technological advancement and development require a different set of criteria and approaches to assess the health and well-being of their citizens. Scientific evidence is essential for effective policymaking to prevent the health impacts of climate change. This report has summarised the policy suggestions and directions to adapt and mitigate, as well as to clarify current research gaps. These actions should accompany social transformation towards sustainable development.

The report has put forward some recommendations for five key sectors:



- Education and training



- Research and knowledge implementation



- Integrated healthcare facilities, services, and implementation



- Government support in policy development



- Financial aid and adequate resources

This regional report was also presented during the 26th United Nations Climate Change Conference (COP26). The IAP is currently publishing the Global Report titled “[Health in the climate emergency – a global perspective](#)” that comprises all input from four regional networks: AASSA (Asia), EASAC (Europe), IANAS (Americans) and NASAC (Africa). The global report is expected to be published in May 2022.

Executive summary:



Full report:

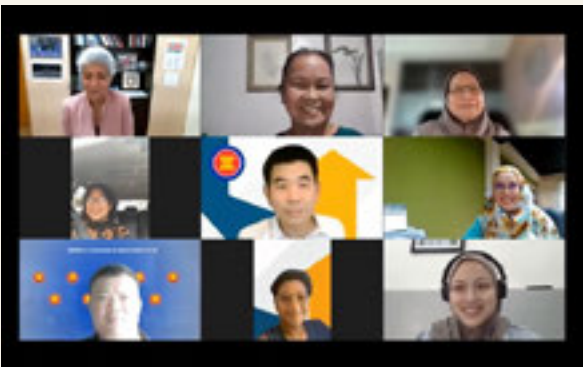
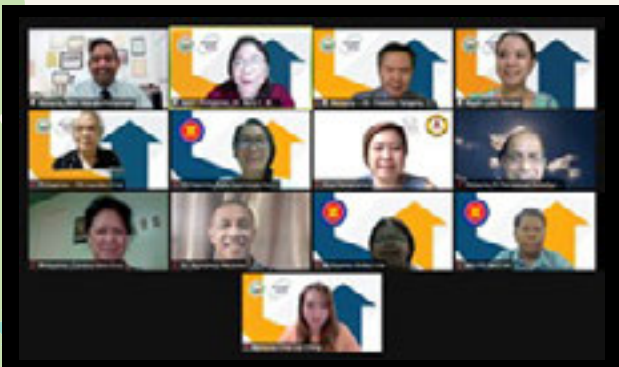


2nd ASEAN Foresight Alliance Workshop

ASM collaborated with the National Academy of Science and Technology, Philippines (NAST PHL) to organise the 2nd ASEAN Foresight Alliance Workshop. The Workshop taught participants on the application of foresight methodologies as tools to design ASEAN common future goals and help build-up the capacity of ASEAN members in developing their national policies, strategies, and action plans.

This Workshop steered towards having an ASEAN Vision 2050, discussed the plans and activities of the ASEAN Members, and expanded the ASEAN Foresight Alliance network. The workshop brought together more than 60 scientists and policymakers to discuss their aspirations of ASEAN beyond 2025 predicated on STI capacity and competency. They also discussed on how ASEAN can be more agile in facing future challenges, as well as planning and coordination in terms of STI.

The Board of Advisors of AFA also convened for their second meeting on 9 June 2021. Members agreed to establish a cohort of permanent foresight researchers called the ASEAN Foresight Research Cohort. The Cohort will consist of two representatives from each ASEAN Member States (AMS) and driven by researchers that will assist AFA to conduct ASEAN Foresight 2035. The researchers will be doing research from their own AMS and the data will be collated in a depository as materials to prepare for the ASEAN Foresight 2035 report. The main goal is to present the ASEAN Foresight 2035 at the ASEAN Ministerial Meeting in 2024 to be formally adopted.



Participants:

- The workshop was attended by a total of 150 participants.



Workshop

- 2nd ASEAN Foresight Alliance Workshop from 7 to 9 June 2021. Prior to this Workshop, ASM and NAST organised a training workshop on 24 May 2021.

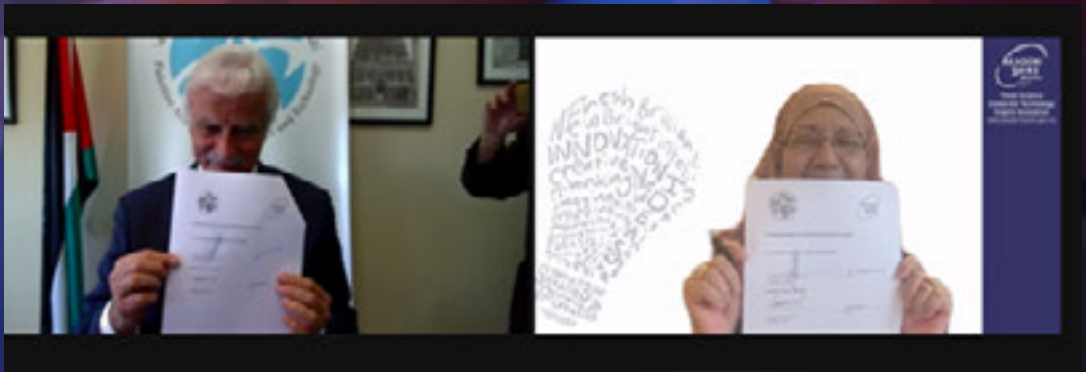
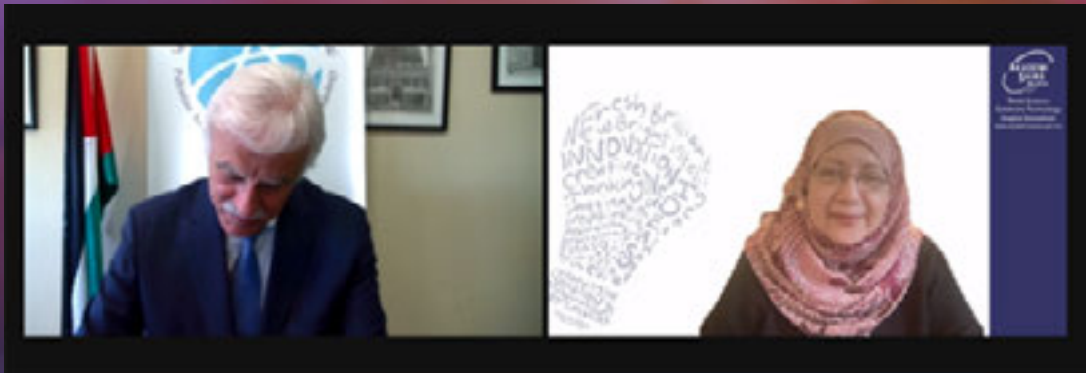
ASM-PALAST Virtual MoU Signing Ceremony

ASM has opened another chapter in its effort to establish international partnerships by signing a Memorandum of Understanding (MoU) for Scientific Collaboration in Research with the Palestine Academy for Science and Technology (PALAST) virtually on 6 October 2021.

The MoU was signed by ASM President Professor Emerita Datuk Dr Asma Ismail FASc and the President of PALAST cum Palestine's Minister of Education, H.E. Minister Professor Marwan Awartani.

The objective of the MoU is to foster collaboration in the fields of science, research, and education between Malaysia and Palestine. A Palestinian-Malaysian Science Bridge program was proposed to build capacity and transfer knowledge in the fields of S&T research and education. This partnership is in line with MOSTI's objectives to expand Malaysian capabilities in STI by forging partnership with reputable international institutions. This synergistic partnership helps to advance knowledge to deal with local issues by introducing internationally merged solutions.

The Science Bridge will close the scientific and technological cooperation gap between the two academies. Such "bridges" will also provide valuable opportunities for researchers at Malaysian universities, research centres and government agencies to engage in collaborative research with their counterparts in international partner institutions.



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

Inspired by the 2005 Doha Plan of Action and adopted during the Second South Summit of the Group of 77 and China in Qatar, ISTIC was launched in May 2008, as an international platform for South-South cooperation in science, technology and innovation. ISTIC has come a long way since then. For more than a decade, it has left a big footprint.

The year 2021 was a very important year for ISTIC, one in which the organization prepared itself for the next major step in its journey. The Centre completed its independent review and focused on the renewal process of its Agreement.

ISTIC also finalised the strategy that will guide it into the next phase of its establishment in 2021. This Strategic Plan sets out a vision for ISTIC's evolution over the next six years, responding to a changing development landscape and the evolving needs of its partners. It builds on the lessons learned from its past evaluation and charts new routes forward for ISTIC, while also building on existing strength. This plan reinforces its commitment to working with Governments, civil society, and the private sectors as a catalyst and facilitator of support as mandated by the Malaysian Government and UNESCO. It will walk on a new path built on a strong legacy to achieve its aims, realise its ambitions and aspirations, and ensure the sustained success of this leading international organisation.

ISTIC Key Outcomes



4298 All participants
1566 🇺🇸 participants



105 Total Countries
99 G77 Members



101 Programmes and Activities



150 Strategic Partners and Collaborators



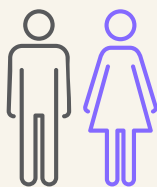
18 Publications



8 SDGs Covered



16 MPO Signed



65% Participation by Gender
35% Gender

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

The International Science Council - Regional Office for Asia and the Pacific (ISC-ROAP) promotes the development of science throughout Asia and the Pacific. The organisation helps strengthen the voice of scientist from the developing countries in this region, and increased the value of science and evidence-based decision making.

This Regional Office was inaugurated on 19 September 2006 and hosted by Malaysian Government since then. The hosting of the regional office is based on five-year agreement between Malaysian Government and ISC headquarters in Paris. Funding for ISC ROAP is supported by Malaysian Government and ISC. The term for Malaysia to host ISC-ROAP ended in 2021 after 15 years hosting it.

This year, ISC-ROAP together with ASM and the Mahathir Science Award Foundation (MSAF) organised a number of programmes. Among the highlights are:

1. Disaster Risk Reduction (DRR) Session at Sustainability Research and Innovation Congress 2021 (SRI2021)

On 14 June 2021, the IRDR ICoE Taipei convened a panel at the Sustainability Research & Innovation Congress 2021 (SRI2021). Participants came together in a forum entitled "To Distill from Experiences of Stakeholders, Scalable Strategies for Disaster Risk Reduction and Societal Resilience Building". The forum served as a platform for the participants to share their knowledge and best practices.

2. International Day of Forest

On 23 March 2021, ISC-ROAP, MSAF and ASM partnered with the Jeffrey Sachs Center on Sustainable Development at Sunway University to jointly organise a webinar themed "Tropical Forests Under Threat: Finding Our Way Out of the Woods" in conjunction with the International Day of Forests. Webinar attendees came from 18 different countries and indicated that they liked the multi-pronged approach of the webinar towards forest restoration and preservation, which covered community involvement, green finance and agroforestry.

3. World Health Day

The Webinar was organised together with MSAF and ASM in conjunction with World Health Day. The Webinar themed "Towards a Fairer and Healthier Tropics" was organised on 7 April 2021. The moderator summarised that at the local level, tropical nations have the capacity to lead their own change. Meanwhile, at the global level, health policy reforms require us to recognise that health and equity is a political, scientific, and ethical choice that can be achieved by a coalition of the willing, the able and the relevant. Overall, the webinar was a success in bringing people from 25 countries in the interest of a fairer and healthier tropics.

4. World Ocean Day

In conjunction with World Ocean Day, ISC-ROAP, MSAF and ASM co-organised a webinar that addressed "Ocean Life and Livelihoods in The Tropics". This year's World Ocean Day sheds light on the wonders of the ocean and how it is our life source, supporting humanity and every other organism on earth. Some of the key points raised in the discussion were the vulnerability and resiliency of coastal communities in response to climate change, municipal fisheries and aquaculture development for sustainable marine resource management. The panellists also underscored the importance of generating collective impact at all levels by establishing an effective national ocean policy and governance for the tropical ocean. Towards that effort, the UN Ocean Decade could be used as an action framework consisting of transdisciplinary priority areas relating to the ocean for the Tropics.

5. International Day of Biodiversity – Naming Nature 2

Naming Nature 2 was held on 21 May 2021 via Zoom in conjunction with the International Day of Biodiversity. The webinar was jointly organised by ASM, MSAF and ISC. Two hundred and eighty people from 12 countries (Australia, Bangladesh, Denmark, France, Indonesia, Malaysia, Netherlands, Philippines, Singapore, Spain, UK, USA) had registered for the webinar.

Malaysia through ASM will continue become the member of ISC to participate in important scientific conversations and activities, to showcase national scientific contributions at the international level, and to connect to each other and to influential networks worldwide.

Communicating Science

The Marketing Communication, Creative Production and Design Unit of ASM as well as ASM Press work hand-in-hand with ASM's top management and Expert Network to enhance the organisation's visibility of its initiatives and studies. These teams play a crucial role in the enculturation of science and strengthening corporate identity through the curation and dissemination of STIE topics.

Ultimately, these efforts are made visible among ASM's stakeholders to build strong and meaningful relationships with them. Conventional and new media are the chosen platforms on which ASM performs its communication endeavours, and we strive to expand our avenues via novel media.



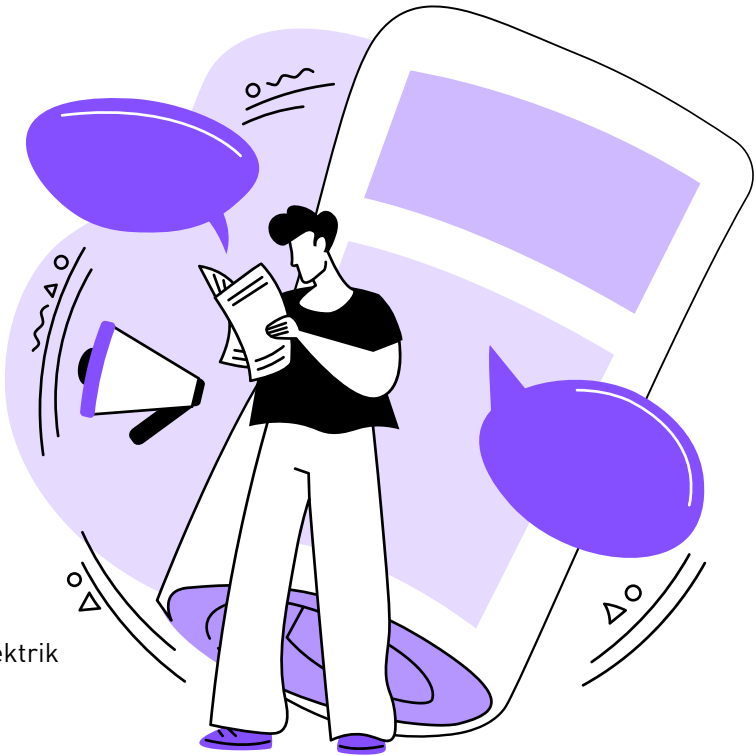
PUBLICATIONS & JOURNAL:

ASM Science Journal **105** articles

3 SPECIAL ISSUES

- ICSTSS2018
- ICST2017
- SCIEMATHIC2019 Structured Abstracts for ISVC2021

- Begitulah Sang Suria: Daripada Cahaya Kepada Elektrik
- Gen, Inovasi Kehidupan!
- Executive Summary – Science Outlook Report 2020
- Science Outlook Report 2020
- 2020 ASM Annual Report



ONLINE READERSHIP:

e-Publications
107
to date

Readership
44,555

Impression
128,657

 **ASM FOCUS:**
e-Newsletter

Issues
10
(2 bumper issues)

Articles
33

Readership
4,492

Webinar
67

Launching
2

Science Outlook &
ArtScience Exhibition
'Alangkah'

Media Coverage
51

e-Estidotmy

Published
95

Visit/Pageviews
4,492

ASM PODCAST



Perkongsian audio mengenai topik-topik menarik berkaitan Sains, Teknologi, Inovasi dan Ekonomi (STIE) bersama jaringan pakar ASM dan tokoh-tokoh dalam industri.

@akademisainsmy



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f 28,672

 9,340

 4,563

 4,907

 48,599

21,140 TOTAL FOLLOWERS

93



OUR EXPERTS

EXPERT NETWORK

ASM's greatest asset is its people. The convergence of expertise, knowledge and wisdom of the Fellows from various disciplinary groups allows ASM to provide solutions to many problems that is faced by the nation. Besides Fellows, the recipients of Top Research Scientists Malaysia (TRSM), members of Young Scientists Network (YSN-ASM), ASM Associates and the Mahathir Science Award Laureates actively work with ASM. These various groups of experts form the ASM Expert Network.

Apart from taking part in working committees and projects, the ASM Expert Network often represents ASM at ministerial level meetings and symposiums. They are also referred for their technical expertise by ASM, ministries and government agencies, and media.

Every year, the Academy organises programmes to engage ASM Expert Network and harnesses their input through dialogues and intellectual discourse. Following are the programmes organised in 2021:

1 General Assembly

1 IdeaXchange

2 FAScinate session

390 FELLOWS OF THE ACADEMY OF SCIENCES MALAYSIA
(27) SENIOR FELLOWS

- 1  Biological, Agricultural & Environmental Sciences
- 2  Chemical Sciences
- 3  Engineering Sciences
- 4  Information Technology & Computer Sciences
- 5  Mathematics, Physics & Earth Sciences
- 6  Medical & Health Sciences
- 7  Science & Technology Development Industry
- 8  Social Sciences & Humanities

11 MSA LAUREATES
51 ASSOCIATES

133 TRSM RECIPIENTS
225 YSN-ASM NETWORK

Humanising the Economy through 5Ps of SDGs for Greater Impact

Malaysia performed reasonably well in reaching the sustainable development goals (SDGs) in 2020, having recorded positive achievements in 49 indicators (34%). Regrettably, the COVID-19 pandemic became ferocious in 2021. Not only had it robbed us of lives and livelihoods, but it also threw us off the track in the pursuit of sustainability of development. ASM President Professor Emerita Datuk Dr Asma Ismail FASc called for a reassessment of where we are, and to strategise recovery plans so Malaysia can get back on track on achieving the 17 SDGs, which could contribute to the Malaysian economy and societal wellbeing.

The 13th ASM General Assembly was held online on 9 September 2021 to discuss how the five core elements of SDGs (5Ps) i.e. **People, Planet, Prosperity, Peace and Partnership** contribute to societal wellbeing and economic growth. The pandemic has highlighted the significance of a humanised economy by implementing the essence of 5Ps.



People



Planet



Prosperity



Peace



Partnership

The panellists:

- Academician Emeritus Professor Tan Sri Dato' Sri Zakri Abdul Hamid FASc (moderator)
- Professor Datuk Dr Denison Jayasooria (Secretariat Head of APPGM SDG)
- Ms Lavanya Rama Iyer (Head of Policy & Climate Change WWF)
- Distinguished Professor Dato' Dr Rajah Rasiah FASc (University of Malaya)
- Ms Tan Mei Ling (World Bank Senior Country Operation Officer)

The panellists concluded that the 5Ps are a good basis to create future action plans for the country. The President of ASM concurred and pointed out that ASM has been a trusted entity among the quadruple helix that takes different perspectives from various stakeholders into account when composing policy papers.

Building a Resilient Nation: STI as the Enabler of the 12th Malaysia Plan

The much-awaited Twelfth Malaysia Plan (12th MP) has captured extra attention among its *rakyat* as the nation slowly recovers from COVID-19. It is imperative to understand, appreciate and support the 12th MP to transform Malaysia into a prosperous, inclusive, and sustainable country. Can the Twelfth Malaysia Plan be the ultimate game changer? The 35th IdeaXchange was organised virtually to provide insights from 12th MP specialists on 25 October 2021.

MOSTI Minister YB Dato' Sri Dr Adham Baba emphasised the significance of STIE for effective COVID-19 pandemic recovery in his speech. Synergy among the quadruple helix is key for achieving success. The Minister also urged researchers to foster the **WOW** characteristics: **W**orld class pacesetting, **O**utstanding opportunity-creating and being **W**innable, transformative, and impactful.

The IdeaXchange concluded that the 12th MP would not attain success only by single-handedly involving the quadruple helix. Instead, the 10-10 MySTIE framework that focuses on various niche areas should also be applied.

- Moderator: Ts Professor Dato' Dr Ahmad Ibrahim FASc
- Presenter: Dato' V Valluvan Veloo, Director of Manufacturing Industry, S&T Division from EPU

Two sessions of FAScinate were held this year featuring eight speakers. The topics presented were diverse, ranging from physical and social sciences, green technology, medical sciences as well as science education.



