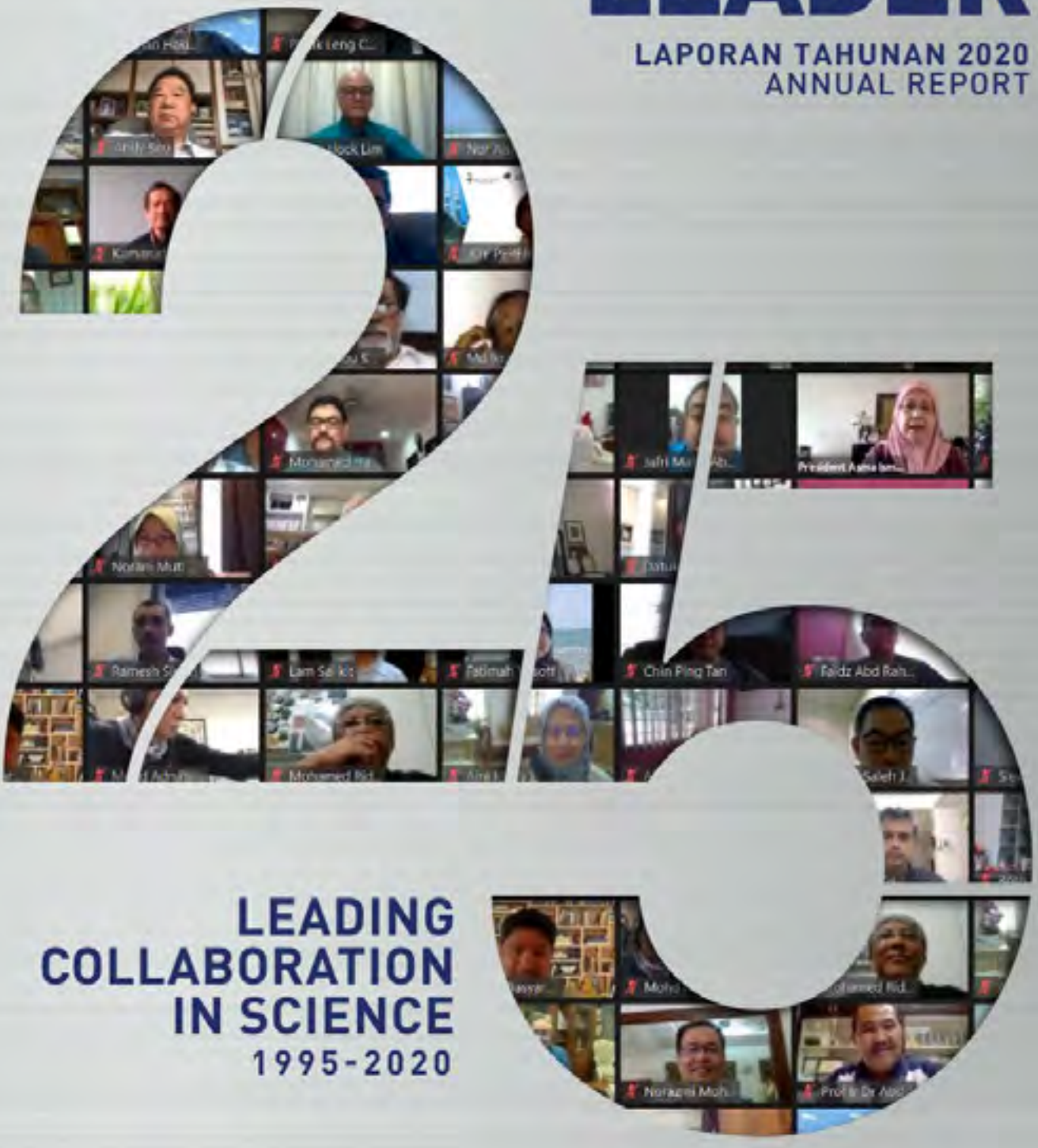
THOUGHT LEADER

LAPORAN TAHUNAN 2020
ANNUAL REPORT



LEADING COLLABORATION IN SCIENCE
1995-2020



AKADEMI SAINS MALAYSIA

LAPORAN TAHUNAN 2020

IMBAS UNTUK BACA LAPORAN INI VERSI DIGITAL

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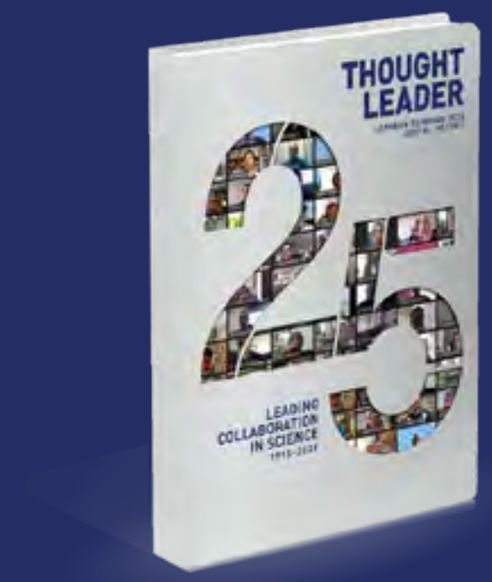
THOUGHT LEADER '20

Laporan ini merupakan sumber maklumat utama mengenai Akademi Sains Malaysia (ASM). Laporan ini memberikan gambaran umum yang ringkas mengenai pencapaian kami serta prestasi kewangan dan bukan kewangan bagi tahun 2020.

Penglibatan kami dengan pihak pemegang taruh dalaman dan luaran turut dibentangkan. Selain itu, inisiatif, rakan strategik, dan strategi serta matlamat masa depan kami turut dikemukakan untuk menunjukkan kredibiliti kami sebagai sebuah badan pemikir. Objektif kami adalah untuk memperkukuh kepercayaan para pemegang taruh melalui pelbagai input dan idea strategik yang kami usulkan.



KONSEP

Laporan Tahunan 2020 memaparkan logo Ulang Tahun ke-25 di muka hadapan dengan latar belakang berwarna perak menandakan sambutan Jubli Perak ASM. Warna perak ini juga memberi konsep teknologi moden yang dimanfaatkan sepanjang tahun. Kami bekerja, belajar dan berkomunikasi antara satu sama lain menggunakan peranti dan alat sepenuhnya.

Angka 25 dengan kemasan *die-cut* membolehkan pembaca untuk melihat halaman seterusnya yang memaparkan Felo ASM semasa Mesyuarat Agung Tahunan yang dijalankan secara dalam talian. Mesyuarat kali ini mencatat sejarah susulan jumlah penyertaan tertinggi dalam 25 tahun penubuhan ASM. Slogan Menerajui Kolaborasi dalam Sains (*Leading Collaboration in Science*) memberi gambaran tepat mengenai tahun 2020 yang kami jalani di mana masing-masing saling bekerjasama dalam menjalankan tugas. Kami bekerja bersama masyarakat, organisasi dan rakan strategik dari seluruh dunia untuk mencapai matlamat, visi dan misi kami.

kandungan.



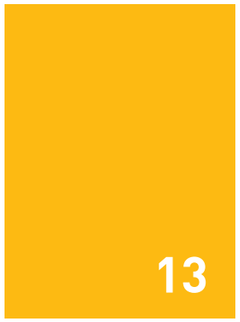




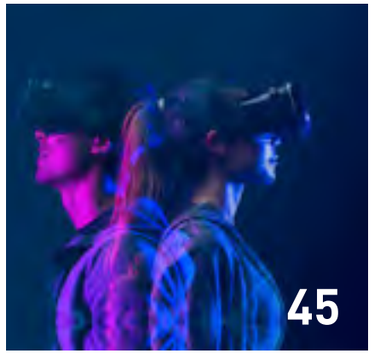


















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Mengenai ASM

SIAPA KAMI

ASM berusaha menjadi Peneraju Pemikir yang diiktiraf bagi isu berkaitan Sains, Teknologi dan Inovasi (STI).

ASM komited dalam memupuk kecemerlangan dalam bidang Sains, Kejuruteraan dan Teknologi (SET) untuk kebaikan masyarakat sejagat.

AKTIVITI KAMI

ASM menyokong sains yang bermanfaat dengan menggalakkan aktiviti yang mempromosikan penglibatan, pemahaman dan literasi dalam STI.

Sains di luar jangkauannya merupakan suatu pengalaman yang memacu kita ke arah yang lebih menarik, dipenuhi dengan penglibatan dengan pelbagai lapisan masyarakat. Pada akhirnya, komitmen ASM adalah untuk meningkatkan keupayaan saintifik negara ini.

KAJIAN STRATEGIK PERDANA STI & PENASIHAT DASAR	Laporan Penasihat & Kertas Posisi | Pembangunan Pelan Tindakan & Pelan Pembangunan | Pemikiran & Pandangan Masa Depan | Dasar Kebangsaan / Sektoral | Penilaian & Rumusan | Kewajaran Keputusan & Amalan Terbaik Dalam STI | Tindak Balas Terhadap Isu Nasional & Antarabangsa
INISIATIF & RAKAN STRATEGIK	Kajian Diterajui Pakar | Komunikasi, Pembudayaan & Penglibatan dalam Sains | Pembinaan Kapasiti STI | Anugerah, Geran dan Pengiktirafan | Hubungan Strategik STI
JARINGAN ANTARABANGSA	Ahli *Science Council of Asia* (SCA), *Association of Academies and Societies in Asia* (AASSA), *The InterAcademy Partnership* (IAP), *Asia-Pacific Economic Cooperation* (APEC), *Association of Southeast Asian Nations* (ASEAN), *The World Academy of Sciences* (TWAS) | Program Saintis Muda – CERN & Lindau | Membida geran antarabangsa – ASEAN & APEC
KOMUNIKASI SAINS	Penerbitan | Jurnal Sains ASM | Komunikasi Korporat | Perhubungan Awam | Penglibatan Media | Pengurusan & Visualisasi Data
PROJEK RINTIS	*Malaysian Collaborative Network for Innovation* (i-Connect) | *Malaysia Open Science Platform* (MOSP)



- Menjadi Peneraju Pemikir
- Menjadi Badan Penasihat Apex dalam hal berkaitan STI
- Menjadi penggalak yang efektif terhadap kesedaran dan pemahaman awam tentang STI
- Menjadikan STI sebagai asas bagi pembangunan ekonomi dan kesejahteraan rakyat



- Menasihati Kerajaan berkenaan hal STI yang berkepentingan kepada negara dan antarabangsa
- Memupuk budaya kecemerlangan SET di Malaysia
- Membantu meningkatkan keupayaan teknologi sektor industri di Malaysia
- Menggalakkan kesedaran dan pemahaman umum mengenai kepentingan STI dalam kehidupan seharian
- Menjalin jaringan dan kerjasama antarabangsa
- Menghasilkan penerbitan saintifik



- Memanfaatkan pemikiran saintifik untuk menentukan hala tuju STI negara
- Memupuk budaya kecemerlangan SET
- Memastikan input STI yang berwibawa dan tepat pada masanya
- Menggalakkan penggunaan dan aplikasi sains untuk kesejahteraan rakyat
- Memudahcara pelaksanaan strategi ekonomi berasaskan inovasi



Dalaman
Felo | *Associates* | *Young Scientists Network-Academy of Sciences Malaysia* (YSN-ASM) | *Top Research Scientists Malaysia* (TRSM)

Luaran
Kerajaan Malaysia | Agensi | Industri | Institusi Penyelidikan | Institusi Pendidikan Tinggi (IPT) | Badan Profesional STI | Organisasi STI antarabangsa | Masyarakat awam



- Memberi khidmat nasihat yang bebas, boleh dipercayai, berasaskan data yang tepat pada masanya
- Komited dalam mewujudkan program yang berkualiti ke arah pembangunan asas STI negara yang kukuh
- Mewakili Malaysia dan komuniti saintifiknya di arena antarabangsa
- Menyebarkan pengetahuan saintifik

Para Pembaca,

TABAH MENGHADAPI KETIDAKPASTIAN

Sambutan ulangtahun ke-25 ASM merupakan suatu pencapaian yang amat membanggakan, terutama sekali ketika berlatarbelakangkan pandemik yang melanda. Bulan Februari merupakan bulan terakhir di mana kita dapat menjalani kehidupan yang "normal".

Sebagai salah sebuah akademi sains yang terbaharu di dunia, ASM mempunyai keupayaan dan kesediaan untuk mempraktikkan ruang digital dalam meneruskan pelbagai aktiviti berunsurkan sains di peringkat kebangsaan, serantau dan antarabangsa meskipun dunia dilanda pandemik COVID-19.

Felo ASM telah menggunakan kepakaran masing-masing dalam usaha untuk menangani pandemik tersebut. Mereka telah berkongsi ilmu pengetahuan dan pengalaman masing-masing untuk memastikan keputusan berdasarkan fakta disampaikan dengan baik, seiring dengan usaha akademi sains dari negara lain dalam menyediakan penyelesaian kepada isu pandemik ini. Selain itu, ASM telah membentuk *Special Interest Group* (SIG) COVID-19 yang terdiri daripada Felo ASM dan ahli YSN-ASM. SIG tersebut telah menyediakan sebanyak sepuluh lembaran fakta mengenai virus tersebut.

Dengan kerjasama pelbagai pihak, ASM telah mengharungi tahun 2020 dengan pelbagai kejayaan. Namun begitu, Felo ASM perlu sentiasa memastikan bahawa maklumat yang disampaikan adalah berasaskan fakta, serta berusaha untuk memerangi penyebaran maklumat palsu.

Pada tahun ini, hampir 50 peratus daripada Felo ASM telah menghadiri Mesyuarat Agung yang julung kalinya diadakan secara maya. Ini merupakan kehadiran yang tertinggi dicatat sejak penubuhan ASM. Kehadiran yang memberangsangkan ini telah membangkitkan suasana yang mesra dan bersemangat dalam kalangan Felo ASM. Sehubungan dengan itu, ASM telah mula melaksanakan pelbagai program secara maya, yang merupakan suatu keputusan yang bijak. Sebanyak 25 webinar telah dijalankan sepanjang tahun 2020 dan program-program tersebut telah mencatatkan sebanyak 271,000 tontonan.

Salah sebuah program utama ASM iaitu *National Science Challenge* (NSC) turut dijalankan secara maya pada tahun ini. *Virtual* NSC (VNSC) yang bertemakan Ke Arah Komuniti Berdaya Tahan Terhadap Pandemik Melalui Sains telah disertai oleh 1,027 pasukan. Tema VNSC telah dipilih untuk membolehkan para belia memahami impak pandemik serta menyediakan penyelesaian terhadap isu yang dihadapi dalam memerangi virus tersebut.

Ahli YSN-ASM telah memainkan peranan yang penting dalam pelaksanaan VSNC. Mereka juga turut memacu perubahan dalam pelaksanaan program lain pada tahun 2020. YSN-ASM *Science Cafe* merupakan salah satu program yang dijalankan semasa Minggu Sains Negara 2020. Sebanyak 11 sesi *Science Cafe* telah dijalankan sepanjang tahun 2020, yang telah dijalankan sama ada secara fizikal (sebelum Perintah Kawalan Pergerakan (PKP)) atau secara maya (semasa PKP dan Perintah Kawalan Pergerakan Bersyarat (PKPB)). Sembilan sesi *Science Cafe* yang diadakan secara maya telah mencapai sebanyak 25,000 tontonan, sebuah pencapaian yang memberangsangkan.

ASM *ArtScience™* merupakan salah sebuah inisiatif ASM dalam melangsungkan penumpuan ilmu pengetahuan demi masa depan. *ArtScience™* telah diperkenalkan pada penghujung tahun 2019 yang menampilkan pemurnian bidang sains dan bidang seni. Sebanyak 60 penyertaan telah diterima untuk inisiatif tersebut, dan penyertaan tersebut akan dipaparkan secara maya pada bulan Jun 2021.

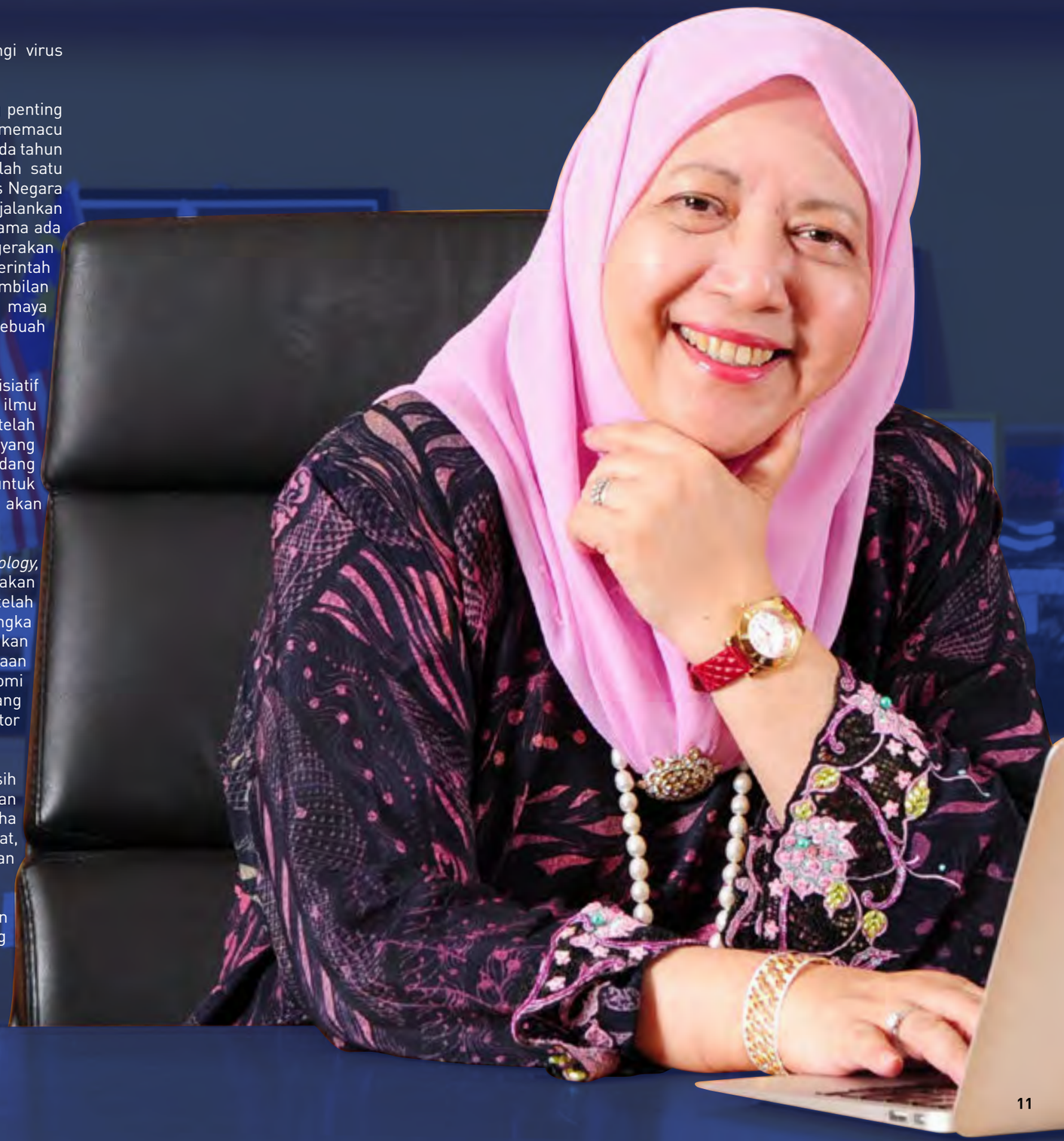
Rangka kerja *10-10 Malaysian Science, Technology, Innovation, and Economic* (MySTIE) merupakan salah satu projek kebanggaan ASM yang telah diterimapakai di peringkat kebangsaan. Rangka kerja tersebut telah memperkukuh kedudukan ASM di tahap tertinggi di peringkat kebangsaan dan telah mengiktiraf impak STI terhadap ekonomi negara. MySTIE turut menghasilkan bidang-bidang STIE baharu yang menghubungkan sektor-sektor sains, teknologi, inovasi dan ekonomi.

Saya ingin mengucapkan ribuan terima kasih kepada para Felo ASM yang telah meyumbangkan tenaga, masa dan kewangan mereka dalam usaha memajukan sains dalam kalangan masyarakat, serta mengarusperdanakan dan meluaskan impak aktiviti ASM.

Saya berharap agar kita dapat menyaksikan kejayaan yang berterusan dalam dekad yang akan datang.

Profesor Datuk Dr Asma Ismail FASc

» Saksikan Ucapan Presiden 2020 semasa Mesyuarat Agung ke-25 di sini.

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AHLI MAJLIS

1) PROFESOR DATUK DR ASMA ISMAIL FASc
Presiden (2019-2022)
Sains Perubatan dan Kesihatan

2) PROFESOR DATO' IR DR A. BAKAR JAAFAR FASc
Timbalan Presiden (2020-2022)
Sains Kejuruteraan

3) PROFESOR DATO' DR AWG BULGIBA AWG MAHMUD FASc
Setiausaha Agong (2019-2021)
Sains Perubatan dan Kesihatan

4) DATUK DR ABDUL RAZAK MOHD ALI FASc
Bendahari (2019-2021)
Pembangunan Sains & Teknologi dan Industri

AHLI BIASA (2020-2021)

5) PROFESOR DATO' DR AHMAD IBRAHIM FASc
Pembangunan Sains & Teknologi dan Industri (2020-2022)

6) PROFESOR DR AHMAD ISMAIL FASc
Sains Biologi, Pertanian dan Alam Sekitar (2020-2022)

7) ACADEMICIAN TAN SRI DATO' IR TS AHMAD ZAIDEE LAIDIN FASc
Sains Kejuruteraan (2019-2021)

8) PROFESOR DATIN PADUKA SETIA DATO' DR AINI IDERIS FASc
Sains Biologi, Pertanian dan Alam Sekitar (2019-2021)

9) ACADEMICIAN PROFESOR DATO' DR KHAIRUL ANUAR ABDULLAH FASc
Sains Perubatan dan Kesihatan (2020-2022)

10) IR TS CHOO KOK BENG FASc
Pembangunan Sains & Teknologi dan Industri (2019-2021)

11) DR HELEN NAIR FASc
Sains Biologi, Pertanian dan Alam Sekitar (2019-2021)

12) ACADEMICIAN EMERITUS PROFESOR DATO' DR KHALID YUSOFF FASc
Sains Perubatan dan Kesihatan (2020-2022)

13) PROFESOR DATIN PADUKA DR KHATIJAH MOHD YUSOFF FASc
Sains Biologi, Pertanian dan Alam Sekitar (2019-2021)

14) EMERITUS PROFESOR DR PHANG SIEW MOI FASc
Sains Biologi, Pertanian dan Alam Sekitar (2019-2021)

15) PROFESOR DR SHAMALA DEVI K.C. SEKARAN FASc
Sains Perubatan dan Kesihatan (2019-2021)

16) PROFESOR DR YVONNE LIM AI LIAN FASc
Sains Perubatan dan Kesihatan (2020-2022)

JARINGAN PAKAR

394 FELO AKADEMI SAINS MALAYSIA

(28) FELO KANAN

8 KUMPULAN DISIPLIN

- Teknologi Maklumat & Sains Komputer
- Sains Biologi, Pertanian & Alam Sekitar
- Sains Kejuruteraan
- Pembangunan Sains & Teknologi dan Industri
- Sains Perubatan & Kesihatan
- Matematik, Fizik & Sains Bumi
- Sains Kimia
- Sains Sosial & Kemanusiaan

11 PENERIMA ANUGERAH MSA

166 PENERIMA TRSM

214 AHLI YSN-ASM

50 AHLI GABUNGAN

INPUT STRATEGIK

3 LAPORAN STI:
Precision Medicine
Science Education
Natural Rubber

2 KAJIAN PERDANA:
Science Outlook 2020
10-10 *My*STIE

4 RAKAN STRATEGIK:
WST2040
EQA 1974
Pollution Act
Nanotech Policy

7 SPECIAL INTEREST GROUPS:
Precision Biodiversity | Hydrogen Economy | Zoonosis
Robotics | Machine Learning
Blue Economy | COVID-19

INISIATIF & AKTIVITI

289 WACANA

25 WEBINAR

47 SESI PERKONGSIAN ILMU

2 PROJEK RINTIS

1 INISIATIF

1 PROGRAM PERDANA

6 PENERBITAN

30,940 JUMLAH PEMBACA

123 *ARTIKEL DALAM* ***ASM SCIENCE JOURNAL***
+6 Isu Khas

LIPUTAN MEDIA & CAPAIAN

656 BERITA **DALAM TALIAN & CETAK**

35,209 KOMUNITI MEDIA SOSIAL

11 **ISU** (SURAT BERITA DIGITAL) **ASM FOCUS**

Input Strategik untuk Ekosistem STI yang Kukuh



Menuju Kemakmuran, Kesejahteraan Masyarakat & Daya Saing di Peringkat Global

10-10 *My*STIE FRAMEWORK

Peranan STI adalah penting untuk pembangunan ekonomi dan perkembangan sosial. Justeru, ASM telah merangka satu rangka kerja yang dikenali sebagai *10-10 Malaysian Science, Technology, Innovation and Economic* (MySTIE) Framework dengan mengintegrasi 10 pemacu utama sosio-ekonomi dengan 10 pemacu sains dan teknologi (S&T) yang sejajar dengan keperluan dan kekuatan Malaysia.

Sembilan puluh lima teknologi memuncul yang dikenal pasti dalam laporan kajian *Emerging Science, Engineering & Technology* (ESET) terbitan ASM, serta kajian peringkat global, analisis paten dan jangkaan teknologi telah dikumpulkan dalam 10 pemacu S&T. Manakala, 10 pemacu sosio-ekonomi dikenal pasti melalui bidang keutamaan penyelidikan nasional (*National Key Economic Areas* (NKEA), *National Science Research Council (NSRC) Priority Areas*) dan analisis mengenai ekosistem industri di pelbagai sektor ekonomi. Lebih 80 sesi libat urus yang disertai oleh pihak penggubal dasar, komuniti saintifik, akademik, pemimpin industri dan pihak profesional STI telah dianjurkan sejak Mac 2020 untuk mengumpul input dan maklum balas.

Tiga puluh Bidang Keutamaan STIE telah dikenal pasti melalui beberapa siri sesi libat urus dengan pihak berkepentingan bagi memastikan ianya selari dengan aspirasi negara. Bidang keutamaan ini telah diterima oleh Majlis Sains Negara pada 14 Julai 2020 dan akan dinilai setiap 2-3 tahun untuk memastikan ianya kekal relevan seiring perubahan masa.

Laporan *10-10 MySTIE Framework* telah dilancarkan pada 8 Disember 2020 oleh Menteri Sains, Teknologi dan Inovasi, YB Khairi Jamaluddin, melalui siaran Astro Awani. Pelancaran ini merupakan pelancaran secara maya yang pertama bagi ASM berikutan keperluan mengamalkan norma baharu. Sesi perkongsian pengetahuan dengan organisasi tempatan dan antarabangsa (seperti Kementerian Pertanian dan Industri Makanan, Kementerian Pertahanan, *Malaysian Investment Development Authority* (MIDA), Bank Negara Malaysia dan Bank Dunia) juga dianjurkan untuk meluaskan penglibatan rangka kerja ini. 10-10 *My*STIE akan membolehkan pembangunan inisiatif STIE yang lebih strategik di bawah Rancangan Malaysia Kedua Belas (RMKe-12) dan seterusnya. E-buku ini telah dimuat turun lebih 700 kali dalam bulan pertama pelancarannya.

Rangka Kerja ini turut menyokong kolaborasi dengan membolehkan komunikasi pelbagai saluran dan maklum balas sesama pihak berkepentingan. Lapan kluster platform kolaborasi akan menyediakan penyelesaian yang lebih holistik dan akan membantu pelaksanaan projek strategik berimpak tinggi di seluruh Malaysia. Untuk menangani jurang ekonomi demi pembangunan negara yang lestari, Rangka Kerja ini akan menyediakan pendekatan sistematik untuk mengubah Malaysia ke arah ekonomi berteraskan pengetahuan intensif. Langkah ini akan membolehkan pembangunan 30 bidang keutamaan STIE yang inklusif bagi tujuan penjanaan kekayaan dan kesejahteraan sosial.

> “Peranan STI dalam pembangunan ekonomi tidak boleh dipertikaikan lagi. Malaysia mengiktiraf pengaruh STI ke atas ekonomi dan impaknya terhadap pembangunan sosial. Keduanya saling berkait rapat; oleh itu, terma STIE diperkenalkan untuk menekankan kepentingan pendekatan ekosistem sebagai penjana kemajuan negara.”

YB Khairy Jamaluddin
Menteri Sains, Teknologi dan Inovasi,
di pelancaran maya *10-10 MySTIE Framework*

10 Pemacu S&T

- 5G / 6G
- TEKNOLOGI SENSOR
- PENCETAKAN 4/5D
- BAHAN TERMAJU
- SISTEM CERDAS TERMAJU
- KESELAMATAN SIBER & ENKRIPSI
- AUGMENTASI ANALITIK & PENEROKAAN DATA
- BLOK RANTAI
- NEURO TEKNOLOGI
- TEKNOLOGI BIOSAINS

10 Pemacu sosio-ekonomi

- TENAGA
- PERKHIDMATAN PERNIAGAAN & KEWANGAN
- KEBUDAYAAN, KESENIAN & PELANCONGAN
- PERUBATAN & PENJAGAAN KESIHATAN
- TEKNOLOGI & SISTEM PINTAR (KEJURUTERAAN & PEMBUATAN GENERASI BAHARU)
- BANDAR PINTAR & PENGANGKUTAN
- AIR & MAKANAN
- PERTANIAN & PERHUTANAN
- PENDIDIKAN
- ALAM SEKITAR & BIODIVERSITI

30 Bidang Keutamaan STIE untuk 10 Pemacu Sosio-ekonomi

Tenaga


Kepelbagaian Tenaga Boleh Diperbaharui

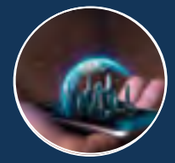

Sistem Penyimpanan Tenaga


Grid Mikro

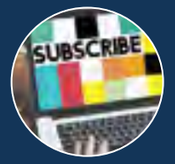
Bandar Pintar & Pengangkutan


Pengurusan Bersepadu Infrastruktur & Infostruktur

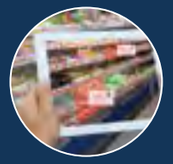

Sistem Pintar untuk Komuniti Bandar – Luar Bandar Terhubung


Reka Bentuk & Analitik Berpaksikan Manusia

Perkhidmatan Perniagaan & Kewangan



Model Perniagaan Langganan & Platform Perkongsian

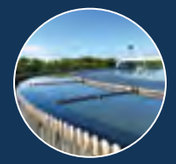

Perkhidmatan Berdigital & Berautonomi


Teknologi Kewangan dalam Kewangan Islam

Air & Makanan

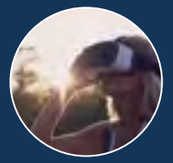

Makanan Halal Premium


Makanan Unggul Tempatan


Pengurusan Sumber Air Bersepadu

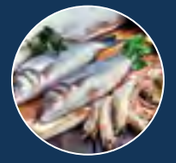
Kebudayaan, Kesenian & Pelancongan


Model Perniagaan Langganan & Platform Perkongsian


Pelancongan Digital


Pelancongan Nilai Tinggi

Pertanian & Perhutanan


Makanan Laut Nilai Tinggi

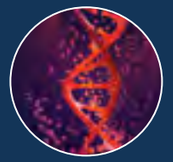

Buah-buahan Tropikal Premium


Input Pertanian Tempatan


Pengurusan Rantaian Bekalan Pintar untuk Kelestarian Produk Hutan

Perubatan & Penjagaan Kesihatan


Kandungan Kreatif & Warisan


Perubatan Kepersisan


Hub Ujian Klinikal bagi Negara Membangun

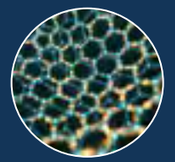
Pendidikan


Pembelajaran yang Diperibadikan & Berasaskan Pengalaman


Pensijilan Mikro


Pembelajaran Dalam Talian Global: Mempromosikan Kandungan Tempatan

Teknologi & Sistem Pintar (Kejuruteraan & Pembuatan Generasi Baharu)


Bahan Termaju untuk Ekonomi Kitaran & Masyarakat Lestari


Kilang Pintar Generasi Hadapan


Pembuatan Peranti Pintar & Pembangunan Teknologi

Alam Sekitar & Biodiversiti


Biodiversiti Kepersisan


Produk Eko-Inovatif daripada Bahan Buangan

Imbas kod QR untuk baca laporan penuh

Kertas Posisi

Inisiatif Perubatan Kepersisan di Malaysia

Inisiatif ini mengkaji kemungkinan mengarusutamakan perubatan kepersisan untuk melengkapkan amalan klinikal semasa. Berikut adalah dapatan dari kajian ini:

Peraturan dan Perundangan
• Untuk menyediakan rangka kerja undang-undang dan peraturan termasuk mengemas kini Akta yang berkaitan. Agensi pengawalselia perlu cekap untuk memastikan bidang ini dapat berkembang pesat.

Inisiatif Biobank Negara
• Untuk melabur dalam biobank sebagai penyelaras pusat. Pusat Kecemerlangan Pendidikan Tinggi (HICoE) sedia ada boleh digunakan sebagai biobank peringkat nasional.
• Penyelaras bagi pelbagai inisiatif adalah perlu untuk memastikan impak perubatan kepersisan bersepadu. Langkah ini memerlukan penyelarasan di peringkat persekutuan, negeri dan institusi.

Inisiatif Data Raya
• Untuk melabur dalam infrastruktur bagi pusat penyelaras untuk menerima, mengambil dan menganalisis data pesakit tetapi mengekalkan akta privasi data pesakit (yang akan digubal).
• Pelaksanaan dan penerimaan piawaian integriti perkongsian data akan mempercepat perkongsian data. Langkah ini akan menjadi pemangkin kepada pengembangan terapi baharu, teknologi dan sistem ramalan.

Pengurusan Bakat
• Untuk memastikan sumber bakat yang terlatih dan mencukupi bagi pelaksanaan inisiatif perubatan kepersisan yang berkesan.
• Untuk memasikan inisiatif ini berjaya, tenaga kerja yang berkelulusan, berpendidikan dan berkemahiran diperlukan di setiap peringkat sistem. Ini termasuklah ahli bioinformatik dan kaunselor genetik.

Pentauliahan Makmal
• Pentauliahan ISO 15189 untuk semua makmal diagnostik molekul.
• Langkah ini bertujuan untuk memastikan sistem teknologi makmal yang cekap dan bersepadu dengan keseluruhan sistem kesihatan untuk memberi manfaat kesihatan maksimum kepada masyarakat.

Usaha Kerjasama dalam Penyelidikan
• Untuk memberikan insentif cukai seperti pemotongan dan pengecualian cukai kepada industri untuk mengambil bahagian dalam inisiatif ini.
• Penglibatan awam-swasta yang inklusif, bersepadu dan berterusan sama ada dengan rakan tempatan atau antarabangsa adalah penting bagi menyatukan penyelidikan, teknologi dan perkembangan proses untuk keberkesanan inisiatif perubatan kepersisan di Malaysia.

Peningkatan Akses kepada Diagnosis dan Rawatan
• Untuk mengawal selia dan memastikan akses dan kesediaan bagi rawatan berasaskan perubatan kepersisan untuk semua kes dan ubat-ubatan penting Pertubuhan Kesihatan Dunia (WHO).
• Perubatan kepersisan akan mengubah hubungan antara pesakit, pengamal dan penyedia perkhidmatan swasta yang lain. Oleh itu, agensi pengawalselia perlu mengembangkan kepakaran dalam bidang ini dan memastikan sinergi dalam sistem penjagaan kesihatan di semua negeri di Malaysia.

Kertas posisi ini telah dibentangkan kepada Dr Hishamshah Mohd Ibrahim, Timbalan Ketua Pengarah Kesihatan (Penyelidikan Dan Sokongan Teknikal), pada November 2020 untuk mendapatkan pandangan dan sokongan Kementerian Kesihatan (KKM). KKM menyedari keperluan pelan nasional untuk menambah baik pengurusan rawatan pesakit dengan memanfaatkan kelebihan masing-masing. Hasil mesyuarat ini membolehkan penemuan ASM dibentangkan bersama pembentangan KKM kepada *High-Tech Nation Council* (HTNC) yang dipengerusikan oleh Menteri MOSTI, YB Khairy Jamaluddin pada Disember 2020.

Pembentangan bersama ini merangkumi pendekatan bersifat peribadi, ramalan, pencegahan dan penyertaan terhadap perubatan, dilengkapi analisis data raya untuk memberikan cadangan bersifat peribadi. Ia diluluskan untuk dibentangkan di Majlis Sains Negara pada suku pertama tahun 2021.

HTNC menyediakan pelan strategik kepada teknologi sedia ada dan memuncul yang berpotensi untuk dibangunkan di Malaysia. HTNC akan memberi laporan terus kepada Majlis Sains Negara, yang dipengerusikan oleh Perdana Menteri.

Pengerusi:
Profesor Datuk Dr A Rahman A Jamal FASc

Penubuhan:
September 2017

Imbas Kod QR untuk baca laporan penuh.

Science Outlook

***Science Outlook 2020* (SO2020)** merupakan edisi yang diterbitkan selepas *Science Outlook 2015* dan *Science Outlook 2017*. SO2020 meneroka kemajuan dan perkembangan ekosistem STI sejak tahun 1991, tahun di mana pengisytiharan Wawasan 2020 diumumkan. SO2020 akan mengkaji ekosistem STI dan kesannya terhadap dimensi **ekonomi**, **masyarakat** dan **alam sekitar** selama 30 tahun ini.

Science Outlook 2015 dan *Science Outlook 2017* mendapat perhatian yang meluas, dan lebih dari 50% cadangan yang dikemukan dalam kedua laporan tersebut telah diambil oleh pihak berkepentingan yang berkaitan. Versi dalam talian bagi kedua-dua laporan tersebut juga telah mendapat kira-kira 100,000 capaian, dengan SO2020 juga dijangka mendapat perhatian yang sama dari kesemua pihak berkepentingan, kerajaan, industri, komuniti saintifik dan masyarakat awam.

Objektif kajian ini:

- Untuk mengkaji status lanskap STI di Malaysia, termasuk arah aliran, cabaran, dan pencapaian utama
- Untuk menentukan kesan ekosistem STI Malaysia dari perspektif ekonomi, sosial dan persekitaran
- Untuk mengenal pasti kekuatan dan jurang dalam ekosistem STI
- Untuk mengemukakan cadangan bagi memastikan Malaysia mampu mengharungi ketidaktentuan global

SO2020 menekankan pendekatan ekosistem yang akan mengenal pasti jurang dan kekuatan ekosistem STI Malaysia menerusi model Pemboleh 8i. Sebuah ekosistem digambarkan sebagai pemboleh utama yang saling berinteraksi dalam persekitaran tertentu yang akan mewujudkan nilai bagi masyarakat. Laporan ini akan mengemukakan cadangan yang menyeluruh untuk mengubah Malaysia menjadi sebuah negara maju dan progresif menjelang 2030.

Persediaan bagi SO2020 bermula pada suku akhir 2019 dan ianya giat berjalan sepanjang tahun 2020. Kajian ini dirangka untuk dijalankan berdasarkan data kuantitatif dan kualitatif. Pandemik COVID-19 menyebabkan kebanyakan sesi libat urus bersama pihak berkepentingan dilakukan secara fizikal dan juga secara maya. Sebanyak 50 sesi libat urus dijalankan pada tahun 2020, dengan lebih daripada 31 mesyuarat (jawatankuasa pemandu dan perbincangan kumpulan kerja), lima bengkel (dua penyelarasan dan tiga latihan penggabungan data) dan 14 sesi wawancara. Kaji selidik melibatkan 1,000 peserta juga dijalankan untuk mendapatkan pandangan mengenai kesan STI dari perspektif syarikat dan individu.

Pengerusi:
Profesor Dato' Ir Dr Mohd Saleh Jaafar FASc

Naib Pengerusi:
Profesor Dr Nik Meriam Nik Sulaiman FASc

Pengerusi, *Societal Impact Pillar*:
Profesor Dr Rofina Yasmin Othman FASc

Pengerusi, *Environmental Impact Pillar*:
Dr Helen Nair FASc

Pengerusi, *Economic Impact Pillar*:
Profesor Dr Mahendhiran Sanggaran Nair FASc

Tempoh Kajian: 21 Bulan

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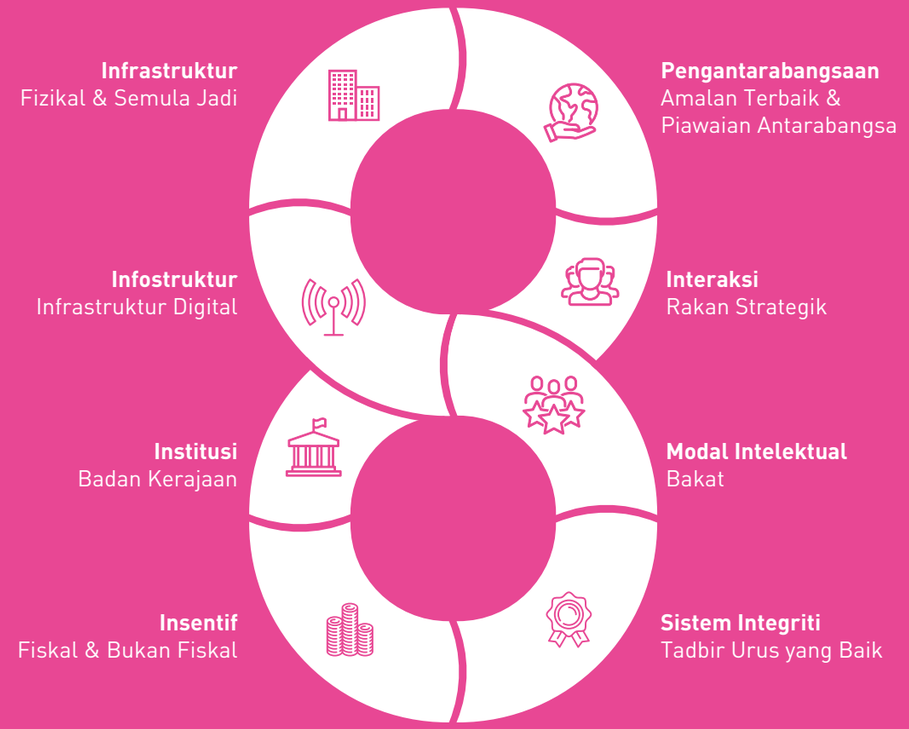
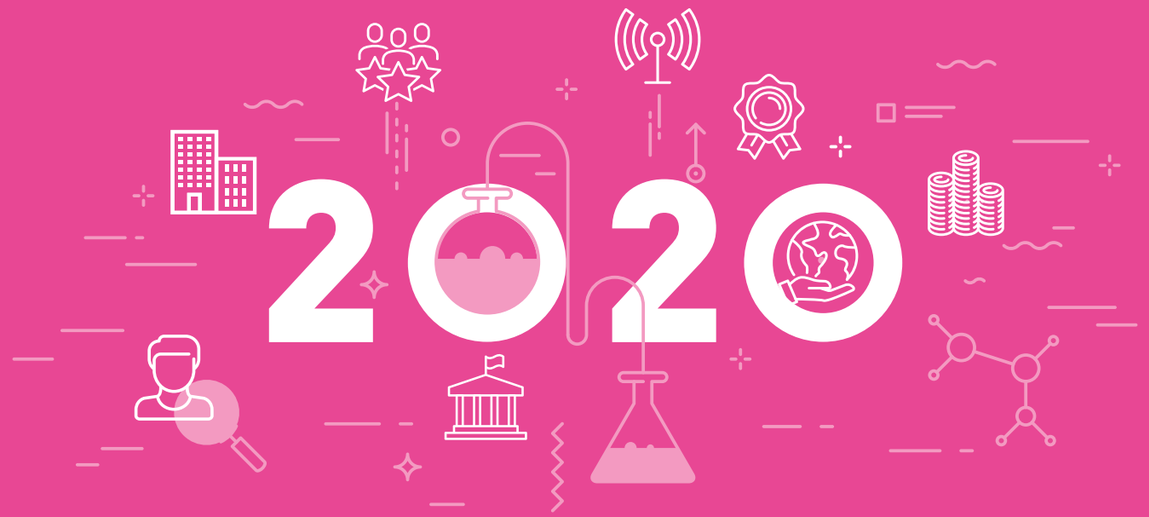


Model Pemboleh 8i

SCIENCE OUTLOOK



Getah Asli - Komoditi Dunia

Getah asli adalah komoditi dunia yang penting dalam pembuatan ribuan produk, termasuk tayar, sarung tangan perubatan, bearing dan fender. Walaupun Malaysia pernah menjadi pengeluar dan pengeksport utama getah asli dunia, kini kita jatuh di tempat ke-7.

Walaupun keluasan ladang getah Malaysia adalah hampir 1 juta hektar, pengeluaran getah sekarang tidak mencapai 700,000 tan kerana beberapa faktor utama, termasuklah harga getah yang rendah, pekebun kecil yang makin tua, kos penanaman semula yang tinggi, kekurangan tenaga kerja dan penoreh getah yang terperangkap dalam golongan berpendapatan rendah.

Selain itu, industri produk getah turut menghadapi cabaran seperti produktiviti yang rendah, pembaziran, dan harga getah yang rendah dan berpanjangan. Pandemik COVID-19 turut memburukkan keadaan, membuatkan industri ini terdedah kepada impak ekonomi.

Berikutan ini, satu Badan Bertindak telah ditubuhkan untuk mengkaji status dan cabaran industri getah asli Malaysia dan mencadangkan langkah-langkah yang boleh diambil untuk memulihkan sektor ekonomi utama ini. Cadangan akan diusulkan kepada pihak kerajaan untuk mengumpul input yang diperlukan bagi memastikan industri ini kekal sengit dan maju.

Pengerusi:
Academician Datuk Dr Aziz Sheikh Abdul Kadir FASc

Penubuhan:
November 2019

Sesi libat urus bersama pihak berkepentingan:
Lembaga Kemajuan Tanah Persekutuan (FELDA)
6 Ogos 2020

Pihak Berkuasa Kemajuan Pekebun Kecil Perusahaan Getah (RISDA)
24 Ogos 2020

Kementerian Perusahaan Perladangan dan Komoditi
25 Ogos 2020

FELCRA
27 Ogos 2020

FGV *Rubber*
30 September 2020

Forum/webinar:
Workshop on Natural Rubber Systems and Climate Change
23-25 Jun 2020

Webinar Maladies of Hevea
10 Ogos 2020

The Future of Natural Rubber Industry: Price and Sustainability Challenges
3 September 2020

Webinar on Strategic R&D Towards Sustainable Natural Rubber Industry
20 Oktober 2020

Webinar on Current Status of Rubber Leaf Disease Outbreak
4 Disember 2020

Memupuk Bakat STEM Masa Depan

Sebagai sebuah negara yang berhasrat untuk menjadi negara maju dan berpendapatan tinggi, bakat Sains, Teknologi, Kejuruteraan dan Matematik (STEM) adalah penting dan merupakan perkara asas bagi Malaysia untuk meningkatkan keupayaan dan kemampuan STI. Pendidikan memainkan peranan penting dalam memupuk bakat STEM melalui sesi pembelajaran secara formal dan tidak formal.

Walaupun pelbagai polisi dan langkah-langkah telah dilaksanakan, setakat ini, Malaysia masih belum mencapai sasaran 60:40 target pelajar aliran STEM dan bukan STEM di peringkat sekolah menengah dan universiti. Berdasarkan data KPM 2020, pendaftaran pelajar dalam bidang STEM yang merangkumi aliran sains, teknikal dan vokasional masih di bawah sasaran 60:40, iaitu 43.7% untuk STEM dan 56.3% untuk bukan STEM, bagi tahun 2019. Hanya beberapa polisi dan pelan tindakan telah dilaksanakan secara berkesan. Dari tahun 1967 hingga kini, kita masih belum melihat peningkatan yang signifikan terhadap prestasi pelajar dalam bidang STEM.

Jawatankuasa Pendidikan Sains ASM terdiri daripada pakar dari pelbagai bidang dan pemain utama dari sektor Pendidikan. Mereka telah diamanahkan untuk mengenal pasti jurang dan kelemahan serta merangka pendekatan transformatif dan cadangan untuk menambahbaik Pendidikan STEM di Malaysia. Satu kertas posisi akan disediakan dan dibentangkan kepada pihak berkepentingan yang relevan.

Pelbagai input telah diterima melalui beberapa sesi libat urus dengan pihak berkepentingan pendidikan STEM, termasuklah:
1. Kementerian Pendidikan
2. *National STEM Association*
3. YSN-ASM
4. *National Science Centre*
5. Unit Pelaksanaan dan Prestasi Pendidikan (PADU)
6. Persatuan Ibu Bapa dan Guru Nasional (PIBGN)
7. *Mara Junior Science College*
8. Institut Pendidikan Guru (IPG)
9. Planetarium Negara
10. Petrosains SDN BHD

Pengerusi:
Profesor Dr Ahmad Ismail FASc

Penubuhan:
Disember 2019



SPECIAL INTEREST GROUP (SIG)

SIG diterajui oleh pakar yang proaktif dalam merapatkan jurang antara penjana dan pengguna pengetahuan bagi merangka tindakan tranformatif dan kolaborasi agar Malaysia terus maju ke hadapan.

SIG on Precision Biodiversity

Pandemik COVID-19 telah membuktikan bahawa manusia senang terdedah oleh impak perubahan oleh ekosistem, alam sekitar, dan biodiversiti. Ia juga menunjukkan kegagalan kita dalam menguruskan zoonotik dan usaha memelihara biodiversiti. Malaysia dinobatkan negara ke-12 terkaya dengan biodiversiti di dunia. Walaubagaimanapun, Malaysia mencatatkan status biodiversiti yang sangat teruk. Penggunaan Jejak Ekologi (*Ecological Footprint Consumption*) adalah di antara 3.5 – 5.25 global hektar yang jauh lagi teruk dari negara-negara Asia Tenggara yang lain.

Justeru, SIG on Precision Biodiversity telah merangka *Precision Biodiversity* (PBD), pendekatan generasi seterusnya untuk memelihara, memulihara dan mengurus sumber biodiversiti di Malaysia. PBD menggunakan platform teknologi canggih untuk melindungi planet serta pulangan sosio-ekonomi. Pemacu utama bagi pendekatan ini adalah kemajuan dalam:

- **Teknologi pengkomputeran dan telekomunikasi** seperti Kecerdasan Buatan (AI), Pembelajaran Mesin (ML), robotik, dron, Internet Kebendaan (IoT)
- **Bioteknologi** seperti pengklonan, omik, penyuntingan gen dan biologi sintetik

Apabila dimanfaatkan dengan betul, PBD boleh mengurangkan ketidaktentuan dalam mengurus sumber semula jadi. Ia juga boleh membantu untuk memastikan penggunaan yang optimum bagi keuntungan, kelestarian, dan perlindungan alam sekitar.

Kertas posisi ini mengusulkan cadangan yang menyeluruh seperti berikut:

1. Mengarusperdanakan PBD dan pemuliharaan melalui pendekatan kerajaan secara menyeluruh, selari dengan semua polisi dan pelan tindakan
2. Memanfaatkan PBD melalui saluran pemeliharaan sedia ada
3. Melaksanakan perkongsian data secara terbuka dan telus mengenai isu biodiversiti melalui *MOSP* dan *i-Connect*
4. Menubuhkan pangkalan data genom strategik melalui kerjasama kerajaan – institusi akademik – industri yang akan memberi manfaat sosio-ekonomi
5. Menambahkan bilangan program kesedaran dan Pendidikan untuk memberi pengetahuan mengenai penggunaan PBD di peringkat negara
6. Menubuhkan platform kolaborasi untuk pemeliharaan dan PBD di peringkat kebangsaan dan antarabangsa dalam usaha mencapai Matlamat Pembangunan Lestari (SDG) dan Wawasan Kemakmuran Bersama
7. Mebubuhkan Muzium Sejarah Alam Negara (digital/fizikal) di bawah Akta Biodiversiti
8. Menubuhkan Jawatankuasa Nasional untuk menyelaras aktiviti PBD berdasarkan Rangka Kerja 10-10 *MySTIE*

Pengerusi:
Dr Helen Nair FASc

Penubuhan:
November 2019



SIG on COVID-19

Pandemik COVID-19 telah mendatangkan impak sosio-ekonomi yang besar dan mengubah kehidupan 7.8 bilion penduduk dunia, termasuk Malaysia.

Dalam usaha untuk memberi pemahaman kepada masyarakat awam serta menyediakan informasi yang tepat mengenai pandemik ini, SIG ini telah menerbitkan 11 lembaran fakta dan penilaian pakar yang merangkumi pelbagai aspek COVID-19 seperti diagnostik, epidemiologi, ilmu terapi, dan vaksin dalam format yang mudah difahami.

Selain itu, SIG ini sedang menyediakan satu kertas posisi yang memberi analisis dan mengenal pasti kekuatan dan kelemahan prosedur sedia ada dalam mengurus Pandemik COVID-19.

Kertas posisi ini merangkumi aspek berikut:
1. Analisis pasca-pandemik
2. Penggunaan kecerdasan buatan dan analisis data rata untuk penyelidikan penyakit berjangkit
3. Kesediaan Malaysia dalam menangani wabak penyakit berjangkit

Pengerusi: Profesor Dr Rosnah Mohd Zain FASc

Penubuhan: Mac 2020

SIG on Hydrogen Economy

SIG ini telah merangka kertas posisi yang holistik dan berdasarkan bukti, memfokuskan kepada peluang dan implikasi Malaysia untuk mencuba Ekonomi Hidrogen. Kertas posisi ini telah disokong oleh mesyuarat Majlis ASM pada 3 Disember 2020.

Kertas posisi itu menekankan bahawa Malaysia perlu membina sistem Tenaga tahan iklim melalui penggunaan Ekonomi Hidrogen sebagai sumber tenaga utama. Dua bidang projek demonstrasi telah dicadangkan, iaitu projek demonstrasi untuk pengangkutan awam dan logistik sel bahan api, dan projek demonstrasi penjanaan kuasa industri dan kediaman. Platform kolaborasi yang melibatkan kerajaan, universiti dan pemain industri yang berpotensi adalah penting untuk membina ekosistem yang dinamik dengan pihak berkepentingan, di mana agensi kerajaan yang dipilih akan menerajui pembangunan Ekonomi Hidrogen di Malaysia.

Piawaian dan peraturan perlu dirangka untuk membolehkan penggunaan teknologi hidrogen dalam sistem tenaga kita. Selain itu, dana dan insentif kebangsaan adalah penting untuk menyokong fasa-fasa penggunaan ekonomi hidrogen.

Kertas posisi ini telah dibentangkan kepada NanoMalaysia Berhad, *Malaysian Green Technology and Climate Change Centre* (MGTC) dan NanoVerify Sdn Bhd (NVSB) pada bulan Disember 2020. Input yang diterima akan dijadikan dasar bagi merangka *Hydrogen Economy Roadmap* yang akan ditugaskan oleh MOSTI, diterajui oleh NanoMalaysia dan ASM, di mana NVSB dan MGTC akan menjadi rakan strategik kajian ini.

Pengerusi: Profesor Dato' Ir Dr Wan Ramli Wan Daud FASc

Penubuhan: September 2019

SIG on Zoonosis



Sejak permulaan pembelajinakan haiwan 10000 tahun yang lalu, manusia telah memandang serius terhadap penyakit zoonotik. Saban tahun, penyakit ini telah menyebabkan sekurang-kurangnya 2.5 bilion kes penyakit dan 2.7 juta kematian di seluruh dunia. Di Malaysia, beberapa penyakit zoonotik telah melanda negara sebelum ini seperti Virus Nipah, Sindrom Pernafasan Akut Teruk (SARS), H5N, H1N1, H7N9 dan Virus Zika.

Oleh itu, dalam usaha untuk bersedia menangani penyakit berjangkit di masa hadapan, Malaysia perlu meningkatkan kapasiti tempatan dan memahami penularan zoonotik, ancamannya kepada kesihatan manusia dan pendekatan untuk mengurangkan impak wabak di masa hadapan.

Berikutan itu, satu kertas posisi telah dirangka untuk menangani isu zoonotik dan menyediakan cadangan strategik bagi memastikan ketahanan Malaysia dalam menangani penyakit zoonotik. Aspek utama yang akan diketengahkan adalah:
1. Pentadbiran dan penguatkuasaan
2. Faktor alam sekitar
3. Penyelidikan dan pembangunan
4. Pembangungan keupayaan dan kebolehan
5. Sistem pengurusan biokeselamatan dan biosekuriti

Pengerusi: Profesor Dato' Dr Mohd Hair Bejo FASc

Penubuhan: Julai 2020

SIG on Robotics



Robotik adalah teknologi penggerak utama yang menyokong peranti autonomi generasi baru dan artifak kognitif ke arah interasi dengan dunia yang lancar, pembangunan sosio-ekonomi, daya saing, dan kemajuan negara. Ianya mempengaruhi setiap aspek kehidupan secara positif, meningkatkan tahap kecekapan dan keselamatan, dan memberikan tahap perkhidmatan yang baik.

Pendapatan robotik global, termasuk bidang industri dan bukan industri, dianggarkan akan mencapai USD 248.5 bilion setiap tahun menjelang 2025, meningkat dari USD 48.9 bilion pada tahun 2018. Oleh itu, penting bagi pembangunan dan penggunaan robotik diberi keutamaan untuk mendorong pembangunan dan kemajuan Malaysia.

Justeru, Strategic Paper on Robotics Directions in Malaysia akan dirangka untuk menilai status semasa, mengatasi cabaran dan merapatkan jurang, serta merangka pelan strategik bagi bidang robotik di Malaysia. Laporan ini adalah penting dalam merangka *National Robotics Roadmap 2021* oleh MOSTI. Aspek yang akan diketengahkan adalah:
1. Pentadbiran dan ekosistem
2. Bakat
3. Penyelidikan, pembangunan, pengkomersialan, dan inovasi (R,D,C&I)
4. Penggunaan
5. Perundangan
6. Impak sosio-ekonomi

Pengerusi: Profesor Ir Dr Khairul Salleh Mohamed Sahari

Penubuhan: November 2020

SIG on Machine Learning

Special Interest Group on Machine Learning (SIGML) ditugaskan untuk menyediakan Kertas Posisi bertajuk *Setting the Science, Technology & Innovation* (STI) Agenda for *Homegrown Artificial Intelligence* (AI) *Solutions for Common Good*. Kertas posisi ini menekankan kepentingan peranan AI dalam pembangunan Malaysia dan mengemukakan cadangan strategik dan polisi utama bagi mempercepatkan penggunaannya. Inisiatif yang meluas dan dipercepatkan amatlah penting memandangkan impak AI yang makin meluas dalam masyarakat kontemporari.

Kepakaran sedia ada dalam institusi akademik tempatan, komuniti penyelidik dan industri perlu dimanfaatkan untuk pembangunan dan penyelidikan bagi bidang sains dan teknologi dalam usaha untuk menghasilkan inovasi keluaran tempatan. Cadangan berikut diusulkan bagi membina ekosistem yang diperlukan untuk menghasilkan inovasi keluaran tempatan:

1. Pelan hala tuju strategik AI yang memfokuskan kepada STI negara untuk mengubah sudut pandang Malaysia terhadap pengetahuan melalui AI untuk manfaat ekonomi dan sosial
2. Mencadangkan penubuhan Jawatankuasa AI Nasional untuk menyelaras semua projek AI bertaraf kebangsaan di bawah naungan Majlis Sains Negara
3. Memperkenalkan peranan Data Czar dan rangka kerja tadbir urus data untuk memastikan ekosistem data yang boleh meningkatkan akses kepada data awam dan swasta yang tidak sensitif bagi tujuan penciptaan nilai
4. Membina *AI Makerspace* yang akan memanfaatkan platform kolaborasi sedia ada untuk mengembangkan solusi AI tempatan dalam empat bidang fokus: (i) Bandar Pintar, (ii) Pembuatan Digital, (iii) Pertanian Kepersisan & (iv) Penjagaan Kesihatan yang Terhubung
5. Melengkapkan bakat Malaysia dengan kecekapan dan kemahiran untuk menggunakan teknologi dan aplikasi AI

Satu ekosistem diperlukan untuk memastikan penggunaan teknologi AI dan ML Berjaya. Kertas posisi ini turut mencadangkan beberapa projek rintis dalam empat bidang yang telah dikenal pasti. Empat bidang ini dipilih berdasarkan tahap ketersambungan, langkah digitalisasi sedia ada dan potensi untuk berkembang maju. Selain dari Pertanian Kepersisan, tiga bidang yang lain mempunyai asas digital yang kukuh untuk membolehkan penggunaan AI. Pemilihan bidang Pertanian Kepersisan sebagai bidang utama adalah kerana keperluan Malaysia untuk menangani jurang digital dalam sektor pertanian agar AI dan ML boleh diguna pakai bagi mengembangkan sektor ini. Dalam jangka masa pendek, empat bidang ini akan menjadi bidang yang boleh mengguna pakai teknologi AI dan ML dengan pesat.

Pengerusi:
YM Academician Tengku Datuk
Dr Mohd Azzman Shariffadeen FASc

Penubuhan:
November 2020



SIG on Blue Economy

Ekonomi Biru telah menjadi antara agenda penting bagi kebanyakan negara di dunia, selari dengan SDG 14: Kehidupan di bawah Air. Berikutan potensinya dalam pembangunan sosio-ekonomi, ekonomi biru global dianggarkan akan mencecah USD 3.0 trilion menjelang 2030.

Ekonomi Biru menawarkan nilai dan prospek ekonomi berpotensi besar untuk Malaysia.

Sebagai negara maritim dengan kawasan perairan pantai yang luas dan ekosistem marin yang kaya dengan kepelbagaian bio, dengan 70% penduduk tinggal di sepanjang 4800 kilometer pinggir laut, Malaysia perlu memahami konsep Ekonomi Biru. Struktur tadbir urus yang holistik, lestari dan dilengkapi maklumat diperlukan bagi menyeimbangkan konflik antara penggunaan sumber marin, pemulihan habitat dan pembangunan kawasan. Pendekatan sebegini adalah penting bagi mengenal pasti cabaran dan mencadangkan langkah untuk memastikan pelaksanaannya.

Justeru, SIG ini telah menyiapkan *Position Paper on Blue Economy* yang akan menyediakan rangka kerja untuk pembangunan lestari bagi ekonomi marin serta sektor maritim di Malaysia.

Pengerusi:
Emeritus Profesor Dr Phang Siew Moi FASc

Penubuhan:
November 2019

Rakan Strategik

Roadmap for The National Agenda on Water Sector Transformation 2040

Sejak penerbitan laporan *Transforming the Water Sector: National Integrated Water Resources Management Plan: Strategies and Road Map (NIWRMP)* pada tahun 2016, Pengurusan Sumber Air Bersepadu di peringkat kebangsaan mula mendapat perhatian. Laporan tersebut merupakan hasil daripada kajian sektor air yang dijalankan oleh ASM sejak tahun 2008. Ia telah membuka peluang kepada penglibatan Felo dalam menyusun Kertas Strategi RMKe-12 Mengenai Transformasi Sektor Air dan memulakan *National Agenda on Water Sector Transformation*.



Kajian *The Development of the Road Map for the National Agenda on Water Sector Transformation 2040* (WST2040) telah ditugaskan oleh Unit Perancang Ekonomi (EPU), Jabatan Perdana Menteri.
Fokus kajian ini adalah untuk memastikan jaminan dan kelestarian air di seluruh negara, selari dengan sasaran global dan nasional, bagi tahun-tahun selepas 2040. Ini bermaksud bahawa bekalan air akan tersedia untuk semua, selain mentransformasikan sektor air Malaysia dari pemboleh ekonomi kepada satu sektor ekonomi yang dinamik. Transformasi tersebut akan mengubah sektor air negara yang akan menyumbang kepada Keluaran Dalam Negara Kasar (KDNK) negara melalui empat gelombang transformasi, yang disebut dalam empat Rancangan Malaysia dari tahun 2021 hingga 2040.



Sebagai rakan strategik, ASM telah ditugaskan untuk menilai dan menganalisis polisi semasa, menjalankan analisis strategi perbandingan / model perniagaan, mengkaji potensi industri sektor air negara, menyediakan Strategi Transformasi dan Rangka Kerja Pelaksanaan Inisiatif, mengadakan sesi perbincangan dengan pihak berkepentingan dan pakar, serta merangka satu pelan tindakan yang lengkap bagi *National Agenda on the Water Sector Transformation 2040* (WST2040).

Pengerusi:
Ir Dr Salmah Zakaria FASc

Tempoh Kajian:
Mei 2020 - Disember 2021

Badan Bertindak:

- ***Advocacy, Awareness Raising, Capacity Building (AACB) & Public Participatory Platform Task Force*** Pengerusi - Profesor Dato' ChM Dr Mazlin Mokhtar FASc) – Untuk menambah baik kesemua konsep IWRM di setiap peringkat dan sektor bagi memastikan keberkesanan pelaksanaan dalam pengurusan sumber air secara lestari
- ***Integrated Water Sector Data Center (IWSDC) Task Force*** (Pengerusi - Datuk Mohd Adnan Mohd Nor FASc) – Untuk mengkaji penubuhan Pusat Data dan R,D,C&I nasional sebagai asas bagi merancang strategi dan membuat keputusan serta sebagai pemangkin untuk mengembangkan kepakaran dan teknologi inovatif tempatan di sektor air
- ***Industrial Revolution 4.0 in the Various Water Sub-sectors (IR4.0 WS) Task Force*** (Pengerusi – Datuk Abdul Kadir Din FASc) – Untuk menilai kesediaan sektor air dalam menghadapi IR4.0 dan penggunaan teknologi pintar untuk memacu perkembangan keseluruhan sektor air
- ***Water-Food-Energy (WFE) Nexus Task Force*** (Pengerusi - Dr Mohd Hezri Adnan FASc) – Untuk menubuhkan pengurusan sumber air nasional berorientasikan Neksus Air-Makanan-Tenaga untuk memastikan kelestarian sosial dan ekonomi negara
- ***Virtual Water and Water Footprint (VW&WF) Task Force*** (Pengerusi - Profesor Dr Zulkifli Yusop FASc) – Untuk menyediakan data kuantitatif yang komprehensif mengenai keperluan dan kegunaan semasa sebagai panduan untuk mengenal pasti tahap penggunaan air di setiap peringkat sektor ekonomi
- ***Climate Change Impact and Adaptation (CCIA) Task Force*** (Pengerusi - Profesor Dr Joy Jacqueline Pereira FASc) – Untuk mengenal pasti kesediaan menghadapi kesan perubahan iklim terhadap sektor air
- ***Alternative Water Financing Task Force*** (Pengerusi - Datuk Seri Ir Dr Zaini Ujang FASc) – Untuk mengembangkan model perniagaan baharu bagi mendorong industri air nasional menjadi industri yang kompetitif, menarik dan menguntungkan
- ***Water as an Economic Sector (WES) Task Force*** (Pengerusi - Profesor Dr Mahendhiran Nair FASc) – Untuk meneliti pelaksanaan program strategik bagi memposisikan sektor air sebagai sektor ekonomi nasional yang baharu

Penilaian Akta Kualiti Alam Sekeliling 1974

Penilaian Akta Kualiti Alam Sekeliling 1974 (EQA1974) adalah projek yang ditugaskan oleh Kementerian Tenaga, Sains, Teknologi, Alam Sekitar dan Perubahan Iklim (MESTECC) pada bulan November 2019. Projek ini bertujuan untuk mengenal pasti jurang, memberikan cadangan dan membuat pembandingan mengenai undang-undang sedia ada dengan negara lain. Selain menangani masalah-masalah yang berkaitan dalam penguatkuasaan, akses maklumat dan tadbir urus alam sekitar, pihak jawatankuasa turut mencari peruntukan untuk perubahan iklim, ekonomi pekeliling, penyertaan masyarakat dan banyak lagi.

Pihak jawatankuasa telah mencadangkan untuk mengubah pendekatan pengurusan alam sekitar semasa, dari pendekatan reaktif kepada pendekatan berdasarkan pencegahan. ASM berharap untuk membantu kementerian semasa, Kementerian Alam Sekitar dan Air (KASA), dalam mengukuhkan peraturan alam sekitar melalui perundangan yang lebih holistik.

Tempoh kajian projek ini telah dipanjangkan hingga 31 Oktober 2021. KASA telah memutuskan untuk menambahbaik EQA1974 melalui pendekatan dua fasa. Fasa pertama memfokuskan kepada kompaun dan penalti manakala fasa kedua akan memfokuskan kepada cadangan dari ASM.

Pengerusi: Academician Profesor Emeritus Tan Sri Dr Zakri Abdul Hamid FASc

Ahli: Profesor Dato' Ir Dr A. Bakar Jaafar FASc, Profesor Dato' Dr Aishah Bidin FASc, Datuk Dr Abdul Rahim Nik FASc, Ir Dr Salmah Zakaria FASc, Profesor Dr Fredolin Tangang FASc, Profesor Dr Mohd Talib Latif FASc, Profesor Dr Zulkifli Yusop FASc, Profesor Dr Haslenda Hashim, Dato' Halimah Hassan, Dr Lulie Melling, Dr Hanim Kamaruddin, Dr Ho Wai Shin, Dr Elizabeth Philip, Dato' Dr Nadzri Yahaya
Penggubal Undang-undang Kanan: Dato' Dr Gurdial Singh Nijar

Kajian sedang berlangsung dari November 2019

Kajian Kemungkinan Akta Pencemaran

ASM telah ditugaskan oleh MOSTI (sebelum ini dikenali sebagai MESTECC) untuk menjalankan kajian mengenai *Local and Transboundary Pollution Act.*

Untuk kajian ini, bengkel libat urus bersama pihak berkepentingan telah diadakan pada 21 Januari 2020 untuk mendapatkan maklumbalas mengenai implikasi dan pelaksanaan akta yang dicadangkan dari pihak agensi kerajaan, pertubuhan bukan kerajaan (NGO), organisasi masyarakat sivil (CSO), pemain industri dan institut penyelidikan.

Kajian ini telah membentangkan lima cabaran dan 14 cadangan untuk menyelesaikan isu pencemaran merentasi sempadan melalui pendekatan undang-undang. Berdasarkan penemuan, Akta Pencemaran Merentasi Sempadan perlu digubal untuk mengatur syarikat Malaysia yang beroperasi di luar negara. Undang-undang tersebut perlu disokong oleh pihak lain, seperti suruhanjaya pihak ketiga yang boleh mengurus permasalahan berkaitan pencemaran di peringkat ASEAN.

Laporan ini telah dihantar kepada MESTECC pada 14 Februari 2020.

Pengerusi: Profesor Dato' Ir Dr A. Bakar Jaafar FASc

Tempoh kajian: November 2019 - Februari 2020

Polisi dan Strategi Nanoteknologi Kebangsaan 2021-2030

MOSTI telah melantik ASM sebagai rakan strategik untuk menilai dan menambahbaik draf Polisi dan Strategi Nanoteknologi Kebangsaan (NNPS) 2016 untuk merangka NNPS 2021-2030. Penilaian ini akan memberi petunjuk strategik dan mengukuhkan sektor nanoteknologi negara yang akan meneraju aspirasi untuk menjadikan Malaysia sebagai negara berteknologi tinggi.

Kajian ini telah membuat penilaian mengenai status, cabaran dan jurang nanoteknologi semasa. Dari kajian ini, empat teras strategik, 15 strategi dan 32 inisiatif telah diusulkan untuk NNPS 2021-2030.

Selain itu, ASM turut mengusulkan tiga lonjakan dan inisiatif berimpak tinggi yang akan mengutamakan perkembangan dan pelaksanaan lima nanoteknologi memuncul dari kajian ESET dan *Foresight* ASM.

Pengerusi: Profesor Dato' Ir Dr Abdul Rahman Mohamed FASc

Pengerusi bersama: Profesor Dr Zainovia Lockman

Tempoh kajian: Julai 2020 – Oktober 2021

Pengukuhan Tadbir Urus untuk Ekosistem STI yang Dinamik

Berdasarkan cadangan yang dikemukakan dalam *Malaysia Policy and Master Plan on Science, Technology & Innovation 2021-2030*, ASM meneruskan usahanya dengan penglibatan yang berterusan bersama kerajaan bagi mengukuhkan Tadbir Urus dan Ekosistem Kolaboratif STI melalui beberapa langkah seperti berikut:

a) Majlis Sains Negara
Majlis Sains Negara diaktifkan semula pada tahun 2020 dengan mesyuarat pertamanya diadakan pada 3 Februari 2020. Majlis ini merupakan badan pembuat keputusan tertinggi untuk bidang STI di negara ini dan dianggotai oleh menteri-menteri utama negara.

Dalam mesyuarat pertama tersebut, ASM telah membentangkan kertas kerja mengenai Mekanisme Penggunaan Rangka Kerja 10-10 Sains, Teknologi, Inovasi dan Ekonomi (STIE) Sebagai Panduan Dalam Penentuan Bidang Keutamaan dan Pengagihan Dana Penyelidikan Bagi Setiap Pemacu Sosio-ekonomi. Mesyuarat itu telah meluluskan pelaksanaan cadangan tersebut.

Pada 14 Julai 2020, semasa mesyuarat NSC kedua yang dipengerusikan oleh Perdana Menteri, YAB Tan Sri Muhyiddin Yassin, *30 National STIE Niche Areas (2021-2025)* disokong untuk diguna pakai oleh semua kementerian yang berkaitan. Langkah ini bertujuan untuk mengubah 10 sektor sosio-ekonomi yang dikenal pasti dalam rangka kerja 10-10 *My*STIE.

Mesyuarat ini juga telah mempersetujui penubuhan satu Badan Bertindak STIE yang dianggotai oleh kementerian berkaitan. Badan ini akan mengenal pasti projek berimpak sebagai pelengkap bagi anjakan yang telah digariskan dalam *National Policy for Science, Technology and Innovation (NPSTI) 2021-2030*.