Indigenous Communities and COVID-19: Response and Resilience
Dato' Dr Madeline Berma FASc



Earthquakes: Is Malaysia at Risk?
Professor Ir Dr Azlan Adnan FASc
Universiti Teknologi Malaysia



Will Destroy Our Oil Palm Industry?
Professor Ts Dr Chong Khim Phin
Universiti Malaysia Sabah



Supercapattery : A Salvation For Sustainable Smart Cities
Professor Dr Ramesh T Subramaniam FASc
Universiti Malaya



Medicinal Benefits of Maslinic Acid
Professor Ts Dr Lim Yang Mooi



Green and Sustainable Innovations through Process Intensification
Professor Ir Dr Suzana Yusup FASc



Nature; The Fascinating Chemical Factory
Professor Dr Nor Hadiani Ismail FASc



Engaging, Inspiring and Transforming the Learners of Tomorrow
Dr Manraj Singh Cheema

10,948 views on Facebook live **21** Speakers to date



Watch the FAScinate videos on our YouTube channel

ASM Chapters

The ASM Chapters were set up to provide a platform for the ASM Expert Network to get together and organise programmes in their region. The Chapters bring together ASM Fellows, TRSM recipients, members of YSN-ASM and ASM Associates in the region to carry out activities aligned with the ASM functions. By concentrating their expertise and resources, the Chapters could hold more specific programmes in the region, getting a wider reach among the local scientific community and consequently increasing ASM's visibility in the region.

The Northern Chapter was the first chapter established in 2011, followed by the Southern Chapter in 2016. Three additional Chapters were being set up last year - the East Coast Chapter, the Sabah Chapter and the Sarawak Chapter. In 2021, the main activities held by the Chapters were webinars, conferences, competitions, technical projects and proposals for studies. Some of the activities also involved collaboration with other stakeholders such as UniMas, UTM, USM and UMP.



In Memoriam

Tun Ahmad Sarji Abdul Hamid

Elected as Honorary Fellow in 2009



(16 September 1938 – 28 August 2021)

Tun Ahmad Sarji Abdul Hamid was born in Tapah, Perak on 16 September 1938. He obtained education at Government English School in Tapah and studied up to Master's degree at Harvard University, the USA, in Public Administration.

His first career began in public administration by joining the Malayan Administrative Service as the Deputy Assistant District Officer of Klang, Selangor, on 10 January 1961. He served as a Rembau District Officer in 1963. In 1964, he was appointed as Port Dickson District Officer, which he served until 1967.

In 1968, Ahmad Sarji was appointed as Assistant Director (Service) of the Public Service Department before being appointed Secretary (Cabinet Division) of the Prime Minister's Department in 1972. After that,

Ahmad Sarji was appointed to lead several government agencies, including the Director-General of the Farmers Organisation Authority (1973-1979) and Majlis Amanah Rakyat (MARA) in 1981 and then Deputy Director-General of the Public Service Department (JPA) in 1981 to 1985.

Ahmad Sarji was later appointed Secretary-General of the Ministry of Trade and Industry in 1985 until 31 January 1990. His career in the civil service was at its peak when he was appointed Chief Secretary to the Government from 1 February 1990 until his retirement in 1993. His service as the Chief Secretary to the Government was extended on a contract basis until 15 September 1996.

Tun Ahmad Sarji held several important positions in leading Government-linked companies. Among them were Petronas Board Member (1985-1990), Permodalan Nasional Berhad (PNB) Board Member (1985), Chairman of the Malaysian Institute of Standards and Industrial Research (SIRIM) (1992), and Chairman of Sime Darby Bhd (1998). He also served as the first chairman of the Institut Kefahaman Islam Malaysia (IKIM) in 1992, Pro-Chancellor at Universiti Tun Abdul Razak (UNITAR) in 2003 and Universiti Kebangsaan Malaysia (UKM) in 2006, as well as Chancellor of Universiti Tun Abdul Razak (UNIRAZAK) in 2012. He also contributed as the first Chairman of the Mahathir Science Award Foundation (2010-2013). In 2012, headed the Malaysian Contingent to the Olympic Games in London.

He received various awards, including Tokoh Maal Hijrah 1420 Hijrah, Sports Leadership Award by the National Sports Awards, Tun Sri Lanang National Book Figure Premier Award, 2012 Gold Medal of Honor by the Royal Rotary Club of Kuala Lumpur, Queen Victoria Memorial Medal by the European Business Assembly. He was also named as a Sports Icon for National Sports Award 2015. He was awarded the Seri Setia Mahkota Malaysia (SSN), which carries the title of Tun, in June 2008.

Tun Ahmad Sarji passed away at the age of 82, but his legacy as the most respected and revered public service figure remains in the country.

Professor Dr Hamdani Saidi

Elected as Fellow in 2013 under the Engineering Sciences Discipline



(16 September 1938 – 28 August 2021)

Professor Dr Hamdani Saidi FASc was born in Selangor. He completed his secondary education at Sekolah Alam Shah, Kuala Lumpur, in 1970 before joining the College of Agriculture, Serdang, in 1971. He then continued his tertiary education at Louisiana State University, USA, until 1980 and received his Bachelor's and Master's degree in Chemical Engineering. In 1988, he obtained his PhD in Chemical Engineering at the University of Bradford, United Kingdom.

Professor Dr Hamdani started his first career as an Assistant Lecturer at Universiti Teknologi Malaysia (UTM) in 1977. A few years later, he was appointed as the Head of the Petroleum Engineering Department and then Deputy Dean in 1989. He was then promoted to Professor and Dean, Faculty of Chemical and Natural Resources Engineering until 1997.

Professor Dr Hamdani was one of the pioneers in the R&D of membrane technology in Malaysia. In 1990, he initiated the establishment of the Membrane Research Unit (MRU) in UTM, currently known as the Advanced Membrane Technology Research Centre (AMTEC). Through this research centre, he started the development of membranes and their applications in the process industry. To date, AMTEC is recognised globally as a reference centre attracting significant researchers from Government and industry, developing expertise and products, and contributing new knowledge.

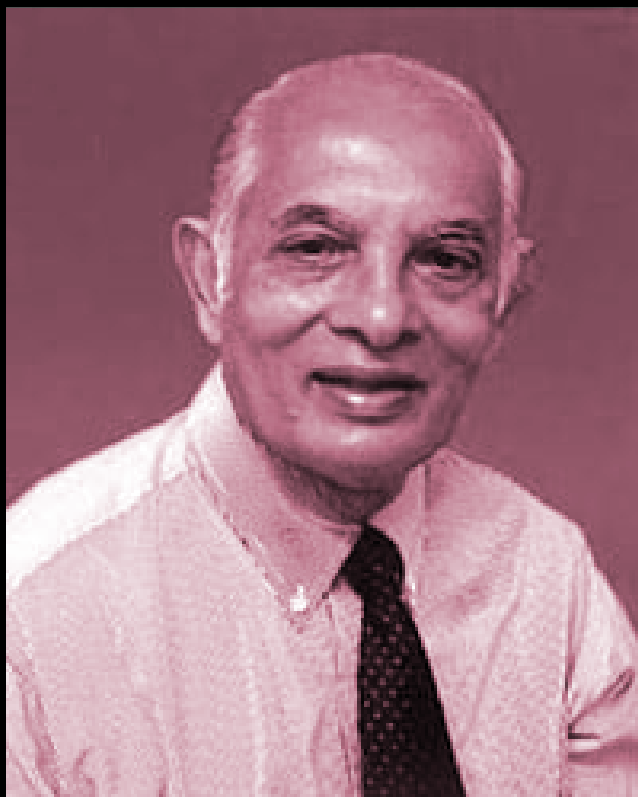
In pursuit of knowledge and innovation, he led a team of experts to develop fuel cell technology, a clean and efficient power generation system for stationary and mobile applications. The Government fully funded the program under the prioritised research project. He also pioneered the development work on the implementation of plasma technology for waste-to-energy conversion in Malaysia. His research findings were widely published in many international journals, namely Journal of Power Sources, Advanced material, Mathematical Modeling, Journal of Applied Polymer Science, Journal of New Material for Electrochemical Systems and Polymer International.

Professor Dr Hamdani actively contributed his expertise and experience to the industry, Government and international organisations. He served as a technical consultant to the Malaysia Energy Centre (PTM) and was involved in the planning and implementation of Energy R&D. At the international level, he was appointed as a member of the Council of Energy Advisor of Gerson Lehrman Group, USA. The Council is a leading group of power and energy professionals that provides independent research in the power and energy sector to the investment community by working directly with industry professionals.

Professor Dr Hamdani is seen as a passionate scientist in the field of membrane technology. He will always be remembered by all.

Academician Dr C. Devendra FASc

Elected as Fellow in 2006 under the Biological, Agricultural and Environmental Sciences



(21 Aug 1926 - 17 June 2021)

Academician Dr C. Devendra FASc was exemplary in animal science, locally and internationally. He was an international tropical animal production specialist with experience spanning over thirty years in research and development initiatives. His specialisation was in animal nutrition and animal production systems, central to integrated natural resource management and agricultural systems. He obtained a Bachelor of Agriculture Science degree in New Zealand, a Master of Agriculture Science in Malaysia, and his PhD from the University of Nottingham in the United Kingdom.

From 1971 until 1984, he served at the Malaysian Agricultural Research and Development Institute. He worked on fundamental and applied animal nutrition projects with goats and sheep and attained the rank of Principal Research Officer. In Singapore, from 1985 to 1992, he worked with the International Development Research Centre as Programme Officer in Animal Production Systems. During this time, he was involved

with 80 projects in animal production systems in 13 Asian countries, targeted at encouraging efficient use of natural resources and the development of environmentally sustainable agriculture.

From 1993 to 1994, he worked as an independent consultant, undertaking work for the International Livestock Research Institute. Assignments took him around the world, from Latin America to North Africa. In 1995 as a Senior Associate with the Institute of Livestock Research, he managed projects in Asia. In 1999 he was appointed as a Team Leader for the Institute's Crop-Animal Systems Research Network project involving five Asia countries, including China.

This work, funded through the Asian Development Bank, aimed to increase the productivity of crop-livestock systems. Dr Devendra has contributed to the establishment, management, monitoring, and evaluation of crop and animal production projects and the use of natural feed resources in almost 20 different countries.

He also served at the University of the West Indies in Trinidad, MARDI in Malaysia, and the Animal Production Systems Asia programme with Canada's International Development Research Centre (IDRC). He was a member of the Strategic Planning Task Force of the International Livestock Research Institute (ILRI) in Nairobi, Kenya, and subsequently was appointed as a Senior Associate. He was a consultant to the World Bank, Asian Development Bank (ADB), United Nations Development Programme (UNDP), Food and Agriculture Organization (FAO), International Atomic Energy Agency (IAEA), United States Agency for International Development (USAID), Commonwealth Secretariat and several governments.

He was a Distinguished Visiting Professor at the University of Delaware, USA, and has also been an external examiner to the Universities of Queensland, Australia, and Uppsala, Sweden, and the University of Life Sciences in Ås, Norway.

Academician Dr C. Devendra FASc passed away on 17 June 2021. He will be remembered as a reputed icon in Animal Science.

Professor Dr Lim Yau Yan FASc

Elected as Fellow in 2015 under the Chemical Sciences Discipline



(9 March 1943 - 26 August 2021)

Professor Dr Lim Yau Yan FASc was born in Kuala Lumpur on 9 March 1943. He obtained a Bachelor of Science with honours from the University of Malaya in 1966 and a Doctor of Philosophy from the University of Illinois, Urbana in 1971.

Professor Dr Lim was known as a leading expert in physical inorganic chemistry and specific areas of food chemistry. His research interests were diverse, from micellar catalysis based on surface-active transition metal complexes, the identification and bioactivity of active compounds from herbal plants, and the effects of processing treatment on the bioactivity of herbal plants.

He served as a chemistry lecturer for more than 40 years and produced many eminent chemists for the nation. He has published and delivered lectures extensively in physical inorganic chemistry. He has authored more than 80 refereed journal papers. Being an expert, he reviewed many chemistry and food science journals and evaluated research grants nationally and internationally. His achievements were in research on surface-active complexes and solution chemistry.

He was an active member in his professional and social activities. He contributed as an Associate of the American Chemical Society and a member of the Malaysian Institute of Chemistry. He served as an organising committee member of the Malaysian Applied Biology Symposium, the MONASH University of Malaysia in 2001 and an organising committee member of the 12th Asian Chemical Congress in 2007.

As an academic, Professor Lim Yau Yan has taught inorganic chemistry, medicinal chemistry, analytical chemistry and spectroscopy. He has supervised PhD students with exceptional and unique supervision practices. He received a commendation for Excellence in Postgraduate Supervision from the Science Faculty, MONASH University, Clayton, Australia, in 2014.

Professor Dr Lim Yau Yan FASc passed away on 26 August 2021. He is seen as a successful Malaysian Chemistry educator and will be remembered by everyone.

Academician Professor Emeritus Dato' Dr Khalid Yusoff FASc

Elected as Fellow in 2002 under the Medical and Health Sciences Discipline



(30 January 1955 – 5 April 2021)

Academician Professor Emeritus Dato' Dr Khalid Yusoff FASc was the UK trained cardiologist who spent three decades promoting excellence in medical research in Malaysia, leading positions in three Malaysia's leading universities and being a trusted adviser to the Government.

He was trained as a cardiology expert and started his medical career in the late 1970s as a student at the University of Melbourne, Australia, before conducting his training at the University of Newcastle-upon-Tyne, United Kingdom. Upon returning to Malaysia after his

training in medicine, he began to teach and cultivate the practice and scientific investigation of his speciality. He initiated The Institute for Medical Molecular Biotechnology (IMMB) and the Centre for Translational Research and Epidemiology (The CentRE), which quickly became a substantial research centre in Malaysia. He moulded strategic international partnerships linking UiTM's medical faculty to a wide range of global universities and research institutes (including developing formal partnerships with the University of Melbourne and Bio21). These initiatives appreciably expanded the Malaysian medical workforce and national medical research.

He has been the Vice-Chancellor and President of USCI University, Malaysia, since 2013. Under his leadership, USCI has achieved various academic recognitions. The most notable one was that USCI University was ranked as the nation's best private university two years in a row from 2019 to 2020, according to QS World University Rankings. As a leader, he also brought up USCI to the world stage when he successfully created a strategic collaboration with prestigious universities, including Harvard University, to strengthen the medical students with the opportunity to pursue research programs with high impact.

His most remarkable list of national and international recognitions were in particular, the top academic awards from both UKM (2002) and UiTM (2011), the Lifetime Achievement Award from the Malaysian Society of Hypertension (2013), the Royal College of Physicians of London (1995) research award, the Hewlett Packard International Award (1998), the Albert Schweitzer Gold Medal (2001) and the Royal Awards from the Sultan of Kelantan (1999 & 2000). In 2019, he was appointed as a Senior Fellow of ASM for his contribution to the field of cardiology through practice, teaching and research, as well as championing research integrity in Malaysia. His motto throughout his leadership at USCI University was "Go Beyond; Be profound: Make a difference".

Datuk Dr Hussein Awang FASc

Appointed on Foundation Fellow, Elected as Fellow in 1995 under the Medical and Health Sciences



(10 April 1940 – 18 April 2021)

Datuk Dr Hussein Awang FASc attended boarding school for his secondary education at Melbourne Grammar School. Following that, Datuk Dr Hussein entered Melbourne Medical School and graduated with MBBS in 1965. Then, he returned to Malaysia, where he got married and commenced resident years at the General Hospital in Singapore and later in Johor Bahru. In Singapore, he was trained in general surgery and was awarded the Fellow of the Royal Australasian College of Surgeons (FRACS). He then moved to the General Hospital Kuala Lumpur (GHKL) for urological training under Dr G. Sreenevasan. He rapidly acquired exceptional clinical and technical skills due to dealing with many cases involving advanced pathology, such as staghorn renal calculi and neglected tumours.

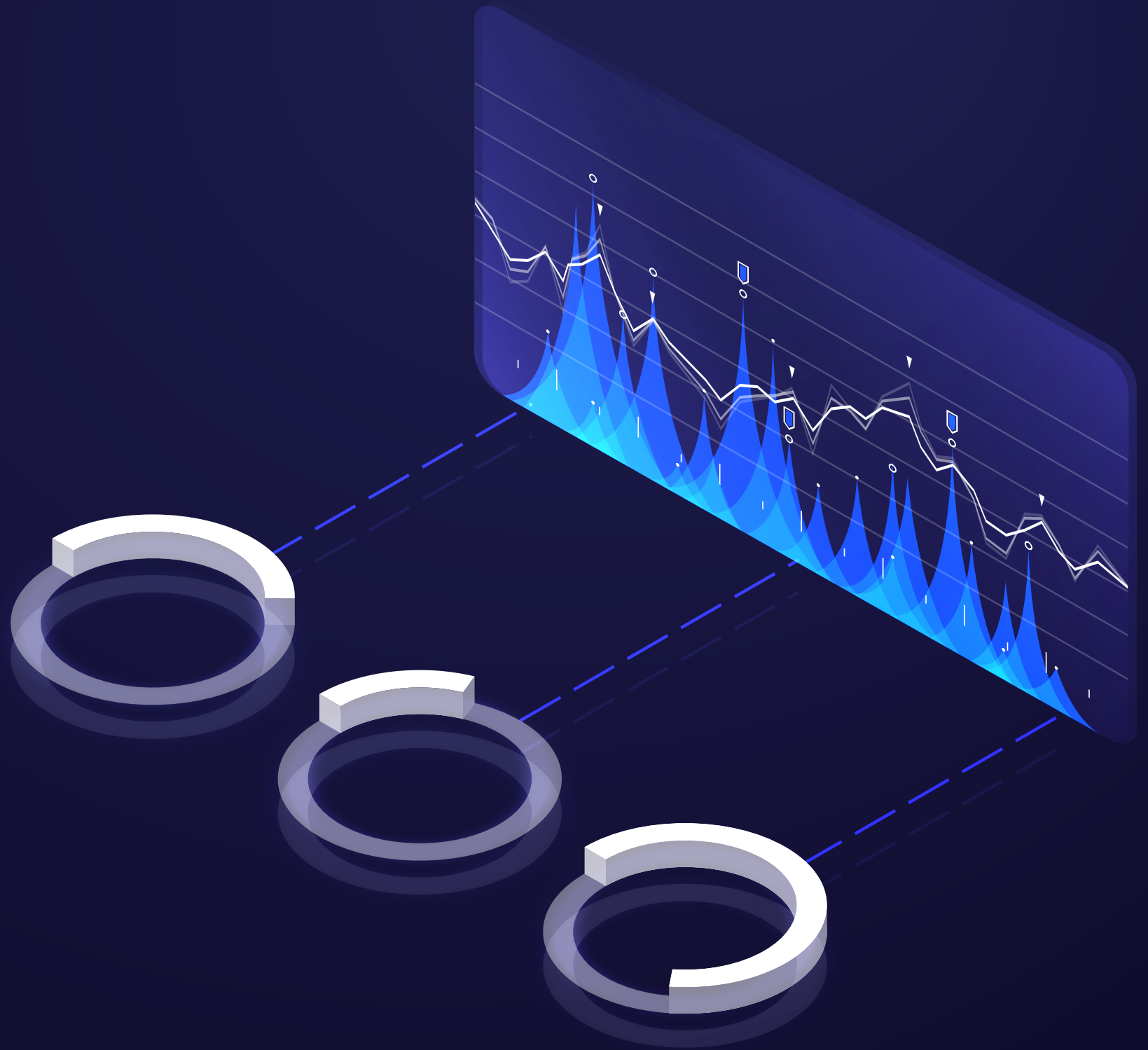
In 1974, he was one of the founding members of the Malaysian Urological Association (MUA) and was later appointed as the president leading the association. This establishment represents a significant milestone in the development of Urology in Malaysia. As cadaveric transplantation was prohibited due to religious restrictions, he switched to performing transplants from a live related donor. In 1975, he marked history as the first surgeon in Malaysia to perform a renal transplant. After this success, he did a total of 75 transplants at GHKL. He held many offices, including representing Malaysia on the Asian Association of Surgeons Council.

In the 1980s, Datuk Dr Hussein has seen the sprouting of private healthcare services. He and his two colleagues were inspired to fill a growing need for private healthcare and relieve the pressure on public hospitals. With the investment by the Johor Corporation (JCorp) and others, Tawakkal Specialist Centre, a 66-bed private specialist hospital run by doctors, was built opposite GHKL. The name "tawakkal" was derived from his grandfather's house in Johor Bharu and a family clinic in the same state, which means "trust in God" in Arabic. The then Prime Minister, Tun Dr Mahathir Mohamad, graced the official opening of Tawakkal in 1983. It grew through several extensions and was rebuilt to a hospital that accommodates 200 beds with most senior specialists from GHKL.

Datuk Dr Hussein remained the dominant influence and ensured that patient respect and care came first and that charity was appropriate in situations of financial difficulty. As a result of this success, the investor JCorp has developed a network of 28 hospitals with 3000 beds in Malaysia, Indonesia, Thailand and Bangladesh. Tawakkal hospital is now known as KPJ Healthcare.