Selepas pembentangan tersebut, lebih 80 sesi libat urus bersama pihak berkepentingan telah diadakan, melibatkan pelbagai kementerian, agensi kerajaan, pemain industri, organisasi antarabangsa dan institusi pengajian tinggi bagi membentuk rangkaian kolaboratif. Sesi yang dijalankan turut bertujuan untuk memastikan bahawa pelan strategik adalah selari dengan aspirasi nasional, berdasarkan bidang keutamaan STIE negara.

Selain itu, kelebihan melabur dalam STIE juga diusulkan sebagai strategi yang akan dilaksanakan di bawah RMKe-12. Rangka kerja 10-10 *My*STIE dianjurkan untuk menjadi alat strategik bagi membangun ekosistem yang cekap dan dinamik untuk setiap sektor sosio-ekonomi.

b) Akta STI
MOSTI sedang dalam proses merangka satu Akta STI, bertepatan dengan cadangan yang diusulkan dalam NPSTI 2021-2030. Ianya bertujuan untuk mengukuhkan Tadbir Urus STI dan membentuk ekosistem STI yang kolaboratif dan dinamik. ASM bekerja rapat dengan MOSTI untuk menyediakan akta ini. Satu Badan Bertindak ditubuhkan dan dipengerusikan oleh Profesor Dato' Dr Aishah Bidin FASc.

Peruntukan undang-undang utama bagi Akta STI ini adalah seperti berikut:
a. Pelantikan & peranan Penasihat Sains Negara
b. Rangka kerja institusi
c. Penubuhan PSC bagi bidang STI
d. Peruntukan sumber
e. Perkongsian awam-swasta
f. Infrastruktur fizikal & digital
g. Etika & integriti dalam amalan STI
h. Harta intelektual (IP)
i. Pangkalan data STI & pengurusan repositori
j. Pembangunan & pengurusan bakat
k. Promosi & pembudayaan
l. Pautan & rangkaian antarabangsa

c) Penubuhan *Technology Commercialisation Accelerator* (TCA)
Satu badan bebas yang dikenali sebagai TCA telah dicadangkan untuk menerajui penyelidikan berasaskan ekonomi. TCA ini akan mengumpulkan industri, penyelidik, dan entiti pembiayaan untuk menjalankan penyelidikan berasaskan permintaan dan penghantaran berasaskan pasaran. Menjalankan tugas sebagai satu cabang pengkomersialan bagi Agensi Pengurusan Penyelidikan (RMA), ianya akan mengenal pasti mekanisme yang diperlukan (kewangan, reka bentuk, khidmat nasihat, dll) bagi produk untuk mencapai tahap yang sesuai dikomersialkan. Memfokuskan R&D yang berasaskan permintaan, penghantaran berasaskan pasaran, pembangunan bakat untuk industri dan syarikat pemula berasaskan teknologi, TCA turut memantau dan membeli laporan prestasi produk dan perkhidmatan yang dikomersialkan.

TCA akan memainkan peranan penting sebagai penghubung antara pelabur dan perniagaan dengan kerajaan dan institusi penyelidikan. ASM membentangkan satu kertas cadangan bertajuk *Forging Local Innovation Ecosystems for a High-Tech Nation through TCA* di mesyuarat pertama HTNC MOSTI yang diadakan pada 17 Disember 2020, dipengerusikan oleh YB Khairy Jamaluddin, Menteri MOSTI. Beberapa siri perbincangan telah diadakan untuk mengumpul input dan persetujuan dari pihak berkepentingan yang berkaitan, termasuklah EPU dan Kementerian Kewangan Malaysia (MOF).

d) *Malaysia Science Endowment* (MSE)
MSE merupakan komponen penting dalam Ekosistem Kolaboratif STI untuk membolehkan pembiayaan R, D, C & I yang berterusan untuk penyelidikan asas dan gunaan, pembangunan eksperimental (pra-pengkomersialan) dan inisiatif strategik bagi kesemua bidang keutamaan negara. Ianya akan berfungsi seiring dengan RMA dan TCA untuk merapatkan jurang pengetahuan dan inovasi menerusi pelbagai pembiayaan R, D, C & I yang berterusan. Kelulusan Kabinet telah diminta pada bulan Disember 2020 untuk penjenamaan semula Kumpulan Wang Amanah Majlis Sains dan Penyelidikan Kebangsaan (KWA MSPK) MOSTI kepada MSE dan meluaskan fungsi-fungsinya. ASM dilantik sebagai agensi pelaksana.



Industri Mineral dan Nadir Bumi & Aktiviti Berkaitan

a) Majlis Mineral Negara
ASM telah menyerahkan Kertas Maklumat kepada Majlis Mineral Negara (MMN), yang berjudul *Issues of Research and Development in the Rare Earths Industry Identified Under ASM Studies.* Kertas ini merangkumi cadangan utama dari tiga penerbitan ASM:
i. *Revitalising the Rare Earth Mineral Programme in Peninsular Malaysia as a Strategic Industry (2013)*
ii. *The Blueprint on the Establishment of Rare Earth-Based Industries in Malaysia (2014)*
iii. *Sustainable Mining: Rare Earth (RE) Industries (2019)*

Kertas ini telah dibentangkan kepada YB Khairi Jamaluddin, Menteri MOSTI pada 4 Disember 2020. Pada 7 Januari 2021, satu mesyuarat persediaan MMN telah diadakan dan dua felo ASM, Academician Datuk Fateh Chand FASc dan Mr P. Loganathan FASc, telah membentangkan kertas ini kepada YB Dato' Dr Shamsul Anuar Nasarah, Menteri Kementerian Tenaga dan Sumber Asli (KeTSA).

Kedua-dua mesyuarat telah mengambil maklum pandangan ASM mengenai R&D yang memainkan peranan penting dalam mentransformasikan industri mineral dan nadir bumi ke arah masa depan yang lebih lestari.

b) Input mengenai Industri Perlombongan dan Nadir Bumi

Pada Disember 2020, ASM (melalui MOSTI) telah menyediakan input untuk beberapa memorandum kepada KeTSA seperti berikut:

i. Rangka kerja Prosedur Operasi Standard (SOP) untuk perlombongan nadir bumi bukan radioaktif di Malaysia
- ASM telah menekankan kepentingan merangka SOP untuk membina rantaian bekalan nadir bumi tempatan

ii. Rangka kerja untuk *Transformation of the National Mining Industry 2021-2030*
- ASM telah menegaskan kepentingan komunikasi, pendidikan dan kesedaran awam dalam meningkatkan pehamahaman dan penerimaan orang ramai terhadap aktiviti perlombongan

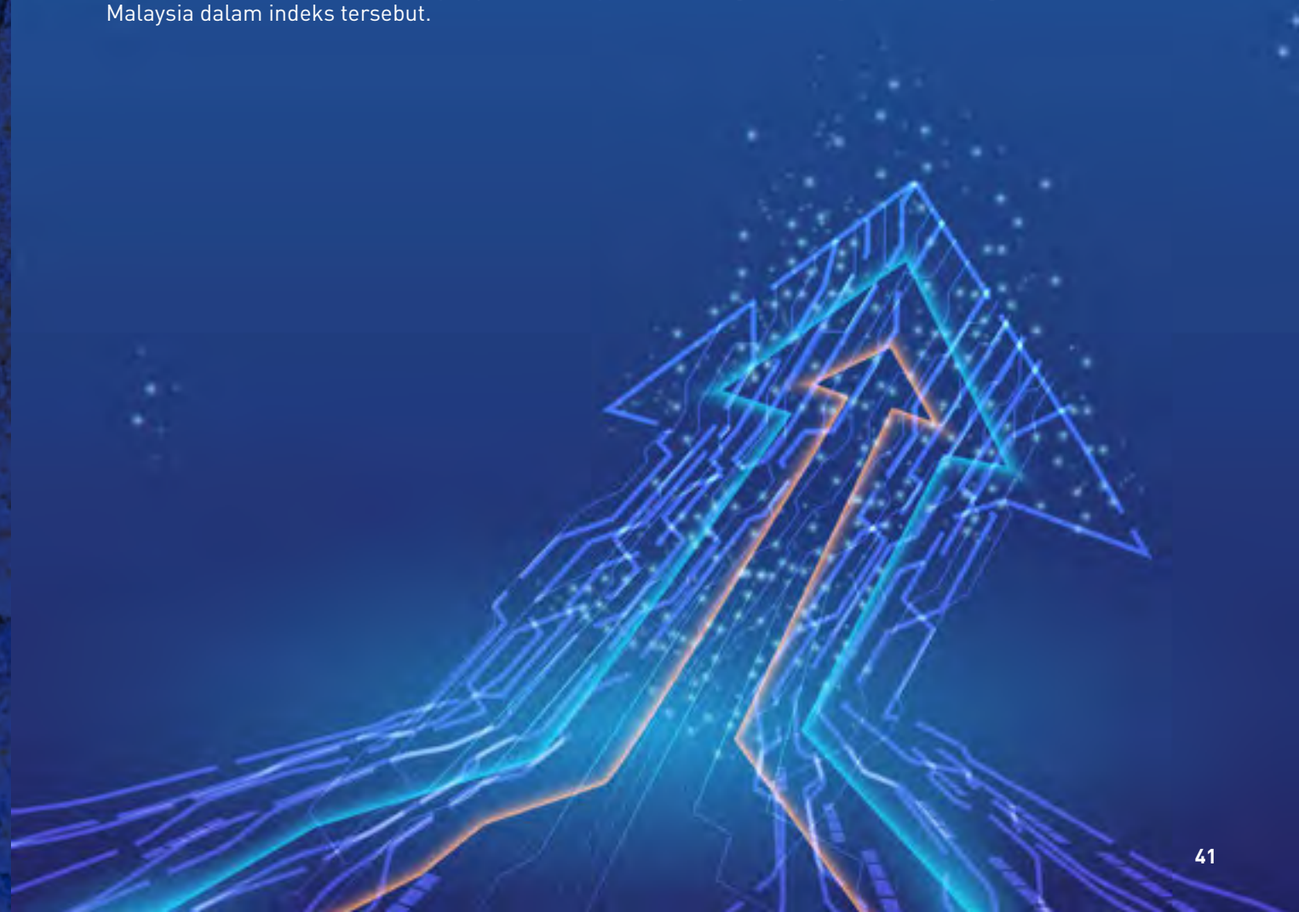
iii. Memorandum SOP untuk aktiviti perlombongan dan pengeksportan bauksit
- ASM telah menekankan kepentingan melaksanakan peraturan yang ketat untuk memastikan amalan lestari yang boleh mengurangkan kesan negatif terhadap industri perlombongan bauksit. Cadangan ASM yang telah diterbitkan dalam laporan *Sustainable Mining: Case Study for Bauxite Mining in Pahang* (2017) telah diusulkan kepada KeTSA.

Analisis Indeks Inovasi Global (GII)

Inter-Agency Committee of Global Innovation Index (GII) Competitiveness Monitoring telah ditubuhkan pada Disember 2020 melibatkan pelbagai kementerian dan agensi berkaitan sebagai rakan strategik. Tujuan penubuhan jawatankuasa ini adalah untuk menggalakkan pemantauan daya saing Malaysia dalam GII yang lebih sistematik dan berkesan bagi meningkatkan kedudukannya. Ianya selari dengan target yang telah ditetapkan dalam RMKe-12 untuk Malaysia berada di kedudukan 20 teratas GII menjelang 2025.

Buat masa sekarang, Malaysia berada di kedudukan ke 33 dari 131 negara. Malaysia telah menunjukkan peningkatan dari tahun berikutnya (kedudukan ke 35 dari 129 negara). Namun, skor Malaysia telah jatuh, dari 42.68 (2019) kepada 42.42 (2020).

ASM telah dilantik untuk mempengerusikan *Working Group Committee (Human Capital and Research Cluster).* Profesor Dr Yvonne Lim Ai Lian FASc dan Profesor Dr Mohd Basyaruddin Abdul Rahman FASc masing-masing telah ditugaskan sebagai Pengerusi dan Ahli Kumpulan Kerja. ASM telah membentangkan analisis mendalam mengenai GII kepada Jawatankuasa mengenai prestasi Malaysia berbanding negara berprestasi tinggi dan negara ASEAN yang lain, bidang yang boleh ditambah baik, dan perancangan masa hadapan. Pendekatan kolaboratif dan inovatif di antara semua pihak berkepentingan diperlukan bagi memastikan data dikemas kini tepat pada masanya dan merangka strategi untuk meningkatkan kedudukan Malaysia dalam indeks tersebut.



Jawatankuasa Perikatan Penyelidikan Pengurangan Risiko Bencana (DRR)

Pada 15 Oktober 2020, Jawatankuasa Perikatan Penyelidikan Pengurangan Risiko Bencana (DRR) ASM yang dipengerusikan oleh Profesor Dr Joy Jacqueline Pereira FASc, dengan kerjasama Agensi Pengurusan Bencana Negara (NADMA), *United Nations Office for Disaster Risk Reduction (UNDRR), Asia-Pacific Science, Technology and Academia Advisory Group (APSTAAG*), dan rakan strategik lain telah menganjurkan *Virtual 2020 Asia Pacific Science and Technology Conference for Disaster Risk Reduction (APSTCDRR).*

Dalam APSTCDRR 2020 ini, para pegawai dan penyelidik dalam bidang pengurangan risiko bencana telah mempertimbangkan cabaran utama yang dihadapi di rantau ini. Persidangan ini telah disertai oleh lebih daripada 200 peserta berdaftar dan 1,700 penonton dalam talian.

APSTCDRR 2020 memberi peluang kepada komuniti sains, teknologi, dan akademik di Asia dan Pasifik untuk meneruskan sesi dialog berkaitan sains dan polisi bagi memastikan bahawa langkah-langkah DRR berpandukan kepada STI. Persidangan ini dikenali sebagai satu persidangan yang bersifat inklusif, terutama untuk negara-negara kepulauan Pasifik dan semua sektor serta pihak berkepentingan. Selain bertindak sebagai platform untuk pegawai kanan dan pakar terkemuka, persidangan ini turut menampilkan sumbangan saintis muda dan belia, terutama anggota perikatan serantau, U-Inspire, yang menyertai sesi teknikal dan pentas pemuda (*youth stage*).

Hasil dari persidangan ini akan dibawa ke *Asia-Pacific Ministerial Conference on Disaster Risk Reduction* yang akan datang. Persidangan tersebut akan dihoskan oleh Kerajaan Australia dan akan diadakan oleh UNDRR pada tahun 2021.



Penilaian/ Maklum Balas Mengenai Polisi / Pelan / Kertas Kabinet

Poin Utama untuk Penyelesaian STI dan Pengantara bagi Kerajaan
ASM, dalam menjalankan peranannya sebagai Peneraju Pemikir dalam STI untuk negara, telah memenuhi komitmennya melalui pelbagai platform untuk menyediakan penyelesaian dan cadangan berdasarkan bukti kepada kerajaan.

ASM reviews and feedback were also provided as follows (non-exhaustive):

No.	Pelan / Polisi	Pihak berkepentingan luar
1.	*ASM Inputs for the New Industrial Master Plan (NIMP) 2021-2030*	MITI
2.	*ASM Inputs for the Formulation of EE Roadmap*	MITI
3.	Kertas Pertimbangan ASM untuk *National Science Council 1.2020, 3 February 2020* bertajuk Cabaran yang Dihadapi oleh Sektor Industri Berteknologi Tinggi di Malaysia dan Mekanisma Penggunaan Rangka Kerja 10-10 Sains, Tecknologi, Inovasi dan Ekonomi (STIE) Sebagai Panduan Bidang Keutamaan dan Pengagihan Dana Penyelidikan Bagi Setiap Pemacu Sosioekonomi	MESTECC
4.	*ASM Inputs for 12th Malaysia Plan*	MEA, KKMM, MOH, MITI, MOHE, MESTECC
5.	Penyediaan Kertas Kerja Hala Tuju Industri Bioekonomi Negara	MOSTI
6.	Maklumbalas Pelan Pemulihan Ekonomi Pasca COVID-19	MOSTI
7.	*Proposal on the Development of COVID-19 Index*	MOSTI
8.	Semakan & Ulasan Terhadap Terma Rujukan Kajian Impak Dasar Bioteknologi Negara (DBN 2005-2020)	MOSTI
9.	*Proposal to develop Malaysia Advanced Materials Roadmap 2030*	MOSTI
10.	Kertas Pertimbangan ASM untuk *National Science Council 2.2020, 14 July 2020* bertajuk Bidang Keutamaan Sains, Teknologi, Inovasi dan Ekonomi (STIE) Nasional (2021-2025)	MOSTI
11.	Maklumbalas *Technology Commercialisation Accelerator*	MOSTI
12.	*Inputs to develop Research, Development, Commercialisation, and Innovation (R,D,C&I) Roadmap – October 2020*	MOSTI
13.	Maklumbalas Sesi Libat Urus RMKe12 dengan YB Menteri MOSTI	MOSTI
14.	Maklumbalas Cadangan Pembentangan Rangka Kerja 10-10 MySTIE & Bidang Keutamaan STIE Nasional Sebagai Input ke arah merancang Perlaksanaan Platform di bawah Pasukan Petugas Khas *Deeptech & Futureskills*	MOSTI
15.	Kertas Pertimbangan ASM untuk *High Tech Nation Council 1.2020, 17 December* 2020 bertajuk *Forging Local Innovation Ecosystems for A High-Tech Nation through Technology Commercialisation Accelerator* dan Kertas Pertimbangan MOH bertajuk *Precision Medicine, Digital Health & Clinical Trials Hub (based on ASM Special Interest Group on Precision Medicine - Position Paper on Precision Medicine Initiatives for Malaysia)*	MOSTI
16.	Maklumbalas Lanskap STI untuk MJM Kebenaran Penggubalan Akta STI	MOSTI

Budaya Kecemerlangan Sains

Analisis Impak *National Science Challenge* (NSC)

ASM telah menganjurkan NSC sejak 20 tahun yang lalu (1999 hingga 2018). Dari November 2019 hingga April 2020, satu Kajian Analisis Impak mengenai NSC telah dijalankan dengan objektif untuk menilai impak pertandingan ini (dari tahun 2008 hingga 2018) bagi menambah baik pelaksanaan NSC di masa hadapan.

Kajian Analisis Impak menunjukkan bahawa NSC memainkan peranan penting dalam mengembangkan minat pelajar terhadap STEM dan meningkatkan kemahiran insaniah mereka, seperti komunikasi, kerja berpasukan, pemikiran kritis, kreativiti, penyelesaian masalah dan pengurusan masa. NSC juga menjadi titik tolak kepada para pelajar untuk melanjutkan pelajaran dan kerjaya dalam bidang yang berkaitan dengan STEM, selain memberi peluang kepada pelajar untuk membina rangkaian dalam kalangan rakan sebaya dan pakar.

Pengerusi: Profesor Madya Dr Noor Syamilah Zakaria - Universiti Putra Malaysia (UPM)

- 175 responden termasuk peserta NSC, semifinalis, dan calon peserta NSC terlibat dalam kajian ini:
  - 135 responden terlibat dalam tinjauan dalam talian
  - 40 responden terlibat dalam perbincangan kumpulan fokus

- NSC meningkatkan kecenderungan pelajar untuk melanjutkan pelajaran dan kerjaya dalam bidang STEM:
  - 90% responden bersetuju bahawa pertandingan ini memupuk minat mereka terhadap STEM
  - 88% responden bersetuju bahawa NSC telah meningkatkan minat mereka untuk meneruskan pendidikan dan kerjaya dalam bidang STEM
  - 93% responden kini sedang belajar dan bekerja dalam bidang berkaitan STEM

Virtual National Science Challenge (VNSC)

Selaras dengan norma baharu, NSC kembali dalam format pertandingan maya pada tahun 2020. Berlangsung dari 25 Ogos hingga 9 November 2020, VNSC diiktiraf sebagai salah satu Program Khas Minggu Sains Negara. Tema VNSC tahun ini adalah *Towards a Pandemic Resilient Community Through Science*.

Sejumlah 1,027 pasukan telah mengambil bahagian dalam Pusingan Awal sebelum tiga pasukan teratas dari setiap negeri layak ke pusingan kedua: pertandingan video. Di antara 47 pasukan yang mengambil bahagian di Pusingan Kedua, enam pasukan telah dipilih oleh hakim untuk bertanding di Pusingan Akhir pada 9 November 2020.

Selepas persaingan sengit di Pusingan Akhir, SMK Jit Sin Pulau Pinang telah Berjaya merangkul gelaran Juara VNSC 2020. Pemenang masing-masing membawa pulang Piala Perdana Menteri, Anugerah Pendidikan ASM-VNSC bernilai RM6,000, komputer riba, dan sijil pencapaian. YB Khairi Jamaluddin telah merasmikan pertandingan maya ini sebelum mengumumkan nama pemenang.

Imbas Kod QR untuk menonton video VNSC



Juara
SMJK Jit Sin, Pulau Pinang



Tempat Kedua
Pusat GENIUS@Pintar Negara, Selangor



Tempat Ketiga
SMK Mat Salleh Ranau, Sabah



Tempat Keempat
SM Sri Cempaka Cheras, Selangor



Tempat Kelima
MRSM Kuala Berang, Terengganu



Tempat Keenam
SMK King George V, Negeri Sembilan

MAKLUMAT PESERTA:

3,093 pelajar **42%** Lelaki **58%** Perempuan



Johor
384



Kedah
171



Kelantan
57



Perak
192



Negeri Sembilan
57



Pahang
153



Pulau Pinang
156



Melaka
249



Perlis
36



Selangor
537



Terengganu
168



Sabah
210



Sarawak
432



W.P Kuala Lumpur
192



W.P Labuan
30



W.P Putrajaya
69

Malaysian Code of Responsible Conduct in Research

Malaysian Code of Responsible Conduct in Research (MCRCR) adalah satu kod etika kebangsaan dalam penyelidikan untuk meningkatkan daya saing Malaysia dalam penyelidikan, pembangunan dan inovasi. Objektif kod etika ini juga adalah untuk mempromosikan pelaksanaan dasar dan strategi yang cekap melalui ketelusan dan kebertanggungjawaban dalam penyelidikan.

Sepanjang tiga tahun pelaksanaannya, MCRCR telah dikemaskini berdasarkan komen dan input dari pelbagai pihak. Justeru, edisi kedua MCRCR yang telah ditambah baik telah diterbitkan pada tahun 2020. Edisi kedua ini telah diedarkan oleh MOSTI kepada Kabinet untuk menjadi rujukan utama dalam penyelidikan dan pembangunan negara.

Jawatankuasa Integriti Penyelidikan yang dipengerusikan oleh Akademician Profesor Emeritus Dato' Dr Khalid Yusoff FASc telah diangkat menjadi *National Committee on Research Integrity*. Tindakan ini membenarkan jawatankuasa tersebut untuk tampil di peringkat kebangsaan bagi merancang, menyelaras dan memantau pelaksanaan inisiatif MCRCR serta memberikan nasihat dan latihan.



Imbas Kod QR untuk baca Edisi Kedua MCRCR

ANUGERAH & GERAN

Anugerah dan geran adalah penting untuk memberi motivasi kepada para penyelidik dalam mengembangkan idea, membuat penemuan baharu dan menyediakan penyelesaian masalah untuk masyarakat melalui pendekatan inovatif dan praktikal. ASM memanfaatkan kepakaran jaringan pakarnya untuk menjalankan proses pemilihan dan memberikan penilaian dan cadangan yang berdasarkan prestasi.

Anugerah Penyelidikan Barah MAKNA

Pelbagai usaha telah dijalankan oleh para saintis untuk merangka strategi pencegahan barah, memajukan teknologi pengesanan awal barah serta meningkatkan keberkesanan dan kecekapan dalam perawatan barah. Para saintis percaya bahawa penemuan kajian mereka dapat menyelesaikan isu masyarakat. Sehubungan dengan itu, MAKNA telah memperkenalkan *MAKNA Cancer Research Award* (MCRA) yang membuka peluang kepada saintis muda negara yang berpotensi besar untuk mencari penawar barah.

Sebagai Rakan Strategik MAKNA, ASM telah menyumbang dalam proses permohonan dan pemilihan MCRA dengan menyediakan platform permohonan dalam talian melalui Sistem dan Pangkalan Data Anugerah dan Pengiktirafan ASM. Jaringan pakar ASM pula telah menyumbang kepakaran mereka dalam proses penilaian calon. MCRA diberikan kepada saintis muda Malaysia yang telah memberikan sumbangan bermanfaat dalam penyelidikan barah.

2005 - 2020

- 761 permohonan diterima
- 60 penerima anugerah setakat ini dengan jumlah geran bernilai RM 1,731,410.00
- 6 penerima telah dianugerahkan geran bernilai RM30,000 setiap seorang (2019 dan 2020)

Imbas Kod QR untuk bacaan selanjutnya

Program Tabung Amanah Penyelidikan Perubatan Dr Ranjeet Bhagwan Singh

Semangat mendiang Dr Ranjeet Bhagwan Singh untuk memupuk penyelidikan dalam bidang bioperubatan telah mendorong beliau untuk mendedikasikan sebahagian dari kekayaannya sebagai geran penyelidikan. Penyelidikan bioperubatan juga semakin membangun demi memastikan masyarakat hidup dengan lebih sihat dan lama.

Bagi memperingati mendiang Dr Ranjeet Bhagwan Singh, sebuah program bertajuk *Paradigm Shift in Medical Research* telah dianjurkan. Program atas talian ini merangkumi Syarahan Peringatan RBS mengenai *Medical Research in a Doughnut World* yang disampaikan oleh Academician Distinguished Profesor Datuk Dr Looi Lai Meng FASc. Sebuah dialog bertajuk *Pivoting Your Research during COVID-19* dan pengumuman penerima Geran Penyelidikan RB 2019/2020 turut dianjurkan. Program tersebut mendapat maklum balas positif daripada para peserta dan menunjukkan bahawa sumbangan penting mendiang Dr Ranjeet Bhagwan Singh sangat dihargai dan tidak lapuk ditelan zaman.

Imbas Kod QR untuk bacaan selanjutnya

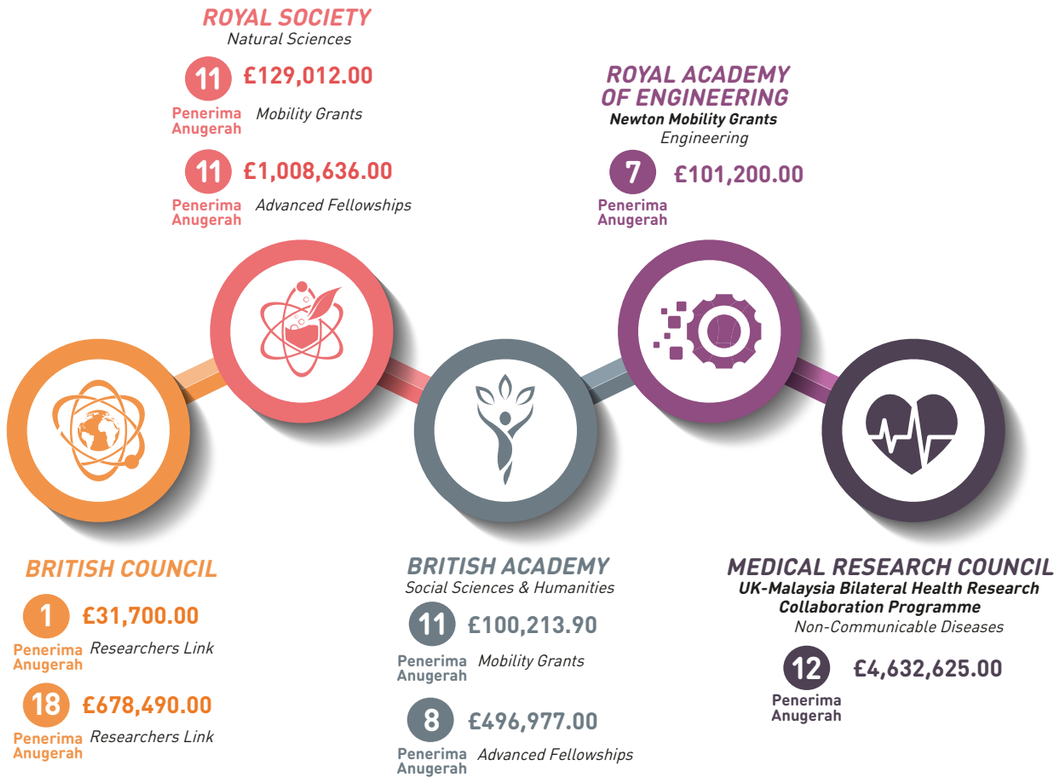
Newton-Ungku Omar Fund (NUOF)

Sejak tahun 2015, NUOF memberi fokus kepada pengembangan rangkaian penyelidikan dalam kalangan penyelidik pelbagai dan antara disiplin melalui integrasi pengetahuan STI yang menangani masalah sosio-ekonomi di Malaysia dan United Kingdom (UK).

Antara aktiviti NUOF termasuk:
a. Fellowship, skim mobiliti, dan pusat kerjasama bagi memantapkan komuniti sains dan inovasi Malaysia.
b. Kerjasama penyelidikan mengenai topik-topik pembangunan.
c. Rakan inovasi dan dana untuk mengembangkan penyelesaian inovatif bagi topik-topik pembangunan.

Dalam masa lima tahun sebagai rakan strategik NUOF, ASM telah bekerjasama dengan lima buah rakan strategik di UK. ASM telah bertanggungjawab dalam melaksanakan tujuh program di bawah NUOF, dengan keseluruhan berjumlah 62 projek. Pelaksanaan program-program ini telah dipantau oleh Pengerusi Jawatankuasa NUOF.

BILANGAN GERAN DAN JUMLAH DANA YANG DIANUGERAHKAN PADA 2020



RAKAN PELAKSANA . PROGRAM . PENERIMA

Mahathir Science Award (MSA) *2020*

MSA mengiktiraf penyelidikan dan sumbangan berdasarkan sains dan teknologi serta inovasi dalam mencari penyelesaian kepada masalah-masalah di kawasan tropika. Anugerah ini diberikan kepada individu, institusi atau organisasi yang telah membuat penemuan yang diiktiraf di peringkat antarabangsa dalam bidang:



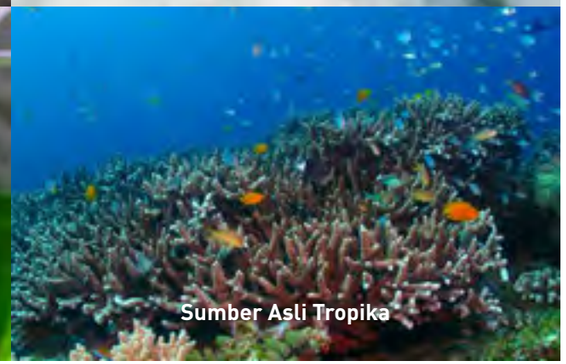
Pertanian Tropika



Senibina dan Kejuruteraan Tropika



Perubatan Tropika

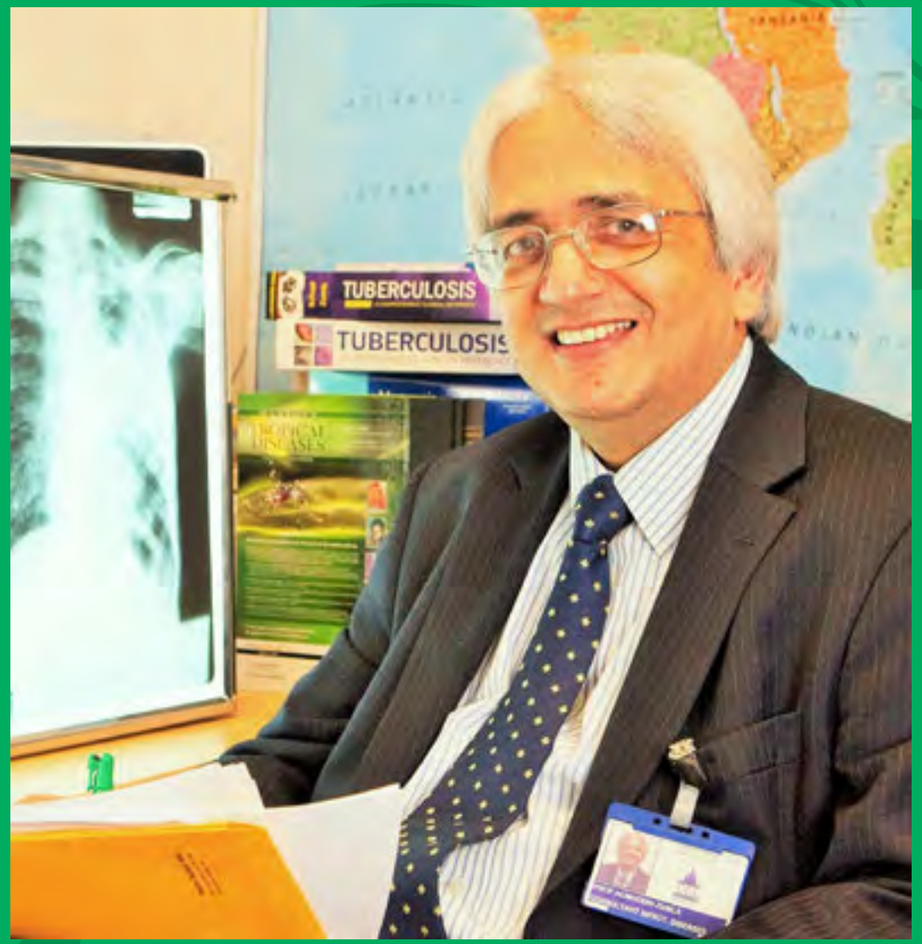


Sumber Asli Tropika

MSA 2020 terbuka untuk kategori Perubatan Tropika dan Sumber Asli Tropika. Proses penilaian dan pemilihan pemenang dilakukan oleh ASM dari 3 Februari hingga 2 Julai 2020.

Imbas Kod QR untuk bacaan selanjutnya

Pemenang MSA 2020 ialah Sir Professor Alimuddin Zumla (kategori Perubatan Tropika) di atas penyelidikannya yang luar biasa, diakui di peringkat global, penyelidikan berkaitan polisi-kesihatan, peningkatan kapasiti dan sumbangan untuk memahami epidemiologi, pathogenesis, diagnosis, rawatan, dan kawalan *Tuberculosis* (batuk kering), lain-lain jangkitan saluran pernafasan, serta patogen memuncul yang berpotensi menjadi wabak.



Pemenang MSA 2020, Sir Professor Alimuddin Zumla
Perubatan Tropika

“ Saya percaya bahawa impak terhadap masyarakat harus menjadi pendorong kepada setiap penyelidikan dan dikenali oleh rakan sebaya saya adalah satu insentif untuk terus berkecimpung dalam bidang perubatan tropika. Saya gembira kerana berpeluang memperkasakan generasi saintis seterusnya melalui YSN-ASM dan untuk berinteraksi dengan rakan-rakan saya, Felo ASM, melalui anugerah ini. ”

Memupuk Inovasi Terbuka

Malaysian Open Science Platform (MOSP)

MOSP merupakan satu inisiatif transformatif untuk mengukuhkan ekosistem penyelidikan di Malaysia dan untuk memupuk kerjasama melalui platform perkongsian data penyelidikan mentah. Projek rintis ini memfokuskan kepada elemen-elemen penting dalam menjadikan Sains Terbuka (*Open Science*) satu realiti. Elemen tersebut adalah landskap dan garis panduan sains terbuka, peningkatan keupayaan dan kesedaran serta infrastruktur. Ditubuhkan melalui ASM dan Malaysia *Open Science Alliance*, MOSP akan meneraju ekosistem penyelidikan yang "terbuka seluas mungkin, dan tertutup seperlunya".

1. *Landscape Report on Open Science in Malaysia*
MOSP telah menghasilkan satu laporan mengenai Sains Terbuka di Malaysia yang menggambarkan situasi semasa dan kesediaan negara untuk menerima sains terbuka. Laporan tersebut merangkumi perspektif penyelidik, pustakawan, dan pengurusan tertinggi universiti. Laporan ini turut menyentuh mengenai kemampuan infrastruktur Malaysia dan kedudukan Malaysia di samping negara-negara lain dalam Sains Terbuka. Kajian ini dilakukan melalui kaji selidik dan wawancara pihak berkepentingan, terutama dari universiti dan institusi penyelidikan.

2. *National Guidelines of Open Science in Public Funded Research*
Garis panduan ini dirangka bagi menerangkan cara untuk melaksanakan Sains Terbuka berdasarkan amalan terbaik antarabangsa. Garis panduan ini dirangka melalui sesi libat urus dengan pihak berkepentingan dari kementerian, agensi, institusi pengajian tinggi, institusi penyelidikan dan lain-lain bagi mencapai sains terbuka di peringkat kebangsaan.

3. *Training of Trainers Programme on Data Stewardship for Open Science*
Dengan fokus untuk melatih seramai 200 *data stewards* menjelang akhir projek rintis ini, program latihan ini dianjurkan untuk meningkatkan kemahiran pustakawan, penyelidik, dan pengurus penyelidik untuk menjadi data stewards yang bertanggungjawab dalam menyokong integriti data penyelidikan. Siri pertama telah diadakan dari 19 September 2020 hingga 4 Januari 2021 dan berjaya melatih 56 data stewards dari lima universiti penyelidikan.

4. Open Science Forum for Asia and the Pacific
Forum ini dianjurkan pada 13 Februari 2020 untuk membincangkan dan memahami strategi dan pendekatan antarabangsa mengenai gerakan sains terbuka. Forum ini dihadiri oleh wakil negara yang mengamalkan sains terbuka seperti Afrika, Australia, Singapura dan China. Penceramah utama, Dr Ismail Seragaldin, *Emeritus Librarian of Alexandria* dan *Founding Director of Bibliotheca Alexandrina* menyampaikan ucaptama bertajuk *Open Science for Shared Prosperity in the Asia Pacific Region*. Perbincangan panel mengenai Sains Terbuka dikendalikan oleh Academician Profesor Emerita Dato' Seri Dr Mazlan Othman FASc. Perbincangan ini menyentuh tentang Sains Terbuka, cabaran dan peluang bagi menyokong gerakan ini.

Untuk memanfaatkan forum ini yang telah dianjurkan bersempena dengan mesyuarat *Asia-Pacific Economic Cooperation* (APEC) *Policy Partnership on Science, Technology and Innovation* (PPSTI), Malaysia telah mengusulkan satu kenyataan forum untuk menyokong gerakan Sains Terbuka ini. Kenyataan ini telah dibincangkan dalam forum dan telah disokong oleh komuniti APEC pada 14 Ogos 2020.

Sesi seterusnya telah meneroka tiga bidang utama sains terbuka, iaitu polisi, infrastruktur, dan pembinaan kapasiti dan kesedaran. Peserta dari Malaysia telah menyertai perbincangan ini dan menegaskan bahawa Malaysia boleh memanfaatkan pengetahuan dan pengalaman dari negara lain selain dari meneroka peluang dan kelebihan pelaksanaan sains terbuka.

5. Dialogue on Open Science
Profesor Dr Barend Mons, Presiden, *Committee on Data of the International Science Council* (CODATA) dan Dr Ross Wilkinson, Bekas Pengarah Eksekutif, *Australian National Data Service* (ANDS) berkongsi pengalaman dan pengetahuan dalam melaksanakan prinsip FAIR bagi pengurusan data penyelidikan dan menubuhkan perkhidmatan data nasional. Sesi dialog yang diadakan pada 14 Februari 2020 telah meneroka forum Sains Terbuka secara lebih mendalam, terutamanya mengenai bagaimana Malaysia boleh berkembang maju dalam bidang sains terbuka.

6. Webinar on Citizen Science from Malaysia's Perspective
Webinar ini dianjurkan bersempena dengan *Training of Trainers program on Data Stewardship for Open Science*. Webinar ini membincangkan topik penyertaan dan kerjasama orang awam dalam penyelidikan saintifik (*citizen science*), yang merupakan salah satu elemen sains terbuka, dari perspektif Malaysia. Academician Profesor Emerita Dato' Seri Dr Mazlan Othman FASc telah menyampaikan ucaptama bertajuk *Citizen Science in Space*. Sesi ini telah dikendalikan oleh Datuk Dr Azizan Baharuddin, Ketua Pengarah dari Institut Kefahaman Islam Malaysia. Ahli panel yang dijemput ialah Dr Nadine Brigitte Rupert, Cik Nadhirah Mohd Rifai dan Encik Tan Choo Eng, pakar sains biodiversiti yang berpengalaman dalam mengendalikan pelaksanaan sains terbuka di Malaysia. Sesi webinar ini telah meneroka bagaimana masyarakat boleh menyumbang kepada sains.

7. Bengkel Libat Urus dengan Pihak Berkepentingan
Bengkel pertama telah dianjurkan pada 4 Jun 2020 untuk memperkenalkan MOSP kepada pihak berkepentingan Sains Terbuka di Malaysia, termasuklah penyelidik, pengurusan tertinggi, pustakawan, agensi dan kementerian kerajaan. Bengkel ini telah berbincang mengenai bidang utama MOSP iaitu polisi dan garis panduan, pembinaan kapasiti dan kesedaran, dan infrastruktur. Bengkel ini telah mendapat pelbagai input, terutama dari perspektif penyelidik, yang merupakan pihak berkepentingan paling utama bagi MOSP. Cabaran, kemungkinan, dan permasalahan telah dikongsi dan dinilai bersama-sama.

Bengkel kedua telah diadakan khususnya untuk membincangkan mengenai garis panduan nasional sains terbuka di Malaysia. Isu utama dan sebarang permasalahan telah ditangani dalam sesi ini, selain memberi penambahbaikan dan nilai kepada garis panduan yang telah dirangka. Isu seperti keselamatan data, kelebihan kepada pihak berkepentingan dan pemilikan data telah diketengahkan dalam kedua-dua bengkel yang dianjurkan. Input ini telah dimasukkan dalam pengembangan dan penambahbaikan garis panduan.



i-Connect

i-Connect merupakan rangkaian inovasi kolaboratif yang diterajui oleh industri untuk mencipta dan memupuk ekosistem inovasi yang kondusif di Malaysia. Ekosistem yang saling berhubung ini akan meningkatkan inovasi disruptif dan akhirnya membolehkan Malaysia memanfaatkan peluang ekonomi baru agar industri negara memasuki pasaran global baru dan memuncul.

Rangkaian ini akan memperkasakan kolaborasi untuk penemuan idea baharu berdasarkan pengetahuan S&T. Idea-idea ini kemudiannya akan diterapkan secara kreatif untuk menghasilkan nilai yang seterusnya akan menghasilkan produk dan perkhidmatan yang unik, membantu dalam pembahagian dan pengurangan risiko, serta memudahcara penawaran dan permintaan barang dan perkhidmatan.

Dalam rangkaian ini, empat pihak berkepentingan (industri, kerajaan, penyelidik, dan masyarakat awam) akan dihubungkan melalui entiti neutral untuk mencapai matlamat dan wawasan bersama. Oleh itu, peranan entiti neutral yang dipercayai sangat penting dalam menguruskan rangkaian yang dibayangkan. Selepas dua siri penilaian, empat entiti neutral yang dipercayai telah dipilih dan dilantik untuk menguruskan rangkaian kolaborasi di sektor industri masing-masing berdasarkan pengalaman dan kepakaran mereka, seperti berikut:

No.	Sektor Industri	Organisasi
1.	Pembuatan: Industri 4.0	*Collaborative Research in Engineering, Science and Technology Centre* (CREST) & NanoMalaysia Berhad
2.	Fintech dalam Kewangan Islam	International Centre for Education in Islamic Finance (INCEIF)
3.	Penjagaan Kesihatan Digital	CREST
4.	Rantaian Bekalan Halal	*Halal Development Corporation* (HDC)

Aktiviti sepanjang 2020:
a) Mesyuarat Jawatankuasa Pemandu i-Connect: Lima mesyuarat
b) Sesi Penilaian & Pemilihan Entiti Neutral: Dua sesi
c) Menandatangani perjanjian dengan Tiga Entiti Neutral
d) Sesi libat urus dengan pihak berkepentingan luar:

Pembuatan: Industri 4.0	**52** Industri	**18** Penyelidik	**23** Kerajaan	**10** Masyarakat awam
Fintech dalam Kewangan Islam	**18** Industri	**10** Penyelidik	**10** Kerajaan	**12** Masyarakat awam
Penjagaan Kesihatan Digital	**39** Industri	**16** Penyelidik	**13** Kerajaan	**21** Masyarakat awam
Rantaian Bekalan Halal	**24** Industri	**10** Penyelidik	**7** Kerajaan	**12** Masyarakat awam

Angels in Science

ASM memulakan inisiatif *Angels in Science* untuk terus menambahbaik dan menyokong ekosistem inovasi Malaysia, serta menggalakkan pelaburan dan keusahawanan dalam bidang STI. Selain itu, inisiatif ini bertujuan untuk menyokong pengkomersialan penemuan STI tempatan yang bernilai tinggi dalam kalangan penyelidik, saintis, dan syarikat permula. Inisiatif ini melengkapi projek i-Connect melalui sumber pembiayaan alternatif, dan bukan hanya bergantung pada dana dari kerajaan dan industri untuk mengembangkan produk buatan sendiri. Inisiatif ini pertama kali diusulkan oleh *Science and Technology Industry Linkages Committee* (STILC), yang dipengerusikan oleh Ir Ts Choo Kok Beng FASc.

ASM bekerjasama dengan *Malaysian Business Angel Network* (MBAN) dan bersama-sama menganjurkan dua bengkel pada 25-27 November 2020 dan 8 & 9 Disember 2020. Bengkel-bengkel ini mencetuskan minat dermawan tempatan dan pelabur untuk melabur dalam syarikat permulaan berasaskan sains dan teknologi yang masih di peringkat awal. Ia turut berkongsi mengenai pengetahuan dan amalan terbaik tentang angel investment, melatih dan memperkasa penyelidik, saintis, dan syarikat permulaan mengenai teknik terbaik untuk mempromosikan produk / hasil ciptaan serta memperoleh pelaburan dari pelabur angel. Kedua-dua bengkel ini telah menarik minat 25 peserta.





Pemahaman & Kesedaran Awam Terhadap Sains

2020 ASM artscience™ ***Prize***

Sebagai penghormatan kepada gabungan seni dan sains, ASM memulakan Inisiatif ArtScience™ dengan objektif untuk mempromosikan penghargaan dan ciptaan seni yang luar biasa ke arah pembudayaan sains dalam kalangan rakyat Malaysia. Inisiatif ini juga bertujuan untuk memupuk kreativiti dalam penyatuan seni dan sains. ASM ArtScience™ Prize adalah program di bawah inisiatif ArtScience™ untuk mengiktiraf karya seni dan projek yang merangkumi falsafah ArtScience™. Inisiatif ini merupakan yang pertama ditubuhkan di Malaysia untuk meraikan komuniti artis-saintis yang baru muncul.

Sesi penilaian telah diadakan pada 28-30 September 2020 di ASM oleh enam panel juri.

65 permohonan

13 permohonan disenarai pendek

ASM Artscience™ Prize Winner

Ketua Projek: Dr Ahmad Hanif Ahmad Baharin
Institusi: Universiti Kebangsaan Malaysia (UKM)
Ahli Kumpulan: Mohd Nasir Baharuddin & Muhammad Hafiz Mastro
Tajuk Projek: *Digital- Tropical Breathing the Waves*
Hadiah: Wang tunai RM 20,000, Piala, Sijil & *Residency Attachment*



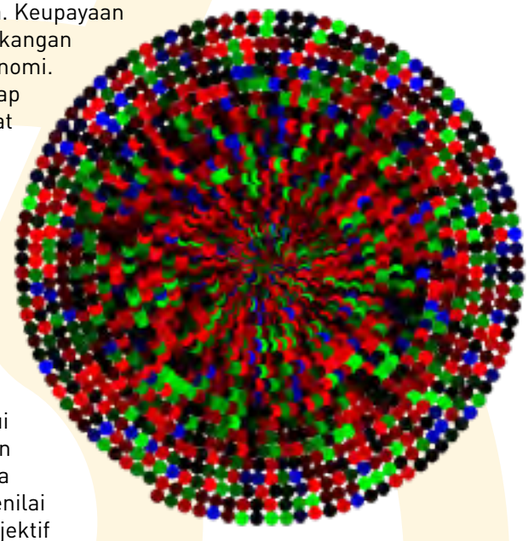
Digital-Tropical: Breathing the Waves

Digital-Tropical merupakan projek yang menggabungkan data analog dan aliran digital menjadi realiti beranalogi antara resonans sejarah lampau dengan gelombang teknologi semasa. Dalam karya ini, kami meneroka penggunaan pengkomputeran fizikal untuk visualisasi data. Data sejarah ketinggian gelombang lautan dari projek penyelidikan tenaga boleh diperbaharui, yang dikumpul selama dua tahun dari lokasi berhampiran Pulau Tioman, ditunjukkan dengan penggunaan lampu yang menerangi bahagian bawah rumah tropika tradisional berusia 300 tahun, Istana Puteri Bongsu di Taman Pantun UKM. Karya ini bukan sekadar pembentangan data saintifik bersifat artistik, tetapi ia merupakan seni bina tradisional Melayu dalam bentuk satu peninggalan budaya, digunakan sebagai realiti baharu. Melalui proses wacana pelbagai disiplin, *Digital-Tropical* meluaskan penjelasan saintifik mengenai sesuatu dari segi penggabungan artistik / saintifik tentang bagaimana sesuatu dapat terjadi.

RISING STAR AWARD WINNER

Pemenang: Dr Roopesh Sitharan dan Dr Mohd Hafizuddin Mohd Yusof
Institusi: *Multimedia University (MMU)*
Nama Projek: *Artificial autonomy and the question of subjectivity in AI*
Hadiah: Piala, Sijil & *Residency Attachment*

Artificial autonomy and the question of subjectivity in AI



Usaha penyelidikan ini merumuskan kemungkinan teknologi autonomi dapat mencapai subjektiviti melalui kecerdasan algoritmanya. Keupayaan pengkomputeran yang berkembang pesat sejak kebelakangan ini telah membawa kepada penciptaan kenderaan autonomi. Ini merupakan titik permulaan tarikan manusia terhadap Kecerdasan Buatan (AI) yang membawa banyak manfaat pada manusia. Hal ini juga telah menyebabkan penggunaan AI secara meluas dalam kehidupan seharian, terutama dalam urusan ekonomi dan pentadbiran sosial sehingga menjadikan AI satu komponen penting untuk pendigitalan. Boleh dikatakan, tiada domain atau disiplin yang bebas dari pengaruh AI. Namun, dari perspektif antroposentrik, terutamanya perkara berkaitan kognisi menunjukkan penyerapan tenaga fizikal dan kognitif manusia ke dalam sistem teknikalnya. Secara asasnya, AI belajar dari budaya manusia melalui analisis data, tafsiran kandungan mengikut konteks dan klasifikasi pengetahuan. Dengan kata lain, data di mana AI belajar, mengklasifikasikan, mengira, mengukur, menilai dan berkorelasi berasal dari model persepsi realiti subjektif kemanusiaan. Berdasarkan premis ini, projek ini berkisarkan objektif AI dengan mempertimbangkan data di mana AI bergantung untuk membangun autonomi merangkumi pandangan dari dunia manusia.

ASM ARTSCIENCE™ PRIZE TROPHY DESIGN COMPETITION
Pertandingan ini dianjurkan untuk mencari reka bentuk piala terbaik yang akan dianugerahkan kepada penerima ASM *ArtScience™ Prize*. Pemenang pertandingan ini akan bekerjasama dengan Rakan Strategik Inisiatif *ArtScience™, ForceMaker Division of Nazca Scientific* Sdn Bhd untuk pembuatan piala.

8 rekaan piala diterima

3 rekaan terbaik dipilih

Program Libat Urus
Program ini bertujuan untuk menggabungkan profesional, artis/karyawan dan saintis untuk mempromosikan falsafah penyatuan antara seni dan sains. Aktiviti yang dijalankan di bawah program ini membolehkan para peserta berkomunikasi dengan pakar.

ArtScience™ Webinar for All
Webinar ini dianjurkan bersempena dengan Minggu Sains Negara 2020 dan berlangsung pada 9 Jun 2020 dan dikendalikan oleh Academician Tan Sri Dr Salleh Mohd Nor FASc, salah seorang ahli *Task Force on ASM ArtScience™ Initiative*.

Tetamu jemputan bagi webinar ini ialah Dr Roslina Ismail, Timbalan Pengarah (Pascasiswazah dan Penyelidikan), Pusat Kebudayaan Universiti Malaya (UM) dan Dr Mohammad Kamal Sabran, seorang pensyarah dari Universiti Sains Malaysia (USM). Webinar ini telah menarik 100 peserta berdaftar dan 1200 penonton.



Poster webinar ASM *ArtScience™ for All*

Wawancara dalam rancangan *Fresh Brew@RTM2*
Sesi wawancara ini telah diadakan pada 31 Mei 2020, bertujuan untuk mempromosikan inisiatif *ArtScience™* kepada orang ramai. Academician Profesor Emerita Dato' Seri Dr Mazlan Othman FASc dan Puan Wan Zaleha Radzi telah dijemput untuk memberi pengenalan mengenai program di bawah inisiatif *ArtScience™* iaitu *ArtScience™ Prize*.



Wawancara dalam rancangan *Fresh Brew@RTM2* pada 31 Mei 2020



Webinar *ASM ArtScience™ for All* pada 9 Jun 2020

FAScinate

Open Minds, Spark Ideas

Kembali untuk tahun kedua, FAScinate terus menarik minat penonton mengenai kemajuan terkini sains dan teknologi. Melalui FAScinate, saintis terkemuka negara telah mencetuskan inspirasi melalui perkongsian pengalaman dan perjalanan kerjaya mereka. Program ini turut disenaraikan sebagai salah satu program Minggu Sains Negara. Ianya berjaya menarik perhatian orang ramai dengan jumlah tontonan dan penglibatan penonton yang tinggi menerusi siaran langsung di Facebook dan Zoom Live.

Siri FAScinate bagi tahun 2020 menampilkan tujuh Felo dari pelbagai bidang disiplin yang berkongsi pengetahuan mereka secara maya, dalam dua sesi berlainan:

FAScinate Kedua
30 Jun 2020



Straightening the Nose to the Sinus: A One Team Surgical Approach
Profesor Dato' Dr Balwant Singh Gendeh FASc
Sejak tahun 1991, gabungan pembedahan rinoplasti dan endoskopi sinus (ESS) telah memberi banyak manfaat dengan komplikasi yang minimum.



My God, Your Gum Bleeds
Emeritus Profesor Dato' Dr Hashim Yaacob FASc
Pendarahan gusi adalah satu situasi normal yang dapat dicegah. Bak kata pepatah, mencegah lebih baik daripada mengubati.



A Brighter Path for Solar Cell
Profesor Dr Zainal Abidin Talib FASc
Berdasarkan sains bahan, sintesis bahan fotovoltan adalah bidang penyelidikan yang sedang berkembang pesat.



STEM and Competencies for the 21st Century
Profesor Dr Lee Sze Wei FASc
Dalam usaha untuk menjadi sebuah negara maju, kecekapan STEM adalah penting untuk untuk pembangunan sosio-ekonomi Malaysia yang lestari.

FAScinate Ketiga
3 November 2020



Reimagining Ageing: Debunking Myths and Stereotypes
Profesor Dato' Dr Tengku Aizan Tengku Abdul Hamid FASc
Malaysia dijangka akan memiliki populasi warga tua yang lebih tinggi menjelang tahun 2050. Mitos dan stereotaip mengenai penuaan masih menjadi kebimbangan masyarakat kita. Sesi ini merungkaikan stereotaip dan mitos tersebut.



Amazing Mushrooms - Nature's Gift
Profesor Dr Vikineswary Sabaratnam FASc
Cendawan merupakan salah satu keajaiban semula jadi, yang dijadikan makanan sejak seribu tahun yang lalu. Ia bermanfaat untuk manusia dari segi kesihatan dan biopemulihan.



What a Waste!
Profesor Dr Nik Meriam Nik Sulaiman FASc
Di sebalik pengurusan sisa dalam kehidupan seharian, ada falsafah yang lebih bermakna –buat keputusan sebelum terlambat.

6,500 tontonan di *Facebook live*

7 Felo

Tonton video FAScinate di saluran YouTube ASM

Minggu Sains Negara

The Magic of Science merupakan tema yang dipilih untuk tahun ketiga Minggu Sains Negara (MSN). Program ini telah dianjurkan dari April hingga November 2020 secara maya berikutan pandemik COVID-19 yang melanda negara. ASM telah dilantik sebagai Agensi Utama untuk Wilayah Persekutuan Kuala Lumpur, bersama-sama Pusat Sains Negara dan Planetarium Negara.

ASM juga bekerjasama dengan rakan strategik lain seperti Merck Sdn Bhd dan *British High Commission* Kuala Lumpur dalam mengatur program yang dianjurkan. Walaupun terdapat kekangan, MSN KL tetap berjaya mencapai penyertaan dan penglibatan yang tinggi dari orang ramai. Objektif program untuk membudayakan sains masih dapat dicapai walaupun tanpa program fizikal seperti tahun-tahun sebelumnya. Kejayaan VNSC sebagai salah satu program khas MSN 2020 telah menggalakkan lagi usaha untuk meneruskan agenda memupuk lebih ramai bakat STEM negara.

21 program

158, 622 tontonan

6,850 peserta

11 sesi *Science Café*

3 Pusingan VNSC

2 sesi *FAScinate™*

2 program *Artscience™*

2 siri *YSN-ASM Merck Back to Lab*

1 sesi *IdeaXchange™*

2 kerjasama dengan *British High Commission* Kuala Lumpur

2 Kembara *STIE MOSTI at Rembau*











The Future Belongs to The Tropics

Siri Webinar *TropSc:*
Mahathir Science Award Foundation (MSAF), ASM dan *International Science Council Regional Office for Asia and the Pacific (ISC ROAP)* telah bersama-sama menganjurkan tujuh Webinar TropSc bertemakan *The Future Belongs to the Tropics*. Penganjuran webinar ini bertujuan untuk meningkatkan keterlihatan, menggalakkan penyertaan dan mempromosikan *International Conference on Tropical Sciences* (TropSc) 2021.



International Day of the Tropics
International Day of the Tropics diraikan pada 29 Jun 2020 untuk memperingati kejayaan terdahulu dan semasa, serta merangsang pemikiran mengenai peranan Malaysia sebagai pemimpin. Webinar ini telah mengetengahkan empat tema MSA iaitu Pertanian Tropika, Sumber Asli Tropika, Perubatan Tropika dan Senibina dan Kejuruteraan Tropika. Ia turut menampilkan perbincangan mengenai visi bagi *Federated Data Platform for Tropical Biodiversity* dan Kuala Lumpur *Declarations for the Tropics*. Seramai 423 peserta dari seluruh dunia telah menyertai webinar ini.



International Day of the Conservation of the Mangrove Ecosystem
Bakau meliputi sekitar 15 juta hektar di seluruh dunia, di mana 95% daripadanya berada di kawasan tropika. Ekosistem luar biasa ini menyumbang kepada kesejahteraan, jaminan bekalan makanan, dan memberi perlindungan kepada komuniti yang menetap di pesisir pantai di seluruh dunia. Bersempena dengan *International Day of the Conservation of the Mangrove Ecosystem*, satu webinar bertemakan *People and Mangroves* telah diadakan pada 28 Julai 2020 untuk memberi gambaran menyeluruh mengenai penemuan saintifik terkini dan usaha pemuliharaan bakau. Tiga wakil dari komuniti setempat yang bergantung pada bakau sebagai mata pencarian berkongsi pengalaman mereka dalam webinar yang telah menarik 239 peserta dari 31 negara ini.



Engineering for Sustainability: Water and Energy in the Tropics
Kawasan tropika kaya dengan sumber semula jadi yang boleh memberi manfaat kepada penduduk setempat. Kewujudan sungai dan tanah pertanian yang bergantung kepada hujan di kawasan tropika membenarkan kebanyakan sektor tenaga boleh diperbaharui untuk terus berkembang. Mengakui hal ini, webinar bertema *Engineering for Sustainability: Water and Energy in the Tropics* telah dianjurkan pada 22 September 2020. Felo ASM dari Disiplin Kejuruteraan meneroka bagaimana tenaga dan air di kawasan tropika dapat disediakan dan dikendalikan secara lestari.

Webinar kali ini menekankan kepentingan penegasan dalam mencegah krisis dan pencemaran air, merangka dasar nasional yang menggalakkan kolaborasi antara industri-akademik untuk pengurangan CO2, menilai kesesuaian tenaga hijau di kawasan tropika dan menganalisis nisbah kos dan manfaat dalam melaksanakan pembaharuan secara besar-besaran. Lebih 100 peserta dari seluruh dunia telah menyertai webinar ini.



International Youth Day
Sempena Hari Belia Antarabangsa, dua webinar bertemakan *Youth for the Tropics* telah dianjurkan pada 12 dan 13 Ogos 2020. Webinar ini bertujuan untuk memberi kesedaran kepada para belia di kawasan tropika mengenai isu-isu penting bagi para belia dan meraikan mereka dengan sumbangan melalui sains, penglibatan dasar dan keusahawanan sosial dalam menyelesaikan isu-isu tropika. Webinar bertarikh 12 Ogos membincangkan bagaimana golongan belia boleh menyumbang kepada tropika khususnya bagi isu perubahan iklim, dan memanfaatkan dan melindungi sumber semula jadi. Webinar pada 13 Ogos pula memberi tumpuan kepada keusahawanan sosial untuk membina komuniti yang berdaya tahan terhadap bencana dan perubahan iklim. Webinar ini telah menarik 398 peserta dari 30 negara.



International Coffee Day
Bersempena Hari Kopi Sedunia, satu webinar bertemakan *Black Gold of the Tropics* telah dianjurkan pada 1 Oktober 2020. Webinar ini meraikan biji kopi sebagai satu komoditi dagangan utama bagi kawasan tropika dan kesusahan yang dihadapi penanam biji kopi. Selain penonton secara langsung, 76 peserta dari 14 negara telah menyertai webinar ini secara maya.



World Cities Day
Menjelang 2050, populasi bandar akan bertambah sekitar 2.5 bilion penduduk, dengan hampir 90% kenaikan berlaku di kawasan tropika Asia dan Afrika. Bandar-bandar di kawasan tropika ini akan meneraju wacana global mengenai pembandaran di masa hadapan. Pada 4 November 2020, satu webinar dengan tema *The Soul of the City* dianjurkan bersempena Hari Perancangan Bandar Sedunia bagi meneroka pelbagai elemen yang membentuk "jiwa" bagi bandar-bandar di kawasan tropika. Lebih dari 150 peserta dari 12 negara telah menyertai webinar ini.



International Mountain Day
Satu webinar mengenai *Mountains and Life* telah dianjurkan pada 11 Disember 2020 bersempena *International Mountain Day* untuk membincangkan bagaimana pergunungan boleh membantu kehidupan di kawasan tropika. Webinar ini telah disertai oleh peserta dari 14 negara.

ASM Northern Chapter

Ditubuhkan pada tahun 2011, *ASM Northern Chapter* adalah satu platform untuk Jaringan Pakar ASM meningkatkan keterlihatan ASM di Wilayah Utara.

ASM Northern Chapter bekerjasama dengan *National Innovation Hub (NIH)* dan USM dalam menganjurkan dua siri webinar mengenai R,D,C&I. Siri ini dianjurkan sebagai sebahagian daripada program NIH untuk mendorong kerjasama strategik ke arah mengembangkan ekosistem inovasi yang mampan dalam kalangan Jaringan Pakar ASM, institusi pendidikan peringkat tinggi, sekolah, industri, perusahaan kecil sederhana (PKS), agensi kerajaan dan sektor korporat.

Webinar bertarikh 18 Jun 2020 telah berjaya mendidik 163 peserta mengenai IP serta kepentingannya dalam R,D,C&I. Webinar seterusnya yang diadakan pada 18 November 2020 telah membentangkan strategi untuk memadankan dan menghubungkan penyelidikan di universiti dengan industri dan masyarakat untuk meningkatkan kadar pengkomersialan. Sekitar 100 peserta telah menyertai webinar ini.



e-estidotmy

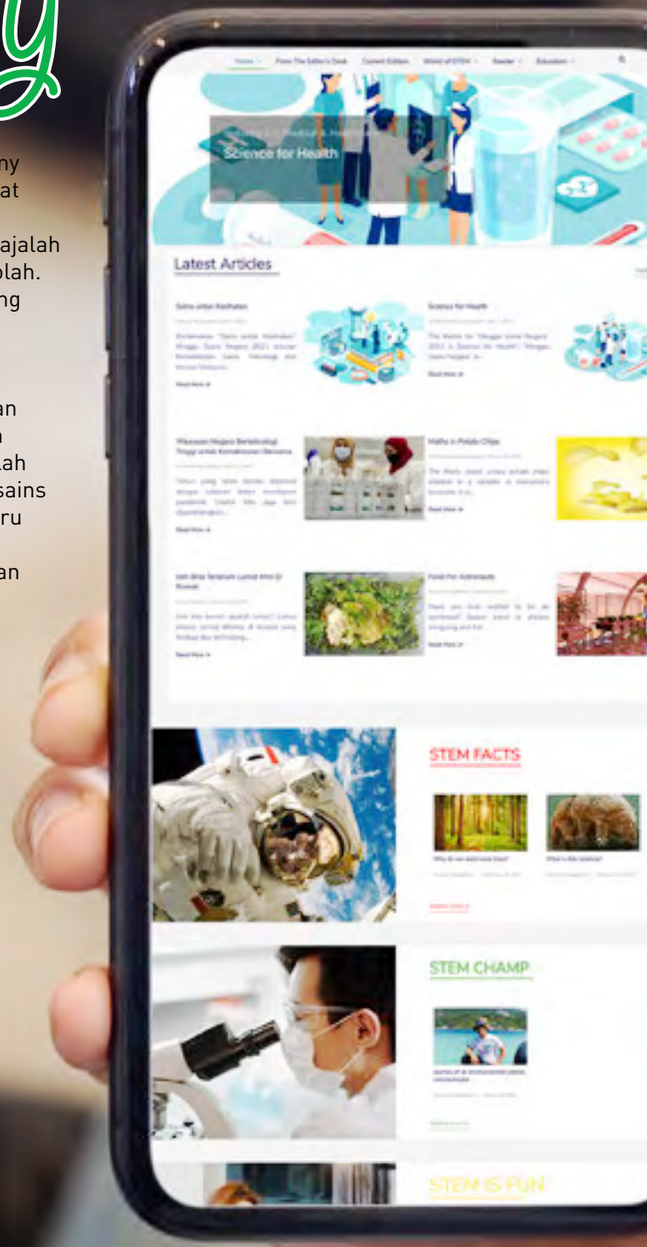
Nafas Baru Satu Khazanah

Pada tahun 2002, majalah sains pertama, estidotmy, telah diperkenalkan kepada masyarakat awam. estidotmy merupakan satu inisiatif oleh ASM untuk menanam minat terhadap sains, terutama untuk generasi muda, dan mempromosikan STI kepada masyarakat. Penerbitan majalah tersebut secara khususnya ditujukan untuk pelajar sekolah. Oleh itu, bahasa yang mudah difahami dan pengisian yang santai digunakan, sesuai untuk orang ramai.

Sepanjang penerbitannya dari tahun 2002 hingga 2012, estidotmy telah diterbitkan sebagai sisipan dalam Utusan Malaysia. Lebih dari 100 isu dengan pelbagai tema telah dihasilkan. Dibiayai dan diterbitkan oleh MOSTI, ASM telah berkhidmat sebagai penyedia kandungan bagi majalah sains ini. Penerbitannya telah menjadi rujukan utama para guru dalam memberikan pengetahuan saintifik kepada para pelajar. Namun, kerana kekangan belanjawan, penerbitan estidotmy telah dihentikan pada 2012.

Ketika Malaysia dilanda wabak COVID-19, aktiviti ekonomi dan pendidikan negara terjejas dengan teruk. Penutupan sekolah yang berpanjangan telah mengganggu proses pembelajaran. Namun, digitalisasi telah membantu orang ramai untuk menyesuaikan diri dengan norma baharu dalam setiap aspek kehidupan, termasuk pendidikan. Untuk menyokong kemajuan tersebut, ASM memulakan inisiatif untuk menghidupkan kembali estidotmy melalui platform digital bagi memastikan pengetahuan sains, teknologi, dan inovasi akan terus disampaikan kepada orang ramai. Dijelmakan kembali sebagai estidotmy, inisiatif ini merupakan kerjasama antara YSN-ASM dan *Science Media Center* (SMC) Malaysia.

Imbas Kod QR untuk ke laman web e-estidotmy

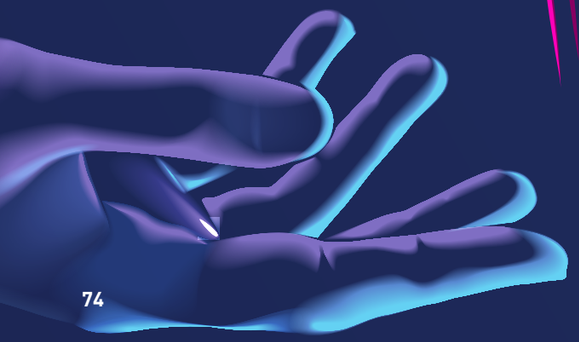


“Science isn’t finished until it’s communicated”

Mark Walport







Komunikasi Sains

Unit

Komunikasi Sains

Komunikasi Sains bekerjasama dengan jaringan pakar ASM untuk mengurus kandungan dengan pendekatan yang menarik untuk disebarkan kepada orang awam. Pelbagai media digunakan untuk menyedia dan menyebarkan maklumat oleh unit produksi ASM. Dari menyusun dokumen berkaitan dasar hingga menghasilkan video kempen, karya komunikasi ASM terus berkembang dengan merangkumi pelbagai disiplin ilmu.

Peranan komunikasi sains sangat penting dalam menyediakan maklumat berdasarkan bukti agar masyarakat awam memahami fakta dan data berkaitan COVID-19.

Norma baharu telah mendorong ASM untuk meluaskan jangkauan dan mencabar kebiasaan yang telah diamalkan selama ini. Justeru, dalam usaha menyesuaikan diri dengan aktiviti yang dijalankan sepenuhnya secara maya, hasil kerja ASM telah dibentangkan di pelbagai platform.

PENERBITAN & JURNAL:



- Edisi Kedua Modul *MCRCR*
- Laporan Tahunan 2019
- *Precision Medicine Inititative in Malaysia*
- Pengajaran dari Sungai Kim Kim, Pasir Gudang (Dwibahasa)
- *10-10 MySTIE Framework*

ASM Science Journal 123 artikel

6 ISU KHAS

VOL. 13

- ICFICE
- ICSCC2019
- CIIDT2018
- NCAFM2018
- APRU2018
- InCOMR2019

Lembaran Fakta COVID-19

10

PEMBACA DALAM TALIAN:

e-Penerbitan
101
setakat ini

Pembaca
30,940

Capaian
82,510

ASM FOCUS: *e-Newsletter*

Terbitan
11

Artikel
38

Pembaca
20,616

AKAN DATANG...



Just an Individual of a Species: An Autobiography of Ahmad Mustaffa Babjee

Academician Tan Sri Dr Ahmad Mustaffa Babjee FASc merupakan seorang figura terkenal dalam pemuliharaan alam. Beliau telah memainkan peranan penting dalam usaha pemeliharaan spesies biodiversiti yang unik dan jarang di Malaysia.

Just an Individual of a Species mengandungi setiap elemen pengetahuan mengenai naturalis terkenal ini. Autobiografi ini menceritakan pelbagai kisah dan pengalaman Tan Sri Dr Ahmad Mustaffa Babjee FASc. Perjalanan hidup beliau yang menarik, emosi yang beliau lalui, dah perspektif beliau mengenai kebajikan, sains dan teknologi telah disampaikan dengan baik dalam autobiografi ini, membuatkan sisi lain pahlawan hijau negara ini menarik untuk difahami.

***The Biology of a Long-Necked Weevil (Cycnotrachelus* sp.)**

Adakah teknologi yang diilhamkan oleh serangga berpotensi sebagai penyelesaian masalah?

Terdapat pelbagai persoalan mengenai serangga di dunia ini. Latihan dan kajian selama bertahun-tahun diperlukan bagi menjawab soalan-soalan tersebut. Namun demikian, minat Academician Tan Sri Dr Ahmad Mustaffa Babjee FASc terhadap alam mendorong beliau untuk mengkaji peranan serangga yang boleh memberi ilham kepada teknologi untuk menghasilkan produk dan perkhidmatan yang lestari.

Buku *The Biology of a Long-Necked Weevil* ditulis mengenai kitaran hidup dan anatomi *Cycnotrachelus* sp., di mana menurut penulis, Tan Sri Dr Ahmad Mustaffa Babjee FASc, serangga ini boleh menunjukkan sensor berteknologi tinggi untuk bunyi, getaran, bau, dan juga dari segi mekanikal.

Perhubungan Korporat

Visibility. Views. Vision

Unit Perhubungan Korporat ditubuhkan secara rasmi pada Julai 2020 untuk memastikan bahawa ASM boleh meningkatkan keterlihatan di ruang media dan media sosial. Melalui tayangan di saluran penyiaran dan media cetak, isu COVID-19 dibicarakan secara meluas. Selain itu, topik-topik nasional lain seperti masalah air, pendidikan dan kesihatan turut diteroka dengan lebih mendalam.

Kami ingin menampilkan individu di sebalik segala aspek sains serta menyampaikan ilmu pengetahuan daripada jaringan pakar ASM kepada masyarakat umum melalui saluran media dan rangkaian media sosial.

Kami mengalu-alukan penglibatan Felo ASM dalam menyampaikan sains. Hubungi kami di corporate_relations@akademisains.gov.my untuk maklumat lanjut mengenai peluang bekerjasama ini.