In his closing years, Datuk Dr Hussein's vitality started to fade. However, his legacy as the country's most outstanding urologist remains, and he will be dearly missed.

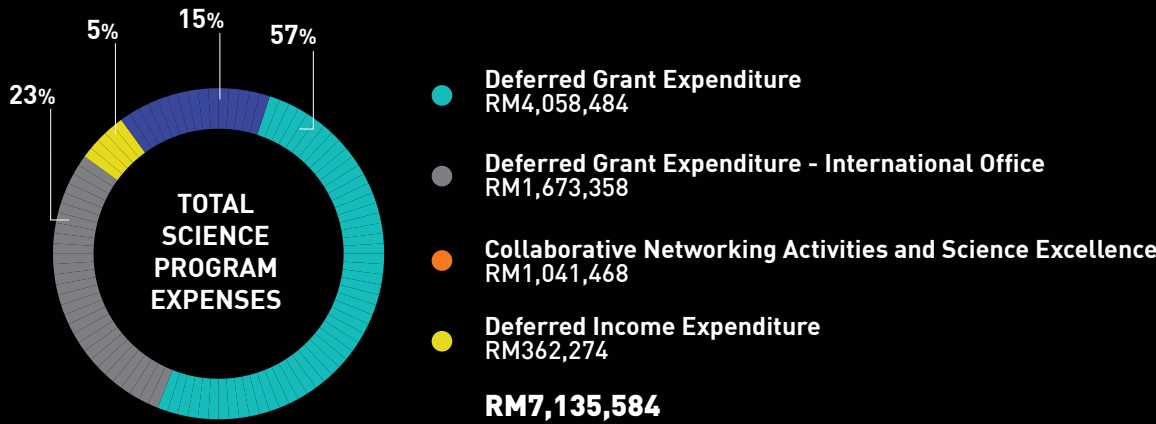
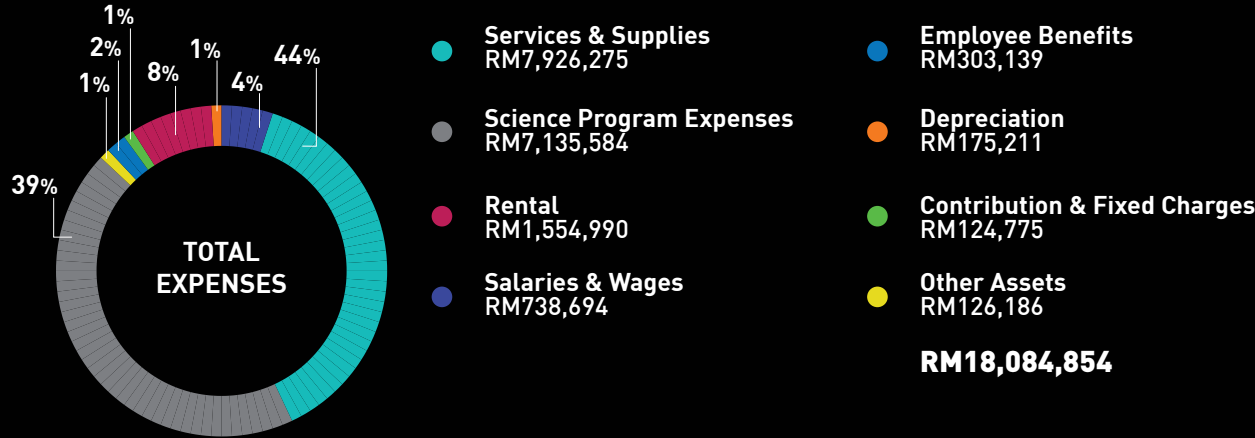
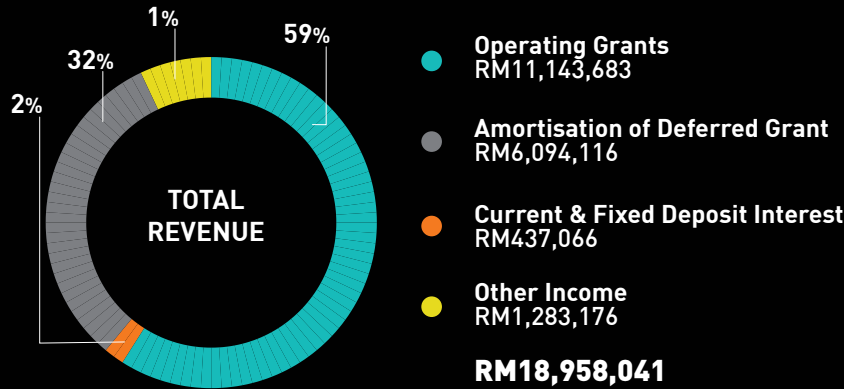
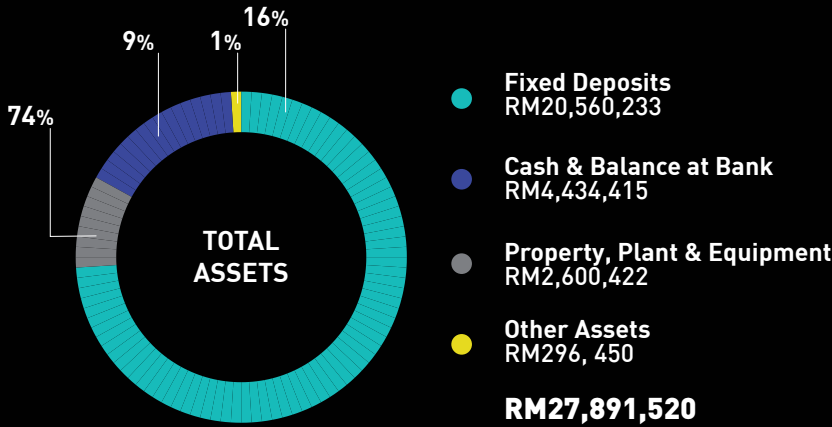
FINANCIAL STATEMENTS



FINANCIAL OVERVIEW & ANALYSIS

The financial statements of the ASM and its reports are prepared in accordance with the Academy of Sciences Malaysia Act (ACT 524) and the Malaysian Public Sector Accounting Standards (MPSAS). This report aims to describe the financial position of ASM as well as a summary of financial transactions for the year ended 31 December 2021.

The financial statements for the year ended 31 December 2021 were submitted to the Auditor General on 11 March 2022 and the Auditor General certified and issued the certificate on 23 May 2022. During the financial year ended 31 December 2021, ASM recorded a profit after tax of RM739,193 compared to 2020 with a profit of RM631,186.



Statement of Financial Position

Assets

Cash and Bank Balance

The cash balance for the year ended 31 December 2021 was RM4.43 million as compared to RM0.68 million recorded for the year ended 31 December 2020. The cash balance increases more than 100% due to the receiving grants for Malaysian Collaborative Network (i-Connect) and Malaysia Open Science Platform (MOSP) amounting RM3.87 million in December.

Fixed Deposits

Fixed Deposits in ASM are made over period of 12 months or less depending on ASM's immediate cash requirements and the interest rates offered by the financial institution. In the year ended 31 December 2021, fixed deposits amounted to RM20.56 million compared to RM20.38 million in the year ended 31 December 2020.

Table 1 shows the position of Cash and Fixed Deposit balances for 2021 and 2020.

CASH AND BANK BALANCE AND FIXED DEPOSITS

| | 2021 | 2020 | Increase / (Decrease) | Percentage % |
|--------------------------|-------------|-------------|--------------------------|-----------------|
| | RM' million | RM' million | | |
| Cash and Balance at Bank | 4.43 | 0.68 | 3.75 | 551% |
| Fixed Deposits | 20.56 | 20.38 | 0.18 | 1% |

Receivables for Exchange Transactions

Accounts Receivables shows the balance of money due to ASM for goods or services delivered at the end of the financial year. For year ended 2021, the receivables have increased from RM0.08 million in FY2020 to RM0.23 million in FY2021. Please refer to Notes 5 & 6 of the Notes to the Financial Statements for further details.

Liabilities

Current Liabilities

Total Current Liabilities for the year ended 31 December 2021 amounting to RM2.59 million shows an increase of 3.0% as compared to the RM2.53 million for year ended 31 December 2020. This is due to an increase in the tax provision for the current year.

Table 2 shows the position of Current Liabilities balances for 2021 and 2020

CURRENT LIABILITIES

| | 2021 | 2020 | Increase / (Decrease) | Percentage % |
|---------------------------------------|-------------|-------------|--------------------------|-----------------|
| | RM' million | RM' million | | |
| Payables for Exchangeable Transaction | 0.65 | 0.65 | 0.00 | 0.2% |
| Employee Benefits | 0.26 | 0.24 | 0.02 | 10% |
| Deferred Income | 1.16 | 1.26 | -0.10 | -8% |
| Other Current Liability | 0.51 | 0.38 | 0.13 | 35% |
| Total Current Liability | 2.59 | 2.53 | 0.06 | 3% |

Non-Current Liabilities

Total Non-Current Liabilities recorded an increase of 25.0% for the year ended 31 December 2021. The changes were due to the increase in Deferred Grants for Malaysian Collaborative Network (i-Connect) and Malaysia Open Science Platform (MOSP) projects compared to the previous year.

Table 3 shows the position of Non Current Liabilities balances for 2021 and 2020.

NON-CURRENT LIABILITIES

| | 2021 | 2020 | Increase / (Decrease) | Percentage % |
|--|-------------|-------------|--------------------------|-----------------|
| | RM' million | RM' million | | |
| Employee Benefits | 0.04 | 0.03 | 0.01 | 25% |
| Deferred Grants | 15.47 | 11.22 | 4.25 | 38% |
| Deferred Grants - International Office | 0.01 | 1.11 | -0.10 | -99% |
| Total Non-Current Liabilities | 15.51 | 12.36 | 3.15 | 25% |

Statement of Financial Performance

Income

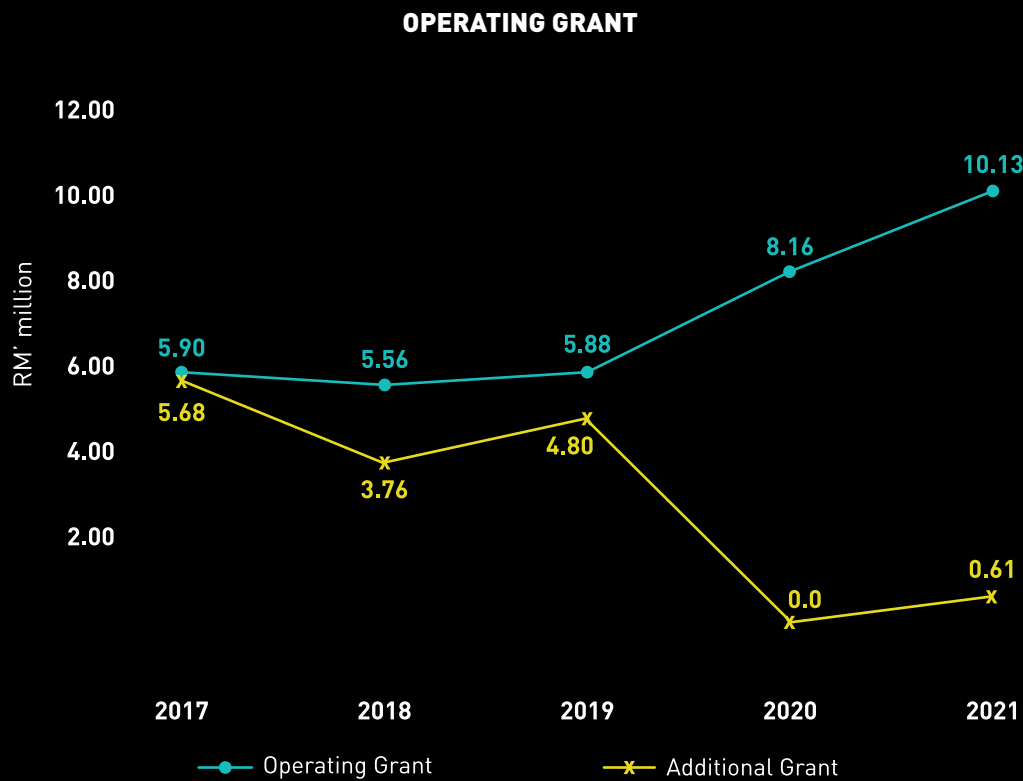
Income consists of Non-Exchange Transactions and Exchange Transactions. Non-Exchange Transactions include operating grants, program grants, office rental charges etc. while Exchange Transactions include program management charges, fixed deposit interest and other income. Total income increased by 5.0% compared to prior year. This increase is due to operating grant and program grant amounting RM11.15 million.

Table 4 shows the Income for 2021 and 2020.

INCOME

| | 2021 | 2020 | Increase / (Decrease) | Percentage % |
|--|-------------|-------------|-----------------------|--------------|
| | RM' million | RM' million | | |
| Operating Grant | 10.74 | 8.16 | 2.57 | 31% |
| Program Grant | 0.41 | - | 0.41 | 0% |
| Amortisation of Deferred Grant | 6.09 | 8.10 | -2.01 | -25% |
| Fixed Deposit & Current Account Interest | 0.44 | 0.69 | -0.26 | -37% |
| Other Income | 1.28 | 1.07 | 0.22 | 20% |
| Total Income | 18.96 | 18.03 | 0.93 | 5% |

Chart 5 shows the Total Operating Grants received for the years 2017 to 2021.



Budget Performance

In FY2021, the Ministry of Science, Technology and Innovation (MOSTI) has allocated a total of RM10.74 million for the ASM Operating Grant including an additional one-off allocation for the maintenance of the ASM building amounting to RM0.61 million. The operating grants in FY2021 has increased by 31.0% compared to RM8.16 million operating grants received by ASM in FY2020. The additional allocation given is for the maintenance costs of the ASM office at Matrade building and Jalan Tun Ismail for piping works, wiring, air conditioning as well as air ventilation.

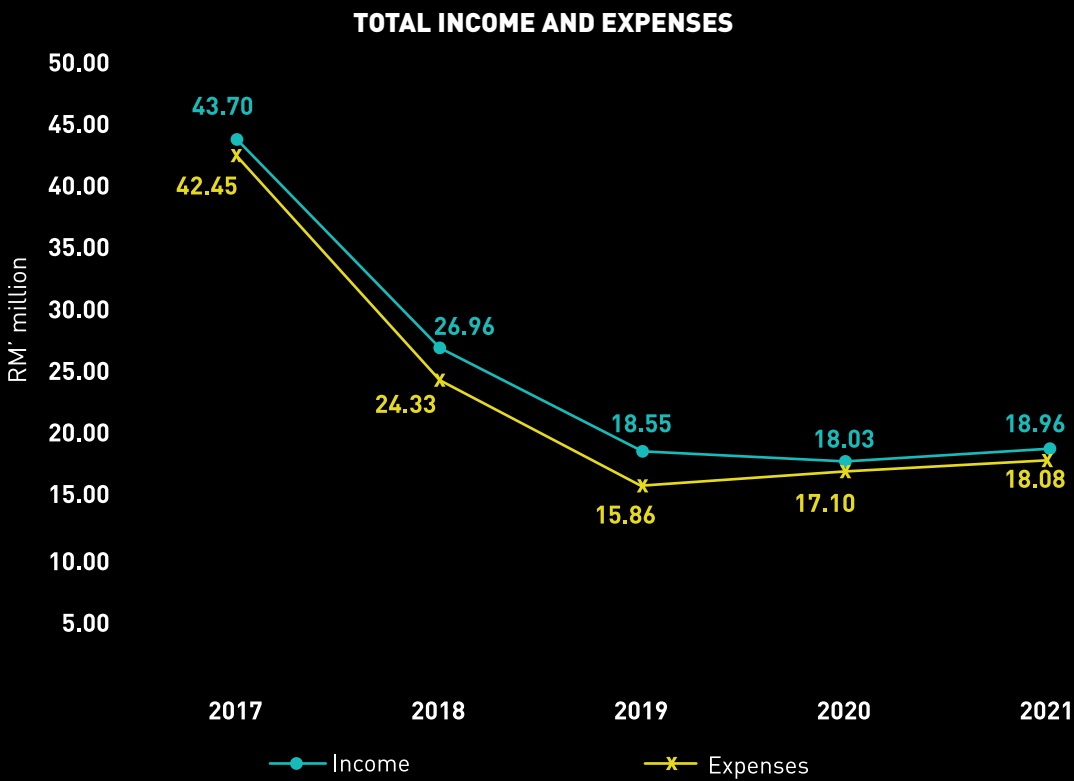
ASM's Operating Expenditure for FY2021 amounted to RM10.69 million. Operating Expenses consist of payment of salaries and wages, services and supplies, fixed assets, grants and fixed charges as well as other expenses.

Table 5 shows a summary of the budget performance of the ASM in FY2021.

BUDGET PERFORMANCE

| | 2021 | | | 2020 | | | % Actual 2021 vs 2020 |
|---------------------|-------------|-------------|---------------|-------------|-------------|---------------|--------------------------|
| | Budget | Actual | % Expenses | Budget | Actual | % Expenses | |
| | RM' million | RM' million | | RM' million | RM' million | | |
| Operating Grant | 10.13 | 10.74 | 100% | 7.33 | 8.16 | 99% | 31% |
| Operating Expenses | 10.13 | 10.69 | | 7.33 | 8.08 | | 32% |
| Surplus / (Deficit) | - | 1.67 | | - | 0.08 | | |

Chart 6 shows Total Income and Expenditure for 2017 to 2021.



Expenses

Services and Supplies

Expenditure for Services and Supplies consists of administrative management expenses, contract staff expenses, science communications and membership affairs. The total services and supplies expenses for FY2021 increase by 30.0% mainly due to major renovation works done at ASM MATRADE and repairing of rooftop at ASM Jalan Tun Ismail.

Table 6 shows the Services and Supplies for 2021 and 2020

SERVICES AND SUPPLIES

| | 2021 | 2020 | Increase / (Decrease) | Percentage % |
|-----------------------------------|-------------|-------------|--------------------------|-----------------|
| | RM' million | RM' million | | |
| Administrative Cost | 2.42 | 0.98 | 1.44 | 148% |
| Emoluments for Contract Employees | 4.91 | 4.28 | 0.63 | 15% |
| Science Communication | 0.25 | 0.44 | -0.19 | -44% |
| Membership Affairs | 0.35 | 0.37 | -0.03 | -7% |
| Total Services and Supplies | 7.93 | 6.08 | 1.85 | 30% |

Science Programme Expenses

Science programmes are the activities undertaken by ASM to fulfill the 14 functions of ASM as stipulated in ASM Act 1994. The total science programme expenses for the year ended 31 December 2021 amounting to RM7.14 million shows a decrease of 18.0% compared to prior year (FY2020: RM8.70 million). This is due to the completion of nine programmes in 2020.

Table 7 shows the Science Program Expenses for 2021 and 2020.

SCIENCE PROGRAM EXPENSES

| | 2021 | 2020 | Increase / (Decrease) | Percentage % |
|--|-------------|-------------|--------------------------|-----------------|
| | RM' million | RM' million | | |
| Collaborative Networking Activities and Science Excellence (One-off project) | 1.04 | 0.60 | 0.44 | 74% |
| Deferred Grant Expenditure | 4.06 | 5.88 | -1.82 | -31% |
| Deferred Grant Expenditure - International Office | 1.67 | 1.32 | 0.35 | 26% |
| Deferred Income Expenditure | 0.36 | 0.54 | -0.18 | -33% |
| Donation Fund Expenditure | - | 0.36 | -0.36 | -100% |
| Total Services and Supplies | 7.14 | 8.70 | -1.56 | -18% |

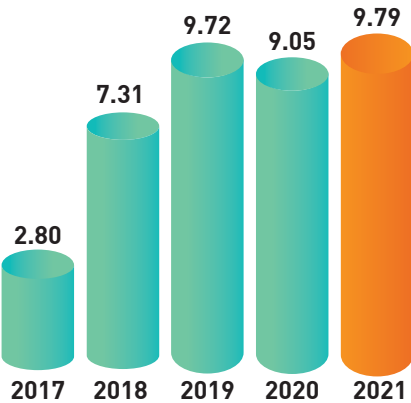
Summary of Financial Performance

Table 8 shows the summary of financial performance for years 2017 to 2021:

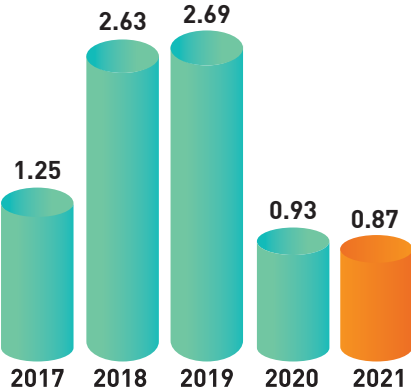
SUMMARY OF FINANCIAL PERFORMANCE

| RM' million | 2017 | 2018 | 2019 | 2020 | 2021 |
|-------------------------------|-------|-------|-------|-------|-------|
| Income | 43.70 | 26.96 | 18.55 | 18.03 | 18.96 |
| Expenses | 42.45 | 24.33 | 15.86 | 17.10 | 18.08 |
| Surplus Before Tax | 1.25 | 2.63 | 2.69 | 0.93 | 0.87 |
| Property, Plant and Equipment | 0.38 | 3.60 | 3.55 | 2.39 | 2.60 |
| Fixed Deposits | 0.85 | 51.68 | 20.80 | 20.38 | 20.56 |
| Deferred Grant | 48.50 | 48.85 | 12.20 | 12.33 | 15.47 |
| Employee Benefits | 0.38 | 0.20 | 0.25 | 0.27 | 0.30 |
| Total Assets | 59.66 | 62.38 | 25.11 | 23.94 | 27.89 |
| Total Net Assets | 2.80 | 7.31 | 9.72 | 9.05 | 9.79 |
| Current Assets | 59.28 | 58.78 | 21.54 | 21.14 | 25.22 |
| Current Liabilities | 8.22 | 6.21 | 3.16 | 2.53 | 2.59 |

Total Net Assets
(RM'million)



Surplus Before Tax
(RM'million)





**CERTIFICATE OF THE AUDITOR GENERAL
ON THE FINANCIAL STATEMENTS OF
ACADEMY OF SCIENCES MALAYSIA
FOR THE YEAR ENDED 31 DECEMBER 2021**

Certificate on the Audit of the Financial Statements

Qualified Opinion

I have authorised a private audit firm pursuant to Subsection 7 (3) of the Audit Act 1957 [Act 62] to undertake an audit of the Financial Statements of the Academy of Sciences Malaysia. The financial statements comprise of the Statement of Financial Position as at 31 December 2021 of the Academy of Sciences Malaysia and the Statement of Financial Performance, Statement of Changes in Net Assets, Statement of Cash Flows and Statement of Comparison Budget and Actual for the year then ended, and notes to the financial statements, including a summary of significant accounting policies, as set out on pages 3 to 34.

In my opinion, except for the effects of the matter described in the Basis for Qualified Opinion section, the accompanying financial statements give a true and fair view of the financial position of the Academy of Sciences Malaysia as at 31 December 2021, and of its financial performance and its cash flows for the year then ended in accordance with the Malaysian Public Sector Accounting Standards (MPSAS) and the Academy of Sciences Malaysia Act 1994 (Act 524) requirements.

Basis for Qualified Opinion

1. Tax Provision

According to the year 2020, TF tax computation form, the Academy of Sciences Malaysia (ASM) has been given a tax exemption. However, a tax provision amounted to RM380,333 was allocated in the financial statement and there is no current year adjustment been made. In addition, ASM had also allocated a sum of RM133,994 for tax expense purposes in the year 2021. This matter has caused unverified tax provision liabilities amounted to RM514,327 for the year 2021.

2. Uncapitalized Assets Expenditure

Renovation, maintenance and repair works expenditure amounted to RM1,346,290 were not capitalised in accordance with MPSAS 17- Property, Plant and Equipment.

The audit was conducted in accordance with the Audit Act 1957 and the International Standards of Supreme Audit Institutions. My responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of my certificate. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Independence and Other Ethical Responsibilities

I am independent of the Academy of Sciences Malaysia and I have fulfilled my other ethical responsibilities in accordance with the International Standards of Supreme Audit Institutions.

Information Other than the Financial Statements and Auditor's Certificate Thereon

The Council of the Academy of Sciences Malaysia is responsible for the other information in the Annual Report. My opinion on the Financial Statements of the Academy of Sciences Malaysia does not cover the other information than the financial statements and Auditor's Certificate thereon and I do not express any form of assurance conclusion thereon.

Key Audit Matters

Except for the matter described in the Basis for Qualified Opinion section, I have determined that there are no other key audit matters to communicate in my certificate.

Responsibilities of the Council for the Financial Statements

The Council is responsible for the preparation of Financial Statements of the Academy of Sciences Malaysia that give a true and fair view in accordance with the Malaysian Public Sector Accounting Standards (MPSAS) and the Academy of Sciences Malaysia Act 1994 (Act 524) requirements. The Council is also responsible for such internal control as the Council determines is necessary to enable the preparation of the Financial Statements of the Academy of Sciences Malaysia that are free from material misstatement, whether due to fraud or error.

In preparing the Financial Statements of the Academy of Sciences Malaysia, the Council is responsible for assessing the Academy of Sciences Malaysia's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting.

Auditor's Responsibilities for the Audit of the Financial Statements

My objectives are to obtain reasonable assurance about whether the Financial Statements of the Academy of Sciences Malaysia as a whole are free from material misstatement, whether due to fraud or error, and to issue an Auditor's Certificate that includes my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the International Standards of Supreme Audit Institutions will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with the International Standards of Supreme Audit Institutions, I exercise professional judgement and maintain professional scepticism throughout the audit. I also:

- a. identify and assess the risks of material misstatement of the Financial Statements of the Academy of Sciences Malaysia, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control;
- b. obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Academy of Sciences Malaysia's internal control;
- c. evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Council;
- d. conclude on the appropriateness of the Council's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Academy of Sciences Malaysia's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my Auditor's Certificate to the related disclosures in the Financial Statements of the Academy of Sciences Malaysia or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of Auditor's Certificate; and

statements represent the underlying transactions and events in a manner that achieves fair presentation.


The Council has been informed regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I have identify during the audit.

Report on Other Legal and Regulatory Requirements

In accordance with the requirements of the Academy of Sciences Malaysia Act 1994 (Act 524), I also report that in my opinion, I have not obtained all the information and explanations that are required as described in the Basis for Qualified Opinion section.

Other Matters

This certificate is made solely to the Council of the Academy of Sciences Malaysia in accordance with the Academy of Sciences Malaysia Act 1994 (Act 524) requirements, and for no other purpose. I do not assume responsibility to any other person for the content of this certificate.


(RUSNI BINTI MOHAMED)
ON BEHALF OF AUDITOR GENERAL

PUTRAJAYA
23 MAY 2022





Academy of Sciences Malaysia

PENYATA PRESIDEN DAN BENDAHARI KEHORMAT AKADEMI SAINS MALAYSIA
STATEMENT BY PRESIDENT AND HONORARY TREASURER OF THE ACADEMY OF SCIENCES MALAYSIA

Kami, **PROFESSOR EMERITA DATUK DR. ASMA BINTI ISMAIL FASc** dan **DATIN PADUKA SETIA DATO' DR. AINI IDERIS FASc**, yang merupakan Presiden dan Bendahari Kehormat AKADEMI SAINS MALAYSIA (ASM) dan juga 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 yang berikut ini berserta dengan nota-nota kepada Penyata Kewangan didalamnya adalah disediakan untuk menunjukkan pandangan yang benar dan saksama kedudukan ASM pada 31 Disember 2021 dan hasil kendaliannya serta perubahan kedudukan kewangannya bagi tahun berakhir pada tarikh tersebut.

We, PROFESSOR EMERITA DATUK DR. ASMA BINTI ISMAIL FASc and DATIN PADUKA SETIA DATO' DR. AINI IDERIS FASc being the President and Honorary Treasurer of the ACADEMY OF SCIENCES MALAYSIA (ASM) as well as Council Members, do hereby declare that, in the opinion of ASM Council, the Statement of Financial Position, Statement of Financial Performance, Statement of Changes in Net Assets, Statement of Cash Flows and Statement of Comparison Budget and Actual together with the notes contained therein are drawn up in order to give a true and fair view of the financial position of ASM as at 31 December 2021 and the resulting revenues and changes in the financial position of the period ending on that date.

Bagi pihak Majlis
On behalf of the Council

PROFESSOR EMERITA DATUK DR. ASMA BINTI ISMAIL FASc
Presiden / President

Akademi Sains Malaysia / Academy of Sciences Malaysia

KUALA LUMPUR, MALAYSIA

Tarikh / Date: **10 MAR 2022**

Bagi pihak Majlis
On behalf of the Council

DATIN PADUKA SETIA DATO' DR. AINI IDERIS FASc
Bendahari Kehormat / Honorary Treasurer

Akademi Sains Malaysia / Academy of Sciences Malaysia



Academy of Sciences Malaysia

PENGAKUAN OLEH KETUA PEGAWAI EKSEKUTIF KE ATAS PENGURUSAN KEWANGAN AKADEMI SAINS MALAYSIA
DECLARATION BY CHIEF EXECUTIVE OFFICER ON THE FINANCIAL MANAGEMENT OF THE ACADEMY OF SCIENCES MALAYSIA

Saya, **HAZAMI BINTI HABIB**, No. K/P 660619-08-5516 pegawai utama yang bertanggungjawab ke atas pengurusan kewangan dan rekod-rekod perakaunan 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 dalam kedudukan kewangan yang berikut ini berserta dengan nota-nota kepada penyata kewangan didalamnya mengikut sebaik-baik pengetahuan dan kepercayaan saya, adalah betul dan saya membuat ikrar ini dengan sebenarnya mempercayai bahawa adalah benar dan atas kehendak-kehendak Akta Akuan Berkanun, 1960.

I, HAZAMI BINTI HABIB, NRIC No:660619-08-5516 being the officer primarily responsible for the financial management of the ACADEMY OF SCIENCES MALAYSIA (ASM), do solemnly and sincerely declare that the Statement of Financial Position, Statement of Financial Performance, Statement of Changes in Net Assets, Statement of Cash Flows and Statement of Comparison Budget and Actual together with the notes therein, are the best of my knowledge and belief, correct, and I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the Statutory Declarations Act 1960.

Sebenarnya dan
sesungguhnya diakui oleh
penama di atas di Kuala
Lumpur, Malaysia
*Subscribed and solemnly
declared by the abovenamed
at Kuala Lumpur, Malaysia*

HAZAMI BINTI HABIB

Tarikh / Date : **10 MAR 2022**



Di hadapan saya / Before me :

STATEMENT OF FINANCIAL POSITION
AS AT 31 DECEMBER 2021

| | Note | 2021 RM | 2020 RM <i>As Restated</i> | 01.01.2020 RM <i>As Restated</i> |
|--|------|-------------------|----------------------------------|--|
| ASSETS | | | | |
| Current Assets | | | | |
| Cash and Balance at Bank | 3 | 4,434,415 | 681,387 | 596,349 |
| Fixed Deposit | 4 | 20,560,233 | 20,378,558 | 20,795,161 |
| Account Receivables | 5 | 15,685 | 2,326 | 7,379 |
| Other Receivables | 6 | 213,715 | 77,824 | 136,821 |
| Total Current Assets | | 25,224,048 | 21,140,095 | 21,535,710 |
| Non-current Assets | | | | |
| Property, Plant and Equipment | 7 | 2,600,422 | 2,390,011 | 2,237,282 |
| Work in Progress | 8 | 67,050 | 408,031 | 21,526 |
| Total Non-current Assets | | 2,667,472 | 2,798,042 | 2,258,808 |
| TOTAL ASSETS | | 27,891,520 | 23,938,137 | 23,794,518 |
| LIABILITIES | | | | |
| Current Liabilities | | | | |
| Account Payables | 9 | 650,288 | 649,214 | 942,497 |
| Employee Benefits | 10 | 262,852 | 238,610 | 229,395 |
| Donation Fund | | - | - | 337,385 |
| Deferred Income | 11 | 1,162,423 | 1,258,404 | 1,438,383 |
| Provision for Tax | 23 | 514,327 | 380,333 | 214,676 |
| Total Current Liabilities | | 2,589,890 | 2,526,561 | 3,162,336 |
| Non-current Liabilities | | | | |
| Employee Benefits | 10 | 37,230 | 29,771 | 23,586 |
| Deferred Grants | 12 | 15,465,204 | 11,218,098 | 10,596,172 |
| Deferred Grants - International Office | 13 | 6,138 | 1,109,842 | 1,589,745 |
| Total Non-current Liabilities | | 15,508,572 | 12,357,711 | 12,209,503 |
| TOTAL LIABILITIES | | 18,098,462 | 14,884,272 | 15,371,839 |
| NET ASSETS | | 9,793,058 | 9,053,865 | 8,422,679 |
| NET ASSET | | | | |
| Accumulated Surplus | | 9,793,058 | 9,053,865 | 8,422,679 |
| TOTAL NET ASSETS | | 9,793,058 | 9,053,865 | 8,422,679 |

The notes on pages 7 to 34 are an integral part of these Financial Statements.

STATEMENT OF FINANCIAL PERFORMANCE
FOR THE YEAR ENDED 31 DECEMBER 2021

| | Note | 2021 RM | 2020 RM <i>As Restated</i> |
|---|------|-------------------|----------------------------------|
| INCOME | | | |
| Non-exchangeable Transactions | 14 | 17,437,015 | 16,331,552 |
| Exchangeable Transactions | 15 | 1,521,026 | 1,695,612 |
| TOTAL INCOME | | 18,958,041 | 18,027,164 |
| EXPENSES | | | |
| Salaries and Wages | 16 | 738,694 | 739,509 |
| Services and Supplies | 17 | 7,926,275 | 6,075,216 |
| Science Program Expenses | 18 | 7,135,584 | 8,699,537 |
| Contribution and Fixed Charges | 19 | 124,775 | 124,626 |
| Employee Benefits | 20 | 303,139 | 284,571 |
| Other Expenses | 21 | 126,186 | 274,877 |
| Rental | 22 | 1,554,990 | 754,476 |
| Depreciation of Property, Plant and Equipment | 7 | 175,211 | 143,717 |
| Total Expenses | | 18,084,854 | 17,096,529 |
| SURPLUS BEFORE TAX | | 873,187 | 930,635 |
| Tax | 23 | 133,994 | 299,449 |
| SURPLUS AFTER TAX | | 739,193 | 631,186 |

STATEMENT OF CHANGES IN NET ASSETS
FOR THE YEAR ENDED 31 DECEMBER 2021

| | Note | Accumulated Surplus RM | Total RM |
|--------------------------------|------|------------------------------|------------------|
| Balance as at 01 January 2020 | | 9,720,072 | 9,720,072 |
| - (<i>As Restated</i>) | | | |
| Prior Year Adjustment | 28 | (1,297,393) | (1,297,393) |
| Balance as at 01 January 2020 | | 8,422,679 | 8,422,679 |
| - (<i>As Restated</i>) | | | |
| Surplus Income on Expenditure | | 631,186 | 631,186 |
| - (<i>As Restated</i>) | | | |
| Balance as at 31 December 2020 | | 9,053,865 | 9,053,865 |
| - (<i>As Restated</i>) | | | |
| Surplus Income on Expenditure | | 739,193 | 739,193 |
| Balance as at 31 December 2021 | | 9,793,058 | 9,793,058 |

The notes on pages 7 to 34 are an integral part of these Financial Statements.

STATEMENT OF CASH FLOW
FOR THE YEAR ENDED 31 DECEMBER 2021

| | 2021 RM | 2020 RM <i>As Restated</i> |
|---|-------------------|----------------------------------|
| <u>CASH FLOWS FROM OPERATING ACTIVITIES</u> | | |
| Surplus before Tax | 873,187 | 930,635 |
| Adjustment: | | |
| Tax Paid | - | (133,792) |
| Depreciation of Property, Plant and Equipment | 175,211 | 143,717 |
| Interest from Short Term Deposits and Fixed Deposits | (437,066) | (693,827) |
| Accrued Interest | 52,167 | 77,824 |
| Reversal of Fixed Deposit Interest | 76,364 | 133,204 |
| Adjustment from Property and Equipment Write off | - | 119 |
| Loss / (Profit) Disposal of Property, Plant and Equipment | 1 | (2,367) |
| Amortisation of Deferred Income | (479) | - |
| Amortisation of Deferred Grant | (752,008) | 105,552 |
| Amortisation of Deferred Grant - International | 479 | - |
| Deficit from Operation Before Changes in Working Capital | (12,144) | 561,065 |
| (Increase) / Decrease in Receivable from Exchangeable Transactions | (149,250) | 64,050 |
| Increase / (Decrease) in Payables from Exchangeable Transactions | 32,775 | (277,883) |
| Net Cash from Operating Activities | (128,619) | 347,232 |
| <u>CASH FLOWS FROM INVESTMENT ACTIVITIES</u> | | |
| Decrease from Disposal of Property, Plant and Equipment | - | 2,367 |
| Purchase of Property, Plant and Equipment | (385,623) | (296,565) |
| Work in Progress | 340,981 | (386,505) |
| Interest Received | 308,535 | 482,799 |
| Net Cash from Investment Activities | 263,893 | (197,904) |
| <u>CASH FLOWS FROM FINANCING ACTIVITIES</u> | | |
| Proceeds from Donation | - | 20,630 |
| Repayment of Donation | - | (358,015) |
| Proceeds from Deferred Income | 268,142 | 358,545 |
| Repayment of Deferred Income | (363,644) | (538,524) |
| Proceeds from Deferred Grant | 9,885,250 | 6,686,555 |
| Repayment of Deferred Grant | (4,886,136) | (6,170,181) |
| Proceeds from Deferred Grant - International | 1,917,439 | 844,916 |
| Repayment of Deferred Grant - International | (3,021,622) | (1,324,819) |
| Net Cash from Financing Activities | 3,799,429 | (480,893) |
| INCREASE/ (DECREASE) IN CASH AND CASH EQUIVALENTS | 3,934,703 | (331,565) |
| CASH AND CASH EQUIVALENTS AT THE BEGINNING OF THE FINANCIAL YEAR | 21,059,945 | 21,391,510 |
| CASH AND CASH EQUIVALENTS AT THE END OF THE FINANCIAL YEAR | 24,994,648 | 21,059,945 |
| <u>CASH AND CASH EQUIVALENTS:</u> | | |
| Fixed Deposit | 20,560,233 | 20,378,558 |
| Cash and Balance at Bank | 4,434,415 | 681,387 |
| | 24,994,648 | 21,059,945 |

The notes on pages 7 to 34 are an integral part of these Financial Statements.

STATEMENT OF COMPARISON BUDGET AND ACTUAL
FOR THE YEAR ENDED 31 DECEMBER 2021

| | Total Budget | | Total | Variance |
|--------------------------------------|-------------------|-------------------|-------------------|---------------|
| | Initial | Final | Actual | Budget |
| | 2021 | 2021 | 2021 | 2021 |
| | RM | RM | RM | RM |
| RECEIPTS | | | | |
| Non-exchangeable Transactions | | | | |
| Government Grant | 10,125,000 | 10,735,000 | 10,735,000 | - |
| Exchangeable Transactions | | | | |
| Other Income | - | - | - | - |
| | 10,125,000 | 10,735,000 | 10,735,000 | - |
| EXPENSES | | | | |
| Salaries and Wages | 897,421 | 744,299 | 738,694 | 5,605 |
| Services and Supplies | 8,824,787 | 9,647,487 | 9,524,374 | 123,113 |
| Fixed Asset | - | - | 40,528 | (40,528) |
| Contribution and Fixed Charges | 377,532 | 317,490 | 335,208 | (17,718) |
| Other Expenses | 25,260 | 25,724 | 49,212 | (23,488) |
| | 10,125,000 | 10,735,000 | 10,688,016 | 46,984 |
| NET RECEIPTS | - | - | 46,984 | 46,984 |

The notes on pages 7 to 34 are an integral part of these Financial Statements.

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED ON 31 DECEMBER 2021

1 GENERAL INFORMATION

a) ASM Establishment and Main Objectives

The Academy of Sciences Malaysia (ASM) was established under the Academy of Sciences Malaysia Act 1994 (Act 524). The objective of ASM is to pursue, encourage and enhance excellence in the fields of Science, Engineering, and Technology (SET) for the development of the nation and benefit of mankind.

b) Functional Currency for Financial Statements

The financial statements is presented in Malaysian Ringgit ("RM") which is the functional and presentation currency of ASM. Thus, all financial information is presented in RM.

c) Date of Approval of Financial Statements

ASM Financial Statements for the year ended on 31 December 2021 was approved by ASM Council on

2 ACCOUNTING POLICIES

a) Basis of Preparation of Financial Statements

The Financial Statements of ASM is prepared under the conventional historical cost in compliance with the Malaysian Public Sector Accounting Standards (MPSAS).

The preparation of financial statements requires judgments, estimates, and assumptions that affect the use of policies and the reported amounts of assets, liabilities, revenues, and expenses.

Estimates and assumptions used will be reviewed on an ongoing basis. Revision to accounting estimates will be recognised in the revised accounting period if the revision affects that period, or the period in review and future periods if the revision affects the current and future periods.

Where these judgments, estimates, and assumptions have significant impact on the amounts recognised in the financial statements, they will be disclosed in Note 2(p) Critical Accounting Considerations and Sources of Estimation Uncertainty in the financial statements.