Antara wawancara yang menampilkan Jaringan Pakar ASM:

Astro Awani

Bernama TV

Radio Televisyen Malaysia

Business Station FM

New Straits Times

Berita Harian

Utusan Malaysia

Sin Chew Daily

Malay Mail Online

The Malaysian Insight

Malaysiakini

The Vibes

Malaysia Now

Bernama

Science Media Centre Malaysia

Code Blue

Sinar Harian

The Star

The Sun

Dayak Daily

Utusan Borneo

The Edge

MEDIA SOSIAL

(2020-2021)

10,785

2,151

6,131

1,630

443

JUMLAH PENGIKUT

21,140



Mengukuhkan Kolaborasi dan Rangkaian Antarabangsa

Mesyuarat Serantau bagi AASSA *Working Group on Climate Change and Health*

German National Academy of Sciences (Leopoldina), dan rangkaian global *The InterAcademy Partnership* (IAP) sedang menjalankan satu projek mengenai Perubahan Iklim dan Kesihatan.

Perubahan iklim memberi kesan kepada kesihatan manusia dan sistem kesihatan, dan dijangka akan Perubahan iklim telah pun mempengaruhi sistem kesihatan dan kesihatan manusia. Perubahan iklim dijangka akan meningkatkan beban terhadap pelbagai keadaan kesihatan yang sensitif terhadap iklim. Penyelidikan telah banyak menyumbang terhadap peningkatan taraf kesihatan di pelbagai negara, namun dari segi pemahaman kesan iklim terhadap kesihatan, bukti yang ada tidak teratur. Kesan kesihatan terhadap perubahan iklim sering diabaikan sehingga baru-baru ini, ia mula diberi perhatian. Perubahan ini memerlukan bukti saintifik yang kukuh untuk membantu dalam pemilihan polisi dan menilai komitmen semasa. Ancaman kepada kesihatan perlulah menggalakkan tindakan tegas oleh komuniti saintifik dan kesihatan serta penggubal dasar, untuk melindungi kesihatan generasi semasa dan akan dating, sebagai sumbangan penting kepada SDG.

Projek baru ini akan menerbitkan tiga laporan untuk Afrika, Asia dan Amerika (laporan untuk Eropah telah diterbitkan). Laporan ini akan mengkaji situasi mengenai Perubahan Iklim dan Kesihatan dan merangka cadangan berasaskan sains untuk rantau-rantau tersebut. Selain itu, sintesis global berdasarkan keputusan setiap rantau akan menekankan persamaan dan perbezaan, memberikan nasihat mengenai Perubahan Iklim dan Kesihatan untuk pelaksanaan di peringkat kebangsaan, serantau dan antarabangsa. Cadangan ini akan dipadankan mengikut situasi tempatan dan keperluan strategik, dengan mengambil kira penyelesaian dari segi penyesuaian dan mitigasi/ pengurangan.

IAP terdiri daripada lebih 140 akademi sains dari Afrika, Asia, Amerika dan Eropah yang disusun mengikut empat rangkaian serantau, iaitu The Association of Academies and Societies of Sciences in Asia (AASSA), European Academies' Science Advisory Council (EASAC), InterAmerican Network of Academies of Sciences (IANAS) dan Network of African Science Academies (NASAC).

Pakar dan wakil dari empat rangkaian ini - AASSA (Asia), EASAC (Eropah), IANAS (Amerika) dan NASAC (Afrika) - bersidang di Halle, Jerman pada 4-5 November 2019 untuk mesyuarat pertama projek ini.

Untuk menangani desakan perubahan iklim dan kesannya terhadap kesihatan rantau Asia, mesyuarat serantau pertama AASSA *Working Group on Climate Change and Health* telah diadakan pada 24 hingga 25 Februari di Kuala Lumpur. Ia diketuai oleh Academician Dato' Dr Khairul Anuar Abdullah FASc, Presiden AASSA dan Ketua Projek AASSA *Working Group on Climate Change and Health*. Profesor Yoo Hang Kim telah hadir untuk memberi pengenalan ringkas mengenai AASSA dan untuk berkongsi pengalamannya mengenai projek *InterAcademy Panel*.

Dr Robin Fears (Pengarah merangkap IAP *Coordinator)* dari EASAC *Biosciences Programme* telah berkongsi pengalaman beliau mengenai *Europe's Study on Climate Change and Health*. Wakil dari beberapa negara turut membentangkan laporan mengenai perubahan iklim, yang merangkumi mitigasi, kesesuaian, dan polisi negara, iaitu:

- Australia: Profesor Anthony Capon
- India: Dr Shabana Khan (secara maya)
- Indonesia: Profesor Dr Sofia Mubarika Haryana (secara maya)
- Malaysia: Profesor Dr Jamal Hisham Hashim
- New Zealand: Profesor Alistair Woodward
- Nepal: Dr Megnath Dhimal
- Pakistan: Profesor Dr Mohammed Perwaiz Iqbal
- Rusia: Profesor Victor Bogatov
- Turki: Profesor Ismail Koyuncu

The Asia Report on Climate Change and Health akan merangkumi *Oceania* dan seluruh rantau Asia. Projek The AASSA *Climate Change and Health* dijangka siap menjelang Julai 2021.

Imbas Kod QR untuk bacaan selanjutnya

Webinar *Open Science APEC* & 2020 APEC *Science Prize for Innovation, Research and Education* (ASPIRE)

Waktu pandemik merupakan masa yang sesuai untuk menghargai kepentingan dan nilai sains dan teknologi dalam kehidupan kita.

Sains Terbuka merupakan pendekatan baharu yang diguna pakai dalam proses saintifik yang berdasarkan kerjasama. Ia juga merupakan satu cara baharu menyebarkan pengetahuan melalui teknologi digital dan alat kolaborasi dalam menangani cabaran global. APEC *Policy Sharing Webinar on Open Science* bertujuan untuk membina sebuah komuniti yang bekerjasama dalam mengenal pasti kaedah-kaedah mentadbir urus dan pengetahuan teknikal platform, di samping menjadi suatu medium untuk berkongsi amalan terbaik yang digunakan oleh negara ahli APEC serta dasar-dasar antarabangsa untuk mentadbir urus platform tersebut.

Pakar-pakar yang telah dijemput daripada negara ahli APEC telah mengetengahkan kepentingan berkongsi data pada tahap yang belum pernah dicapai berdasarkan paradigma sains terbuka. Hal ini menjadi semakin penting ketika dunia sedang dilanda pandemik COVID-19. Pakar-pakar yang hadir adalah seperti berikut:

I. Dr Alan Paic, Analis Kanan Dasar, Dasar Sains dan Teknologi OECD
II. Dr Yasuhiro Murayama, Ahli, *Science Council of Japan*
III. Dr Virginia Barbour, *Australasian Open Access Strategy Group* (AOASG)
IV. Profesor Dr Noorsaadah Abdul Rahman FASc, MOSP
V. Dr Anders Karlsson, Naib Presiden, Jaringan Strategik Global, Elsevier

Satu Kenyataan APEC PPSTI Tentang Sains Terbuka telah dibentuk semasa Webinar tersebut untuk menggiatkan penglibatan dan perkongsian ilmu pengetahuan dalam kalangan negara ahli APEC melalui Sains Terbuka. Dalam kenyataan tersebut, negara ahli APEC telah mengiktiraf peranan penting Sains Terbuka dalam menggalakkan pertumbuhan dan pembangunan ekonomi secara lestari dan inklusif yang turut membawa kebaikan dari segi inovasi. Perkara ini akan menjadi kenyataan sekiranya sektor awam dan swasta dapat memberi komitmen dalam memperkasa ekosistem Sains Terbuka yang turut berpotensi memupuk aspirasi masyarakat untuk mempunyai perkongsian maklumat saintifik secara saksama. Sempena acara APEC 2020 dan ulang tahun APEC yang ke-sepuluh, acara penyampaian 2020 ASPIRE turut dijalankan semasa Webinar tersebut. Anugerah tahunan tersebut mengiktiraf saintis muda yang menunjukkan komitmen dalam penyelidikan saintifik.

Dr Huai Chen telah dinamakan sebagai penyelidik awal terbaik di rantau ini. Beliau merupakan seorang profesor di *Chengdu Institute of Biology, Chinese Academy of Sciences*. Fokus penyelidikan beliau terletak pada perkhidmatan biodiversiti dan ekosistem kawasan tanah basah. Pemuliharaan kawasan tanah basah memainkan peranan penting dalam pengurangan kesan perubahan iklim kerana kawasan tanah basah merupakan salah satu kawasan tadahan karbon yang sangat efektif. Hasil kajian Dr Chen telah memberikan pemahaman yang lebih mendalam tentang kawasan tanah basah, termasuklah perlindungan kawasan basah dengan lebih baik, membangunkan model generasi baharu tentang penghasilan gas metana serta mempertingkatkan penilaian penyimpanan karbon dan nilai ekologi. Dr Chen telah dipilih dari kalangan dua belas peserta yang telah dicalonkan oleh negara ahli APEC untuk anugerah tersebut yang bertemakan Biodiversiti untuk Kemajuan Ekonomi. Beliau telah menerima hadiah wang tunai sebanyak USD25,000 tajaan *Wiley and Elsevier*, sebuah syarikat penerbitan ilmu pengetahuan saintifik.

Pemenang Anugerah ASPIRE telah diumumkan oleh YB Datuk Ir Dr Siti Hamisah Tapsir, Setiausaha Agung MOSTI.

2020 World Conference on Science Literacy

Meningkatkan kecelikan sains awam, menggalakkan usaha anti-pandemik global

Sekali lagi, pandemik COVID-19 telah membuktikan bahawa dunia ini terdiri daripada masyarakat yang mempunyai visi yang sama. Oleh itu, peranan sains, teknologi dan invasi perlu diketengahkan dalam menangani krisis tersebut dan mencapai pembangunan secara lestari, di samping memaksimakan peranan kecelikan sains dalam menyokong pembangunan tersebut.

Sehubungan itu, *World Conference on Science Literacy* 2020 telah diadakan pada 8 Disember 2020 di Beijing, yang membawa tema Meningkatkan Kecelikan Sains Awam, Menggalakkan Usaha Anti-Pandemik Global. Persidangan tersebut telah dianjurkan oleh *China Association for Science and Technology* (CAST) dengan kerjasama *World Federation of Engineering Organizations* (WFEO), *United Nations Educational*, *Scientific and Cultural Organization* (UNESCO), *International Science Council* (ISC) dan *The World Academy of Sciences* (TWAS).

Wakil-wakil dari organisasi sains & teknologi antarabangsa dan serantau serta pakar-pakar (termasuk pemenang anugerah Nobel dan ahli akademik dari pelbagai bidang sains dari seluruh dunia) telah menyampaikan ilmu pengetahuan mereka untuk meningkatkan kecelikan sains awam serta menyampaikan peranan sains dalam menangani pandemik COVID-19. Objektif persidangan tersebut adalah untuk berkongsi pengetahuan, pengalaman dan hasil daripada usaha menangani COVID-19, di samping membincangkan langkah balas dan pelan untuk tindak balas krisis kesihatan awam. Selain itu, persidangan ini turut menjadi platform untuk mempergiatkan mekanisme kerjasama antarabangsa dalam menggalakkan kecelikan sains awam, serta meningkatkan kapasiti komuniti sains dan teknologi global dalam menangani krisis dan cabaran termasuk pandemik.

Semasa sidang pleno, beberapa ahli panel dari beberapa negara telah menyampaikan ucapan masing-masing tentang kecelikan sains serta peranan sains dalam melawan pandemik. Zhang Boli, (ahli akademik dari Chinese Academy of Engineering), Michael Levitt (Pemenang anugerah Nobel dalam bidang kimia), Hazami Habib (KPE, ASM), Ehud Menipas (Pengerusi *Association of Engineers, Architects and Graduates in Technological Sciences in Israel*) dan Huai Jinpeng (Naib Presiden Eksekutif and Ketua Setiausaha Eksekutif CAST, *Academician of Chinese Academy of Sciences* (CAS)). Puan Hazami Habib telah berkongsi pengalaman dan langkah-langkah yang diambil oleh negara Malaysia dalam memerangi COVID-19 serta menekankan kepentingan penyelidikan dan program capaian semasa pandemik ini.

Komuniti sains dan teknologi telah disarankan untuk mempraktikkan pertukaran pelbagai hala, kerjasama terbuka, pembangunan bersama, dan berusaha untuk menggalakkan kecelikan sains di seluruh dunia. Komuniti sains juga perlu memerangi pandemik COVID-19 secara berterusan dan memudahcarakan pemulihan ekonomi. Selain itu, komuniti sains juga perlu berusaha membentuk masa depan yang ideal di samping mencapai SDG untuk kesejahteraan dunia.

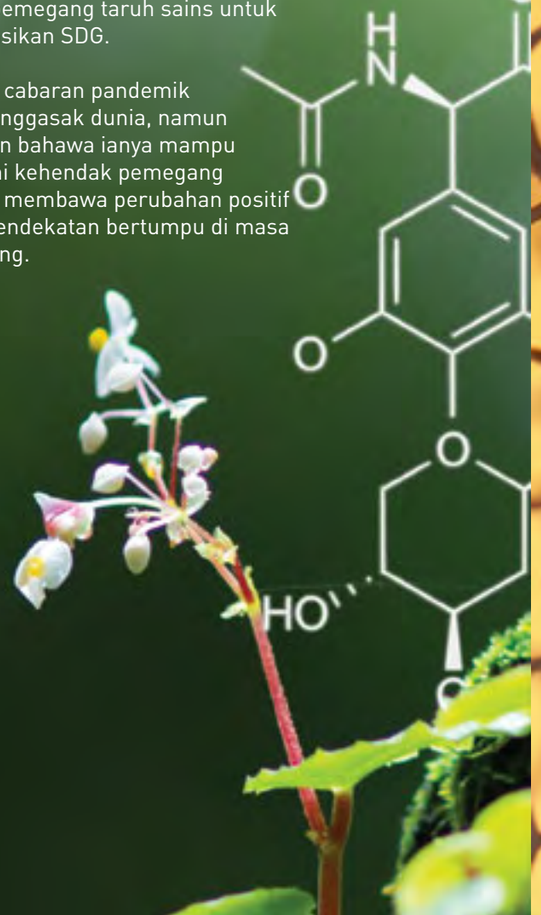
International Science, Technology and Innovation Centre for South-South Cooperation (ISTIC)

ISTIC di bawah naungan UNESCO merupakan satu-satunya Pusat Kategori Kedua di bawah sektor Sains Semula Jadi yang mempunyai pengkhususan dalam Dasar STI di negara selatan. Selama sedekad, ISTIC telah memberi fokus kepada agenda utama berikut: Polisi STI; Wanita dalam STI; Pendidikan Sains Berdasarkan Inkuiri (IBSE) dan Pendidikan STEM; Penyelenggaran Infrastruktur; Teknokeusahawanan; Akreditasi dan Mobiliti Jurutera dan Juruteknik; serta Teknologi Digital. Sejak pertubuhannya, ISTIC telah menganjurkan sebanyak 101 program yang merangkumi lapan SDG. Program tersebut telah dihadiri oleh 4,298 peserta (1,566 peserta dari Malaysia) dari 105 negara (termasuk 99 negara ahli G77) dan telah bekerjasama dengan lebih daripada 150 rakan strategik.

Tahun 2020 akan diingati sebagai tahun pandemik COVID-19. Namun begitu, ISTIC telah bertindak dengan menghadapi cabaran yang ada serta beradaptasi dengan normal baharu. ISTIC telah mencatat pencapaiannya setakat ni, terus mengukuhkan hubungan antara rakan kongsi, melaksanakan inisiatif saintifik serta meneroka peluang-peluang baharu.

ISTIC telah menganjurkan program utama di bawah agenda (seperti Teknokeusahawanan) dengan *Malaysian Technology Development Corporation* (MTDC) dan *Centre for Science & Technology of the Non-Aligned and Other Developing Countries* (NAM S&T Centre). ISTIC telah menganjurkan program latihan tentang polisi STI bersama *Korea Institute of S&T Evaluation and Planning* (KISTEP). Selain itu, ISTIC bekerjasama dengan *International Knowledge Centre for Engineering Science and Technology under the auspices of UNESCO* (IKCEST) untuk menganjurkan program mengenai Data Raya. ISTIC juga bekerjasama dengan Universiti Teknologi Malaysia (UTM) dan *National STEM Centre* untuk menganjurkan program latihan *Computer Science Education* untuk guru-guru dari seluruh Malaysia. ISTIC turut bekerjasama dengan *Office for Climate Education* (OCE), *Southeast Asian Ministers of Education Organisation–Regional Centre for Education in Science and Mathematics* (SEAMEO RECSAM) dan *Institute for Environment and Development* (LESTARI) untuk menganjurkan program *Climate Change Education* secara dalam talian. ISTIC juga telah menganjurkan sebuah program baharu tentang Sains Terbuka yang melibatkan kerjasama antara sektor dalam kalangan jaringan pemegang taruh sains untuk merealisasikan SDG.

Meskipun cabaran pandemik masih menggasak dunia, namun ISTIC yakin bahawa ianya mampu memenuhi kehendak pemegang taruh dan membawa perubahan positif melalui pendekatan bertumpu di masa akan datang.



International Science Council-ROAP

ROAP tetap meneruskan tanggungjawabnya sepanjang tahun 2020 walaupun pandemik COVID-19 telah melanda negara. ROAP menggiatkan usahanya untuk mempelbagaikan cara dalam meneruskan penglibatan bersama semua ahli serantau.

Sains Terbuka merupakan fokus utama bagi aktiviti-aktiviti ROAP. ROAP telah bekerjasama dengan UNESCO *Science Bureau for Asia and the Pacific in Jakarta* untuk memberi input dalam perundingan serantau bagi mencapai persetujuan tentang Sains Terbuka. ROAP akan tetap meneruskan aktiviti dan bekerjasama dengan pelbagai pihak untuk membangunkan Sains Terbuka. Oleh itu, ROAP telah bekerjasama dengan ASM dan MOSTI untuk memperjuangkan agenda Sains Terbuka di APEC. APEC PPSTI telah menyokong usaha perjuangan agenda tersebut. Usaha tersebut menyeru negara ahli APEC untuk menyokong Sains Terbuka dalam menggalakkan penggunaan bukti berasaskan sains dalam menyebarluaskan dasar domestik dan meningkatkan kerjasama melalui pembangunan kapasiti serta perkongsian pengalaman.

ROAP bersama dengan MSAF dan ASM telah menganjurkan *TropSc Webinar Series: The Future Belongs to the Tropics* bagi menangani SDG. Siri webinar tersebut mengetengahkan isu-isu kelestarian di kawasan tropika. Webinar pertama yang dianjurkan, *Youth for the Tropics*, telah diadakan sempena Hari Belia Antarabangsa. Webinar tersebut memfokuskan kepada isu perubahan iklim, penggunaan dan perlindungan sumber-sumber asli serta mengupas tentang peranan keusahawanan sosial. ROAP telah melancarkan *Register of Disaster Risk Reduction (DRR) Social Entrepreneurs* yang akan diguna pakai dalam penghasilan *DRR Social Entrepreneurs Handbook and Roadmap*. Selain itu, ROAP turut bersama-sama menganjurkan:

i. *Black Gold of the Tropics* sempena Hari Kopi Sedunia
ii. *The Soul of the Cities* sempena Hari Perancangan Bandar Sedunia
iii. *Mountains and Life* sempena I*nternational Mountain Day*

ISC juga telah bekerjasama dengan *United Nation Development Programme* (UNDP) untuk menganjurkan webinar bertajuk *Rethinking Human Development*. Hasil daripada webinar tersebut telah dibukukan dan dilancarkan semasa Hari Sains Sedunia untuk Keamanan dan Pembangunan. Penerbitan tersebut telah memasukkan input daripada pelbagai pihak tentang isu-isu sempadan dunia dan hak orang asli dalam usaha memangkinkan perbincangan tentang isu-isu tersebut. Selain itu, ROAP turut menganjurkan webinar tersebut dalam Bahasa Malaysia untuk merangkumkan kepelbagaian rantau ini. Hasil daripada webinar tersebut akan diterbitkan.



Jaringan Pakar

Mesyuarat Agung Tahunan ASM ke-25

Mesyuarat Agung Tahunan kali ini merupakan mesyuarat pertama yang diadakan secara maya berikutan sekatan pergerakan yang dikenakan semasa pandemik COVID-19. Seramai 186 Felo telah menyertai mesyuarat ini, di mana 184 felo menyertai secara dalam talian dan dua felo menghadirkan diri secara fizikal di pejabat ASM. Mesyuarat kali ini mencatatkan kehadiran yang tertinggi dalam tempoh 25 tahun penubuhan ASM.

Tayangan video selama 2 minit yang memaparkan perjalanan ASM selama 25 tahun telah menarik perhatian para hadirin. Video tersebut turut menampilkan permulaan 50 Felo Asas yang kini telah berkembang ke jumlah 374 Felo. ASM juga turut menerbitkan sebuah buku peringatan yang merekodkan kenangan dan aktiviti ASM sepanjang 25 tahun penubuhannya.

Dalam ucapannya, Profesor Datuk Dr Asma Ismail FASc menyampaikan gambaran keseluruhan inisiatif ASM, aktiviti utama bagi tahun 2020 dan kajian strategik ASM mengenai impak sains pada ekonomi negara. Datuk Asma turut mengumumkan bahawa Rangka Kerja 10-10 MySTIE telah diusulkan sebagai salah satu pelan pemulihan ekonomi pasca COVID-19. Buat julung kalinya, Menteri MOSTI, YB Khairi Jamaluddin menyebut mengenai STIE dalam sesi Parlimen. STIE juga turut disematkan dalam Dasar Sains, Teknologi, dan Inovasi Negara baharu, di mana integrasi antara sains dan ekonomi untuk penghasilan impak diakui secara formal.

Felo Kanan bagi tahun 2019 turut diumumkan pada mesyuarat kali ini. Academician Profesor Datuk Dr Halimaton Hamdan FASc dilantik atas usaha beliau dalam memupuk bakat saintifik Malaysia, pencapaian cemerlang serta sumbangan beliau dalam bidang nanoteknologi melalui penyelidikan, pembangunan dan pengkomersialan.

Top Research Scientists Malaysia (TRSM)

Saintis terkemuka negara melaksanakan penyelidikan dengan meneliti fakta-fakta asas, menyebarkan pengetahuan untuk generasi akan datang dan menterjemahkan penemuan mereka demi sebuah negara yang lebih makmur. Minda terulung ini, iaitu para penyelidik, berpotensi menerajui pelaksanaan agenda STI Malaysia.

Inisiatif pangkalan data TRSM dimulakan ASM dengan tujuan untuk meraikan pencapaian saintis Malaysia dan meletakkan mereka sebagai contoh yang terbaik dan mentor untuk saintis muda negara. Repositori dalam talian tersebut turut berperanan sebagai hub penyebaran ilmu pengetahuan yang akan membantu perkembangan STI di Malaysia.

Pengguna berdaftar: 5,152
Data dan maklumat lengkap penyelidik: 4,833
Jumlah Penerima TRSM (2012-2020): 196

Penerima TRSM berdasarkan kumpulan disiplin:
- Sains Kejuruteraan: 69
- Sains Biologi, Pertanian & Alam Sekitar: 45
- Sains Perubatan & Kesihatan: 24
- Teknologi Maklumat & Sains Komputer: 21
- Matematik, Fizik & Sains Bumi: 17
- Sains Kimia: 16
- Sains Sosial & Kemanusiaan: 3
- Pembangunan Sains & Teknologi dan Industri: 1

2020 FELO

1 Felo Kanan

20 Felo Baharu

2019 TRSM

30 Penerima

196 Jumlah Penerima

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

New Norms, Impacts and Beyond
Tahun 2020 membawa pelbagai cabaran yang menguji YSN-ASM dalam meneruskan impak sambil menyesuaikan diri dengan norma baru. Di bawah kepimpinan Dr Chai Lay Ching, YSN-ASM komited dalam menyesuaikan diri dengan dunia maya dalam usaha untuk menjadi pendorong ekosistem STI nasional.

Dua puluh tiga saintis dari universiti awam dan swasta, institusi penyelidikan, pertubuhan bukan kerajaan, dan industri telah dilantik sebagai ahli YSN-ASM pada tahun 2020. Latar belakang ahli-ahli baru yang komprehensif dan kerjasama dengan ahli gabungan baru akan dimanfaatkan bagi membawa YSN-ASM ke tahap yang lebih tinggi.

Sebahagian daripada program maya yang diterajui YSN-ASM pada tahun 2020:

1. Kerjasama dengan industri
YSN-ASM sebagai suara saintis muda Malaysia kini diiktiraf di peringkat nasional, dengan lebih banyak jemputan untuk berkolaborasi dengan pemain industri. Merck Malaysia Sdn Bhd dan ViTrox Corporation Sdn Bhd merupakan rakan industri untuk YSN-ASM *Chrysalis Award* 2020. YSN-ASM juga menganjurkan tiga siri webinar *Merck Back to Lab* untuk membincangkan cabaran yang dihadapi semasa pandemik COVID-19. Selain itu, kerjasama berterusan dengan Petrosains Sdn Bhd juga memberi impak positif melalui projek *Petrosains STEM Live*.

2. *YSN-ASM Chrysalis Award* 2020
Panel hakim telah memilih 15 finalis daripada 46 penyertaan untuk anugerah sulung ini. Semua finalis telah menjalani latihan mengenai pelbagai kemahiran seperti etika penyelidikan, komunikasi sains, penasihat sains, pengkomersialan, dan penyusunan kertas cadangan. Acara akhir telah disempurnakan oleh Setiausaha Agung MOSTI, Datuk Ir Dr Siti Hamisah Tapsir pada 9 Januari 2021. Lam Jia Yong dari UPM telah diumumkan sebagai Pemenang Tempat Pertama. Beliau telah membawa pulang hadiah wang tunai, tajaan dari Merck, dana pembangunan kerjaya dari ASM dan sijil pencapaian. Tujuan utama anugerah ini adalah bagi mengenal pasti dan memupuk calon PhD untuk menjadi tonggak pada masa hadapan bagi STI ekosistem.

3. *Science Café*
Science Café, salah satu acara khas YSN-ASM untuk mempromosikan komunikasi sains, telah dianjurkan secara maya melalui Facebook YSN-ASM dengan pelbagai topik STI yang menarik, dari pembelajaran dalam talian hingga ke bisa ular. Dua belas sesi telah dianjurkan, dengan menampilkan ahli YSN-ASM dan ahli gabungan, dan telah mendapat 8601 tontonan di Facebook.

4. Pelancaran modul IBSE
Begitulah Sang Suria dan Gen, Inovasi Kehidupan! adalah dua Modul IBSE yang ditujukan untuk guru sekolah rendah. Kedua-duanya telah disiapkan oleh kumpulan kerja Pendidikan Sains YSN-ASM. Presiden ASM melancarkan kedua-dua modul semasa Kolokium Maya YSN-ASM 2020. Kursus dalam talian boleh didapati di Openlearning.com pada tahun 2021. Ia juga akan digunakan untuk latihan dalam talian dalam kolaborasi yang akan datang dengan Pusat STEM Nasional.

5. Kembara STIE MOSTI
Ini adalah satu-satunya program jangkauan yang dijalankan secara fizikal pada tahun 2020. Program ini dianjurkan sempena Minggu Sains Negara (Negeri Sembilan). Dua modul jangkauan mengenai sains forensik dan genetik telah diatur oleh pasukan YSN-ASM *Outreach* di UiTM Rembau, yang turut dihadiri oleh YB Khairy Jamaluddin. Acara ini masih berjaya menarik minat pelajar sekolah dengan keajaiban sains walaupun terbatas dengan pelaksanaan SOP yang ketat.



68
Ahli

111
Ahli gabungan

23
Ahli baru

23
Ahli gabungan baru

22.3%

24.6%

16.4%

Live

4,900
tontonan ketika sesi Pembentangan di Pusingan Akhir YSN-ASM Chrysalis Award 2020

Imbas kod QR untuk maklumat lanjut



Dalam Kenangan

Academician Emeritus Profesor Tan Sri Dato' Dr Mohd Rashdan Baba FASc



(31 Oktober 1935 – 30 Mac 2020)

> *"At every turn we make around the world to-day we witness a mounting wave of diligent persuit of knowledge by every progressive nation and emphasis made in transforming education attainment into progress."*

Academician Profesor Emeritus Tan Sri Dato' Dr Mohd Rashdan Baba dilahirkan di Chembong, Rembau, Negeri Sembilan. Beliau merupakan pemegang Diploma dalam bidang Sains Pertanian dari Malayan *Agricultural College* (1954-1957), Sarjana Muda Sains (BSc) dalam bidang Pertanian dari *University of Reading*, UK (1960), dan Ijazah Doktor Falsafah dari *University of Leeds*, UK (1964).

Kerjaya pertama beliau bermula pada tahun 1957 sebagai pegawai di Jabatan Pertanian di Seremban, Negeri Sembilan. Kemudian, beliau bekerja sebagai penolong pensyarah di *Agricultural College of Malaya* dan ahli agronomi di Jabatan Pertanian (1964).

Kemahiran kepemimpinan Tan Sri Rashdan terserlah ketika beliau memegang jawatan sebagai Pengetua di *Agricultural College of Malaya* (1965-1969). Kredibiliti beliau dalam sektor pendidikan terbukti apabila Perdana Menteri ketika itu, Tun Abdul Razak, telah melantik beliau sebagai Naib Canselor pertama yang menerajui Universiti Kebangsaan Malaysia (UKM). Tan Sri Rashdan telah memulakan inisiatif untuk menggunakan Bahasa Melayu sebagai bahasa utama dalam pengajaran dan penulisan dengan tujuan untuk memartabatkan Bahasa setaraf dengan perkembangan ilmu pengetahuan.

Beliau juga telah dilantik sebagai Naib Canselor UPM yang pertama (1971-1982). Selaku Naib Canselor pertama, beliau telah berjaya menubuhkan sembilan buah fakulti dan dua pusat yang mengendalikan 19 program ijazah, sembilan program diploma dan satu program profesional, serta ijazah lanjutan. Setelah bersara dari UPM, beliau dilantik sebagai Pengerusi Eksekutif Kumpulan Guthrie Berhad dari tahun 1982 hingga 1987, menggantikan pengurus Britain ketika itu. Tidak lama kemudian, beliau menerajui Telekom Malaysia Bhd (TM) selama 12 tahun, dan telah menyumbang terhadap pertumbuhan industri telekomunikasi negara.

Sepanjang perjalanan kerjayanya, Tan Sri Rashdan telah menerima pelbagai anugerah dari dalam dan luar negara, termasuk gelaran Profesor Emeritus oleh UPM (1982), Ijazah Kehormat Undang-Undang oleh UKM (1999), Ijazah Kehormat Doktor Sains dari *University of Reading* (1986), dan Ijazah Kehormat Undang-Undang dari *University of Leeds* (1989). Beliau juga telah menerima anugerah *CEO of The Year* dari *Business Times* dan *American Express Corporate Services* (1995). Pada tahun 2013, beliau telah dianugerahkan dengan Anugerah Akademik Nasional (AAN).

Tan Sri Rashdan disegani sebagai seorang ikon, pendidik dan ahli korporat yang berjaya. Beliau akan sentiasa dikenang oleh semua.

Dr Lim Boon Liat FASc



(21 Ogos 1926 – 11 Julai 2020)

> *"Do not be deterred by failure as persistency and perseverance will overcome it."*

Dr Lim Boon Liat adalah ahli zoologi yang disegani di Malaysia. Beliau telah mendedikasikan kehidupannya untuk membuat penyelidikan dalam bio-perubatan pada haiwan kecil berkaitan dengan penyakit zoonosis. Minat beliau mula berputik ketika beliau di belajar di Sekolah Tinggi Klang. Sekolah tersebut memiliki sebidang tanah sebagai tapak semaian tanaman dan sayur-sayuran. Burung, serangga dan kadang kala, tikus dan ular sering muncul di kebun tersebut. Beliau mula tertarik dan sentiasa ke kebun itu untuk memerhati kehidupan flora dan fauna di situ.

Perang Dunia II telah mengganggu pelajarannya. Dr Lim kemudiannya menuju ke Pulau Carey di Selangor dan mendirikan kilang untuk menghasilkan garam dari air laut. Di sana, beliau bertemu dengan orang asli yang telah mengajar beliau cara untuk mengenal pasti jenis haiwan yang berbeza.

Minatnya yang mendalam terhadap alam semula jadi semakin bercambah. Dengan pengetahuannya mengenai haiwan, beliau ditawarkan pekerjaan di Institut Penyelidikan Perubatan (IMR) sebagai pembantu makmal sementara di Unit Penyelidikan Scrub Typhus. Beliau terlibat dengan pelbagai projek di bawah naungan Muzium Bishop, Universiti Hawaii. Beliau juga berpeluang membantu menubuhkan Zoo Negara di Malaysia, bersama-sama dengan mendiang Tan Sri V M Hutson dan mendiang Datuk Kington Loo, serta pegawai dari Jabatan Perlindungan Hidupan Liar dan Taman Negara (DWNP).

Pada tahun 1959, Dr Lim telah menerima *Sino-British Fellowship Trust Award* di bawah *British Council*. Selama setahun setengah, beliau telah mempelajari ekologi haiwan di Oxford dan taksonomi mamalia di *British Natural History Museum*. Pada tahun 1961, beliau telah dilantik sebagai ketua Unit Ekologi Perubatan di IMR. Kemudian, Dr Lim telah melanjutkan pelajaran dan berjaya menggenggam Ijazah Sarjana dari *University of Aberdeen*, Scotland. Beliau telah kembali ke IMR dan dinaikkan pangkat sebagai ahli zoologi. Pada tahun 1977, beliau menerima Ijazah Doktor Falsafah dalam Zoologi di Universiti Sains Malaysia. Dr Lim kemudiannya telah dibawa ke WHO di Indonesia, di mana beliau dilantik sebagai ketua Unit Penyelidikan Kawalan Vektor Biologi.

Setelah bersara dari WHO pada tahun 1987, Dr Lim dilantik sebagai penasihat kehormat untuk Jabatan Perlindungan Hidupan Liar dan Taman Negara dan Persatuan Pencinta Alam Malaysia. Beliau turut berkhidmat sebagai perunding dengan *Forest Research Institute of Malaysia* (FRIM) dan *DANCED-Management of Krau Wildlife Reserve*, Pahang.

Dr Lim telah menerima pelbagai anugerah termasuk *Sandosham Gold Medal* oleh *Malaysian Society of Parasitology and Tropical Medicine* (1978), *Malaysia Toray Science Foundation* (1995), Ahli Kehormat bagi *The American Society of Mammalogists* (2003), *Spallanzani Award* oleh *North American Society for Bat Research* (2007), dan Merdeka Award (2013).

Dr Lim telah meninggal dunia pada usia 94 tahun. Legasi beliau sebagai ahli zoologi dan naturalis terkemuka akan tetap dikenangi.

Penyata Kewangan ASM 2020 adalah bukti ketahanan ASM dalam menghadapi cabaran berikutan pandemik COVID-19. Walaupun situasi sebegini tidak pernah terjadi, Akademi cekal menghadapi cabaran pandemik ini. Pada ketika ini, Akademi telah meneruskan operasinya dengan menggunakan sumber dan teknologi sedia ada dan telah melaksanakan pendekatan bekerja dari rumah. Ia merupakan masa yang strategik untuk menilai keberkesanan pendekatan yang dipraktiskan dan keperluan untuk beralih dari manual ke sistem, fizikal ke maya, rigid ke fleksibel dan terhad kepada tidak terhad.

Akademi telah menyusun dan menjadualkan semula aktiviti dan programnya untuk memenuhi objektif yang dirancang. Pada tahun ini, Mesyuarat Majlis, Mesyuarat Agung Tahunan, sesi libat urus dan mesyuarat jawatankuasa yang diadakan secara maya, telah membolehkan penyertaan yang lebih tinggi. Webinar juga telah menjadi platform popular untuk penganjuran syarahan, seminar dan kursus, di mana ianya telah berjaya menarik lebih ramai peserta dan berimpak tinggi.

Pandemik ini telah mencetus lonjakan paradigma dalam mengadaptasi teknologi sekali gus mengubah minda warga ASM. Walau bagaimanapun , ASM turut berdepan dengan cabaran-cabaran norma baharu terutamanya dalam pengurusan dan pengekalan bakat, kepimpinan dan prestasi. Transformasi ini pasti menjanjikan kemajuan dan perkembangan yang progresif untuk ASM.



Kedudukan Kewangan ASM

Kedudukan Kewangan ASM pada tahun 2020 adalah lebih kukuh dengan lebihan terkumpul berjumlah RM10,330,774 [2019: RM9,720,072].

Jumlah aset ASM adalah RM25,232,047. Sumbangan terbesar ASET ASM adalah dari simpanan tetap berjumlah RM20,378,558. Geran kerajaan dan Geran Antarabangsa yang diterima untuk operasi dan aktiviti dilaburkan ke dalam simpanan tetap yang diluluskan oleh MOF.