2 ACCOUNTING POLICIES (CONT.)

b) Income Recognition

Income from Non-exchangeable Business Transactions

Non-exchangeable business transactions will be recognised as an asset when there are future economic benefits expected to flow to the entity as a result of historical event and the cost or value of the asset can be measured reliably. Non-exchangeable business transactions recognised as an asset shall be recognised as income except when there's a liability that is also being recognised for the same transaction as a 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.

Income from non-exchangeable business transactions are as follows:

i. Government Grants

Government grants which are not subjected to certain future performance conditions such as the operating grant are recognised as income in the financial statements. Government grants subject to certain future performance conditions such as development grants are recognised as deferred grants to be amortised as income with the liability valued at its carrying amount. Grants are amortised on a straight-line basis over their estimated useful life.

ii. Donation

Donations which are not subjected to certain future performance conditions are recognised as an income in the financial statements. Funds subject to certain future performance conditions are recognised as liabilities to be amortised as an income with the liability valued at its carrying amount. Funds are amortised on a straight-line basis over their estimated useful lives.

Income from Exchange Transactions

Income from exchange transactions are recognised when there are possibilities for the future economy expected to flow to the entity and the benefits can be measured reliably.

Income from exchange transactions are as follows:

i. Income Derived from Interest and Other Investment

Income derived from fixed deposits are recognised based on current exchange rates taking into consideration of an effective return of investment. The rate of return of investment on asset is the profit rate required to discount the future cash inflow expectation throughout the life expectancy of the respective asset to be equalised with the brought forward value of the asset.

Income derived from interest gained from conventional deposits and investments are recognised on accrual basis.

2 ACCOUNTING POLICIES (CONT.)

b) Income Recognition (Cont.)

Income from Exchange Transactions (Cont.)

ii. Rental

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

iii. Other Revenue/Income

Other incomes are recognised when services are provided.

c) Property, Plant and Equipment

Property, Plant and Equipment are stated at cost less accumulated depreciation and impairment losses. Cost includes all of the direct costs to bring the asset to working condition for its intended use by the management. The cost of replacement of any asset that requires replacement at regular intervals will be capitalised. The carrying amount of those parts replaced will be derecognised in accordance with derecognition provision. The cost of day-to-day servicing will be recognised as an expense in the financial statement.

Property, plant and equipment of value over RM2,000 and above or in need of regular maintenance will be capitalised as property, plant and equipment.

If an asset is acquired through a non-exchange transaction, the cost should be measured at its fair value as of the acquisition date. These assets will be recognised in the financial statements unless there is a condition for the use of the asset, current liability will be recognised.

The carrying value of property, plant and equipment items should be derecognised at disposal or when no future economic benefits or potential services are expected from their use or disposal.

The gain or loss on the derecognition of property, plant and equipment is the difference of the proceeds and the carrying amount of the asset and its differences are recognised as profit or loss in the financial statements.

The initial cost of ASM building at Jalan Tun Ismail which has been assessed in 2017 was RM3,399,000. However, a revaluation has been done by the *Jabatan Penilaian dan Perkhidmatan Harta (JPPH)* on the same building on 20 April 2021 with new valuation cost of RM2,170,000.

Depreciation for property, plant and equipment are calculated based on a straight-line basis over their accumulated useful life at the following rates:-

| | |
|-------------------|----------|
| Building | 60 years |
| Motor Vehicle | 20% |
| Office Equipment | 20% |
| Computer | 20% |
| Office Renovation | 10% |

2 ACCOUNTING POLICIES (CONT.)

c) Property, Plant and Equipment (Cont.)

Full depreciation is charged in the year of purchase of property, plant and equipment. The net balance of each property, plant and equipment should not be less than RM1. If there are significant changes in the factors that affects the residual value, changes in the expected useful life or pattern of consumption of benefits since the last financial year, the carrying amount, depreciation method and the useful life of the asset will be reviewed and adjusted prospectively.

Work in progress consists of work involving property and equipment that has not been completed until the end of the current financial year. Work in progress is stated at cost and is not depreciated until the asset is ready for use.

d) Impairment of Non-financial Assets

i. Cash Generating Assets

At each reporting date, ASM assesses the carrying value of its assets to determine whether there is any indication of impairment. If any indication exists, impairment is calculated by comparing the carrying amount of the asset with its recoverable amount. Recoverable amount is the highest value of the asset's fair value less costs to sell and its value in use.

In determining value in use, future cash flows are discounted to their present value using a pre-tax discount rate that reflects the current market value and specific risks associated with the asset. In determining fair value less costs to sell, most recent market transactions will be considered, if any. If there are no recent market transactions, an appropriate valuation model should be used.

An impairment loss is recognised as an expense on an ongoing surplus or deficit when the carrying amount of an asset exceeds its recoverable amount unless the asset is carried at revalued amount. Any impairment loss on a revalued asset will be reduced to the extent that the revaluation surplus is not used for the same asset.

ii. Non-cash Generating Assets

ASM will evaluate at each reporting date whether there is any indication that a non-cash-generating asset may be impaired. If any indication exists, then ASM will make an estimate of the total asset recovery service. The asset's recoverable amount is the highest of its fair value less costs to sell and value in use.

An impairment loss is recognised as a reduction in its surplus or as an expense when the carrying amount of an asset exceeds its recoverable amount.

In determining value in use, ASM has adopted depreciated replacement cost approach. Under this approach, the present value of the asset's remaining balance potential is determined as the cost of replacing the depreciated asset. Depreciation expense will be measured by taking into account the cost of replacement of the asset less accumulated depreciation calculated on that cost to reflect the potential use of the asset that has been used or expired.

2 ACCOUNTING POLICIES (CONT.)

d) Impairment of Non-financial Assets (Cont.)

ii. Non-cash Generating Assets (Cont.)

In determining fair value less costs to sell, the price of an asset in a binding agreement in an arm's length transaction is adjusted to determine the disposal price of the asset. If no binding agreement exists, but the asset is actively traded on the market, the fair value of the cost of the sale is determined by reference to the current market value less the cost of disposal. If there is no binding sale agreement or active market for the asset, ASM determines the fair value less costs to sell based on the best available information.

For each asset, an assessment is made at each reporting date as to whether there is any indication that previously recognised impairment losses may no longer exist or have diminished. If such an indication exists, ASM estimates the amount of asset's recoverable service amount. The previously recognised impairment loss will be reversed only if there has been a change in the assumptions used to determine the amount of the asset's recoverable service since the last impairment loss was recognised. A reversal is limited to the carrying amount of the asset not exceeding the recoverable amount of the service, or the carrying value of the asset net of depreciation and had no impairment loss being recognised for the asset in prior years.

e) Financial Assets

Financial assets are recognised in the financial statements when ASM participates in the contractual provisions of the instrument.

In the initial recognition, financial assets are measured at fair value, including transaction costs for financial assets that are not measured at fair value through profit or loss which are directly attributable to the issuance of financial assets.

Following initial recognition, financial assets will be classified into one of four categories of financial assets, namely financial assets measured at fair value through profit or loss, loans and receivables, held-to-maturity investments and ready-to-sell financial assets.

The purchase or sale of a financial asset that requires the surrender of the asset within the time frame stipulated by the rules or conventions in the market will be recognised on the date the transaction is made, which is the date on which ASM makes a commitment to buy or sell the asset.

ASM has only the following financial asset categories:

i. Loans and Receivables

Loans and receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in the active market. After the initial measurement, the financial assets are subsequently measured at amortised cost using the effective interest method and less impairment. An amortised cost is calculated using any discount or premium on the purchase of the asset as well as fees or costs that are part of the effective interest rate. Losses arising on impairment are recognised in the profit or loss.

2 ACCOUNTING POLICIES (CONT.)

e) Financial Assets (Cont.)

ii. Held-to-maturity Investments

Non-derivative financial assets with fixed or determinable payments maturity and are classified as held for maturity when ASM has a positive intention and ability to hold to maturity. After initial measurement, the holding to maturity of the investment is measured at amortised cost using the effective interest method and less impairment. The amortisation cost is calculated taking into account any discount or premium on the acquisition and fees or costs that are part of the effective interest rate. Impairment losses are recognised in the financial statements.

iii. Impairment of Financial Assets

At the end of each reporting period, ASM will evaluate whether there is any objective evidence that the financial assets need to be impaired. Objective evidence includes:

- (i) significant financial difficulties by borrowers; or
- (ii) payment in arrears; or
- (iii) the possibility that the borrower will go bankrupt; or
- (iv) data indicating decline in future cash flow estimates.

For a financial asset category that is measured at amortised cost, if no objective evidence exists for a significant individual, then all assets in ASM with similar risk characteristics regardless of whether they are significant, will be evaluated collectively to determine whether it needs to be impaired.

An impairment loss, in respect of a financial asset measured at amortised cost, is measured as the difference between the carrying amount of the asset and its present value of estimated cash flow at the original effective interest rate. The carrying value of the asset is reduced through the use of an allowance account. Any impairment loss is recognised in profit or loss immediately. If, at any time, circumstances that led to the impairment no longer exist, the previously recognised impairment loss will be reversed directly in the allowance account. This reversal is recognised in the profit or loss immediately.

iv. Derecognition of Financial Assets

Financial assets are derecognised when the contractual right to cash flow from the financial assets expires or is settled and ASM transfers significant risks and rewards of ownership of the financial assets to another.

On the derecognition of financial assets as a whole, the difference between the carrying amount and the amount of consideration received is recognised in the surplus or deficit during the period of the derecognition.

f) Cash and Cash Equivalents

The cash flow statement was prepared using the indirect method. Cash and cash equivalents consist of cash in hand and cash at banks as well as high-risk investments with licensed banks and financial institutions with 12-month or less maturity that are readily convertible to known amounts of cash which are subject to an insignificant risk of changes in value.

2 ACCOUNTING POLICIES (CONT.)

g) Employee Benefits

i. Short Term Employee Benefits

In general, ASM as a Federal Statutory Body is guided by the Public Service Department (JPA)'s employment regulations adopted by ASM and ASM's own policies. The short-term employee benefits provided are basic salaries, fixed allowances, non-fixed allowances, and various leaves including annual leave, medical benefits and insurance.

Short-term employee benefits including salaries, wages, allowances, statutory contributions and employment injury scheme and invalidity scheme are recognised as an expense in the year in which the related services are provided by employees. Unutilised paid leave such as annual leave can be accumulated and carried forward to the next servicing year of the employee. Whereas for leaves that are not able to be carried forward such as sick leave, may only be taken as and when the employee applies.

ii. Post-employment Pension Benefits

Employees' Provident Fund (EPF)

ASM makes EPF contributions according to the rates and conditions set by EPF. The contribution rates used by ASM are 12% and 13% for employees under 60, whereas for employees 60 years and above, the contribution rates are 4% and 6%, respectively. The contribution rate is also applicable to permanent employees who opted for EPF contribution.

Kumpulan Wang Persaraan Diperbadankan (KWAP)

ASM also makes contributions to public services pension fund for permanent staff who opted for pension. The contribution rate is 17.5%. as set by KWAP.

iii. Paid Leave and Compensation for Employees

Permanent Employees

ASM permanent employees will receive reimbursement for annual leave (compensated absences / *Gantian Cuti Rehat (GCR)*) upon their retirement whether they chose pension scheme or EPF. This reward is based on the *Jabatan Perkhidmatan Awam* (JPA) Service Circular adopted by ASM.

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

$1/30 \times \text{salary} + \text{allowances received} \times \text{number of leave accumulated}$

(subject to a maximum limit of 150 days).

Allowances includes:

- *Imbuhan Tetap Perumahan (ITP)*
- *Imbuhan Tetap Khidmat Awam (ITKA) / Keraian*

2 ACCOUNTING POLICIES (CONT.)

g) Employee Benefits (Cont.)

iii. Paid Leave and Compensation for Employees (Cont.)

Contract Employees

ASM pays gratuity for each Contract of Service (CoS) according to the terms and conditions of the respective contract. ASM CoS employees are paid in lieu of leave (GCR) up to 6-days within a contract period. Remuneration and GCR payments for contract employees are in accordance with the terms and conditions set out in the civil service circular.

h) Contra of Financial Instrument

Financial assets and financial liabilities are to be contra if, and only if, there is a legal right to offset them and have the purpose of settling them to their net worth or to realize the assets and settle the liabilities simultaneously.

i) Goods and Services Tax (GST) and Sales and Services Tax (SST)

The implementation of the Goods and Services Tax (GST) took effect on 1 April 2015. ASM registered with the Royal Malaysian Customs Department on 29 December 2014 with reference number 001836703744 and later the GST was abolished by the Government on 30 June 2018. The Sales and Service Tax (SST) was later re-implemented on 1 September 2018.

j) 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 the annual budget prepared and only refers to the operational budget.

The budget presented is for ASM's reference and was approved by ASM Council.

k) Provisions and Liabilities

Provisions are recognised when ASM has current (legal or constructive) obligations as a result of past events, and it is probable that an outflow of resources containing economic benefits will be required to settle the obligation and that the amount of the obligation can be estimated reliably. When ASM expects some or all of the provision to be repaid, the allocation-related expenses are presented in excess of or deductible from any refund.

l) Related Parties

ASM regards a related party as a person or entity with the ability to exercise control individually or collectively or to exercise significant influence over ASM, or vice versa. ASM Management's key employees, President and members of the ASM Council are considered as related parties.

2 ACCOUNTING POLICIES (CONT.)

m) Contingent Liabilities and Contingent Assets

A contingent liability is an unrecognised current obligation as there is no probable source of outflow to resolve the obligation or in the rare case where the liability cannot be recognised because it cannot be reliably measured. Contingent liabilities are not recognised but are disclosed in the financial statements. Obligations arising from past events, whose existence can only be confirmed by the occurrence or non-occurrence of one or more uncertain events, are not under the control of the entire ASM, also disclosed as contingent liabilities unless the probability of an outflow of economic resources is small.

Contingent assets are assets that may arise from past events whose existence will only be confirmed in the event of the occurrence or the occurrence of one or more uncertain events in the future that are not within the control of ASM. ASM does not recognise contingent assets in the financial statements but discloses their existence where inflows of economic benefits are possible, but not certain.

n) Financial Liabilities

Financial liabilities are recognised in the statement of financial position when ASM is a party to the contractual provisions of the instrument.

In the initial recognition, financial liabilities are measured at fair value, including transaction costs for financial liabilities that are not measured at fair value through profit or loss, which are directly attributable to the issue of financial liabilities.

Following initial recognition, financial liabilities are classified into two categories of financial liabilities, namely financial liabilities measured at fair value through surplus or borrowings, loans and payables.

ASM has the following categories of financial liabilities:

Loans and Repayments

After initial recognition, loans and repayments are measured at amortised cost using the effective interest method. Gains or losses are recognised in profit or loss when financial liabilities are derecognised or impaired.

Effective interest rates are a method of calculating the cost of amortising your financial liabilities and to allocate interest expense over the relevant period. The effective interest rate is the discounted rate of estimated future cash payments due to the existence of a financial liability or, where appropriate, the shorter term, with the carrying amount of the financial liability.

A financial liability is recognised when the obligation specified in the contract has been discharged, canceled or expired.

Any discrepancy between the carrying amount of the deferred financial liability and the consideration paid is recognised in the surplus or deficit during the period of the derecognition.

2 ACCOUNTING POLICIES (CONT.)

o) Lease

Leases of property, plant and equipment are classified as finance leases when most of the risks and rewards of ownership of property, but not legal ownership, are transferred to ASM.

ASM initially recognises the right to use and its obligations under finance leases as assets and liabilities in the statement of financial position at an amount equal to the fair value of the leased asset or, if less, the present value of the minimum lease payments, determined at the beginning of the lease. Any initial direct costs are added to the amount recognised as an asset.

Minimum lease payments are divided between finance charges and the reduction of outstanding liabilities using the effective interest method. Monetary charges are allocated periodically throughout the lease term to generate a fixed-term interest rate on the balance of the liability.

The depreciation policy for a leasehold asset is consistent with the asset's depreciable assets. If there is no reasonable assurance that ASM will acquire ownership by the end of the lease term, the leased asset will be fully depreciated over the term of the lease and its useful life. At each reporting date, ASM assesses whether the leasehold assets under finance lease are impaired.

Operating leases are recognised as an expense in the profit or loss on a straight-line basis over the lease term. The aggregate benefit of incentives provided by the lender is recognised as a reduction of rent expense over the lease term using the straight-line method.

p) Critical Accounting Considerations and Sources of Estimation Uncertainty

i. Critical Accounting Considerations

There are no critical accounting judgments that have material impact on the amounts recognised in the financial statements.

ii. Sources of Estimation Uncertainty

The key estimates of the future, and other key sources of budget uncertainty as of the reporting date, are significant risks that will result in significant adjustments to the carrying values of assets and liabilities in the next financial year.

Allocation Measurement

Budget Measurement Report (BMR) always uses the best estimates as the basis for measuring such an allocation. The estimates are based on past experience, other indications or assumptions, recent developments and reasonable future events in determining allocation.

Impairment Loss on Accounts Receivable

ASM evaluates at each reporting date whether there is any objective evidence that financial assets are impaired. To determine whether there is objective evidence of impairment, ASM considers factors such as insolvency and default or delay in payment. Where there is objective evidence of impairment, the amount and timing of future cash flows are estimated based on a history of loss experience for assets with similar credit risk characteristics.

2 ACCOUNTING POLICIES (CONT.)

p) Critical Accounting Considerations and Sources of Estimation Uncertainty (Cont.)

ii. Sources of Estimation Uncertainty (Cont.)

Changes in Estimated Life Expectancy for Property, Plant and Equipment

All property, plant and equipment are depreciated on a straight-line basis over the life of the asset. Management estimates the life expectancy of property, plant and equipment over a period of five (5) to sixty (60) years. Changes in the estimation of asset usage patterns and technology development can impact the life and residual value of those assets. This will result in a change of depreciation of the asset in the future.

q) Tax

The income tax expense of a controlled entity recognised in the statement of financial performance comprises current and deferred tax. Current tax is the expected amount of income tax payable in respect of the taxable profit for the year and is calculated using tax rates that have been enacted or substantively enacted by the reporting date.

Tax payable on taxable profits for the current and past periods is recognised in the current liability to the extent that it is unpaid. If the amount paid in respect of the current and past periods exceeds the amount due for that period, the excess is recognised in current assets.

Current tax liabilities and assets are offset only when the ASM has a legally valid right to offset the amount and intends to either settle on a net basis, or realise the asset and settle the liability simultaneously.

Deferred tax is provided using the liability method, on temporary differences at the statement of financial position date between the tax bases of assets and liabilities and their carrying amounts in the financial statements. In principle, a deferred tax liability is recognised for all taxable temporary differences. Deferred tax assets are recognised for deductible temporary differences, unutilised tax losses and unused tax credits to the extent that it is probable that future taxable profits will be available against which it can be utilised. Deferred tax is not recognised if the temporary difference arises from goodwill, negative goodwill or from the initial recognition of an asset or liability in a transaction that is not a business combination, and at the time of the transaction, does not affect accounting profit or taxable profit.

Deferred tax is measured at the tax rates that are expected to apply in the period in which the asset is realised or the liability is settled, based on tax rates that have been enacted or substantively enacted at the reporting date. Deferred tax is recognised in the statement of financial performance, except when it arises from a transaction that is recognised directly in equity, where the deferred tax is also recognised directly in equity, or when it arises from a business combination that is an acquisition, in which deferred tax is included in the goodwill and negative goodwill.

3 CASH AND BANK BALANCE

| | 2021 RM | 2020 RM |
|--------------|------------------|----------------|
| Cash in Hand | 4,674 | 6,000 |
| Cash at Bank | <u>4,429,741</u> | <u>675,387</u> |
| | <u>4,434,415</u> | <u>681,387</u> |

4 FIXED DEPOSIT

| | 2021 RM | 2020 RM |
|---------------|-------------------|-------------------|
| Fixed Deposit | <u>20,560,233</u> | <u>20,378,558</u> |
| | <u>20,560,233</u> | <u>20,378,558</u> |

Fixed deposits are made over a period of 12 months or less depending on ASM's immediate cash requirements and benefit at Short Term Deposit Rates. The Average Effective Interest Rate Weight as at 31 December 2021 is 2.00% per annum (2020: 2.08% per annum).

5 ACCOUNT RECEIVABLES

| | 2021 RM | 2020 RM |
|-------------|---------------|--------------|
| Receivables | <u>15,685</u> | <u>2,326</u> |
| | <u>15,685</u> | <u>2,326</u> |

Accounts Receivable are interest-free and generally range from one to 30 days. Accounts Receivable are recognised at Fair Value at the time of initial recognition. The amount expected to be recovered within 12 months will be recognised on the original invoice amount. Otherwise, it will be recognised on the Current Value of the original invoice amount.

Analysis of account receivable aging is as follows:

| | 2021 RM | 2020 RM |
|--|---------------|--------------|
| Does not exceed duration and is not affected | - | - |
| 1 to 3 months | 15,685 | 2,326 |
| 3 to 12 months | - | - |
| More than 12 months | - | - |
| | <u>15,685</u> | <u>2,326</u> |
| Affected | - | - |
| | <u>15,685</u> | <u>2,326</u> |

6 OTHER RECEIVABLES

| | 2021 RM | 2020 RM |
|------------------|----------------|---------------|
| Prepayment | 161,548 | - |
| Accrued Interest | <u>52,167</u> | <u>77,824</u> |
| | <u>213,715</u> | <u>77,824</u> |

7 PROPERTY, PLANT AND EQUIPMENT

| | As at 01 January 2021 RM (As Restated) | Additions RM | Disposal/ Classification RM | As at 31 December 2021 RM |
|-------------------|--|-----------------|-----------------------------------|------------------------------------|
| <u>COST</u> | | | | |
| Building | 2,170,000 | - | - | 2,170,000 |
| Motor Vehicle | 477,148 | 236,706 | - | 713,854 |
| Office Equipment | 873,976 | 146,417 | - | 1,020,393 |
| Computer | 582,292 | 2,500 | (2,720) | 582,072 |
| Office Renovation | 3,851,640 | - | - | 3,851,640 |
| | <u>7,955,056</u> | <u>385,623</u> | <u>(2,720)</u> | <u>8,337,959</u> |

| | As at 01 January 2021 RM (As Restated) | Additions RM | Disposal/ Classification RM | As at 31 December 2021 RM |
|---------------------------------|--|-----------------|-----------------------------------|------------------------------------|
| <u>ACCUMULATED DEPRECIATION</u> | | | | |
| Building | 325,500 | 36,166 | - | 361,666 |
| Motor Vehicle | 477,142 | 3,945 | - | 481,087 |
| Office Equipment | 775,739 | 29,865 | - | 805,604 |
| Computer | 275,910 | 77,658 | (2,719) | 350,849 |
| Office Renovation | 3,710,754 | 27,577 | - | 3,738,331 |
| | <u>5,565,045</u> | <u>175,211</u> | <u>(2,719)</u> | <u>5,737,537</u> |

| | As at 31 December 2021 RM |
|----------------------------|------------------------------------|
| <u>NET CARRYING AMOUNT</u> | |
| Building | 1,808,334 |
| Motor Vehicle | 232,767 |
| Office Equipment | 214,789 |
| Computer | 231,223 |
| Office Renovation | 113,309 |
| | <u>2,600,422</u> |

7 PROPERTY, PLANT AND EQUIPMENT (CONT.)

| | As at 01 January 2020 RM (As Restated) | Additions RM | Disposal/ Classification RM | As at 31 December 2020 RM (As Restated) |
|-------------------|--|-----------------|-----------------------------------|---|
| <u>COST</u> | | | | |
| Building | 2,170,000 | - | - | 2,170,000 |
| Motor Vehicle | 477,148 | - | - | 477,148 |
| Office Equipment | 899,583 | 77,075 | (102,682) | 873,976 |
| Computer | 386,014 | 219,490 | (23,212) | 582,292 |
| Office Renovation | 3,851,640 | - | - | 3,851,640 |
| | <u>7,784,385</u> | <u>296,565</u> | <u>(125,894)</u> | <u>7,955,056</u> |

| | As at 01 January 2020 RM (As Restated) | Additions RM | Disposal/ Classification RM | As at 31 December 2020 RM (As Restated) |
|---------------------------------|--|-----------------|-----------------------------------|---|
| <u>ACCUMULATED DEPRECIATION</u> | | | | |
| Building | 289,334 | 36,166 | - | 325,500 |
| Motor Vehicle | 477,142 | - | - | 477,142 |
| Office Equipment | 858,774 | 19,536 | (102,571) | 775,739 |
| Computer | 239,214 | 59,900 | (23,204) | 275,910 |
| Office Renovation | 3,682,639 | 28,115 | - | 3,710,754 |
| | <u>5,547,103</u> | <u>143,717</u> | <u>(125,775)</u> | <u>5,565,045</u> |

| | As at 31 December 2020 RM (As Restated) |
|----------------------------|---|
| <u>NET CARRYING AMOUNT</u> | |
| Building | 1,844,500 |
| Motor Vehicle | 6 |
| Office Equipment | 98,237 |
| Computer | 306,382 |
| Office Renovation | 140,886 |
| | <u>2,390,011</u> |

7 PROPERTY, PLANT AND EQUIPMENT (CONT.)

| | As at 01 January 2019 RM (As Restated) | Additions RM | Disposal/ Classification RM | As at 31 December 2019 RM (As Restated) |
|--------------------|--|-----------------|-----------------------------------|---|
| <u>COST</u> | | | | |
| Building | 3,399,000 | - | (1,229,000) | 2,170,000 |
| Motor Vehicle | 477,148 | - | - | 477,148 |
| Office Equipment | 881,831 | 17,752 | - | 899,583 |
| Computer | 334,000 | 107,242 | (55,228) | 386,014 |
| Office Renovation | 3,851,640 | - | - | 3,851,640 |
| | <u>8,943,619</u> | <u>124,994</u> | <u>(1,284,228)</u> | <u>7,784,385</u> |

| | As at 01 January 2019 RM (As Restated) | Additions RM | Disposal/ Classification RM | As at 31 December 2019 RM (As Restated) |
|--|--|-----------------|-----------------------------------|---|
| <u>ACCUMULATED DEPRECIATION</u> | | | | |
| Building | 135,960 | 67,980 | 85,394 | 289,334 |
| Motor Vehicle | 471,854 | 5,288 | - | 477,142 |
| Office Equipment | 833,554 | 25,220 | - | 858,774 |
| Computer | 246,298 | 43,130 | (50,214) | 239,214 |
| Office Renovation | 3,651,925 | 30,714 | - | 3,682,639 |
| | <u>5,339,591</u> | <u>172,332</u> | <u>35,180</u> | <u>5,547,103</u> |

| | As at 31 December 2019 RM (As Restated) |
|-----------------------------------|---|
| <u>NET CARRYING AMOUNT</u> | |
| Building | 1,880,666 |
| Motor Vehicle | 6 |
| Office Equipment | 40,809 |
| Computer | 146,800 |
| Office Renovation | 169,001 |
| | <u>2,237,282</u> |

8 WORK IN PROGRESS

| | 2021 RM | 2020 RM |
|---|---------------|----------------|
| Balance as at 01 Januari | 408,031 | 21,526 |
| Additional | 285,474 | 386,505 |
| Transfer to Property, Plant and Equipment | (98,240) | - |
| Transfer to Services and Supplies | (528,215) | - |
| Balance as at 31 December | <u>67,050</u> | <u>408,031</u> |

The breakdown of Work in Progress are as follows:

| | 2021 RM | 2020 RM |
|--|---------------|----------------|
| Repairing of roof top at ASM premise at Jalan Tun Ismail | - | 408,031 |
| Air Conditioner | <u>67,050</u> | <u>-</u> |
| | <u>67,050</u> | <u>408,031</u> |

9 ACCOUNT PAYABLES

| | 2021 RM | 2020 RM |
|---------------------|----------------|----------------|
| Payables – Accruals | 627,988 | 629,214 |
| Payables – Others | 2,300 | - |
| Deposit Received | <u>20,000</u> | <u>20,000</u> |
| | <u>650,288</u> | <u>649,214</u> |

10 EMPLOYEE BENEFITS

| | 2021 RM | 2020 RM |
|--|----------------|----------------|
| Balance as at 01 January | 268,381 | 252,981 |
| Add : Employee Benefit for the Year | 303,139 | 284,571 |
| Deduct : Employee Benefit Paid During the Year | (271,438) | (269,171) |
| Balance as at 31 December | <u>300,082</u> | <u>268,381</u> |

| | 2021 RM | 2020 RM |
|-----------------------|----------------|----------------|
| Current Liability | 262,852 | 238,610 |
| Non-current Liability | <u>37,230</u> | <u>29,771</u> |
| | <u>300,082</u> | <u>268,381</u> |

11 DEFERRED INCOME

| | 2021 RM | 2020 RM |
|---|------------------|------------------|
| Balance at 01 January | 1,258,404 | 1,438,383 |
| Income | 268,142 | 358,545 |
| Adjustment | (479) | - |
| Funding Refund | (1,370) | - |
| Amortisation to Financial Statements Expenses | (362,274) | (538,524) |
| Balance as at 31 December | <u>1,162,423</u> | <u>1,258,404</u> |

The breakdown of deferred income are as follows:

| | 2021 RM | 2020 RM |
|--------------------------------|------------------|------------------|
| ASM | | |
| ASEAN Young Scientists Network | - | 48,697 |
| ISC ROAP | <u>1,162,423</u> | <u>1,209,707</u> |
| | <u>1,162,423</u> | <u>1,258,404</u> |

Deferred income are allocations received from a non-Malaysian Government entity which includes international grants or grants from corporate or organisations. ASM is bound by the terms of reference and duration of the program as outlined in the agreement or letter of appointment.

12 DEFERRED GRANT

| | 2021 RM | 2020 RM (As Restated) |
|---|-------------------|-----------------------------|
| Balance as at 01 January | 11,218,098 | 10,596,172 |
| Income | 9,885,250 | 6,686,555 |
| Returns of Allocation | (29,838) | (290,007) |
| Program Management Charges | (797,814) | (752,608) |
| Adjustments | (752,008) | 105,552 |
| Amortisation to the Financial Statements Expenses | (4,058,484) | (5,127,566) |
| Balance as at 31 December | <u>15,465,204</u> | <u>11,218,098</u> |

Deferred grants are provisions received from the Malaysian Government for a specific purpose. ASM is bound by the terms of reference and duration of the program as outlined in the agreement or letter of appointment.

Deferred grants are analysed as follows:

| | 2021 RM | 2020 RM (As Restated) |
|-----------------------|-------------------|-----------------------------|
| Non-current Liability | <u>15,465,204</u> | <u>11,218,098</u> |
| | <u>15,465,204</u> | <u>11,218,098</u> |

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12 DEFERRED GRANT (CONT.)

The breakdown of the deferred grant allocation are as follows:

| | 2021 RM | 2020 RM (As Restated) |
|--|-------------------|-----------------------------|
| ASM | | |
| Newton Ungku Omar Fund (NUOF) | 2,957,136 | 3,005,123 |
| Malaysian Collaborative Network Platform for Disruptive Innovation (i-CONNECT) | 5,052,694 | 2,421,238 |
| Malaysia Open Science Platform (MOSP) | 2,729,011 | 538,072 |
| Review and Update Study on Environmental Quality Act | 852,104 | 1,717,047 |
| Water Sector Transformation 2040 | 3,745,854 | 3,372,125 |
| Virtual National Science Challenge (VNSC) and <i>Minggu Sains Negara</i> | - | 29,838 |
| Review of National Nanotechnology Policy | - | 6,250 |
| MOE Study | <u>128,405</u> | <u>128,405</u> |
| | <u>15,465,204</u> | <u>11,218,098</u> |

13 DEFERRED GRANT – INTERNATIONAL OFFICE

| | 2021 RM | 2020 RM |
|---|--------------|------------------|
| Balance as at 01 January | 1,109,842 | 1,589,745 |
| Income | 1,917,439 | 844,916 |
| Transfer to Deferred Grant | (1,188,264) | - |
| Program Management Charges | (160,000) | - |
| Adjustment | 479 | - |
| Amortisation to the Financial Statements Expenses | (1,673,358) | (1,324,819) |
| Balance as at 31 December | <u>6,138</u> | <u>1,109,842</u> |

Deferred grants are analysed as follows:

| | 2021 RM | 2020 RM |
|-----------------------|--------------|------------------|
| Non-current Liability | <u>6,138</u> | <u>1,109,842</u> |
| | <u>6,138</u> | <u>1,109,842</u> |

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

| | 2021 RM | 2020 RM |
|---|------------|----------------|
| Balance as at 01 January | 818,318 | 996,234 |
| Income | 750,000 | 374,372 |
| Transfer to Deferred Grant | (574,609) | - |
| Program Management Charges | (80,000) | - |
| Adjustment | 479 | - |
| Amortisation to the Financial Statements Expenses | (913,742) | (552,288) |
| Balance as at 31 December | <u>446</u> | <u>818,318</u> |

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13 DEFERRED GRANT – INTERNATIONAL OFFICE (CONT.)

The International Science Council (ISC) works at the global level to catalyse and convene scientific expertise, advice and influence on issues of major concern to both science and society. The ISC was launched in 2018 following a merger of the International Council for Science (ICSU), which was created in 1931, and the International Social Science Council (ISSC), created in 1952.

ISC ROAP (formerly known as ICSU ROAP) is hosted by Malaysian Government since 19 September 2006. The hosting of the Regional Office is based on five (5) year agreement between Malaysian Government and ISC (formerly known as ICSU). The operational cost is funded by Malaysian Government while programme funded by ISC. The third term-expires on 18 September 2021.

International Science, Technology and Innovation Centre (ISTIC)

| | 2021 RM | 2020 RM |
|--------------------------------------|------------|------------|
| Balance as at 01 January | 291,524 | 593,511 |
| Income | 1,167,439 | 470,544 |
| Transfer to Deferred Grant | (613,655) | - |
| Program Management Charges | (80,000) | - |
| Amortisation to Financial Statements | | |
| Expenses | (759,616) | (772,531) |
| Balance as at 31 December | 5,692 | 291,524 |

ISTIC is UNESCO Category II centre hosted by Malaysian Government since 26 March 2009 (launched on 22 May 2008). ISTIC was established to develop and implement programmes for South-South cooperation in science and technology with the objective of facilitating the integration of a developmental approach into national science and technology and innovation policies; capacity building in science and technology through providing policy advice and exchange of experience and best practices; and creating a problem-solving network of centres of excellence in developing countries as well as supporting the exchange of students, researchers, scientists and technologists among developing countries.

The hosting of the Centre is based on five (5) year agreement between Malaysian Government and UNESCO and the third term expires on 7 September 2021. The operational cost and programmes of the Centre is funded by Malaysian Government.

14 NON-EXCHANGEABLE TRANSACTIONS

| | 2021 RM | 2020 RM |
|---|------------|------------|
| Operating Grant | 10,125,000 | 8,164,709 |
| Additional Grant | 610,000 | - |
| | 10,735,000 | 8,164,709 |
| Program Grant | 408,683 | - |
| Amortisation of Deferred Grant | 4,058,484 | 5,880,174 |
| Amortisation of Deferred Grant – International Office | 1,673,358 | 1,324,819 |
| Amortisation of Deferred Income | 362,274 | 538,524 |
| Amortisation of Donation Fund | - | 358,016 |
| Other Income: | | |
| Office Rental Charges | 80,000 | 40,300 |
| Refund from program | 3,875 | 25,010 |
| Donation | 13,750 | - |
| Refund from Insolvency | 101,591 | - |
| | 17,437,015 | 16,331,552 |

15 EXCHANGEABLE TRANSACTIONS

| | 2021 RM | 2020 RM |
|----------------------------|------------|------------|
| Program Management Charges | 957,814 | 752,608 |
| Current Account Interest | 2,131 | 2,029 |
| Fixed Deposit Interest | 434,935 | 691,798 |
| GST Refund | - | 132,658 |
| Other Income | 126,146 | 116,519 |
| | 1,521,026 | 1,695,612 |

16 SALARIES AND WAGES

| | 2021 RM | 2020 RM |
|-------------------------------------|------------|------------|
| Permanent staff: | | |
| Salaries and Wages | 533,160 | 526,706 |
| Fixed Allowance | 154,331 | 158,398 |
| Statutory Contribution to Employees | 41,702 | 40,528 |
| Overtime Allowance | 1,431 | 4,348 |
| Other Employee Benefits | 8,070 | 9,529 |
| | 738,694 | 739,509 |

ASM's permanent employees are civil servants appointed to fill the PSD's employment warrant. Payment of salaries, wages and fixed costs are in accordance with Service Circular No. 1/2016.

17 SERVICES AND SUPPLIES

| | 2021 RM | 2020 RM |
|-----------------------------------|------------------|------------------|
| Administrative Cost | 2,418,256 | 976,245 |
| Emoluments for Contract Employees | 4,910,257 | 4,283,234 |
| Science Communication | 250,062 | 442,771 |
| Membership Affairs | 347,700 | 372,966 |
| | <u>7,926,275</u> | <u>6,075,216</u> |

Services and Supplies are ASM's operating expenses which are mainly administrative expenses that include expenditure for facility management, information technology, finance and accounts, management of data and analysis as well as ASM committees and governing bodies. In addition, salaries and wages for ASM contract employees are designated in accordance with Service Circular No. 2/2008. Payment of wages, wages and fixed costs are in accordance with Service Circular No. 1/2016.

18 SCIENCE PROGRAMME EXPENSES

| | 2021 RM | 2020 RM |
|---|------------------|------------------|
| Collaborative Networking Activities and Science Excellence | | |
| Science Outlook | 93,043 | 371,020 |
| Special Interest Group (SIG) | 22,717 | 53,568 |
| STI Policy and Advisory Committee – STIPAC | 36,242 | 43,870 |
| STI Initiative and Partnership | 866,858 | 62,523 |
| International Affairs | 17,608 | 7,512 |
| Science Communication | 5,000 | 59,511 |
| | <u>1,041,468</u> | <u>598,004</u> |
| Deferred Grant Expenditure | | |
| <i>Newton Ungku Omar Fund (NUOF)</i> | (142,741) | 462,236 |
| <i>Malaysian Collaborative Network (i-Connect)</i> | 1,019,864 | 2,967,569 |
| <i>Malaysia Open Science Platform (MOSP)</i> | 364,692 | 453,403 |
| <i>Review and Update Study on Environmental Quality Act</i> | 257,857 | 281,621 |
| <i>Roadmap for Water Sector Transformation 2040</i> | 2,551,962 | 1,627,875 |
| <i>Review of National Nanotechnology Policy and Strategy</i> | 6,850 | 13,750 |
| Impact Study on the Implementation of the Malaysian Research Universities | - | 8,275 |
| Mid - Term Review of Malaysia Education Blueprint 2015 - 2025 | - | 4,833 |
| National Entrepreneurship Policy | - | 8,300 |
| <i>Minggu Sains Negara</i> | - | 3,750 |
| Virtual National Science Challenge (VNSC) | - | 48,562 |
| | <u>4,058,484</u> | <u>5,880,174</u> |
| Deferred Grant Expenditure – International Office | | |
| International Science Council Regional Office for Asia and the Pacific (ISC ROAP) | 913,742 | 552,288 |
| International Science, Technology and Innovation Centre (ISTIC) | 759,616 | 772,531 |
| | <u>1,673,358</u> | <u>1,324,819</u> |

18 SCIENCE PROGRAMME EXPENSES (CONT.)

| | 2021 RM | 2020 RM |
|---|------------------|------------------|
| Deferred Income Expenditure | | |
| ISC ROAP | 289,481 | 538,524 |
| ASEAN Young Scientists Network | 70,287 | - |
| TWAS-ASM Regional Workshop | 2,506 | - |
| | <u>362,274</u> | <u>538,524</u> |
| Donation Fund Expenditure | | |
| Estidotmy | - | 205,000 |
| Artscience Prize | - | 87,396 |
| Virtual National Science Challenge (VNSC) | - | 45,076 |
| Young Scientists Network (YSN-ASM) | - | 20,543 |
| | <u>-</u> | <u>358,016</u> |
| | <u>7,135,584</u> | <u>8,699,537</u> |

The activities carried out by ASM are listed as Science Programs. This includes the core activities of ASM as well as activities implemented by ASM on behalf of the Government and collaboration program with other organisations at the national and international level through grants/ allocations received.

The Science Programme Expenditures are activities undertaken to fulfill the 14 functions of ASM as stipulated in the Academy of Sciences Malaysia Act 1994. These activities are based on current strategies and directions set by the ASM Council. Meanwhile, Deferred Grant Expenditures are activities carried out by fulfilling the terms of reference of the programme as outlined in the agreement or letter of appointment.