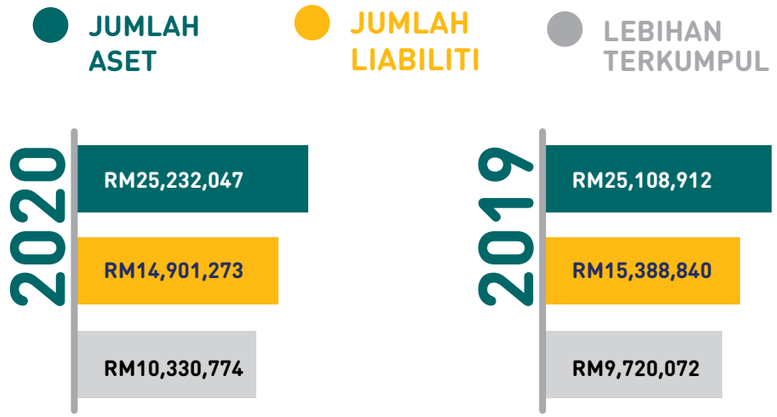
Sebahagian besar jumlah liabiliti ASM adalah dari geran tertunda yang diterima daripada Kerajaan Malaysia dan peruntukan yang diterima untuk Pejabat Antarabangsa yang dihoskan oleh ASM iaitu ISC ROAP dan ISTIC. Penurunan sebanyak 3% bagi tahun 2020 berbanding tahun 2019 (2020: RM14,901,273 2019: RM15,388,840).

Prestasi Kewangan ASM

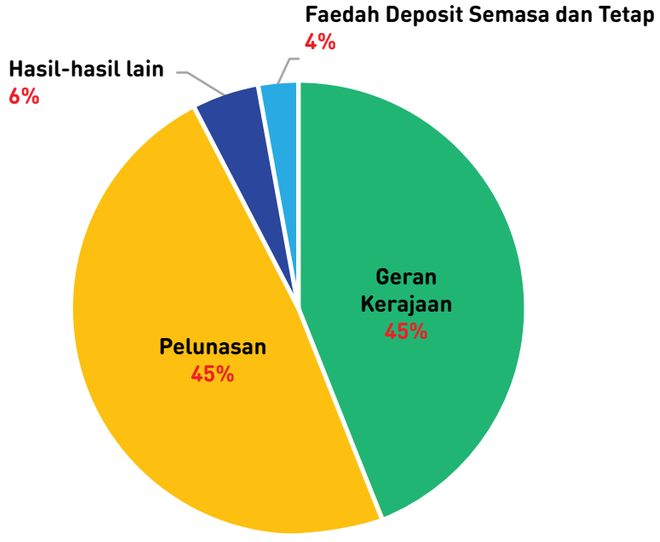
Prestasi Kewangan ASM bagi tahun berakhir 31 Disember 2020 menunjukkan lebihan sebelum cukai berjumlah RM910,151 berbanding tahun 2019 (RM2,688,803).

Terdapat penurunan lebihan sebanyak 66% berbanding tahun 2019. Penurunan pada tahun 2020 adalah kerana tiada pemberian geran tambahan dari Kerajaan walaupun perbelanjaan untuk program sains meningkat sebanyak 43%. (2020: RM8,699,537; 2019: RM6,072,266).

ASM mencatatkan jumlah pendapatan sebanyak RM18,027,164 pada tahun 2020. Geran yang diterima dari Kerajaan Malaysia berjumlah RM8,164,709 (45%) manakala 45% sumber pendapatan merupakan pelunasan geran tertunda, pendapatan tertunda dan dana sumbangan berjumlah RM8,101,533. 10% adalah dari pendapatan lain dan keuntungan pelaburan berjumlah RM1,760,922.



SUMBER PENDAPATAN ASM



JUMLAH PENDAPATAN
RM18,027,164

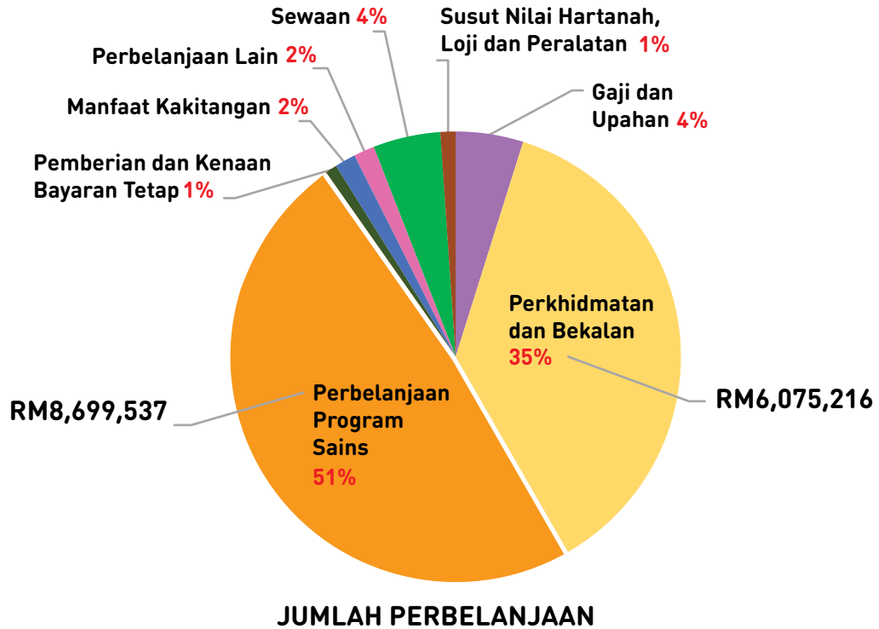
45% -Geran Operasi ASM berjumlah **RM8,164,709**.

45% -Pelunasan geran tertunda, pendapatan tertunda dan dana sumbangan berjumlah **RM8,101,533**.

6% -Pendapatan lain berjumlah **RM1,067,095** dari yuran pengurusan, sewa, lebihan dari projek, bayaran balik GST dan lain-lain.

4% -Keuntungan pelaburan dana ASM berjumlah **RM693,827** dari faedah deposit semasa dan tetap.

PERBELANJAAN



JUMLAH PERBELANJAAN
RM17,117,013

ASM mencatatkan jumlah perbelanjaan berjumlah RM17,117,013 pada tahun 2020 berbanding RM15,862,331 pada tahun 2019, Pecahan perbelanjaan adalah seperti berikut:

51% - **Perbelanjaan Program Sains** adalah aktiviti yang diadakan oleh ASM untuk memenuhi 14 fungsi ASM seperti yang dinyatakan dalam Akta ASM 1994

35% - Perbelanjaan **Perkhidmatan dan Bekalan** terdiri daripada perbelanjaan operasi ASM yang merupakan perbelanjaan pentadbiran, gaji dan upah untuk 83 kakitangan kontrak, komunikasi sains, keahlian dan urusan antarabangsa.

4% - Perbelanjaan **Sewa** merangkumi sewaan ruang pejabat, peralatan dan stor. Pengurangan sewa pejabat yang ketara adalah kerana ASM menerima pengecualian selama 6 bulan berikutan keputusan kerajaan mengenai COVID-19

4% - **Gaji dan Upahan** untuk kakitangan tetap

2% - **Perbelanjaan lain** terdiri daripada yuran, insuran, faedah terakru dan hutang lapuk

2% - **Manfaat Pekerja** terdiri daripada gentian cuti rehat pekerja dan ganjaran

1% - **Susut Nilai Aset (Hartanah, Loji dan Peralatan)**

1% - **Pemberian dan Bayaran Tetap** terdiri daripada sumbangan kepada Kelab Sukan dan Kebajikan Kakitangan ASM, pencen dan langganan tahunan antarabangsa

SIJIL KETUA AUDIT NEGARA
MENGENAI PENYATA KEWANGAN
AKADEMI SAINS MALAYSIA
BAGI TAHUN BERAKHIR 31 DISEMBER 2020

Sijil Mengenai Pengauditan Penyata Kewangan

Pendapat Berteguran

Saya telah mengaudit Penyata Kewangan Akademi Sains Malaysia yang merangkumi Penyata Kedudukan Kewangan pada 31 Disember 2020 dan Penyata Prestasi Kewangan, Penyata Perubahan Dalam Aset Bersih serta Penyata Aliran Tunai bagi tahun berakhir pada tarikh tersebut dan nota kepada penyata kewangan termasuklah ringkasan polisi perakaunan yang signifikan seperti dinyatakan pada muka surat 3 hingga 35.

Pada pendapat saya, penyata kewangan ini memberikan gambaran yang benar dan saksama mengenai kedudukan kewangan Akademi Sains Malaysia pada 31 Disember 2020 dan prestasi kewangan serta aliran tunai bagi tahun berakhir pada tarikh tersebut selaras dengan Piawaian Perakaunan Sektor Awam Malaysia (MPSAS) dan Akta Akademi Sains Malaysia 1994
(Akta 524) kecuali perkara yang dinyatakan di perenggan Asas Kepada Pendapat Berteguran.

Asas Kepada Pendapat Berteguran

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

a. Belanja Terdahulu

Belanja perkhidmatan serta bekalan dan perbelanjaan-perbelanjaan lain adalah terlebih nyata sejumlah RM76,243 bagi tahun 2020. Perbelanjaan ini sepatutnya direkodkan dalam penyata kewangan bagi tahun berakhir 31 Disember 2021.

Kebebasan dan Tanggungjawab Etika Lain

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

Maklumat Lain Selain Daripada Penyata Kewangan dan Sijil Juruaudit Mengenainya

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

Perkara Audit Utama

Kecuali perkara yang dijelaskan dalam perenggan Asas Kepada Pendapat Berteguran, saya memutuskan bahawa tidak ada Perkara Audit Utama lain untuk disampaikan di dalam Sijil ini.

Tanggungjawab Majlis Terhadap Penyata Kewangan

Majlis bertanggungjawab terhadap penyediaan penyata kewangan Akademi Sains Malaysia yang memberi gambaran benar dan saksama selaras dengan Piawaian Perakaunan Sektor Awam Malaysia (MPSAS) dan Akta Akademi Sains Malaysia 1994 (Akta 524). Majlis juga bertanggungjawab terhadap penetapan kawalan dalaman yang perlu bagi membolehkan penyediaan Penyata Kewangan Akademi Sains Malaysia yang bebas daripada salah nyata yang ketara, sama ada disebabkan fraud atau kesilapan.

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

Tanggungjawab Juruaudit Terhadap Pengauditan Penyata Kewangan

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

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

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

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

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

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

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

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

Laporan Mengenai Keperluan Perundangan dan Peraturan Lain

Berdasarkan keperluan Akta Akademi Sains Malaysia 1994 (Akta 524), saya juga melaporkan bahawa pada pendapat saya, rekod perakaunan dan rekod lain yang dikehendaki Akta Akademi Sains Malaysia 1994 (Akta 524) untuk disimpan oleh Akademi Sains Malaysia telah disimpan dengan sempurna kecuali perkara yang dinyatakan di perenggan Asas Kepada Pendapat Berteguran.

Hal-hal Lain

a. Pada 31 Disember 2017, Akademi Sains Malaysia telah mengiktiraf bangunan di Jalan Tun Ismail, Kuala Lumpur. Sehingga kini, Akademi Sains Malaysia masih belum memperoleh dokumen pemilikan bangunan tersebut.

b. Sijil ini dibuat untuk Majlis berdasarkan Akta Akademi Sains Malaysia 1994 (Akta 524) dan bukan untuk tujuan lain. Saya tidak bertanggungjawab terhadap pihak lain bagi kandungan sijil ini.

(SELWAH BINTI HJ. SAID)
b.p. KETUA AUDIT NEGARA
PUTRAJAYA
22 APRIL 2021

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

Kami, **PROFESSOR DATUK DR ASMA BINTI ISMAIL FASc** dan **DATUK DR. ABDUL RAZAK BIN MOHD ALI 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 2020 dan hasil kendaliannya serta perubahan kedudukan kewangannya bagi tahun berakhir pada tarikh tersebut.

*We**, PROFESSOR DATUK DR. ASMA BINTI ISMAIL FASc** and **DATUK DR. ABDUL RAZAK BIN MOHD ALI 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 2020 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 DATUK DR. ASMA BINTI ISMAIL FASc
Presiden / *President*

Akademi Sains Malaysia / *Academy of Sciences Malaysia*

Bagi pihak Majlis
On behalf of the Council

DATUK DR. ABDUL RAZAK BIN MOHD ALI FASc
Bendahari Kehormat / *Honorary Treasurer*
Akademi Sains Malaysia / *Academy of Sciences Malaysia*

KUALA LUMPUR, MALAYSIA

Tarikh / *Date*: 21 APR 2021

20th Floor, West Wing, MATRADE Tower
Jalan Sultan Haji Ahmad Shah off Jalan Tuanku Abdul Halim, 50480 Kuala Lumpur
t : 03 6203 0633 f : 03 6203 0634
www.akademisains.gov.my

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* :
21 APR 2021

PESURUHJAYA SUMPAH
W 465
KAPT (B) JASNI BIN YUSOFF
1 JAN 2019 - 31 DIS 2021
MALAYSIA

Di hadapan saya / *Before me* :

Lot 1.08, Tingkat 1,
Bangunan KWSP, Jln Raja Laut,
50350 Kuala Lumpur
Tel:019-6600746

20th Floor, West Wing, MATRADE Tower
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PENYATA KEDUDUKAN KEWANGAN
PADA 31 DISEMBER 2020

	Nota	2020 RM	2019 RM
ASET			
Aset Semasa			
Wang Tunai dan Baki di Bank	3	681,387	596,349
Simpanan Tetap	4	20,378,558	20,795,161
Akaun Belum Terima Bagi Urus Niaga Pertukaran	5	2,326	7,379
Akaun Belum Terima Lain	6	77,824	136,821
Jumlah Aset Semasa		21,140,095	21,535,710
Aset Bukan Semasa			
Hartanah, Loji dan Peralatan	7	3,683,921	3,551,676
Kerja Dalam Kemajuan	8	408,031	21,526
Jumlah Aset Bukan Semasa		4,091,952	3,573,202
JUMLAH ASET		25,232,047	25,108,912
LIABILITI			
Liabiliti Semasa			
Akaun Belum Bayar Bagi Urus Niaga Pertukaran	9	649,214	942,497
Peruntukan Manfaat Pekerja	10	238,610	229,395
Sumbangan	11	-	337,385
Pendapatan Tertunda	12	1,258,404	1,438,383
Peruntukan Cukai	24	380,333	214,676
Jumlah Liabiliti Semasa		2,526,561	3,162,336
Liabiliti Bukan Semasa			
Peruntukan Manfaat Pekerja	10	29,771	23,586
Geran Tertunda	13	11,235,099	10,613,173
Geran Tertunda - Pejabat Antarabangsa	14	1,109,842	1,589,745
Jumlah Liabiliti Bukan Semasa		12,374,712	12,226,504
JUMLAH LIABILITI		14,901,273	15,388,840
ASET BERSIH		**10,330,774**	**9,720,072**
ASET BERSIH			
Lebihan Terkumpul		10,330,774	9,720,072
JUMLAH ASET BERSIH		**10,330,774**	**9,720,072**

PENYATA PRESTASI KEWANGAN
BAGI TAHUN KEWANGAN BERAKHIR 31 DISEMBER 2020

	Nota	2020 RM	2019 RM
HASIL			
Urus Niaga Bukan Pertukaran	15	16,331,552	17,892,773
Urus Niaga Pertukaran	16	1,695,612	658,361
JUMLAH HASIL		18,027,164	18,551,134
PERBELANJAAN			
Gaji dan Upahan	17	739,509	771,506
Perkhidmatan dan Bekalan	18	6,075,216	5,860,156
Perbelanjaan Program Sains	19	8,699,537	6,072,266
Pemberian dan Kenaan Bayaran Tetap	20	124,626	134,231
Manfaat Kakitangan	21	284,571	237,644
Perbelanjaan-perbelanjaan Lain	22	274,877	1,362,201
Sewaan	23	754,476	1,251,995
Susut Nilai Hartanah, Loji dan Peralatan	7	164,201	172,332
JUMLAH PERBELANJAAN		17,117,013	15,862,331
LEBIHAN SEBELUM CUKAI		910,151	2,688,803
Cukai	24	299,449	274,156
LEBIHAN SELEPAS CUKAI		**610,702**	**2,414,647**

PENYATA PERUBAHAN DALAM ASET BERSIH
BAGI TAHUN KEWANGAN BERAKHIR 31 DISEMBER 2020

	Nota	Lebihan Terkumpul RM	Jumlah RM
Baki pada 01 Januari 2019		7,305,425	7,305,425
- (Seperti yang Dinyatakan Semula)			
Lebihan Pendapatan atas Perbelanjaan		2,414,647	2,414,647
- (Seperti yang Dinyatakan Semula)			
Baki pada 31 Disember 2019		9,720,072	9,720,072
- (Seperti yang Dinyatakan Semula)			
Lebihan Pendapatan atas Perbelanjaan		610,702	610,702
Baki pada 31 Disember 2020		**10,330,774**	**10,330,774**

PENYATA ALIRAN TUNAI
BAGI TAHUN KEWANGAN BERAKHIR 31 DISEMBER 2020

	2020 RM	2019 RM *(Dinyatakan Semula)*
ALIRAN TUNAI DARIPADA AKTIVITI OPERASI		
Lebihan Sebelum Cukai	910,151	2,688,803
Pelarasan:		
Cukai dibayar	(133,792)	(15,279)
Cukai dibayar bagi Tahun Lepas	-	(44,201)
Susut Nilai Hartanah, Loji dan Peralatan	164,201	172,332
Faedah dari Pelaburan Jangka Pendek dan Simpanan	(693,827)	(530,345)
Faedah Terakru	77,824	133,204
Pelarasan Pembalikan Faedah Simpanan Tetap	133,204	846,945
Pelarasan dari Hartanah, Loji dan Peralatan Dihapuskira	119	5,014
Keuntungan daripada Pelupusan Hartanah, Loji dan Peralatan	(2,367)	(1,771)
Hutang lapuk	-	500,000
Pelunasan Pendapatan Tertunda	-	(10,091)
Pelarasan Manfaat Kakitangan	-	52,326
Pelunasan Geran Tertunda	105,552	(1,479,550)
Kurangan dari Operasi Sebelum Perubahan Modal Kerja	561,065	2,317,387
Pengurangan / (Peningkatan) daripada Akaun Belum Terima bagi Urus Niaga Pertukaran	64,050	4,682,097
Pengurangan daripada Akaun Belum Bayar bagi Urus Niaga Pertukaran	(277,883)	(3,973,507)
Tunai Bersih digunakan untuk Aktiviti Operasi	347,232	3,025,977
ALIRAN TUNAI DARIPADA AKTIVITI PELABURAN		
Terimaan daripada Pelupusan Hartanah, Loji dan Peralatan	2,367	1,771
Pembelian Hartanah, Loji dan Peralatan	(296,565)	(124,994)
Kerja dalam Kemajuan	(386,505)	(21,526)
Faedah Diterima	482,799	(449,804)
Tunai Bersih dijana daripada Aktiviti Pelaburan	(197,904)	(594,553)
ALIRAN TUNAI DARIPADA AKTIVITI PEMBIAYAAN		
Terimaan Sumbangan	20,630	98,233
Bayaran Sumbangan	(358,015)	(6,050)
Terimaan Pendapatan Tertunda	358,545	1,931,363
Bayaran Pendapatan Tertunda	(538,524)	(1,350,184)
Terimaan Geran Tertunda	6,686,555	7,498,227
Bayaran Geran Tertunda	(6,170,181)	(42,587,554)
Terimaan Geran Tertunda - Antarabangsa	844,916	2,505,000
Bayaran Geran Tertunda - Antarabangsa	(1,324,819)	(2,580,127)
Tunai Bersih dijana daripada Aktiviti Pembiayaan	(480,893)	(34,491,092)
PENGURANGAN BAKI TUNAI DAN KESETARAAN TUNAI	(331,565)	(32,059,668)
TUNAI DAN KESETARAAN TUNAI PADA AWAL TAHUN KEWANGAN	21,391,510	53,451,178
TUNAI DAN KESETARAAN TUNAI PADA AKHIR TAHUN KEWANGAN	**21,059,945**	**21,391,510**
DIWAKILI OLEH:		
Simpanan Tetap	20,378,558	20,795,161
Wang Tunai dan Baki di Bank	681,387	596,349
	21,059,945	**21,391,510**

PENYATA PERBANDINGAN BAJET DAN SEBENAR
BAGI TAHUN KEWANGAN BERAKHIR 31 DISEMBER 2020

	Jumlah Bajet Asal 2020 RM	Jumlah Bajet Akhir 2020 RM	Jumlah Sebenar 2020 RM	Varian Bajet 2020 RM	Nota
PENERIMAAN					(a)
Urus Niaga Bukan Pertukaran					
Pemberian Kerajaan	7,329,418	8,164,709	8,084,857	79,852	
Sumbangan Luar	-	-	-	-	
Urus Niaga Pertukaran					
Pelbagai Penerimaan	-	-	-	-	
	7,329,418	**8,164,709**	**8,084,857**	**79,852**	
PEMBAYARAN					(b)
Gaji dan Upahan	880,852	776,832	743,888	32,944	
Perkhidmatan dan Bekalan	6,091,319	6,913,469	6,877,712	35,757	
Aset Tetap	-	-	-	-	
Pemberian dan Kenaan Bayaran Tetap	320,787	291,832	284,866	6,966	
Perbelanjaan-perbelanjaan Lain	36,460	182,576	178,391	4,185	
	7,329,418	**8,164,709**	**8,084,857**	**79,852**	
PENERIMAAN BERSIH	**-**	**-**	**-**	**-**	

*Merujuk kepada varian di antara Jumlah Bajet Akhir dan Jumlah Sebenar.

Nota (a):
Perbezaan varian pemberian geran operasi daripada Kerajaan bagi bajet asal dan bajet akhir adalah disebabkan oleh pengurangan dalam pemberian kepada Pejabat Antarabangsa yang dihoskan oleh ASM. Oleh itu, bajet akhir ASM telah ditambah untuk menanggung perbelanjaan tahun semasa.

Nota (b):
Perbezaan varian perbelanjaan adalah disebabkan oleh pelaksanaan program pada tahun semasa terjejas berikutan situasi pandemik COVID-19. Program yang telah dirancang pada awal tahun telah dilaksanakan dalam talian dan terdapat juga aktiviti yang ditunda ke tahun 2021 atau dibatalkan. Oleh itu, ASM telah meneliti dan menyemak semula perancangan program dan bajet bagi tahun semasa.

NOTA-NOTA KEPADA PENYATA KEWANGAN
BAGI TAHUN KEWANGAN BERAKHIR 31 DISEMBER 2020

1 MAKLUMAT AM

a) Penubuhan dan Objektif Utama

Akademi Sains Malaysia (ASM) telah ditubuhkan di bawah Akta 524. Objektif utama ASM adalah untuk mencapai, menggalak dan meningkatkan kecemerlangan dalam bidang sains, kejuruteraan dan teknologi khusus untuk kemajuan dan pembangunan negara serta untuk kebaikan manusia sejagat.

b) Mata Wang Fungsian untuk Penyata Kewangan

Penyata Kewangan ini dibentangkan dalam Ringgit Malaysia ("RM") yang merupakan mata wang fungsian dan persembahan ASM. Semua maklumat kewangan yang dibentangkan adalah dalam RM.

c) Tarikh Penyata Kewangan Diluluskan

Penyata Kewangan Akademi bagi tahun kewangan berakhir 31 Disember 2020 telah dibentangkan dan diluluskan oleh Majlis ASM pada 21 April 2021.

2 DASAR PERAKAUNAN

a) Asas Penyediaan Penyata Kewangan

Penyata Kewangan ASM telah disediakan mengikut kelaziman kos sejarah dan mematuhi Piawaian Perakaunan Sektor Awam Malaysia (MPSAS).

Penyata Kewangan ASM ini adalah merupakan penyata kewangan tahun kelima yang disediakan mengunakan MPSAS. ASM telah menggunapakai MPSAS pada 1 Januari 2015 (lebih awal dari tarikh kuatkuasa pada tahun 2020 kepada penyata kewangan). Pemakaian MPSAS memerlukan semua piawaian di dalam MPSAS digunapakai dalam penyediaan Penyata Kewangan bagi Tahun Kewangan Berakhir 31 Disember 2016, Penyata Perbandingan bagi Tahun sebelumnya Berakhir 31 Disember 2015 dan baki awal Penyata Kedudukan Kewangan pada tarikh peralihan kepada MPSAS. Sebelum ini Penyata Kewangan ASM telah disediakan mengunakan Piawaian Pelaporan Entiti Persendirian (PERS).

Penyediaan penyata kewangan memerlukan pertimbangan, anggaran dan andaian yang memberi kesan kepada penggunaan dasar dan amaun bagi aset, liabiliti, hasil dan belanja yang dilaporkan.

Anggaran dan andaian yang digunakan akan disemak secara berterusan. Semakan semula kepada anggaran perakaunan akan diiktiraf dalam tempoh anggaran tersebut disemak, jika semakan semula hanya memberi kesan kepada tempoh tersebut, atau dalam tempoh semakan dan tempoh masa hadapan sekiranya semakan semula memberi kesan kepada tempoh semasa dan masa yang akan datang.

Sekiranya pertimbangan, anggaran dan andaian ini memberi kesan signifikan kepada amaun yang diiktiraf dalam penyata kewangan, ia telah didedahkan dalam Nota 2(p) Pertimbangan Perakaunan Kritikal dan Sumber Utama Ketidakpastian Anggaran kepada penyata kewangan.

2 DASAR PERAKAUNAN (SAMB.)

b) Pengiktirafan Hasil

Hasil daripada Urus Niaga Bukan Pertukaran

Urus Niaga bukan pertukaran akan diiktiraf sebagai aset apabila terdapat manfaat ekonomi masa depan atau potensi perkhidmatan dijangka mengalir ke dalam entiti, ianya berpunca daripada peristiwa lampau serta nilai saksama aset dapat diukur dengan munasabah. Urus niaga bukan pertukaran yang diiktiraf sebagai aset hendaklah diiktiraf sebagai hasil, kecuali setakat liabiliti yang juga diiktiraf berkenaan dengan aliran masuk yang sama sebagai tertunda di dalam penyata kedudukan kewangan. Apabila obligasi terhadap sesuatu liabiliti itu telah dipenuhi, entiti hendaklah mengurangkan amaun bawaan liabiliti yang diiktiraf itu dan mengiktiraf amaun hasil yang sama dengan pengurangan itu.

Hasil daripada Urus Niaga Bukan Pertukaran adalah seperti berikut:

i. Geran Kerajaan

Geran Kerajaan yang tidak dikenakan syarat-syarat prestasi masa depan yang tertentu seperti geran keseimbangan diambil kira sebagai hasil di dalam penyata prestasi kewangan. Geran Kerajaan yang dikenakan syarat-syarat prestasi masa depan tertentu seperti geran pembangunan diiktiraf sebagai geran tertunda dan dilunaskan sebagai hasil bersamaan dengan amaun bawaan liabiliti yang telah memenuhi syarat. Geran dilunaskan berasaskan kaedah garis lurus mengikut anggaran hayat kegunaannya.

ii. Sumbangan

Sumbangan yang tidak dikenakan syarat-syarat prestasi masa depan yang tertentu diambil kira sebagai hasil di dalam penyata prestasi kewangan. Sumbangan yang dikenakan syarat-syarat prestasi masa depan tertentu diiktiraf sebagai liabiliti dan dilunaskan sebagai hasil bersamaan dengan amaun bawaan liabiliti yang telah memenuhi syarat. Sumbangan dilunaskan berasaskan kaedah garis lurus mengikut anggaran hayat kegunaannya.

iii. Sewaan

Hasil sewaan diiktiraf apabila hasil itu diperoleh mengikut syarat perjanjian penyewaan. Kadar sewaan pejabat adalah dikenakan di bawah kadar pasaran.

Hasil daripada Urus Niaga Pertukaran

Hasil daripada urus niaga pertukaran diiktiraf apabila terdapat kemungkinan bahawa manfaat ekonomi masa hadapan atau potensi perkhidmatan akan mengalir kepada entiti dan manfaat ini boleh diukur dengan pasti.

2 DASAR PERAKAUNAN (SAMB.)

b) Pengiktirafan Hasil (Samb.)

Hasil daripada Urus Niaga Pertukaran (Samb.)

Hasil daripada Urus Niaga Pertukaran adalah seperti berikut :

i. Pendapatan Faedah dan Pendapatan daripada Pelaburan

Hasil keuntungan daripada simpanan tetap diiktiraf atas dasar perkadaran masa yang mengambil kira kadar pulangan hasil efektif atas aset tersebut. Kadar pulangan hasil efektif ke atas aset ialah kadar keuntungan yang diperlukan untuk mendiskaunkan jangkaan aliran penerimaan tunai masa hadapan sepanjang hayat aset tersebut untuk disamakan dengan amaun bawaan awal aset tersebut.

Pendapatan faedah daripada simpanan dan deposit konvensional serta pendapatan daripada pelaburan diiktiraf mengikut asas akruan.

ii. Sewaan

Hasil sewaan diiktiraf apabila hasil itu diperoleh mengikut syarat perjanjian penyewaan.

iii. Lain - lain Hasil

Lain-lain hasil diiktiraf apabila sesuatu perkhidmatan itu telah diberikan.

c) Hartanah, Loji dan Peralatan

Hartanah, loji dan peralatan dinyatakan pada kos tolak susut nilai terkumpul dan rosot nilai terkumpul. Kos termasuk semua kos langsung yang terlibat untuk membawa aset tersebut ke lokasi dan keadaan yang membolehkannya beroperasi dalam cara yang dikehendaki oleh pihak pengurusan. Kos penggantian bagi mana-mana aset yang memerlukan penggantian secara berkala akan dipermodalkan manakala nilai dibawa bagi bahagian yang diganti tersebut akan dinyahiktirafkan. Kos-kos perkhidmatan harian akan diiktiraf sebagai perbelanjaan dalam penyata prestasi kewangan.

Hartanah, loji dan peralatan diiktirafkan pada nilai kos yang melebihi RM2,000 dan ke atas atau yang memerlukan penyelenggaraan secara berkala akan dipermodalkan sebagai hartanah, loji dan peralatan.

Jika sesuatu aset diperoleh melalui urus niaga bukan pertukaran, kos hendaklah diukur berdasarkan nilai saksama pada tarikh perolehan. Aset-aset ini kemudiannya akan dikreditkan di dalam penyata prestasi kewangan, melainkan jika terdapat syarat-syarat mengenai penggunaan aset tersebut, di mana ia perlu diiktiraf di dalam liabiliti semasa.

Nilai dibawa item hartanah, loji dan peralatan hendaklah dinyahiktirafkan semasa pelupusan atau apabila tiada manfaat ekonomi masa hadapan atau potensi perkhidmatan yang dijangka daripada penggunaan atau pelupusannya.

Keuntungan atau kerugian atas nyahiktiraf hartanah, loji dan peralatan adalah ditentukan dengan membandingkan nilai pelupusan bersih dengan nilai dibawa aset di mana perbezaannya akan diambil kira sebagai keuntungan atau kerugian di dalam penyata prestasi kewangan.

2 DASAR PERAKAUNAN (SAMB.)

c) Hartanah, Loji dan Peralatan (Samb.)

Susut nilai bagi hartanah dan peralatan dikira berasaskan kaedah garis lurus di atas kos di sepanjang tempoh hayat kegunaan aset tersebut pada kadar yang berikut:-

Bangunan	1.82%
Pengubahsuaian Pejabat	10%
Kenderaan	20%
Peralatan dan Kelengkapan Pejabat	20%
Komputer	20%

Susut nilai penuh dikenakan dalam tahun pembelian bagi hartanah, loji dan peralatan. Baki bersih setiap hartanah dan peralatan hendaklah tidak kurang daripada RM1. Jika terdapat tanda perubahan yang ketara dalam faktor-faktor yang memberi kesan kepada nilai sisa, jangkaan hayat atau corak berguna aset sejak tarikh laporan tahunan lepas, nilai sisa, kaedah susut nilai dan hayat berguna aset yang boleh disusut nilai akan disemak semula dan dilaraskan secara prospektif.

Kerja dalam kemajuan terdiri daripada kerja-kerja yang melibatkan hartanah dan peralatan yang belum disempurnakan sehingga akhir tahun kewangan semasa. Kerja dalam kemajuan dinyatakan pada nilai kos dan tidak disusutnilaikan sehingga aset berkenaan sedia untuk digunakan.

d) Rosot Nilai Aset Bukan Kewangan

i. Aset Penjanaan Tunai

Pada setiap tarikh penyata kedudukan kewangan, ASM mengkaji semula nilai dibawa bagi aset-asetnya untuk menentukan sama ada terdapat sebarang petunjuk kemerosotan nilai. Jika sebarang petunjuk wujud, rosot nilai dikira dengan membandingkan nilai dibawa aset dengan amaun boleh pulih. Amaun boleh pulih adalah nilai tertinggi di antara nilai saksama ditolak kos untuk dijual dan nilai dalam penggunaan.

Dalam menentukan nilai dalam penggunaan, aliran tunai masa hadapan akan didiskaun kepada nilai semasanya menggunakan kadar diskaun sebelum cukai yang menggambarkan nilai pasaran semasa nilai masa wang dan risiko khusus kepada aset tersebut. Di dalam menentukan nilai saksama ditolak kos untuk dijual pula, urus niaga pasaran terkini akan diambil kira, jika ada. Jika tiada urus niaga pasaran terkini berlaku, model penilaian yang sesuai hendaklah digunakan.

Kerugian kemerosotan diiktiraf sebagai perbelanjaan dalam lebihan atau kurangan serta merta apabila nilai dibawa aset melebihi amaun boleh pulihnya, melainkan aset tersebut dibawa pada jumlah penilaian semula. Sebarang kerugian kemerosotan aset yang dinilai semula akan dikurangkan setakat lebihan penilaian semula yang masih belum digunakan bagi aset yang sama.

ii. Aset Penjanaan Bukan Tunai (Samb.)

ASM akan menilai pada setiap tarikh pelaporan sama ada terdapat petunjuk bahawa aset penjanaan bukan tunai mungkin terjejas. Jika sebarang petunjuk wujud, maka ASM akan membuat anggaran ke atas jumlah perkhidmatan boleh pulih aset. Jumlah perkhidmatan boleh pulih aset adalah nilai tertinggi di antara nilai saksama ditolak kos untuk dijual dan nilai dalam penggunaan.

Kerugian kemerosotan diiktiraf sebagai perbelanjaan dalam lebihan atau kurangan serta merta apabila nilai dibawa aset melebihi jumlah perkhidmatan boleh pulihnya.

Dalam menentukan nilai saksama ditolak kos untuk dijual pula, harga aset dalam perjanjian yang mengikat akan dilaraskan bagi menentukan harga pelupusan aset tersebut. Jika tiada perjanjian yang mengikat, tetapi aset tersebut diniagakan di pasaran secara aktif, maka nilai saksama ditolak kos untuk dijual adalah ditentukan dengan merujuk kepada nilai pasaran terkini ditolak kos pelupusan. Jika tiada perjanjian jual mengikat atau pasaran aktif bagi aset, ASM menentukan nilai saksama ditolak kos untuk menjual berdasarkan maklumat yang ada yang terbaik.

Bagi setiap aset, penilaian dibuat pada setiap tarikh laporan sama ada terdapat sebarang petunjuk yang sebelum ini kerugian rosot nilai yang diiktiraf mungkin tidak lagi wujud atau telah berkurangan. Jika petunjuk sedemikian wujud, ASM menganggarkan jumlah perkhidmatan boleh pulih aset. Kerugian kemerosotan nilai yang diiktiraf sebelumnya dibalikkan hanya jika terdapat perubahan dalam andaian yang digunakan untuk menentukan jumlah perkhidmatan boleh pulih aset sejak kerugian kemerosotan nilai terakhir diiktiraf. Pembalikan adalah terhad setakat nilai dibawa aset tidak melebihi jumlah perkhidmatan boleh pulih atau tidak melebihi nilai dibawa yang mungkin setelah susut nilai terkumpul seperti tiada kerugian kemerosotan nilai diiktiraf bagi aset tersebut dalam tahun sebelumnya. Pembalikan tersebut diiktiraf dalam lebihan atau kurangan.

e) Aset Kewangan

Aset kewangan diiktiraf dalam penyata kedudukan kewangan apabila ASM menjadi pihak kepada peruntukan kontrak instrumen.

Pada pengiktirafan awal, aset kewangan adalah diukur pada nilai saksama, termasuk kos urus niaga untuk aset kewangan yang tidak diukur pada nilai saksama menerusi lebihan atau kurangan, yang terlibat secara langsung di dalam mengisu aset kewangan.

Selepas pengiktirafan awal, aset kewangan akan dikelaskan kepada salah satu daripada empat kategori aset kewangan iaitu aset kewangan diukur pada nilai saksama menerusi lebihan atau kurangan, pinjaman dan belum terima, pelaburan dipegang hingga matang dan aset kewangan sedia untuk dijual.

Pembelian atau penjualan aset kewangan yang memerlukan penyerahan aset dalam tempoh masa yang ditetapkan oleh peraturan atau konvensyen di dalam pasaran akan diiktiraf pada tarikh transaksi itu dibuat, iaitu tarikh di mana ASM membuat komitmen untuk membeli atau menjual aset tersebut.

e) Aset Kewangan (Samb.)