19 CONTRIBUTION AND FIXED CHARGES

| | 2021 RM | 2020 RM |
|--|----------------|----------------|
| <i>Kelab Sukan dan Kebajikan Kakitangan (KSKK)</i> | 25,000 | 25,000 |
| Pension | 61,695 | 61,534 |
| Donation/International Subscriptions | 38,080 | 38,092 |
| | <u>124,775</u> | <u>124,626</u> |

20 EMPLOYEE BENEFITS

| | 2021 RM | 2020 RM |
|--------------------------------------|----------------|----------------|
| Permanent Employee Replacement Leave | 7,459 | 6,185 |
| Contract Employee Replacement Leave | 39,492 | 30,424 |
| Contract Employee Gratuity | 256,188 | 247,962 |
| | <u>303,139</u> | <u>284,571</u> |

21 OTHER EXPENSES

| | 2021 RM | 2020 RM |
|--|----------------|----------------|
| Fees, Insurance, Taxes, and Stamp Duty | 49,822 | 43,130 |
| Reversal of Accrued Interest | 76,364 | 133,204 |
| Reversal of Reimbursement Cost | - | 98,543 |
| | <u>126,186</u> | <u>274,877</u> |

22 RENTAL

| | 2021 RM | 2020 RM |
|-----------------------------|------------------|----------------|
| Office Rental | 1,469,678 | 643,006 |
| Store Rental | 17,839 | 18,390 |
| Parking Rental | 6,080 | 25,170 |
| Electronic Equipment Rental | 4,248 | 4,125 |
| Office Equipment Rental | 57,145 | 63,785 |
| | <u>1,554,990</u> | <u>754,476</u> |

23 TAXATION

| | 2021 RM | 2020 RM |
|---|----------------|----------------|
| Tax Liability: | | |
| Tax Liability as at 01 January | 380,333 | 214,676 |
| Tax | 133,994 | 299,449 |
| Tax Paid | - | (133,792) |
| Current Year's Tax Allocation | <u>514,327</u> | <u>380,333</u> |
| Taxation: | | |
| Current Year Tax | 124,095 | 380,333 |
| Under/(Over) Provision of Previous Year's Tax | 9,899 | (80,884) |
| Tax | <u>133,994</u> | <u>299,449</u> |

ASM is eligible for income tax exemption under the Income Tax (Exemption) (No.22) Order 2006 and Subsection 44(6) of the Income Tax Act 1967 w.e.f 1 December 1995. However, the exemption under the Subsection 44(6) of the Income Tax Act 1967 was ended on 31 December 2020.

24 HUMAN RESOURCE

ASM Management consist of permanent and contract employees. The total number of ASM employees as at 31 December 2021 was 92 (2020: 83). Below is the details:

| | 2021 RM | 2020 RM |
|------------------------------------|------------|------------|
| <u>Permanent Employees:</u> | | |
| Top Management Group | 1 | 1 |
| Management and Professional Group | 2 | 2 |
| Support Group | 6 | 6 |

24 HUMAN RESOURCE (CONT.)

| | 2021 RM | 2020 RM |
|---|------------|------------|
| <u>Contract of Services (CoS) Employees:</u> | | |
| Management and Professional Group | 61 | 54 |
| Support Group | 22 | 20 |
| <u>Total Staff</u> | | |
| Top Management Group | 1 | 1 |
| Management and Professional Group | 63 | 56 |
| Support Group | 28 | 26 |
| | <u>92</u> | <u>83</u> |

25 TOP MANAGEMENT

The ASM leadership is led by the ASM Council chaired by the President. The ASM Council determines the direction of ASM and sets ASM policies. All decisions of the ASM Council are carried out by the ASM Management headed by the Chief Executive Officer (CEO). CEO is the ASM Controller and has the authority and responsibility to plan, direct, implement and control ASM activities. The CEO reports on the performance and status of all activities to the ASM Council.

| | 2021 RM | 2020 RM |
|---|----------------|----------------|
| Member of Council: | | |
| Total Allowance | 44,000 | 32,000 |
| Member of the Finance Committee: | | |
| Total Allowance | 13,450 | 9,500 |
| Member of Executive Committee: | | |
| Total Allowance | 4,050 | 2,100 |
| Member of STI Policy Advisory Committee: | | |
| Total Allowance | 26,500 | 9,500 |
| Key Management Personnel: | | |
| Short Term Benefits | 246,576 | 246,304 |
| | <u>334,576</u> | <u>299,404</u> |

Council is the highest body established under Academy of Sciences Malaysia Act 1994 to carry out functions of ASM as well as manage and oversee the affairs of the Academy. Council members comprises of 16 members elected from among Fellows at the ASM Annual General Meeting, except for President who is appointed by the SPB Yang Di-Pertuan Agong. ASM Council chaired by President comprise of Vice-President, Secretary-General, Honorary Treasurer and 12 Ordinary Council members. Council convenes four (4) to five (5) times a year to decides on the way forward and implementation of ASM activities.

Executive Committee (EXCO) is established to assist Council to oversee the management and day-to-day operations and affairs of the Academy. EXCO comprises of President, Vice-President, Secretary-General and Honorary Treasurer. EXCO meets on behalf Council to deliberate on urgent matters and provide input and decision to ASM Management.

25 TOP MANAGEMENT (CONT.)

ASM Finance Committee is responsible to oversee the planning, implementation and monitoring of ASM activities, procedures, system and reporting related to finance. The Committee is chaired by Honorary Treasurer assisted by eight (8) members. Short term benefit is paid to the key management personnel.

The STI Policy Advisory Committee (STIPAC) functions as an oversight committee that provides strategic direction and inputs on all ASM studies as well as national policy and strategy matters related to STI to forge evidence-based, informed decision making. The Committee plays an important role to ensure ASM that provides the best scientific advice and advocacy that is independent, credible, relevant and timely in the interest of the nation and society. STIPAC is chaired by ASM President assisted by 22 members.

26 FINANCIAL RISK MANAGEMENT

i. Financial Management Risk Objectives and Policies

ASM's financial risk management policy aims to ensure that there are sufficient financial resources for business development, managing credit risk, foreign exchange, and liquidity. ASM operates under clearly defined guidelines approved by ASM and ASM's policy is not to involve ASM in speculative transactions.

ii. Credit Risk

Credit risk or third-party risk of failure to pay is governed by the application of credit approval procedures, limits and strict supervision. Credit risk is minimised and closely monitored by limiting ASM's cooperation with high-credit business partners. Receivables are monitored continuously through ASM management reporting procedures.

For cash and bank balances, fixed deposits and short-term deposits, ASM reduces credit risk by dealing exclusively with high credit rating financial institutions.

iii. Interest Rate Risk

Interest rate risk is the risk that the fair value or future cash flows of ASM financial instruments will fluctuate due to changes in the interest rate market.

iv. Liquidity Risk

Liquidity and cash flow risk is the risk that ASM will face difficulties in meeting its financial obligations due to lack of funds. ASM's exposure to liquidity risks arises from differences in the maturity of financial assets and financial liabilities. The table below shows the maturity profile of ASM's liability at the date of the report based on repayment obligations without contract discounts.

ASM manages liquidity and cash flow risks by ensuring sufficient cash and providing sufficient funds to meet its commitments from operating expenses and financial liabilities.

26 FINANCIAL RISK MANAGEMENT (CONT.)

iv. Liquidity Risk (Con't)

| | Less Than 1 Year RM | More Than 1 Year RM | Total |
|---------------------|------------------------------|------------------------------|-------|
| On 31 December 2021 | | | |
| Accounts Payable | - | - | - |
| On 31 December 2020 | | | |
| Accounts Payable | - | - | - |

v. Fair Value

Cash and cash equivalents, receivables and payables equal their fair value due to their short maturity.

27 NOTES FOR STATEMENT OF COMPARISON FOR BUDGET AND ACTUAL

ASM Budget was approved and presented on a cash basis for the financial year 1 January 2020 to 31 December 2020. The original budget was approved by the Ministry of Science, Technology, dan Innovation (known as MOSTI) by letter MOSTI.400.2/1/4 JLD.2(13) dated 21 January 2021.

28 PRIOR YEAR ADJUSTMENTS AND COMPARATIVE FIGURE

Prior year adjustments were recognised due to the revaluation of Property, Plant and Equipment and deferred grants. The impact on the financial statements are as follows:

Statement of Financial Position as at 31 December 2020

| | As Previously Stated RM | Adjustment RM | Restated RM |
|--|----------------------------------|------------------|-------------------|
| ASSETS | | | |
| Current Assets | | | |
| Cash and Balance at Bank | 681,387 | | 681,387 |
| Fixed Deposit | 20,378,558 | | 20,378,558 |
| Account Receivables | 2,326 | | 2,326 |
| Other Receivables | 77,824 | | 77,824 |
| Total Current Assets | 21,140,095 | | 21,140,095 |
| Non-current Assets | | | |
| Property, Plant and Equipment | 3,683,921 | 1,293,910 | 2,390,011 |
| Work in Progress | 408,031 | | 408,031 |
| Total Non-current Assets | 4,091,952 | | 2,798,042 |
| TOTAL ASSETS | 25,232,047 | | 23,938,137 |
| LIABILITIES | | | |
| Current Liabilities | | | |
| Account Payables | 649,214 | | 649,214 |
| Employee Benefits | 238,610 | | 238,610 |
| Deferred Income | 1,258,404 | | 1,258,404 |
| Provision for Tax | 380,333 | | 380,333 |
| Total Current Liabilities | 2,526,561 | | 2,526,561 |
| Non-current Liabilities | | | |
| Employee Benefits | 29,771 | | 29,771 |
| Deferred Grants | 11,235,099 | 17,001 | 11,218,098 |
| Deferred Grants - International Office | 1,109,842 | | 1,109,842 |
| Total Non-current Liabilities | 12,374,712 | | 12,357,711 |
| TOTAL LIABILITIES | 14,901,273 | | 14,884,272 |
| NET ASSETS | 10,330,774 | 1,276,909 | 9,053,865 |

28 PRIOR YEAR ADJUSTMENTS AND COMPARATIVE FIGURE (CONT.)

Statement of Financial Performance for the year ended 31 December 2020

| | As Previously Stated RM | Adjustment RM | Restated RM |
|---|----------------------------------|------------------|-------------------|
| INCOME | | | |
| Non-exchangeable Transactions | 16,331,552 | | 16,331,552 |
| Exchangeable Transactions | 1,695,612 | | 1,695,612 |
| TOTAL INCOME | 18,027,164 | | 18,027,164 |
| EXPENSES | | | |
| Salaries and Wages | 739,509 | | 739,509 |
| Services and Supplies | 6,075,216 | | 6,075,216 |
| Science Program Expenses | 8,699,537 | | 8,699,537 |
| Contribution and Fixed Charges | 124,626 | | 124,626 |
| Employee Benefits | 284,571 | | 284,571 |
| Other Expenses | 274,877 | | 274,877 |
| Rental | 754,476 | | 754,476 |
| Depreciation of Property, Plant and Equipment | 164,201 | 20,484 | 143,717 |
| Total Expenses | 17,117,013 | | 17,096,529 |
| SURPLUS BEFORE TAX | 910,151 | | 930,635 |
| Tax | 299,449 | | 299,449 |
| SURPLUS AFTER TAX | 610,702 | 20,484 | 631,186 |

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Management Committees

Council
Chair: President, Emeritus Professor Datuk Dr Asma Ismail FASc

Executive Committee (EXCO)
Chair: President, Emeritus Professor Datuk Dr Asma Ismail FASc

Finance & Investment Committee
Chair: Honorary Treasurer, Professor Datin Paduka Setia Dato’ Dr Aini Ideris FASc

Audit Committee
Chair: Datuk Dr Abdul Razak Mohd Ali FASc

Membership Committee
Chair: Vice-President, Professor Dato’ Ir Dr A. Bakar Jaafar FASc

Media Response and Public Domain Focal Group
Chair: Secretary-General, Datuk Professor Dr Awg Bulgiba Awg Mahmud FASc

Presidential Advisory Committee
Chair: President, Emeritus Professor Datuk Dr Asma Ismail FASc

International Affairs
Chair: President, Emeritus Professor Datuk Dr Asma Ismail FASc

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

Publication Committee
Chair: Secretary-General, Datuk Professor Dr Awg Bulgiba Awg Mahmud FASc

Senior Fellows Committee
Chair: Academician Emeritus Professor Dato’ Dr V.G. Kumar Das FASc

Disciplinary Committee for the Top Management Group
Chair: Secretary-General, Datuk Professor Dr Awg Bulgiba Awg Mahmud FASc

Disciplinary Appeal Committee for the Top Management Group
Chair: Vice-President, Professor Dato’ Ir Dr A. Bakar Jaafar FASc

WEHAB++ Committees

Water Committee
Chair: Dr Ir Salmah Zakaria FASc
Advisor: Academician Tan Sri Dato’ Ir Shahrizaila Abdullah FASc

Energy Committee
Chair: Professor Ir Ts Dr Zainuddin Abd Manan FASc
Advisor: Academician Tan Sri Dato’ Ir Ts Ahmad Zaidee Laidin FASc

Health Committee
Chair: Professor Dr Tunku Kamarul Zaman Tunku Zainol Abidin FASc
Advisor: Academician Distinguished Professor Datuk Dr Looi Lai Meng FASc

Agriculture Committee
Chair: Professor Dato’ Dr Zulkifli Idrus FASc
Co-Advisor: Academician Datuk Dr Abdul Aziz S.A. Kadir FASc
Datin Paduka Setia Dato’ Dr Aini Ideris FASc

Biodiversity Committee
Chair: Dr Helen Nair FASc
Co-Advisor: Academician Emeritus Professor Tan Sri Dato’ Sri Dr Zakri Abdul Hamid FASc
Academician Tan Sri Dr Salleh Mohd Nor FASc

Blue Economy Committee
Co-Chair: Emeritus Professor Dr Phang Siew Moi FASc
Professor Ir Dr Suzana Yusuf FASc
Advisor: Professor Dato’ Ir Dr A. Bakar Jaafar FASc

Talent Development Committee
Co-Chair: Professor Dato’ Ir Dr Mohd Saleh Jaafar FASc
Professor Ts Dr Mohamad Kamal Hj Harun FASc
Advisor: Academician Professor Datin Paduka Dr Khatijah Mohd Yusoff FASc

Digitalisation Committee
Co-Chair: Dr Mohamed Awang Lah FASc
Professor Dr Tharek Abd Rahman FASc
Advisor: YM Academician Tengku Datuk Dr Mohd Azzman Shariffadeen FASc

Environment Committee
Chair: Professor Dato’ Dr Mazlin Mokhtar FASc
Advisor: Academician Emeritus Professor Tan Sri Dato’ Sri Dr Zakri Abdul Hamid FASc

Task Force and Sub-Committees

Task Force on Natural Rubber Industry
Chair: Academician Datuk Dr Abdul Aziz Sheikh Abdul Kadir FASc

Task Force on Precision Biodiversity
Co-Chair: Dr Helen Nair FASc
Professor Dr Wickneswari Ratnam FASc

Task Force on Science Education
Co-Chair: Professor Dato’ Dr Mohd Jamil Maah FASc
Professor Dr Ahmad Ismail FASc

Task Force on Review of ASM Act
Chair: Secretary General, Datuk Professor Dr Awg Bulgiba Awg Mahmud FASc

Task Force to Review Senior Fellows Selection Process
Chair: Academician Emeritus Professor Dato’ Dr VG Kumar Das FASc

Task Force to Review Fellows Selection Process
Chair: Emeritus Professor Dato’ Dr Rahmah Mohamed FASc

ASM Strategic Plan Steering Committee
Chair: Secretary General, Datuk Professor Dr Awg Bulgiba Awg Mahmud FASc

Working Group on International Collaboration Strategic Plan 2021-2030
Chair: Academician Professor Emerita Dato’ Seri Dr Mazlan Othman FASc

Science Awards Steering Committee
Chair: Secretary General, Datuk Professor Dr Awg Bulgiba Awg Mahmud FASc

ASM ArtScience™ Steering Committee
Chair: Academician Professor Emerita Dato’ Seri Dr Mazlan Othman FASc

National Committee on Research Integrity
Chair: Academician Professor Datin Paduka Dr Khatijah Mohd Yusoff FASc

ASM Angels in Science Steering Committee
Chair: Ir Ts Choo Kok Beng FASc

Science Outlook 2020 Steering Committee
Chair: Professor Dato’ Mohd Saleh Jaafar FASc
Deputy Chair: Professor Dr Nik Meriam Nik Sulaiman FASc

National Science Challenge (NSC) Steering Committee
Co-Chair: Professor Dr Noorsaadah Abd Rahman FASc
Professor Dr Mohd Basyaruddin Abdul Rahman FASc

Top Research Scientists Malaysia (TRSM) Steering Committee
Chair: Vice-President, Professor Dato’ Ir Dr A. Bakar Jaafar FASc

Top Research Scientists Malaysia (TRSM) Selection Panel
Chair: Professor Dato’ Ir Dr Abdul Rahman Mohamed FASc

Policy and Strategy Working Group:
Chair: Academician Tengku Datuk Dr Mohd Azzman Shariffadeen FASc

Working Group on Neuro Technology Platform
Chair: Professor Dato’ Dr Jafri Malin Abdullah FASc

ASM Science Journal Editorial Board
Chair: Professor Dato’ Dr Mohd Ali Hassan FASc

Estidotmy Editorial Board
Chair: Datuk Professor Dr Awg Bulgiba Awg Mahmud FASc

Young Scientists Network (YSN) –ASM

Chair: Associate Professor Dr Chai Lay Ching
Vice-Chair: Dr Manraj Singh Cheema
Secretary-General: Professor Ir Dr Denny Ng Kok Sum
Honorary-Treasurer: Associate Professor Dr Siti Sarah Othman

Working Group Science Policy & Governance

Chair: Ts Dr Aslina Baharun
Co-Chair: Dr Siti Hawa Ngali

Working Group Science Outreach

Chair: ChM. Dr Sheela Chandren
Co-Chair: Dr Nor Ain Husein

Working Group Science @ Media

Chair: Dr Phan Chia Wei
Co-Chair: Associate Professor Ts Dr Noor Dayana Abd Halim

Working Group Science Communication

Chair: Ts Dr Jaysuman Puspanathan
Co-Chair: Dr Melissa Beata Martin

Working Group Research Synergy

Chair: Dr Heo Chong Chin
Co-Chair: Datin Ts Dr Rozzeta Dolah

Working Group Science Education

Chair: Associate Professor Dr Nurfaadhina Mohd Sharef
Co-Chair: Dr Tan Suat Cheng

Working Group Science Integrity

Chair: Dr Chau De Ming
Co-Chair: Associate Professor Dr Kesaven Bhubalan

Working Group Science Leadership

Chair: Dr Chan Siok Yee
Co-Chair: Dr Kew Si Na

YSN-ASM Membership Selection Committee

Chair: Professor Dato’ Ir Dr A. Bakar Jaafar FASc

Special Interest Group (SIG)

SIG on Zoonosis

Chair: Professor Datuk Dr Mohd Hair Bejo FASc

SIG on Covid-19

Chair: Professor Dr Rosnah Mohd Zain FASc

SIG on Industry-ready Talent for STI-based Enterprise Post COVID-19

Co-Chair: Professor Dato’ Ir Dr Abdul Rahman Mohamed FASc
Dr Shahidah Mohd Shariff FASc

Chapters

ASM Northern Region Chapter

Chair: Professor Dato’ Ir Dr Abdul Rahman Mohamed FASc

ASM Southern Region Chapter

Chair: Professor Dr Ahmad Fauzi Ismail FASc

ASM Sabah Chapter

Chair: Dr Rahimatsah Amat FASc

ASM Sarawak Chapter

Chair: Emeritus Professor Dato’ Ir Abang Abdullah Abang Ali FASc

ASM East Coast Chapter

Chair: Dato’ Dr Mohd Tajuddin Abdullah FASc

Disciplinary Groups

Biological, Agricultural and Environmental Sciences Discipline

Chair: Emeritus Professor Dato’ Dr Rahmah Mohamed FASc
Alternate Chair: Professor Dato’ Dr Zulkifli Idrus FASc

Chemical Sciences Discipline

Chair: Professor Dato’ Dr Mohd Jamil Maah FASc
Alternate Chair: Professor Dr Yang Farina Abdul Aziz FASc

Engineering Sciences Discipline

Chair: Dato’ Ir Dr Gue See Sew FASc
Alternate Chair: Professor Datuk Ir Dr Mohd Jailani Mohd Nor FASc

Information Technology and Computer Sciences Discipline

Chair: Professor Dr Mohamed Ridza Wahiddin FASc
Alternate Chair: Dato’ Ts Dr Amirudin Abdul Wahab FASc

Mathematics, Physics and Earth Sciences Discipline

Chair: Professor Dr Kurunathan Ratnavelu FASc
Alternate Chair: Dr Mazlan Madon FASc

Medical and Health Sciences Discipline

Chair: Professor Datuk Dr Rohana Yusof FASc
Alternate Chair: Datin Paduka Dr Teo Soo Hwang FASc

S&T Development and Industry Discipline

Chair: Academician Emeritus Professor Tan Sri Dr Mazlan Othman FASc
Alternate Chair: Dato’ Dr Jalaluddin Harun FASc

Social Sciences and Humanities Discipline

Chair: Professor Dr Mahendhiran Sanggaran Nair FASc
Alternate Chair: Dr Zainal Ariffin Ahmad FASc