ASM hanya mempunyai kategori aset kewangan seperti berikut:

i. Pinjaman dan Belum Terima

Pinjaman dan belum terima adalah aset kewangan bukan derivatif dengan bayaran tetap atau boleh ditentukan yang tidak disebut harga dalam pasaran aktif. Selepas pengukuran awal, aset kewangan tersebut kemudiannya diukur pada kos dilunaskan menggunakan kaedah faedah berkesan dan ditolak rosot nilai. Kos dilunaskan dikira dengan mengambil kira apa-apa diskaun atau premium atas pembelian aset tersebut serta yuran atau kos yang merupakan sebahagian daripada kadar faedah berkesan. Kerugian yang timbul daripada kemerosotan nilai diiktiraf dalam lebihan atau kurangan.

ii. Pelaburan Dipegang Hingga Matang

Aset kewangan bukan derivatif dengan tempoh matang pembayaran tetap atau boleh ditentukan dan tetap diklasifikasikan sebagai dipegang untuk matang apabila ASM mempunyai niat positif dan keupayaan untuk memegang sehingga matang. Selepas pengukuran awal, dipegang hingga matang pelaburan diukur pada kos yang dilunaskan menggunakan kaedah faedah berkesan dan ditolak rosot nilai. Kos pelunasan dikira dengan mengambil kira apa-apa diskaun atau premium atas pengambilalihan dan yuran atau kos yang merupakan sebahagian daripada kadar faedah efektif. Kerugian yang timbul daripada kemerosotan nilai diiktiraf dalam penyata prestasi kewangan.

iii. Rosot Nilai Aset Kewangan

Pada akhir setiap tempoh pelaporan, ASM akan menilai sama ada terdapat sebarang bukti objektif bahawa aset kewangan perlu untuk dirosot nilai. Bukti objektif termasuk:

(i) kesukaran kewangan yang ketara oleh peminjam; atau
(ii) pembayaran tertunggak; atau
(iii) kemungkinan bahawa peminjam akan muflis; atau
(iv) data yang menunjukkan bahawa terdapat penurunan di dalam anggaran aliran tunai masa hadapan.

Bagi kategori aset kewangan yang diukur pada kos dilunaskan, jika tiada bukti objektif wujud bagi individu yang ketara, maka semua aset dalam ASM yang mempunyai ciri-ciri risiko yang serupa tidak kira sama ada ia ketara atau tidak, akan dinilai secara kolektif untuk menentukan sama ada ia perlu dibuat rosot nilai.

Kerugian rosot nilai, berhubung dengan aset kewangan yang diukur pada kos dilunaskan, diukur sebagai perbezaan di antara nilai dibawa aset berkenaan dan nilai semasa anggaran aliran tunai yang didiskaunkan pada kadar faedah berkesan yang asal. Nilai dibawa aset tersebut akan dikurangkan melalui penggunaan akaun elaun. Sebarang kerugian rosot nilai diiktiraf dalam lebihan atau kurangan dengan serta-merta. Jika, dalam tempoh kemudiannya, sebarang amaun kerugian rosot nilai menurun, kerugian rosot nilai yang diiktiraf sebelumnya akan dibalikkan secara langsung dalam akaun elaun. Pembalikkan ini diiktiraf dalam lebihan atau kurangan dengan serta-merta.

2 DASAR PERAKAUNAN (SAMB.)

e) Aset Kewangan (Samb.)

iv. Penyahiktirafan Aset Kewangan

Aset kewangan dinyahiktiraf apabila hak kontrak untuk aliran tunai daripada aset kewangan tersebut tamat tempoh atau diselesai serta ASM telah memindahkan risiko dan ganjaran pemilikan aset kewangan yang ketara kepada pihak lain.

Pada penyahiktirafan aset kewangan secara keseluruhannya, perbezaan di antara nilai dibawa dan jumlah pertimbangan diterima diiktiraf dalam lebihan atau kurangan dalam tempoh penyahiktirafan.

f) Tunai dan Kesetaraan Tunai

Penyata aliran tunai telah disediakan menggunakan kaedah tidak langsung. Tunai dan kesetaraan tunai terdiri daripada tunai di tangan dan di bank serta pelaburan berkecairan tinggi dengan bank berlesen dan institusi kewangan yang mempunyai tempoh matang dua belas bulan atau kurang yang sedia ditukar kepada amaun tunai yang diketahui dan tertakluk kepada risiko perubahan nilai yang tidak ketara.

g) Manfaat Kakitangan

i. Manfaat Kakitangan Jangka Pendek

ASM sebagai sebuah badan berkanun persekutuan menggunakan peraturan-peraturan perkhidmatan Jabatan Perkhidmatan Awam (JPA) yang diterimapakai oleh ASM dan dasar ASM sebagai panduan. Manfaat pekerja jangka pendek ini merangkumi gaji pokok, elaun-elaun tetap, elaun-elaun berubah, pelbagai cuti termasuk cuti tahunan dan kemudahan perubatan serta insurans.

Faedah kakitangan jangka pendek termasuk gaji, upah, elaun, sumbangan berkanun dan caruman keselamatan sosial dikira sebagai perbelanjaan dalam tahun di mana perkhidmatan berkaitan diberikan oleh pekerja. Cuti bergaji seperti cuti tahunan yang tidak dapat digunakan oleh pekerja boleh di bawa ke tahun hadapan perkhidmatan pekerja tersebut. Bagaimanapun, bagi cuti yang tidak layak di bawa ke tahun hadapan seperti cuti sakit, cuti tersebut hanya akan dikira apabila ketidakhadiran berlaku.

ii. Manfaat Selepas Perkhidmatan

<u>Kumpulan Wang Simpanan Pekerja (KWSP)</u>

ASM membuat caruman KWSP mengikut kadar dan syarat yang ditetapkan oleh KWSP. Kadar caruman yang digunapakai oleh ASM adalah 12% dan 13% bagi kakitangan di bawah 60 tahun, manakala bagi kakitangan berumur 60 tahun ke atas, kadar caruman yang digunapakai adalah 4% dan 6%. Kadar caruman ini juga terpakai bagi kakitangan tetap yang memilih caruman KWSP.

<u>Kumpulan Wang Persaraan (KWAP)</u>

ASM juga membuat caruman kepada KWAP bagi kakitangan tetap yang memilih caruman pencen. Kadar caruman yang digunapakai adalah mengikut seperti yang ditetapkan oleh KWAP iaitu 17.5%.

g) Manfaat Kakitangan (Samb.)

iii. Manfaat Cuti Rehat dan Ganjaran Kakitangan

<u>Kakitangan Tetap</u>

Bagi kakitangan tetap ASM sama ada memilih skim berpencen mahupun KWSP akan mendapat Gantian Cuti Rehat (GCR) apabila tiba umur persaraan mereka. GCR ini adalah berdasarkan Pekeliling Perkhidmatan yang dikeluarkan oleh Jabatan Perkhidmatan Awam (JPA) yang diguna pakai oleh ASM.

Gantian Cuti Rehat adalah dikira berdasarkan formula berikut:

1/30 X gaji + imbuhan tetap akhir yang diterima X bilangan hari cuti rehat yang dikumpul

(tertakluk kepada had maksimum 150 hari)

Imbuhan yang diambil kira adalah:

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

<u>Kakitangan Kontrak</u>

ASM memberi ganjaran bagi setiap kontrak perkhidmatan *Contract of Service* (CoS) tertakluk kepada syarat kontrak. Kakitangan CoS ASM turut dibayar bagi cuti rehat yang tidak dapat dihabiskan dalam tempoh kontrak maksimum 6 hari. Bayaran ganjaran dan GCR bagi kakitangan kontrak adalah mengikut terma dan syarat yang termaktub dalam pekeliling perkhidmatan awam.

h) Mengkontra Instrumen Kewangan

Aset kewangan dan liabiliti kewangan hanya dikontra jika, dan hanya jika, terdapat hak undang-undang mengofset dan terdapat tujuan menyelesaikannya pada nilai bersih atau untuk merealisasikan aset dan menyelesaikan liabiliti secara serentak.

i) Cukai Barangan dan Perkhidmatan (GST) dan Cukai Jualan dan Perkhidmatan (SST)

Pelaksanaan Cukai Barang dan Perkhidmatan (GST) berkuatkuasa pada 1 April 2015. ASM telah mendaftar dengan Jabatan Kastam di Raja Malaysia pada 29 Disember 2014 dengan nombor rujukan 001836703744. GST kemudiannya telah dimansuhkan oleh Kerajaan berkuatkuasa 30 Jun 2018. Cukai Jualan dan Perkhidmatan (SST) kemudiannya telah diperkenalkan berkuatkuasa 1 September 2018.

j) Maklumat Bajet

Bajet tahunan disediakan berdasarkan asas tunai. Memandangkan penyata kewangan disediakan menggunakan asas akruan, maka satu Penyata Perbandingan Bajet dan Sebenar disediakan secara berasingan. Penyata ini telah disediakan menggunakan asas penyediaan bajet tahunan dan hanya merujuk kepada bajet mengurus sahaja.

Bajet yang dibentangkan adalah bagi rujukan pihak ASM sahaja. Bajet ini telah diluluskan oleh Majlis ASM.

2 DASAR PERAKUNAN (SAMB.)

k) Peruntukan dan Liabiliti

Peruntukan diiktiraf apabila ASM mempunyai obligasi semasa (perundangan atau konstruktif) hasil dari peristiwa lalu, terdapat kemungkinan bahawa aliran keluar sumber yang mengandungi manfaat ekonomi perlu dilakukan untuk menyelesaikan obligasi dan jumlah obligasi boleh dianggarkan dengan pasti. Apabila ASM menjangkakan beberapa atau semua peruntukan akan dibayar balik, perbelanjaan berkaitan peruntukan dibentangkan dalam lebihan atau kurangan daripada sebarang pembayaran balik.

l) Pihak Berkaitan

ASM menganggap pihak berkaitan sebagai orang atau entiti dengan keupayaan untuk mengenakan kawalan secara individu atau bersama, atau untuk melaksanakan pengaruh penting ke atas ASM, atau sebaliknya. Kakitangan penting pihak pengurusan dianggap sebagai pihak berkaitan dan terdiri daripada Pengerusi dan ahli-ahli Majlis ASM.

m) Liabiliti Luar Jangka dan Aset Luar Jangka

Liabiliti luar jangka adalah obligasi semasa yang tidak diiktiraf kerana tiada kebarangkalian aliran keluar sumber akan diperlukan untuk menyelesaikan obligasi atau dalam kes yang sangat jarang berlaku di mana liabiliti tidak dapat diiktiraf kerana ia tidak boleh diukur secara pasti. Liabiliti luar jangka tidak diiktiraf tetapi didedahkan dalam penyata kewangan. Obligasi yang muncul dari peristiwa yang lepas, yang kewujudannya hanya dapat disahkan melalui berlakunya atau tidak berlakunya satu atau lebih peristiwa akan datang yang belum pasti, tidak di bawah kawalan ASM keseluruhan juga didedahkan sebagai liabiliti luar jangka melainkan kebarangkalian aliran keluar sumber ekonomi adalah kecil.

Aset luar jangka adalah aset yang berkemungkinan wujud dari peristiwa lalu yang kewujudannya akan hanya disahkan apabila berlaku atau tidak berlakunya satu atau lebih peristiwa yang tidak pasti pada masa hadapan yang bukan dalam kawalan penuh ASM. ASM tidak mengiktiraf aset luar jangka dalam penyata kewangan tetapi mendedahkan kewujudannya di mana aliran masuk manfaat ekonomi adalah berkemungkinan, tetapi tidak pasti.

n) Liabiliti Kewangan

Liabiliti kewangan diiktiraf dalam penyata kedudukan kewangan apabila ASM menjadi pihak kepada peruntukan kontrak instrumen.

Pada pengiktirafan awal, liabiliti kewangan adalah diukur pada nilai saksama, termasuk kos urus niaga untuk liabiliti kewangan yang tidak diukur pada nilai saksama menerusi lebihan atau kurangan, yang terlibat secara langsung di dalam mengisu liabiliti kewangan.

Selepas pengiktirafan awal, liabiliti kewangan dikelaskan kepada salah satu daripada dua kategori liabiliti kewangan iaitu liabiliti kewangan diukur pada nilai saksama menerusi lebihan atau kurangan, pinjaman dan belum bayar.

n) Liabiliti Kewangan (Samb.)

ASM mempunyai kategori liabiliti kewangan seperti berikut :

<u>Pinjaman dan Belum Bayar</u>

Selepas pengiktirafan awal, pinjaman dan belum bayar adalah diukur pada kos dilunaskan menggunakan kaedah faedah berkesan. Keuntungan atau kerugian diiktiraf di dalam lebihan atau kurangan apabila liabiliti kewangan dinyahiktiraf atau dirosot nilai.

Kaedah faedah berkesan adalah kaedah untuk mengira kos dilunaskan liabiliti kewangan dan untuk memperuntukan perbelanjaan faedah ke atas tempoh yang berkaitan. Kadar faedah berkesan adalah kadar diskaun anggaran pembayaran tunai masa depan yang tepat menerusi jangka hayat liabiliti kewangan atau, apabila sesuai, tempoh yang lebih singkat, dengan nilai dibawa liabiliti kewangan tersebut.

Liabiliti kewangan dinyahiktiraf apabila obligasi yang dinyatakan dalam kontrak telah dilepaskan, dibatalkan atau tamat hayat.

Sebarang perbezaan di antara nilai dibawa liabiliti kewangan yang dinyahiktiraf dan pertimbangan dibayar adalah diiktiraf di dalam lebihan atau kurangan dalam tempoh penyahiktirafan.

o) Pajakan

Pajakan hartanah, loji dan peralatan adalah dikelaskan sebagai pajakan kewangan apabila sebahagian besar risiko dan ganjaran dengan pemilikan harta, tetapi bukan pemilikan yang sah disisi undang-undang, dipindahkan kepada ASM.

ASM pada awalnya mengiktiraf hak penggunaan dan obligasinya di bawah pajakan kewangan sebagai aset dan liabiliti dalam penyata kedudukan kewangan pada amaun yang sama dengan nilai saksama aset yang dipajak atau, jika yang lebih rendah, nilai semasa bayaran pajakan minimum, ditentukan pada permulaan pajakan. Sebarang kos langsung awal ditambah kepada amaun yang diiktiraf sebagai aset.

Bayaran pajakan minimum adalah dibahagikan antara caj kewangan dan pengurangan tanggungan tertunggak dengan menggunakan kaedah faedah efektif. Caj kewangan adalah diperuntukkan pada setiap tempoh sepanjang tempoh pajakan untuk menghasilkan kadar faedah tempoh yang tetap ke atas baki liabiliti.

Dasar susut nilai bagi aset pajakan adalah konsisten dengan aset yang boleh disusut nilai yang dimiliki. Jika tiada kepastian yang munasabah bahawa ASM akan mendapat pemilikan menjelang akhir tempoh pajakan, aset pajakan disusut nilai sepenuhnya dalam jangka pajakan dan hayat bergunanya, yang mana lebih singkat. Pada setiap tarikh pelaporan, ASM menilai sama ada harta pajakan di bawah pajakan kewangan perlu dirosot nilai.

Pajakan operasi adalah diiktiraf sebagai perbelanjaan dalam untung atau rugi pada garis lurus sepanjang tempoh pajakan. Manfaat agregat insentif yang disediakan oleh pemberi pajak adalah diiktiraf sebagai pengurangan daripada perbelanjaan sewa sepanjang tempoh pajakan menggunakan kaedah garis lurus. Jumlah pembayaran subpajakan minimum masa hadapan yang dijangka akan diterima di bawah subpajakan tidak boleh batal pada tarikh pelaporan.

2 DASAR PERAKUNAN (SAMB.)

o) Pajakan (Samb.)

Bayaran pajakan dan subpajakan diiktiraf sebagai perbelanjaan dalam tempoh, dengan amaun yang berasingan untuk pembayaran pajakan minimum, sewa luar jangka, dan pembayaran subpajakan.

Tanah pajakan bernombor Lot 20000 seksyen 60, GRN 74954 tidak diambil kira sebagai aset kerana ianya telah diambil kira dalam Penyata Kewangan Kementerian berjumlah RM40,430,000. Nilai tanah ini adalah berdasarkan penilaian bagi tahun 2017 oleh Jabatan Penilaian dan Perkhidmatan Harta (JPPH).

p) Pertimbangan Perakaunan Kritikal dan Sumber Utama Ketidakpastian Anggaran

i. Pertimbangan Perakaunan Kritikal

Tiada sebarang pertimbangan perakaunan kritikal yang mempunyai kesan ketara ke atas jumlah yang diiktiraf di dalam penyata kewangan.

ii. Sumber Utama Ketidakpastian Anggaran

Anggaran utama berkenaan masa hadapan, dan lain-lain sumber utama ketidakpastian anggaran pada tarikh pelaporan, yang mempunyai risiko ketara yang akan menyebabkan pelarasan penting terhadap nilai dibawa aset dan liabiliti di dalam tahun kewangan seterusnya adalah seperti berikut:

Pengukuran Peruntukan

Laporan Pengukuran Belanjawan (LPB) sentiasa menggunakan anggaran terbaik sebagai asas untuk mengukur sesuatu peruntukan itu. Anggaran itu dibuat berdasarkan kepada pengalaman lalu, lain-lain petunjuk atau andaian, perkembangan terkini dan peristiwa masa hadapan yang munasabah dalam menentukan sesuatu peruntukan.

Kerugian Rosot Nilai bagi Akaun Belum Terima

ASM menilai pada setiap tarikh pelaporan sama ada terdapat sebarang bukti objektif bahawa aset kewangan terjejas. Untuk menentukan sama ada terdapat bukti objektif rosot nilai, ASM menganggap faktor seperti ketidakmampuan bayar siberhutang dan keingkaran atau kelewatan pembayaran yang ketara. Jika terdapat bukti objektif kemerosotan nilai, jumlah dan masa aliran tunai masa depan dianggarkan berdasarkan sejarah pengalaman kerugian untuk aset yang mempunyai ciri-ciri risiko kredit yang serupa.

Perubahan Anggaran Jangka Hayat bagi Hartanah, Loji dan Peralatan

Semua hartanah, loji dan peralatan disusut nilaikan mengikut kaedah garis lurus sepanjang jangka hayat aset tersebut. Pengurusan menganggarkan jangka hayat hartanah, loji dan peralatan dalam tempoh masa lima (5) sehingga 60 tahun. Perubahan dalam anggaran corak penggunaan aset dan pembangunan teknologi boleh memberi kesan kepada jangka hayat dan nilai sisa aset tersebut. Ini akan menyebabkan susut nilai aset pada masa hadapan akan disemak semula.

2 DASAR PERAKUNAN (SAMB.)

q) Cukai

Perbelanjaan cukai pendapatan entiti yang dikawal yang diiktiraf di dalam penyata prestasi kewangan adalah terdiri daripada cukai semasa dan cukai tertunda. Cukai semasa adalah jumlah jangkaan cukai pendapatan yang perlu dibayar berhubung dengan keuntungan yang boleh dicukai bagi tahun semasa dan dikira menggunakan kadar cukai yang telah digubal atau sebahagian besarnya digubal menjelang tarikh pelaporan.

Cukai yang perlu dibayar ke atas keuntungan boleh dicukai bagi tempoh semasa dan lalu diiktiraf di dalam liabiliti semasa setakat yang tidak terbayar. Jika amaun yang dibayar berkenaan dengan tempoh semasa dan lalu melebihi amaun yang perlu dibayar bagi tempoh itu, lebihan tersebut diiktiraf di dalam aset semasa.

Liabiliti dan aset cukai semasa diimbangi hanya apabila Syarikat mempunyai hak yang sah di sisi undang-undang untuk mengimbangkan amaun dan berhasrat sama ada untuk menyelesaikan pada asas bersih, atau merealisasikan aset dan menyelesaikan liabiliti secara serentak.

Cukai tertunda diperuntukkan menggunakan kaedah liabiliti, ke atas perbezaan sementara pada tarikh penyata kedudukan kewangan di antara asas cukai aset dan liabiliti dan nilai dibawa di dalam penyata kewangan. Pada dasarnya, liabiliti cukai tertunda diiktiraf bagi semua perbezaan sementara boleh cukai. Aset cukai tertunda pula diiktiraf bagi perbezaan sementara boleh ditolak, kerugian cukai belum digunakan dan kredit cukai yang tidak digunakan pada tahap di mana ia berkemungkinan bahawa keuntungan boleh dicukai pada masa hadapan boleh digunakan. Cukai tertunda tidak diiktiraf jika perbezaan sementara timbul daripada muhibah atau muhibah negatif atau daripada pengiktirafan awal sesuatu aset atau liabiliti dalam urus niaga yang bukan kombinasi perniagaan dan pada masa urus niaga, tidak menjejaskan keuntungan perakaunan atau keuntungan boleh cukai.

Cukai tertunda dikira pada kadar cukai yang dijangka akan digunakan dalam tempoh di mana aset direalisasi atau liabiliti diselesaikan, berdasarkan kadar cukai yang telah digubal atau digubal sebahagian besarnya pada tarikh pelaporan. Cukai tertunda diiktiraf di dalam penyata prestasi kewangan, kecuali apabila ia timbul daripada urus niaga yang diiktiraf secara langsung dalam ekuiti, di mana cukai tertunda juga diiktiraf secara langsung dalam ekuiti, atau apabila ia timbul daripada kombinasi perniagaan yang merupakan pengambilalihan, dalam mana cukai tertunda dimasukkan ke dalam muhibah yang terhasil dan muhibah negatif.

3 WANG TUNAI DAN BAKI DI BANK

	2020 RM	2019 RM
Tunai di Tangan	6,000	3,953
Baki di Bank	675,387	592,396
	681,387	596,349

4 SIMPANAN TETAP

	2020 RM	2019 RM
Simpanan Tetap	20,378,558	20,795,161
	20,378,558	20,795,161

Simpanan tetap dibuat untuk pelbagai tempoh antara 12 bulan atau kurang bergantung kepada keperluan tunai segera ASM dan memperoleh faedah pada Kadar Deposit Jangka Pendek. Purata Wajaran Kadar Faedah Berkesan pada 31 Disember 2020 adalah pada kadar 2.08% setahun (2019: 3.48% setahun).

5 AKAUN BELUM TERIMA BAGI URUS NIAGA PERTUKARAN

	2020 RM	2019 RM
Akaun Belum Terima	2,326	7,379
	2,326	7,379

Akaun Belum Terima tidak dikenakan faedah dan secara umumnya tempoh yang terlibat dari satu hari ke 30 hari. Akaun Belum Terima diiktiraf pada Nilai Saksama semasa pengiktirafan awal. Amaun dijangka boleh pulih dalam masa 12 bulan, akan diiktiraf pada amaun invois asal. Jika tidak, ia akan diiktiraf pada Nilai Kini amaun invois asal.

Analisis pengumuran akaun belum terima adalah seperti berikut:

	2020 RM	2019 RM
Tidak melebihi tempoh dan tidak terjejas	-	6,250
1 hingga 3 bulan	2,326	729
3 hingga 12 bulan	-	-
Lebih dari 12 bulan	-	400
	2,326	7,379
Terjejas	-	-
	2,326	7,379

6 AKAUN BELUM TERIMA LAIN

	2020 RM	2019 RM
Pendahuluan Kakitangan	-	3,617
Faedah Terakru	77,824	133,204
	77,824	136,821

7 HARTANAH, LOJI DAN PERALATAN

	Pada 01 Januari 2020 RM	Tambahan RM	Pelupusan/ Pengkelasan RM	Pada 31 Disember 2020 RM
PADA NILAI KOS				
Bangunan	3,399,000	-	-	3,399,000
Kenderaan	477,148	-	-	477,148
Peralatan Pejabat	899,583	77,075	(102,682)	873,976
Komputer	386,014	219,490	(23,212)	582,292
Ubahsuai Pejabat	3,851,640	-	-	3,851,640
	9,013,385	296,565	(125,894)	9,184,056

	Pada 01 Januari 2020 RM	Tambahan RM	Pelupusan/ Pengkelasan RM	Pada 31 Disember 2020 RM
SUSUT NILAI TERKUMPUL				
Bangunan	203,940	56,650	-	260,590
Kenderaan	477,142	-	-	477,142
Peralatan Pejabat	858,774	19,536	(102,571)	775,739
Komputer	239,214	59,900	(23,204)	275,910
Ubahsuai Pejabat	3,682,639	28,115	-	3,710,754
	5,461,709	164,201	(125,775)	5,500,135

	Pada 31 Disember 2020 RM
AMAUN BAWAAN BERSIH	
Bangunan	3,138,410
Kenderaan	6
Peralatan Pejabat	98,237
Komputer	306,382
Ubahsuai Pejabat	140,886
	3,683,921

7 HARTANAH, LOJI DAN PERALATAN (SAMB.)

	Pada 01 Januari 2019 RM	Tambahan RM	Pelupusan/ Pengkelasan RM	Pada 31 Disember 2019 RM
PADA NILAI KOS				
Bangunan	3,399,000	-	-	3,399,000
Kenderaan	477,148	-	-	477,148
Peralatan Pejabat	881,831	17,752	-	899,583
Komputer	334,000	107,242	(55,228)	386,014
Ubahsuai Pejabat	3,851,640	-	-	3,851,640
	8,943,619	124,994	(55,228)	9,013,385

	Pada 01 Januari 2019 RM	Tambahan RM	Pelupusan/ Pengkelasan RM	Pada 31 Disember 2019 RM
SUSUT NILAI TERKUMPUL				
Bangunan	135,960	67,980	-	203,940
Kenderaan	471,854	5,288	-	477,142
Peralatan Pejabat	833,554	25,220	-	858,774
Komputer	246,298	43,130	(50,214)	239,214
Ubahsuai Pejabat	3,651,925	30,714	-	3,682,639
	5,339,591	172,332	(50,214)	5,461,709

	Pada 31 Disember 2019 RM
AMAUN BAWAAN BERSIH	
Bangunan	3,195,060
Kenderaan	6
Peralatan Pejabat	40,809
Komputer	146,800
Ubahsuai Pejabat	169,001
	3,551,676

Merujuk kepada MPSAS 13, para 28, bangunan diiktiraf pada jumlah nilai saksama sejumlah RM3,399,000 pada tahun 2017 setelah mendapat nilaian daripada Jabatan Penilaian dan Pengurusan Harta (JPPH). Manakala susut nilai bangunan pula merujuk kepada MPSAS 13, para 36, iaitu susutnilai hendaklah disusutnilai pada tempoh usia gunanya iaitu 55 tahun.

Bagi susut nilai bangunan, terdapat perbezaan RM11,330 di antara Laporan Pergerakan Aset yang dijana daripada sistem kewangan dengan pengiraan sebenar. Pengiraan sebenar susut nilai bangunan adalah berdasarkan tempoh usia guna iaitu 55 tahun. Manakala di dalam sistem kewangan, kadar susut nilai dikira secara peratusan dan nombor bulat.

8 KERJA DALAM KEMAJUAN

	2020 RM	2019 RM
Baki pada 01 Januari	21,526	-
Tambahan	386,505	21,526
Baki pada 31 Disember	408,031	21,526

ASM menerima peruntukan geran tambahan *one-off* daripada MESTECC bagi pembaikan bumbung ASM di Jalan Tun Ismail pada suku ke-empat tahun 2019. Jangka masa kerja pembaikan bumbung ini dijadualkan selesai pada tahun suku ke-dua tahun 2020.

Walau bagaimanapun, kerja pembaikan bumbung tergendala disebabkan pandemik Covid-19 pada suku pertama tahun 2020 dan faktor cuaca yang tidak menentu. Kerja-kerja pembaikan bumbung fasa pertama telah selesai pada 6 Julai 2020 dan fasa ke-dua yang merangkumi kerja mengecat dan pembumian dijangka selesai pada suku ke-dua tahun 2021.

9 AKAUN BELUM BAYAR BAGI URUS NIAGA PERTUKARAN

	2020 RM	2019 RM
Pemiutang Institusi	609,216	905,128
Pemiutang Lain-lain	20,000	18,750
Peruntukan Yuran Audit	19,998	18,619
	649,214	942,497

10 PERUNTUKAN MANFAAT PEKERJA

	2020 RM	2019 RM
Baki pada 01 Januari	252,981	200,655
Tambah : Peruntukan Tahun Semasa	284,571	237,644
Tolak : Pembayaran Tahun Semasa	(269,171)	(185,318)
Pada 31 Disember	268,381	252,981

	2020 RM	2019 RM
Liabiliti Semasa	238,610	229,395
Liabiliti Bukan Semasa	29,771	23,586
	268,381	252,981

11 SUMBANGAN

	2020 RM	2019 RM
Baki pada 01 Januari	337,385	245,202
Tambahan	20,630	98,233
Perbelanjaan	(358,015)	(6,050)
Baki pada 31 Disember	-	337,385

Pecahan sumbangan adalah seperti berikut:

	2020 RM	2019 RM
Dana Utama	-	140,930
Program Pembangunan Bakat	-	35,193
Program Kesedaran Sains	-	5,300
ArtScience	-	90,151
Program Pembangunan Ilmu Sains	-	5,011
Program Pembangunan Kelestarian	-	15,000
S&T Based Start-ups	-	800
Penerbitan	-	32,000
Program Saintis Muda	-	13,000
	-	337,385

ASM menerima derma daripada ahli ASM dan bukan ahli untuk pelaksanaan pelbagai program. Sumbangan yang diberi adalah secara sukarela berdasarkan kekerapan sama ada secara bulanan, tahunan atau *one-off*. Sumbangan adalah berdasarkan objektif yang khusus di mana ASM bertanggungjawab melaksanakan program tersebut apabila mencapai nilai yang mencukupi.

Walau bagaimanapun, pelepasan cukai ASM kepada penderma di bawah Subseksyen 44 (6), Akta Cukai Pendapatan 1957 telah dipendekkan sehingga 31.12.2020. Perbelanjaan program yang menggunakan dana sumbangan ini boleh dirujuk pada nota 19 – Perbelanjaan Program Sains.

12 PENDAPATAN TERTUNDA

	2020 RM	2019 RM
Baki pada 01 Januari	1,438,383	867,295
Tambahan	358,545	1,931,363
Pelunasan ke Penyata Prestasi Kewangan		
Perbelanjaan	(538,524)	(1,350,184)
Perlunasan Hasil	-	(10,091)
Baki pada 31 Disember	1,258,404	1,438,383

12 PENDAPATAN TERTUNDA (SAMB.)

Pecahan pendapatan tertunda adalah seperti berikut:

	2020 RM	2019 RM
ASM		
ASEAN *Young Scientists Network*	48,697	48,697
ISC ROAP	1,209,707	1,389,686
	1,258,404	1,438,383

Pendapatan tertunda adalah peruntukan yang diterima daripada pihak bukan Kerajaan Malaysia, dan ianya merangkumi geran antarabangsa atau geran daripada sesuatu firma korporat atau organisasi. ASM adalah terikat dengan terma rujukan dan tempoh pelaksanaan program seperti yang dihuraikan dalam perjanjian atau surat lantikan.

13 GERAN TERTUNDA

	2020 RM	2019 RM
Baki pada 01 Januari	10,613,173	47,182,050
Tambahan	6,686,555	7,498,227
Pelarasan	105,552	(1,479,550)
Pemulangan Peruntukan	(290,007)	(40,603,135)
Pelunasan ke Penyata Prestasi Kewangan Perbelanjaan	(5,880,174)	(1,984,419)
Baki pada 31 Disember	11,235,099	10,613,173

Geran tertunda adalah peruntukan yang diterima daripada Kerajaan Malaysia bagi suatu objektif yang khusus. ASM adalah terikat dengan terma rujukan dan tempoh pelaksanaan program seperti yang dihuraikan dalam perjanjian atau surat lantikan.

Geran tertunda dianalisis seperti berikut:

	2020 RM	2019 RM
Liabiliti Bukan Semasa	11,235,099	10,613,173
	11,235,099	10,613,173

13 GERAN TERTUNDA (SAMB.)

Pecahan peruntukan geran tertunda adalah seperti berikut:

	2020 RM	2019 RM
ASM		
Newton Ungku Omar Fund (NUOF)	3,022,124	3,484,360
Kajian Impak Pelaksanaan Universiti Penyelidikan	-	23,350
Kajian Separuh Penggal Pelan Pembangunan Pendidikan 2015 – 2025 (Pendidikan Tinggi)	-	19,620
Dasar Keusahawanan Negara	-	3,541
Task Force Sg Kim Kim	-	94,369
ASEAN *Foresight Alliance*	-	8,983
Malaysian Collaborative Network Platform for Disruptive Innovation (i-CONNECT)	2,421,238	3,988,807
Malaysia Open Science Platform (MOSP)	538,072	991,475
Review & Update Study on Environmental Quality Act	1,717,047	1,998,668
Water Sector Transformation 2040	3,372,125	-
Virtual National Science Challenge (VNSC) & Minggu Sains Negara	29,838	-
Review of National Nanotechnology Policy	6,250	-
Kajian MOE	128,405	-
	11,235,099	10,613,173

14 GERAN TERTUNDA - PEJABAT ANTARABANGSA

	2020 RM	2019 RM
Baki pada 01 Januari	1,589,745	1,664,872
- (Seperti yang Dinyatakan Terdahulu)		
Hasil	844,916	2,505,000
Pelunasan ke Penyata Prestasi Kewangan		
Perbelanjaan	(1,324,819)	(2,580,127)
Baki pada 31 Disember	1,109,842	1,589,745

Geran tertunda dianalisis seperti berikut:

	2020 RM	2019 RM
Liabiliti Bukan Semasa	1,109,842	1,589,745
	1,109,842	1,589,745

14 GERAN TERTUNDA - PEJABAT ANTARABANGSA (SAMB.)

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

	2020 RM	2019 RM
Baki pada 01 Januari	996,234	864,019
- (Seperti yang Dinyatakan Terdahulu)		
Hasil	374,372	1,000,000
Pelunasan ke Penyata Prestasi Kewangan		
Perbelanjaan	(552,288)	(867,785)
Baki pada 31 Disember	818,318	996,234

International Science Council (ISC) memainkan peranan di peringkat global sebagai pemangkin dan mengadakan persidangan kepakaran saintifik, memberi nasihat dan input mengenai isu-isu yang menjadi keutamaan sains dan masyarakat. ISC telah dilancarkan pada 2018 berikutan penggabungan International Council for Science (ICSU) yang telah ditubuhkan pada 1931, dan International Social Science Council (ISSC) yang telah ditubuhkan pada 1952.

ISC ROAP (sebelum ini dikenali sebagai ICSU ROAP) dihos oleh Kerajaan Malaysia bermula 19 September 2006 berikutan perjanjian lima (5) tahun antara Kerajaan Malaysia dan ISC (sebelum ini dikenali sebagai ICSU). Peruntukan operasi ditanggung oleh Kerajaan Malaysia manakala peruntukan program ditanggung oleh ISC. Perjanjian kali ketiga akan tamat pada 18 September 2021.

Bagi tahun 2020, ASM menyalurkan peruntukan mengurus sebanyak 37% sahaja iaitu RM374,372 berbanding siling peruntukan asal yang berjumlah RM1,000,000 setahun. ASM menyarankan ISC ROAP menggunakan baki terkumpul bagi menampung perbelanjaan kos operasi tahun semasa.

International Science, Technology & Innovation Centre (ISTIC)

	2020 RM	2019 RM
Baki pada 01 Januari	593,511	800,853
- (Seperti yang Dinyatakan Terdahulu)		
Hasil	470,544	1,505,000
Pelunasan ke Penyata Prestasi Kewangan		
Perbelanjaan	(772,531)	(1,712,342)
Baki pada 31 Disember	291,524	593,511

ISTIC merupakan pusat UNESCO kategori II yang dihos oleh Kerajaan Malaysia sejak 26 Mac 2009 (dilancarkan pada 22 Mei 2008). ISTIC ditubuhkan untuk membangunkan dan melaksanakan program kerjasama dengan negara-negara selatan dalam bidang sains dan teknologi dengan tujuan untuk memudah cara integrasi pendekatan pembangunan di dalam sains dan teknologi dan dasar inovasi di peringkat nasional; meningkatkan keupayaan dalam sains dan teknologi dengan memberikan nasihat dasar dan pertukaran pengalaman dan amalan terbaik; dan mewujudkan rangkaian pusat-pusat kecemerlangan penyelesaian masalah di negara-negara membangun serta menyokong pertukaran pelajar, penyelidik, saintis dan teknologis di kalangan negara-negara membangun.

14 GERAN TERTUNDA – PEJABAT ANTARABANGSA (SAMB.)

ISTIC dihos oleh Kerajaan Malaysia untuk tempoh lima (5) tahun berdasarkan perjanjian antara Kerajaan Malaysia dan UNESCO dan perjanjian ketiga akan tamat pada 7 September 2021. Kos operasi dan program adalah ditanggung oleh Kerajaan Malaysia.

Bagi tahun 2020, ASM menyalurkan peruntukan mengurus sebanyak 31% sahaja iaitu RM470,544 berbanding siling peruntukan asal yang berjumlah RM1,500,000 setahun. ASM menyarankan ISTIC menggunakan baki terkumpul bagi menampung perbelanjaan kos operasi tahun semasa.