Discipline Vetting Committees

Biological, Agricultural and Environmental Sciences Discipline

Chair: Emeritus Professor Dato’ Dr Rahmah Mohamed FASc

Chemical Sciences Discipline

Chair: Professor Dato’ Dr Mohd Jamil Maah FASc

Engineering Sciences Discipline

Chair: Dato’ Ir Dr Gue See Sew FASc

Information Technology and Computer Sciences Discipline

Chair: Professor Dr Mohamed Ridza Wahiddin FASc

Mathematics, Physics and Earth Sciences Discipline

Chair: Professor Dr Kurunathan Ratnavelu FASc

Medical and Health Sciences Discipline

Chair: Professor Datuk Dr Rohana Yusof FASc

S&T Development and Industry Discipline

Chair: Academician Emeritus Professor Tan Sri Dr Mazlan Othman FASc

Social Sciences and Humanities Discipline

Chair: Professor Dr Mahendhiran Sanggaran Nair FASc

Strategic Partnership: Advisory

Commissioned Work

Committee
Disaster Risk Reduction (DRR) Research Alliance Committee
Chair: Professor Dr Joy Jaqueline Pereira FASc

WST 2040: Project Management Committee (PMC)
Chair: Ir Dr Salmah Zakaria FASc

- **Task Force on Advocacy, Awareness, Capacity Building and public participatory platforms (AACB)**
Chair: Professor Dato’ Dr Mazlin Mokhtar FASc
- **Task Force on Integrated Water Sector Data Centre (IWSDC)**
Chair: Datuk Ir Mohd Adnan Mohd Nor FASc
- **Task Force on IR 4.0 in the various Water Sub-sectors (IR4.0 WS)**
Chair: Datuk Ir Abdul Kadir Mohd Din FASc
- **Task Force on Water-Food-Energy Nexus (WFE Nexus)**
Chair: Dr Ahmad Hezri Adnan FASc
- **Task Force on Virtual Water and Water Footprint (VW&WF)**
Chair: Professor Dr Zulkifli Yusop FASc
- **Task Force on Climate Change Impact and Adaptation (CCIA)**
Chair: Professor Dr Joy Jacqueline Pereira FASc
- **Task Force on Alternative Water Financing (AWF)**
Chair: Dato’ Seri Ir Dr Zaini Ujang FASc
- **Task Force on Water as an Economic Sector (WES)**
Chair: Professor Dr Mahendhiran Nair FASc

Task Force / Working Group/ Technical Committee

Working Group on Human Capital and Research for Global Innovation Index (GII)
Chair: Professor Dr Yvonne Lim Ai Lian FASc

Task Force on Robotics
Chair: Professor Ir Dr Khairul Salleh Mohamed Sahari

Task Force on Strengthening the Environmental Governance in Malaysia
Chair: Professor Dato’ Ir Dr A. Bakar Jaafar FASc

Task Force on Enhancement and Harmonisation of the National Nuclear Technology Policy (DTNN) 2021-2030
Chair: Academician Tan Sri Datuk Ir Dr Ahmad Tajuddin Ali FASc

Task Force on Formulation of RDCI&E Roadmap
Chair: Professor Datuk Wira Dr Raha Abdul Rahim FASc

Science, Technology and Innovation (STI) Act Technical Committee
Chair: Professor Dato’ Dr Aishah Bidin FASc

Steering Committee to Review the Environmental Quality Act 1974
Chair:
Academician Emeritus Professor Tan Sri Dato’ Sri Dr Zakri Abdul Hamid FASc

Task Force on National Biotechnology Policy 2.0
Chair: Emeritus Professor Dato’ Dr Rahmah Mohamed FASc
Deputy Chair: Professor Datuk Dr Rohana Yusof FASc

- **Working Group Overall Ecosystem and Governance**
Chair: Emeritus Professor Dato’ Dr Rahmah Mohamed FASc
- **Working Group Overall RDIE & Talent**
Chair: Professor Dr Rosli Md Illias FASc & Ts Zainab Ahmad
- **Working Group Biotechnology Industry**
Chair: Professor Datuk Dr Rohana Yusof FASc
- **Working Group Agriculture**
Chair: Professor Dr NorZulaani Khalid
- **Working Group Healthcare**
Co-Chair:
En Abdul Razak Mohd Isa
En Mustadza Muhamad
- **Working Group Industrial**
Co-Chair:
Dr Salmaan Hussain Inayat Hussain FASc
Associate Professor Dr Mohd Firdaus Mohd Raih

Partnership Programme

Dr Ranjeet Bhagwan Singh Medical Research Trust Fund Programme Committee
Chair: Professor Dr Sheila Nathan FASc

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

Programmes with Royal Society, British Academy and Royal Academy of Engineering
Chair: Academician Tan Sri Datuk Ir Hj Ahmad Zaidee Laidin FASc

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

Special Project

Malaysian Collaborative Network (i-Connect) Initiative Steering Committee
Co-Chair:
Academician Tengku Datuk Dr Mohd Azzman Shariffadeen FASc
Ir Ts Choo Kok Beng FASc

• **i-Connect Technical Committee**
Academician Tengku Datuk Dr Mohd Azzman Shariffadeen FASc

Malaysian Open Science Platform Alliance
Chair: Professor Dr Noorsaadah Abdul Rahman FASc

- **Working Group on Policy**
Chair: Datuk Professor Dr Rohana Yusof FASc
- **Working Group on Capacity Building and Awareness**
Chair: Professor Dr Abrizah Abdullah
- **Working Group on Infrastructure**
Chair: Dr Liew Chee Sun

ASM Representative in International and National Meetings

Association of Academies and Societies in Asia (AASSA)

Academician Professor Dato’ Dr Khairul Anuar Abdullah FASc (Vice-President of AASSA)

Inter Academy Partnership for Health (IAP-H)

Academician Professor Datuk Dr Looi Lai Meng FASc (Executive Committee of IAP for Health)

Inter Academy Panel (IAP)

Professor Emerita Datuk Dr Asma Ismail FASc (ASM President)

International Science Council (ISC)

Professor Datin Paduka Dr Khatijah Mohd Yusoff FASc

Network of Academies of Sciences in the Islamic Countries (NASIC)

Professor Emerita Datuk Dr Asma Ismail FASc (ASM President)

Science Council of Asia (SCA)

Emeritus Professor Dr Phang Siew Moi FASc

Academy of Sciences in Developing World (TWAS)

Professor Emerita Datuk Dr Asma Ismail FASc (ASM President)

ASEAN Network of Young Scientists Interim Committee

Professor Dr Abhi Veerakumarasivam

ASEAN Foresight Alliance Committee

Academician Professor Emerita Tan Sri Dr Mazlan Othman FASc

IAP Science for Poverty Eradication Committee (IAP SPEC)

Professor Dato’ Dr Aishah Bidin FASc (Expert IAP SPEC)

International Silk Road Academy of Sciences

Professor Emerita Datuk Dr Asma Ismail FASc (ASM President)
Permanent Alternative Rep:
Professor Dato’ Ir Dr A. Bakar Jaafar FASc (Vice-President)

Interacademy Partnership for Urban Health

Datuk Professor Dr Awg Bulgiba Awg Mahmud FASc

ISTIC Executive Committee

Professor Dato’ Ir Dr A. Bakar Jaafar FASc (Vice-President)

Permanent Alternative Rep: Hazami Habib (CEO)

APEC Policy Partnership on STI (PPSTI) Working Meeting

Hazami Habib – Nominated by MOSTI & Elected at PPSTI
(Chair, Sub-Committee of Capacity Building Cluster)

World Organisation for Science Literacy (WOSL)

CEO, Hazami Habib (Preparatory Committee)

UNESCO Open Science Advisory Committee

Professor Dr Noorsaadah Abd. Rahman (Malaysia Focal Point)

UNESCO Intergovernmental Special Committee on Open Science

CEO, Hazami Habib (Alternate Focal Point)

EPU Technical Committee of Blue Economy Roadmap

Emeritus Professor Dr Phang Siew Moi FASc (ASM Rep)
Professor Dr Mahendhiran Sanggaran Nair FASc (Alternate)

Socioeconomic Advisory Committee

Professor Dato’ Dr Tengku Aizan Tengku Abdul Hamid FASc

Johor National Science Council

Datuk Professor Dr Awg Bulgiba Awg Mahmud FASc

LIST OF ACTIVITIES

JANUARY

Grand Final Pitch of 2020 YSN-ASM Chrysalis Award
9 January

Webinar on Open Science
11 January

WST2040 Advocacy, Awareness, Capacity Building & Public Participatory Platforms (AACB) Task Force on Training Webinar Series on Module Development (Government Sector)
12 January

STDI Webinar Series on the Space Industry: Are the Stars within Reach?
13 January

FEBRUARY

Meeting with KSU KASA on EQA1974
4 February

WST2040 AACB Webinar Series on Community-Led River Basin Management in Kedah
11 February

RTM Khas – Buku Panduan Program Imunisasi COVID-19 Kebangsaan
21 February

National Science Council 1/2021 Meeting
23 February

STDI Webinar Series on the Aviation Industry: Taking Us to the Skies Again?
23 February

MARCH

34th ideaXchange – Moving Towards the Innovation Driven Growth Model: The Challenges between Policies and Implementations
9 March

Sharing Session on Merdeka Award Grant (International Attachment)
15 March

TropSc Webinar - International Day of Forests: Tropical Forests Under Threat
23 March

WST2040 - Safeguarding and Rehabilitating Malaysian Rivers: Role and Responsibility of One and All
31 March

APRIL

YSN-ASM Inquiry Based Science Education (IBSE) Workshop
2 April

YSN-ASM Sharing Session on Rocket Science: Future Technologies
5 April

YSN-ASM Science Cafe: The Universe of STEM
6 April

TropSc Webinar - World Health Day: Towards a Fairer and Healthier Tropics
7 April

STDI Webinar Series on the Space Industry: Will NewSpace Deliver its Promise?
12 April

Workshop on Developing the National Robotics Roadmap
20 & 21 April

26th ASM Annual General Meeting
24 April

WST2040 - Webinar on Promoting Sustainable Water Resource Management in Universities
26 April

MAY

Selangor FM – Aspirasi Negaraku Evolusi Teknologi:
Kemahiran Berasaskan Teknologi
5 May

TropSc Webinar - International Biodiversity Day:
Naming Nature 2
21 May

YSN-ASM Chrysalis Award Workshop - Science
Communication Workshop
22 May

Malaysia Open Science Platform Forum – Bridging
the Gap in Research Ecosystem
25 May

JUNE

WST2040 - Webinar on Alternative Water Financing
3 June

TropSc Webinar - Ocean Life and Livelihoods in the
Tropics
8 June

Succeeding in Interdisciplinary Research
Collaboration Webinar
by Professor Emeritus Dr Ng Kwan Hoong FASc
17 June

11th Mahathir Science Award Ceremony
29 June

TropSc Webinar - Together for the Tropics
29 June

JULY

Announcement of the 2021 NSC Preliminary Round
Winners
22 July

Announcement of the 2021 NSC State Level Winners
26 July

Ranjeet Bhagwan Singh (RBS) Memorial Lecture –
COVID-19 Vaccines: Science vs Antiscience
29 July

Announcement Ceremony of 2021 RBS Research
Grant Recipients
29 July

AUGUST

Selamat Pagi Malaysia RTM – Open Science:
Sumbangan kepada Masyarakat dan Negara
2 August

FASciate Talk
3 August

TropSc Webinar - Youth Innovation for Human and
Planetary Health
12 August

Malaysia Open Science Forum
25 August

ArtScience Webinar TM Webinar Series on
Transcending the Arts and Sciences
28 August

ASM Southern Chapter Webinar - Becoming a
Developed Nation: Are We on Track?
30 August

SEPTEMBER

TropSc Webinar - Joyful Chaos in the Tropics
3 September

2021 NSC Semi Final Science Lectures on
Renewable Energy, Sustainable Environment, Food
Sustainability, Climate Change, Public Health and
Pandemics
4 September

2021 NSC Semi Final: Design Thinking Workshop
4 September

13th General Assembly: Humanising the Economy
Through People, Planet, Prosperity, Peace &
Partnerships (5Ps) of SDGs For Greater Impact
9 September

2021 NSC Semi Final: Technical Workshops on
Robotics, Mobile Apps, Wireless Network & Drones
and AI & Big Data Analytics
11 September

2021 NSC Semi Final: Industry Talk
11 September

TropSc Webinar - Bamboo: Sustainable Housing in
the Tropics
18 September

2021 NSC Semi Final: Talk on Robotics
25 September

Announcement of the 2021 NSC Semi Final
Winners
25 September

Announcement of 2021 Top Research Scientists
Malaysia (TRSM)
28 September

TropSc Webinar - Interdisciplinary Research for
Sustainable Use of Tropical Marine Resources
28 September

OCTOBER

TropSc Webinar - Biodiversity Loss in the Tropics
5 October

Launching of the Science Outlook 2020 Report
7 October

MoU Signing ASM and the Palestine Academy for
Science and Technology
6 October

TropSc Webinar - Aquatic Foods in Nourishing
Nations: Opportunities for the Tropics
8 October

2021 National Science Challenge Grand Final
9 October

TropSc Webinar - What Matters Most for a Better
Tropics: A Youth Perspective
9 October

Expo Dubai 2020 Forum: Malaysia - Your Global
Innovation Partner
14 October

Webinar on Championing Innovation and Creation of
Impactful Research Using the 10-10 MySTIE
20 October

35th ideaXchange - Building A Resilient Nation: STI
as the Enabler of the 12th Malaysia Plan
25 October

INTAN Executive Lecture Series 3/2021 (Leadership)
- Empowering Women Leadership in the New Norm
28 October

NOVEMBER

Webinar on STI for Socio-Economic Transformation: Policy & Governance Considerations for Consistency Paradigm
1 November

ArtScience™ Virtual Exhibition – Alangkah
8 November

ArtScience™ Webinar Series on Transcending the Arts and Sciences - Exploring the International Landscape of ArtScience
8 November

Official Visit by Ambassador of Japan to Malaysia
5 November

Official Visit by YB MOSTI Minister to ASM
9 November

FAScinate Talk
10 November

NSC 2021 Sharing Session on STEM
13 November

RMK12 Webinar on Empowering Technology Development & Commercialisation
15 November

Mesyuarat Menteri-Menteri Dan Ahli-Ahli Majlis Mesyuarat Kerajaan Negeri Yang Bertanggungjawab Mengenai STI (MEXCO-STI)
17 November

Roundatable Briefing on Global Innovation Index 2021
18 November

2021 YSN-ASM Chrysalis Award Final Pitch
23 November

Virtual MAKNA Cancer Research Award Ceremony 2021
25 November

DECEMBER

MoU Signing Ceremony between ASM, UCSI University and UCSI Poll Research Centre
9 December

2021 YSN-ASM Colloquium
12 December

MoU Signing between ASM, MERCK and Petrosains Sdn Bhd
12 December

Masterclass with Philip Kotler on MySTIE Marketing and Branding 5.0
17 December

Malaysian Association of Research Scientists Webinar on Humanising STI Towards a Future Proof Nation: Roles of our Researchers
22 December

ASM
MANAGEMENT
AS OF DECEMBER 2021

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Special Officer CEO
Norazirah Ramli
Secretary

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Principal Analyst

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Analyst
Low Boon Sin
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Analyst
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Analyst
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Analyst
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Analyst
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Analyst
Khairul Nisak Alias
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Vinotheni Rajendran
Analyst

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Siti Nur Shahirah Wahab
Analyst

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Arsalaan Bajunid
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Executive
Murni @ Zahani Ariffin
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Nur Shafawaty Ahmad
Assistant Executive
Suhaila Sabri
Assistant Executive

FACILITY MANAGEMENT UNIT

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Syed Abdul Haliq Syed Abdul Malik
Executive (IT)
Ahmad Khudri Abd Razak
Assistant Executive (IT)
Mohd Azmy Abdul Rahman
Driver
Mohd Zairi Mansor
Chief Clerk
Mohd Zefri Mohd Zulkefli
Assistant Operation
Mohd Zuhairi Zakbar
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Abdullah Sani
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Clerk
Rusli Othman
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Shareeza Shaari
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Chan Wen Nee
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Nurul Ain Asyimah Mohammad
Accountant
Nur Nadia Rozlin
Accountant
Nor Hayati Johan
Clerk
Nur Idayu Abd Aziz
Assistant Accountant
Nurhani Zawani Posari
Assistant Accountant
Siti Nor Adila Sabri
Assistant Accountant
Warnida Mohd Fadzli
Assistant Accountant

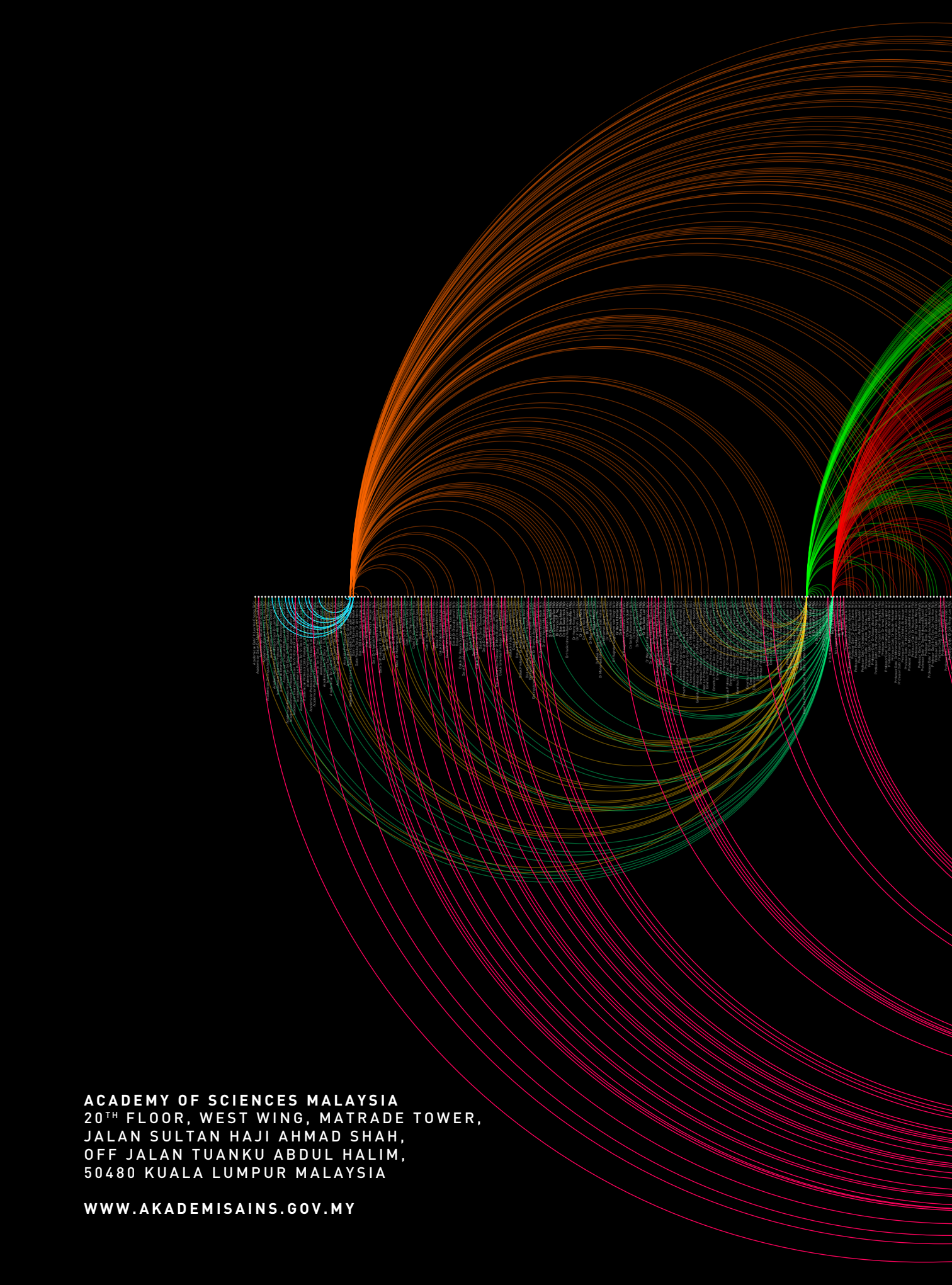
INTERNATIONAL OFFICES HOSTED BY ASM

THE INTERNATIONAL COUNCIL FOR SCIENCE REGIONAL OFFICE FOR ASIA AND THE PACIFIC (ICSU ROAP)

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Nurul Farhana Mohd Farizah
Assistant Executive

THE INTERNATIONAL SCIENCE, TECHNOLOGY AND INNOVATION CENTRE CENTRAL FOR SOUTH-SOUTH COOPERATION (ISTIC)

Tengku Sharizad Tengku Chik
Director
Abdul A'dzim Abd Rashid
Senior Science Officer
Mohd Azim Noor
Information Technology Officer
Norkhalizatul Akmal Mohd Jamil
Science officer
Zarmila Salmi Sabot
Admin Officer



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