15 URUS NIAGA BUKAN PERTUKARAN

	2020 RM	2019 RM
Geran Mengurus	8,164,709	5,879,871
Geran Tambahan	-	4,795,783
	8,164,709	10,675,654
Geran Program	-	1,182,849
Pelunasan Hasil Geran Tertunda	5,880,174	1,984,420
Pelunasan Hasil Geran Tertunda – Pejabat Antarabangsa	1,324,819	2,580,127
Pelunasan Pendapatan Tertunda	538,524	1,350,184
Pelunasan Sumbangan	358,016	6,050
Lain-lain Hasil:		
Caj Sewaan Pejabat	40,300	82,000
Bayaran Balik Program	25,010	-
Kutipan Majlis Makan Malam	-	400
Lebihan Baki Projek	-	31,089
	16,331,552	17,892,773

16 URUS NIAGA PERTUKARAN

	2020 RM	2019 RM
Caj Pengurusan Program	752,608	-
Faedah Akaun Semasa	2,029	18,037
Faedah Simpanan Tetap	691,798	512,308
Hutang Lapuk Pulih Semula	-	2,300
Bayaran Balik GST	132,658	33,900
Lain-lain Hasil	116,519	91,816
	1,695,612	658,361

17 GAJI DAN UPAHAN

	2020 RM	2019 RM
Kakitangan Tetap:		
Gaji dan Upahan	526,706	549,976
Elaun-elaun Tetap	158,398	168,527
Sumbangan Berkanun Untuk Kakitangan	40,528	40,160
Elaun Lebih Masa Kakitangan	4,348	3,149
Faedah Kewangan Yang Lain	9,529	9,694
	739,509	771,506

Kakitangan tetap ASM adalah merupakan kakitangan perkhidmatan awam yang mengisi waran perjawatan JPA. Pembayaran gaji, upah dan bayaran kenaan tetap adalah mengikut Pekeliling Perkhidmatan Bil 1/2016.

18 PERKHIDMATAN DAN BEKALAN

	2020 RM	2019 RM
Perbelanjaan Pengurusan Pentadbiran	976,245	1,288,425
Emolumen Kakitangan Kontrak	4,283,234	3,856,849
Komunikasi Sains	442,771	208,936
Hal Ehwal Keahlian	372,966	505,946
	6,075,216	5,860,156

Perkhidmatan dan Bekalan merupakan perbelanjaan operasi ASM yang merangkumi Perbelanjaan Pengurusan Pentadbiran yang melibatkan perbelanjaan pengurusan fasiliti, teknologi maklumat, kewangan dan akaun, pengurusan data dan analis dan perbelanjaan bagi jawatankuasa dan badan bertindak ASM. Selain itu, gaji dan upahan bagi kakitangan kontrak ASM adalah dilantik mengikut Pekeliling Perkhidmatan Bil 2/2008. Pembayaran gaji, upah dan bayaran kenaan tetap adalah mengikut Pekeliling Perkhidmatan Bil 1/2016.

19 PERBELANJAAN PROGRAM SAINS

	2020 RM	2019 RM
Aktiviti Jaringan Kerjasama dan Kecemerlangan Sains		
Science Outlook	371,020	20,350
Special Interest Group (SIG)	53,568	-
Jawatankuasa Dasar dan Nasihat STI – STIPAC	43,870	40,457
Inisiatif dan Kerjasama STI	62,523	268,058
Hal Ehwal Antarabangsa	7,512	(217,448)
Komunikasi Sains	59,511	40,068
	598,004	151,485

19 PERBELANJAAN PROGRAM SAINS (SAMB.)

	2020 RM	2019 RM
Perbelanjaan Geran Tertunda		
Newton Ungku Omar Fund (NUOF)	462,236	929,355
National Policy on Science, Technology and Innovation (NPSTI)	-	161,122
Science Technology and Innovation Master Plan (STIMP)	-	238,434
Roadmap for Water Sector Transformation 2040	1,627,875	-
Kajian Impak Pelaksanaan Universiti Penyelidikan	8,275	283,318
Kajian Separuh Penggal Pelan Pembangunan Pendidikan 2015 – 2025 (Pendidikan Tinggi)	4,833	159,493
Dasar Keusahawanan Negara	8,300	55,775
Minggu Sains Negara	3,750	75,576
Virtual National Science Challenge (VNSC)	48,562	-
Task Force Sg Kim Kim	-	19,280
Review of National Nanotechnology Policy and Strategy	13,750	-
ASEAN *Foresight Alliance*	-	41,017
Malaysian Collaborative Network (i-Connect)	2,967,569	11,193
Malaysia Open Science Platform (MOSP)	453,403	8,525
Review & Update Study on Environmental Quality Act	281,621	1,332
	5,880,174	1,984,420
Perbelanjaan Geran Tertunda - Pejabat Antarabangsa		
International Science Council Regional Office for Asia and the Pacific (ISC ROAP)	552,288	867,785
International Science, Technology & Innovation Centre (ISTIC)	772,531	1,712,342
	1,324,819	2,580,127
Perbelanjaan Pendapatan Tertunda		
ISC ROAP	538,524	1,293,160
2019 *CCM STEM Up Challenge*	-	23,267
ASEAN *Young Scientists Network*	-	33,757
	538,524	1,350,184
Perbelanjaan Sumbangan		
Estidotmy	205,000	-
Artscience Prize	87,396	4,050
Virtual National Science Challenge (VNSC)	45,076	-
Young Scientists Network (YSN-ASM)	20,543	-
Biografi	-	2,000
	358,015	6,050
	8,699,536	6,072,266

Aktiviti-aktiviti yang dilaksanakan oleh ASM adalah tersenarai sebagai Program Sains. Ini merangkumi aktiviti teras ASM dan juga aktiviti yang dilaksanakan oleh ASM bagi pihak Kerajaan dan atau organisasi lain di peringkat kebangsaan dan antarabangsa melalui geran/peruntukan yang diterima.

Perbelanjaan Kajian, Program dan Aktiviti ASM merupakan aktiviti-aktiviti teras yang dilaksanakan bagi memenuhi 14 fungsi ASM seperti yang dimandatkan dalam Akta Akademi Sains Malaysia 1994. Aktiviti-aktiviti ini berdasarkan strategi dan hala tuju semasa yang ditetapkan oleh Majlis ASM. Manakala, Perbelanjaan Geran Tertunda merupakan aktiviti yang dilaksanakan dengan memenuhi terma dan syarat sesuatu program.

20 PEMBERIAN DAN KENAAN BAYARAN TETAP

	2020 RM	2019 RM
Kelab Sukan dan Kebajikan	25,000	25,000
Pencen	61,534	67,696
Sumbangan/Langganan Antarabangsa	38,092	41,535
	124,626	134,231

21 MANFAAT KAKITANGAN

	2020 RM	2019 RM
Gantian Cuti Rehat Kakitangan Tetap	6,185	1,768
Gantian Cuti Rehat Kakitangan Kontrak	30,424	25,727
Ganjaran Kakitangan Kontrak	247,962	210,149
	284,571	237,644

22 PERBELANJAAN - PERBELANJAAN LAIN

	2020 RM	2019 RM
Yuran, Insurans, Cukai, Duti Setem	43,130	15,256
Pembalikan Faedah Terakru	133,204	846,945
Pembalikan Kos Imbuhan Bayaran Balik	98,543	-
Hutang Lapuk	-	500,000
	274,877	1,362,201

23 SEWAAN

	2020 RM	2019 RM
Sewaan Bangunan	643,006	1,143,667
Sewaan Ruang Simpanan	18,390	18,340
Sewaan Tempat Letak Kenderaan	25,170	23,400
Sewaan Alat Kelengkapan Elektrik	4,125	4,248
Sewaan Alat Kelengkapan Pejabat	63,785	62,340
	754,476	1,251,995

24 CUKAI

	2020 RM	2019 RM
Liabiliti Cukai:		
Liabiliti Cukai Pada 01 Januari	214,676	-
Cukai	299,449	274,156
Cukai Telah Dibayar	(133,792)	(59,480)
Liabiliti Cukai Pada 31 Disember	380,333	214,676
Percukaian:		
Cukai Tahun Semasa	380,333	229,955
Terkurang/(Terlebih) Peruntukan Tahun Lalu	(80,884)	44,201
Cukai	299,449	274,156

25 SUMBER MANUSIA

Pengurusan ASM terdiri daripada kakitangan tetap dan kontrak. Jumlah kakitangan ASM pada 31 Disember 2020 adalah seramai 83 orang (2019: 75) seperti berikut:

	2020 RM	2019 RM
Kakitangan Tetap:		
Kumpulan Pengurusan Tertinggi	1	1
Kumpulan Pengurusan dan Profesional	2	2
Kumpulan Pelaksana	6	6
Kakitangan Kontrak:		
Kumpulan Pengurusan dan Profesional	54	46
Kumpulan Pelaksana	20	20
Jumlah Keseluruhan Kakitangan:		
Kumpulan Pengurusan Tertinggi	1	1
Kumpulan Pengurusan dan Profesional	56	48
Kumpulan Pelaksana	26	26
	83	75

26 PIHAK PENGURUSAN TERTINGGI

Kepimpinan ASM diterajui oleh Majlis ASM yang dipengerusikan oleh Presiden. Majlis ASM menentukan hala tuju ASM dan menetapkan dasar ASM. Semua keputusan Majlis ASM dilaksanakan oleh Pengurusan ASM yang diketuai oleh Ketua Pegawai Eksekutif (KPE). KPE merupakan Pegawai Pengawal ASM dan mempunyai kuasa dan tanggungjawab untuk merancang, mengarah, melaksana dan mengawal aktiviti-aktiviti ASM. KPE melaporkan prestasi dan status semua aktiviti kepada Majlis ASM.

26 PIHAK PENGURUSAN TERTINGGI (SAMB.)

	2020 RM	2019 RM
Ahli Majlis:		
Jumlah Elaun Ahli Majlis	32,000	37,500
Ahli Jawatankuasa Kewangan:		
Jumlah Elaun	9,500	11,200
Ahli Jawatankuasa Exco:		
Jumlah Elaun	2,100	2,500
Kakitangan Pengurusan Utama:		
Manfaat Jangka Pendek	246,304	243,764
	289,904	294,964

Majlis merupakan badan tertinggi ASM yang ditubuhkan di bawah Akta Akademi Sains Malaysia 1994 bagi menjalankan fungsi-fungsi ASM serta mengurus dan mengawal selia hal ehwal Akademi. Ahli Majlis ASM adalah terdiri daripada 16 orang yang dipilih dari kalangan Felo di Mesyuarat Agung Tahunan ASM kecuali Presiden yang dilantik oleh SPB Yang Di-Pertuan Agong. Majlis ASM yang diketuai oleh Presiden terdiri daripada Naib Presiden, Setiausaha Agung, Bendahari Kehormat dan 12 orang Ahli Majlis Biasa. Majlis bersidang empat (4) hingga lima (5) kali setahun bagi memutuskan hala tuju dan pelaksanaan aktiviti ASM.

Jawatankuasa EXCO berperanan membantu Majlis dalam mengurus dan mengawal selia aktiviti pengurusan harian serta hal-ehwal Akademi. EXCO terdiri daripada Presiden, Naib Presiden, Setiausaha Agung, dan Bendahari Kehormat. Jawatankuasa EXCO bersidang bagi pihak Majlis ASM untuk membantu memutuskan perkara-pekara yang memerlukan kelulusan, perbincangan dan pandangan pada kadar segera.

Jawatankuasa Kewangan ASM pula berperanan mengawasi perancangan, pelaksanaan dan pemantauan prosedur, sistem dan pelaporan berkaitan kewangan ASM dan dipengerusikan oleh Bendahari Kehormat dan dibantu oleh lapan (8) orang ahli. Manfaat Jangka Pendek merupakan gaji yang dibayar kepada kakitangan pengurusan utama ASM.

27 PENGURUSAN RISIKO KEWANGAN

i. Objektif dan Polisi Risiko Pengurusan Kewangan

Dasar pengurusan risiko kewangan ASM bertujuan untuk memastikan bahawa terdapatnya sumber kewangan yang mencukupi untuk pembangunan perniagaan, menguruskan risiko kredit, tukaran asing dan kecairan. ASM beroperasi di bawah garis panduan yang telah ditetapkan dengan jelas yang diluluskan oleh ASM dan dasar ASM adalah untuk tidak melibatkan ASM dalam urusniaga spekulatif.

27 PENGURUSAN RISIKO KEWANGAN (SAMB.)

ii. Risiko Kredit

Risiko kredit atau risiko pihak ketiga gagal membayar, dikawal dengan penerapan tatacara kelulusan kredit, had dan pengawasan yang ketat. Risiko kredit diminimumkan dan diawasi secara ketat dengan menghadkan kerjasama ASM dengan rakan perniagaan yang mempunyai kepercayaan kredit yang tinggi. Penghutang diawasi secara berterusan melalui tatacara pelaporan pengurusan ASM.

Bagi wang tunai dan baki di bank, simpanan tetap dan deposit jangka pendek, ASM mengurangkan risiko kredit dengan berurusan secara eksklusif dengan institut kewangan yang mempunyai penarafan kredit yang tinggi.

iii. Risiko Kadar Faedah

Risiko kadar faedah adalah risiko bahawa nilai wajar atau aliran tunai masa hadapan bagi instrumen kewangan ASM akan berubah-ubah kerana perubahan dalam pasaran kadar faedah

iv. Risiko Kecairan

Risiko kecairan dan aliran tunai adalah risiko bahawa ASM akan menghadapi kesukaran dalam memenuhi kewajipan kewangan oleh kerana kekurangan dana. Pendedahan ASM kepada risiko kecairan wujud daripada perbezaan dalam kematangan aset kewangan dan liabiliti kewangan. Jadual di bawah menunjukkan profil kematangan liabiliti ASM pada tarikh laporan berdasarkan obligasi pembayaran semula tanpa diskaun kontrak.

ASM mengurus risiko kecairan dan aliran tunai dengan memastikan tunai yang mencukupi dan menyediakan dana yang cukup bagi memenuhi komitmen daripada perbelanjaan operasi dan liabiliti kewangan.

	Kurang Tempoh Setahun	Lebih Tempoh Setahun	Jumlah
	RM	RM	RM
Pada 31 Disember 2020			
Akaun Belum Bayar Bagi Urus Niaga Pertukaran	-	-	-
Pada 31 Disember 2019			
Akaun Belum Bayar Bagi Urus Niaga Pertukaran	-	-	-

v. Nilai Saksama

Nilai dibawa tunai dan kesetaraan tunai, belum terima dan belum bayar adalah menyamai nilai saksamanya kerana tempoh matangnya yang pendek.

28 NOTA BAGI PENYATA PERBANDINGAN BAJET DAN SEBENAR

Bajet ASM telah diluluskan dan dibentangkan atas asas tunai bagi tempoh kewangan 1 Januari 2020 sehingga 31 Disember 2020. Bajet asal telah diluluskan oleh Kementerian Tenaga, Sains, Teknologi, Alam Sekitar dan Perubahan Iklim (yang dikenali sebagai MESTECC) melalui surat MESTECC.400.4/1/5 JLD.5 bertarikh 16 Januari 2020.

29 IMPAK COVID-19

Pandemik Covid-19 yang melanda seluruh dunia telah memberi impak kepada masyarakat dan pelbagai sektor seperti ekonomi, kebudayaan dan ekologi. Walau bagaimanapun, pandemik ini tidak memberi kesan secara langsung dan signifikan kepada ASM kerana ASM merupakan Badan Berkanun yang tidak menjana pendapatan. Namun aktiviti tahunan ASM telah dirancang semula menggunakan pendekatan yang berbeza untuk mencapai objektif ASM. Norma kerja baru ini yang didokong oleh teknologi telah membuka pelbagai ruang dan peluang baru.



Sambutan Jubli Perak

Tahun 2020 menandakan genap 25 tahun penubuhan Akademi Sains Malaysia. Sambutan Jubli Perak ini bukan sekadar untuk meraikan usia ASM tetapi juga untuk menilai sumbangan, pencapaian, dan impak ASM sebagai Peneraju Pemikir bagi isu-isu berkaitan sains, teknologi, inovasi, dan ekonomi.

Bersempena dengan sambutan ulang tahun ke-25 Akademi, sebuah Buku Peringatan sedang disediakan. Buku tersebut menggambarkan pencapaian dan pengalaman ASM dalam bentuk kata-kata dan gambar, dari awal penubuhannya pada tahun 1995 hingga menjadi salah satu *Think Tank* yang sedang berkembang kini.

ASM telah meraikan pelbagai kejayaan, namun masih banyak yang perlu dicapai. Tahun 2020 merupakan tahun yang penuh cabaran dan pengajaran. Ketangkasan dan sifat kolaboratif ASM membolehkannya menyesuaikan diri dengan norma baharu. Pelbagai acara maya memenuhi jadual sepanjang tahun 2020, dan ASM sentiasa berusaha untuk memastikan sebahagian besar aktiviti dijalankan melalui pelbagai platform dalam talian.

2020 juga mengajar kita bahawa kolaborasi menjadi teras sains global, terutamanya bagi negara-negara membangun seperti Malaysia. Slogan ulang tahun ke-25 ASM, Meneraju Kolaborasi dalam Sains, bertepatan dengan situasi yang sedang dihadapi. Melalui kolaborasi, kita akan belajar dengan lebih banyak dan lebih cepat, bersama-sama.

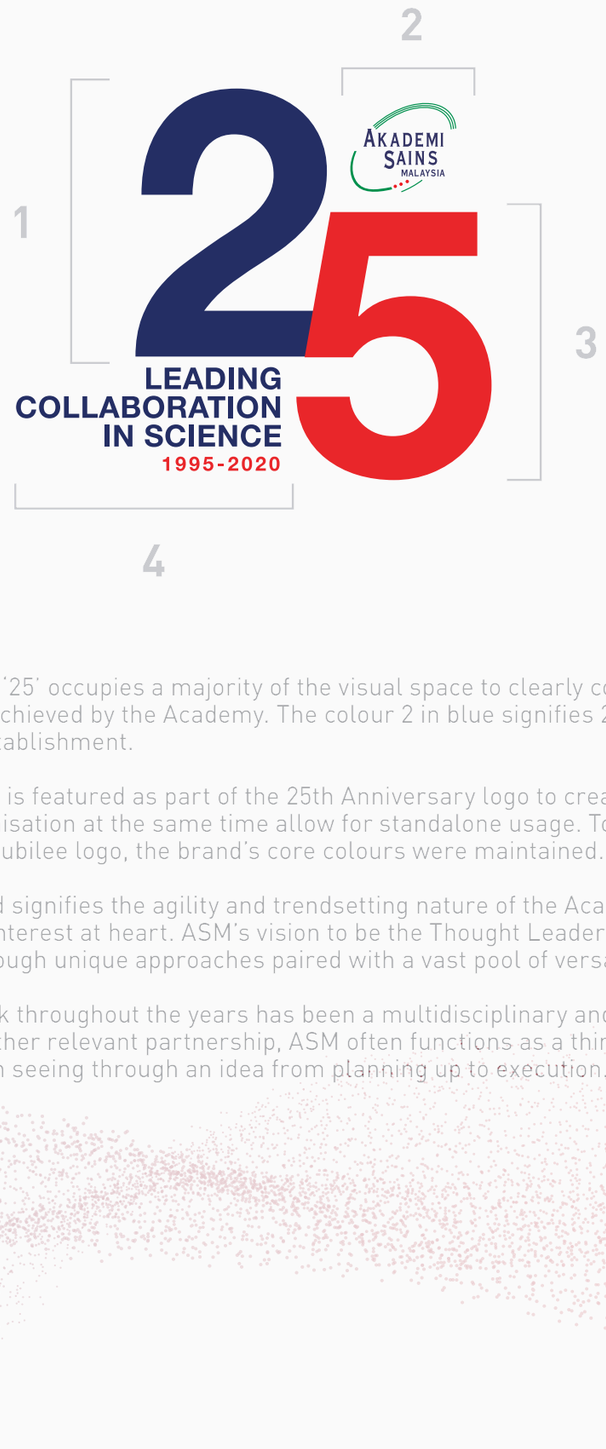
Silver Jubilee Celebration

2020 is a significant year for ASM as it marks the Academy's 25th year of establishment. The silver jubilee celebration is not just to celebrate the age of ASM but also to assess the contribution, achievements, and impact of ASM as a Thought Leader for matters related to science, technology, innovation, and economy.

In conjunction with the Academy's 25th anniversary, we are preparing a commemorative book to chart ASM's milestones in words and images that reflect a variety of experiences, from its humble beginnings in 1995 through to being one of a growing Think Tank it is today.

ASM has made progress, and there remains a great deal more to be achieved. 2020 has revealed itself to be a challenging year; however, the lessons learned are invaluable. ASM's agility and collaborative nature enabled us to quickly adapt to the new norm. Virtual event has come to the fore, and throughout the year, we ensure most of our activities could still be carried out via various online platforms.

Among other lessons 2020 has presented, the value of collaboration has been central. Our 25th Anniversary tagline, Leading Collaboration in Science, cannot be more apt as collaboration is the engine of global science, especially for developing countries like Malaysia. There is strength in numbers; we learn more and faster, together.



1. The bold prominent '25' occupies a majority of the visual space to clearly communicate the important milestone achieved by the Academy. The colour 2 in blue signifies 2 decades of solid progress since our establishment.

2. The Academy's logo is featured as part of the 25th Anniversary logo to create a strong sense of belonging to the organisation at the same time allow for standalone usage. To ensure visual cohesion to the silver jubilee logo, the brand's core colours were maintained.

3. The number 5 in red signifies the agility and trendsetting nature of the Academy's work which has the nation's best interest at heart. ASM's vision to be the Thought Leader for matters related to STIE is realised through unique approaches paired with a vast pool of versatile experts.

4. The Academy's work throughout the years has been a multidisciplinary and collaborative one. Besides bringing together relevant partnership, ASM often functions as a thinker as well as a doer, taking the lead in seeing through an idea from planning up to execution.

AKADEMI SAINS MALAYSIA

2020
ANNUAL REPORT

SCAN TO READ THE DIGITAL VERSION OF THIS REPORT

©Academy of Sciences Malaysia
Written and designed by the Academy of Sciences Malaysia

THOUGHT LEADER '20

This report is the primary source of information about ASM. It provides a simple yet comprehensive overview of our achievements as wellas financial and non-financial milestones for the year 2020.

This annual report highlights our engagements with internal and external stakeholders. Our initiatives, partnerships and strategies as well as our future goals are presented to demonstrate our credibility as a think tank. We aim to strengthen the trust of our stakeholders through various strategic input and ideas.



CONCEPT

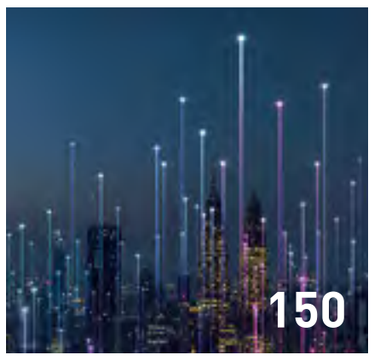
The 2020 Annual Report carries the 25th Anniversary logo on its cover page with a silver background to signify ASM's Silver Jubilee year. The silver tone here also strongly resonates with the concept of modern technology at play throughout the year. We worked, studied and communicated with each other using our devices and gadgets.

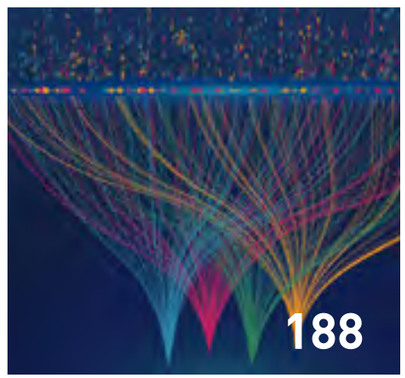
The die-cut number 25 allows us to peep into the next page where we can see Fellows online during the Annual General Meeting, a milestone in the history of the Academy as we received the highest number of participation in 25 years. The tagline, "Leading Collaboration in Science" cannot be more apt as we could not have pulled off the year 2020 working alone. We partnered and worked alongside people, organisations and counterparts from across the globe to achieve our goals, vision and mission.

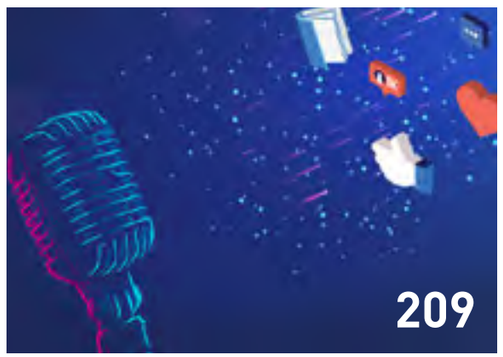
Content.







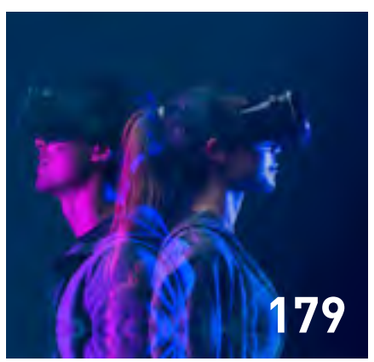




















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About ASM

WHO WE ARE

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.

WHAT WE DO

ASM supports good science by endorsing activities of highest fulfilment to promote engagement, understanding and literacy in science, technology and innovation.

Taking science outside its box is often a delightful journey that leads us to interesting new directions filled with various types of engagements with people. At the end of the day, it is ASM's commitment to enhance the scientific capacity of the country.

FLAGSHIP STI STRATEGIC STUDIES & POLICY ADVISORY	Advisory Reports & Position Papers | Roadmap & Blueprint Development | Futures Thinking & Foresighting | National / Sectoral Policy | Review & Formulation | STI Due Diligence & Decision Intelligence | Rapid Response on Matters of National & International Importance
INITIATIVES & PARTNERSHIPS	Expert-driven Studies | Science Communication, Enculturation & Engagements | STI Capacity Building | Awards, Grants and Recognitions | STI Strategic Linkages
INTERNATIONAL NETWORK	National Member in SCA, AASSA, IAP, APEC, ASEAN, TWAS | Young Scientists Programmes – CERN & Lindau | Bidding International Grants – ASEAN & APEC
SCIENCE COMMUNICATION	Publications | ASM Science Journal | Corporate Communication | Public Relations | Media Engagements | Curation & Visualisation of Data
PILOT PROJECTS	i-Connect - Malaysian Collaborative Network for Innovation | MOSP



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



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



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



Internal
Fellows | Associates | Members of YSN-ASM | TRSM

External
Government of Malaysia | Agencies | Industry | Research Institutions | Higher Learning Institutions | STI Professional Bodies | International STI Organisations | Communities at Large



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

Dear Readers,

THRIVING AMIDST UNCERTAINTY

Turning 25 was definitely a momentous moment for the Academy, especially when considering that the month of February 2020 was the calm before the storm; the last "normal" month for the world before civilisation was turned on its head.

As one of the youngest Academy of Sciences in the world, we certainly lived up to our age. We wholeheartedly embraced going virtual and have actually been able to thrive in the digital space as we have been involved in more activities to advance the sciences- be it local, regional or global- in the age of COVID-19.

As thought leaders in the sciences, many of our Fellows have risen to the occasion; sharing their insights to ensure that fact-based decisions are made in the age of complete uncertainty as our counterparts around the world threw out convention and collaborated to provide solutions for this pandemic. In addition to this, the Academy had set up a SIG on COVID-19 whose members consist of Fellows and members of the YSN-ASM who authored close to 10 factsheets on the virus.

The close of the year definitely brought about good news thanks to that collaborative spirit. However, we as Fellows need to continue ensuring that fact-based information is disseminated and play an active part to quell misinformation in this digital age.

Within the national arena, we have achieved a number of firsts. Our virtual annual general meeting this year, the first for the Academy, saw nearly 50% of our Fellows join the meeting, the highest attendance to date. It was a meeting filled with warm moments as old friends caught up and endeavoured to fulfil the needs of the Academy. Recognising the urgent need to pivot our approach to organising events, we moved online, which has proved to be a beneficial move. Our virtual engagements have been well-received, with a total reach of over 271,000 views for the 25 webinars that were conducted over the last nine months of 2020.

We also took our signature event, the NSC, virtually. The VNSC, which was themed Towards a Pandemic-resilient Community Through Science, drew the participation of 1,027 teams. The aspiration behind the theme was to enable the youth to comprehend the full impact of the pandemic and assist with sparking new ideas in the fight against the virus.

VNSC is run by our able YSN-ASM who also set new standards in their other endeavours in 2020. One of the main programmes organised under Minggu Sains Negara 2020 is the YSN-ASM Science Café. For the year 2020, there were a total of 11 sessions, which took place both physically (pre Movement Control Order (MCO)) and virtually (during MCO and Conditional Movement Control Order (CMCO)). The nine virtual sessions had a record of over 25,000 views, which is impressive.

Another first for the Academy, in keeping with the line of thought that the future is about the convergence of knowledge, is the introduction of the ASM ArtScience Initiative. The ArtScience Initiative, introduced at the end of 2019, is an example of the harmonisation sciences & arts. We received close to 60 submissions which will be exhibited virtually in June 2021.

We have also achieved another first in that a brainchild of the Academy, the 10-10 *My*STIE Framework that has been adopted at the national level. This is one of the efforts that will enable the Academy to strengthen its position at the highest level in the nation and has enabled for the impact that science, technology and innovation have on the economy to be recognised. This has led to the birth of a new area, STIE, which links the science, technology, innovation sector and the economic sector.

Thank you to all the Fellows who have played a part to the Academy's efforts to advancing the sciences in the community. We appreciate all your contributions; be it in terms of time or financial contributions; in making our activities more mainstreamed and far-reaching in its impact.

Here's to a more successful decade ahead.

Professor Datuk Dr Asma Ismail FASc

Watch the 2021 Presidential Address during the 25th Annual General Meeting here



































COUNCIL MEMBERS

1) PROFESSOR DATUK DR ASMA ISMAIL FASc
President (2019-2022)
Medical and Health Sciences

2) PROFESSOR DATO' IR DR A. BAKAR JAAFAR FASc
Vice-President (2020-2022)
Engineering Sciences

3) PROFESSOR DATO' DR AWG BULGIBA AWG MAHMUD FASc
Secretary-General (2019-2021)
Medical and Health Sciences

4) DATUK DR ABDUL RAZAK MOHD ALI FASc
Honorary Treasurer (2019-2021)
Science & Technology Development and Industry

ORDINARY COUNCIL MEMBERS (2020-2021)

5) PROFESSOR DATO' DR AHMAD IBRAHIM FASc
Science & Technology Development and Industry (2020-2022)

6) PROFESSOR DR AHMAD ISMAIL FASc
Biological, Agricultural and Environmental Sciences (2020-2022)

7) ACADEMICIAN TAN SRI DATO' IR TS AHMAD ZAIDEE LAIDIN FASc
Engineering Sciences (2019-2021)

8) PROFESSOR DATIN PADUKA SETIA DATO' DR AINI IDERIS FASc
Biological, Agricultural and Environmental Sciences (2019-2021)

9) ACADEMICIAN PROFESSOR DATO' DR KHAIRUL ANUAR ABDULLAH FASc
Medical and Health Sciences (2020-2022)

10) IR TS CHOO KOK BENG FASc
Science & Technology Development and Industry (2019-2021)

11) DR HELEN NAIR FASc
Biological, Agricultural and Environmental Sciences (2019-2021)

12) ACADEMICIAN EMERITUS PROFESSOR DATO' DR KHALID YUSOFF FASc
Medical and Health Sciences (2020-2022)

13) PROFESSOR DATIN PADUKA DR KHATIJAH MOHD YUSOFF FASc
Biological, Agricultural and Environmental Sciences (2019-2021)

14) EMERITUS PROFESSOR DR PHANG SIEW MOI FASc
Biological, Agricultural and Environmental Sciences (2019-2021)

15) PROFESSOR DR SHAMALA DEVI K.C. SEKARAN FASc
Medical and Health Sciences (2019-2021)

16) PROFESSOR DR YVONNE LIM AI LIAN FASc
Medical and Health Sciences (2020-2022)

2020 BY THE NUMBERS

EXPERT NETWORK

394 FELLOWS OF THE ACADEMY OF SCIENCES MALAYSIA

(28) SENIOR FELLOWS

8 DISCIPLINE GROUPS

- Information Technology & Computer Sciences
- Biological, Agricultural & Environmental Sciences
- Engineering Sciences
- Science & Technology Development Industry
- Medical & Health Sciences
- Mathematics, Physics & Earth Sciences
- Chemical Sciences
- Social Sciences & Humanities

11 MSA LAUREATES

166 TRSM RECIPIENTS

214 YSN-ASM NETWORK

50 ASSOCIATES

STRATEGIC INPUT

3 STI REPORTS:
Precision Medicine
Science Education
Natural Rubber

2 FLAGSHIP STUDY:
Science Outlook 2020
10-10 *My*STIE

4 PARTNER-SHIPS:
WST2040
EQA 1974
Pollution Act
Nanotech Policy

7 SPECIAL INTEREST GROUPS:
Precision Biodiversity | COVID-19
Hydrogen Economy | Zoonosis
Robotics | Machine Learning
Blue Economy

INITIATIVES & ACTIVITIES

- **289** DISCOURSES
- **25** WEBINARS
- **47** KNOWLEDGE SHARING SESSIONS
- **2** PILOT PROJECTS
- **1** INITIATIVE
- **1** FLAGSHIP PROGRAMME

6 PUBLICATIONS

30,940 TOTAL READERSHIP

123 *ARTICLES IN THE* **ASM SCIENCE JOURNAL**
+6 Special Issues

MEDIA COVERAGE & OUTREACH

656 ONLINE & PRINT NEWS

35,209 SOCIAL MEDIA COMMUNITY

11 ISSUES OF (NEWSLETTER) ASM FOCUS

Strategic Input for Robust STI Ecosystems



Trailblazing the Way of Prosperity, Societal Well-Being & Global Competitiveness

10-10 *My*STIE FRAMEWORK

The role of STI is critical for economic development and has a fundamental influence on societal development. Recognising this, ASM developed the 10-10 *My*STIE Framework by integrating 10 key Malaysian socio-economic drivers with 10 global leading S&T drivers that align to Malaysia's strengths and needs.

The 95 emerging technologies identified in ASM's ESET Study were supplemented by a series of global studies, patent analysis and technology trajectories over the past years to be clustered into the 10 S&T drivers. The 10 socio-economic drivers were identified by national research priority areas (NKEA, NSRC Priority Areas) and analysing industrial ecosystems in multiple economic sectors. More than 80 engagements gathered input from policymakers, the scientific community, academia, industry captains and STI professional bodies since March 2020.

The 30 National STIE Niche Areas were identified through a series of stakeholder engagements to ensure that they are aligned with national aspirations. These niche areas were endorsed by the National Science Council on 14 July 2020 and will be reviewed every 2-3 years to ensure relevance to changing times.

The 10-10 *My*STIE Framework report was launched on 8 December 2020 by the Minister of Science, Technology and Innovation, YB Khairy Jamaluddin, on Astro Awani. The virtual launch was a first for ASM as the year demanded adapting to the new norm. Knowledge sharing sessions with local and international entities (such as Ministry of Agriculture and Food Industries, Ministry of Defence, MIDA, *Bank Negara Malaysia* and the World Bank) were conducted for a wider audience take-up. The 10-10 *My*STIE Framework will enable a more focused and strategic development of all STIE Initiatives under the Twelfth Malaysia Plan (12MP) and beyond. The e-book recorded more than 700 downloads in the first month of its launch.

The Framework also supports the spirit of collaboration by enabling multichannel communication and feedback between stakeholders. The eight-cluster collaborative platform will provide a more holistic solution and aid effective implementation of strategies and high impact projects across Malaysian localities. To address economic disparities for sustainable national development, the Framework provides a systematic approach to transform Malaysia into a knowledge-intensive economy by design. This allows for focused and inclusive development of 30 national STIE niche areas towards ensuring wealth creation and societal well-being.

> "The role of Science, Technology and Innovation (STI) in developing an economy is indisputable. Malaysia gladly acknowledges the fundamental influence of STI on the economy and its impact on societal development. Given the strong linkages between the two, the Ministry introduces the term "STIE" to highlight the importance of an ecosystem approach as an engine for nation building."
>
> **YB Khairy Jamaluddin**
> **Minister of Science, Technology and Innovation**
> **at the virtual launch of 10-10 *My*STIE Framework**



30 National STIE Niche Areas for 10 Socio-economics Drivers

Energy



Diversified Renewable Energy



Energy Storage System



Microgrid

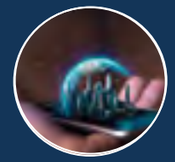
Smart Cities & Transportation



Integrated Urban Infrastructure & Infostructure Management

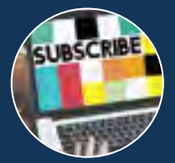


Smart Systems for Connected Rural-Urban Communities

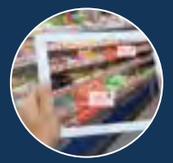


Human-Centred Design & Analytics

Business & Financial Services



Subscription Business Models & Sharing Platforms

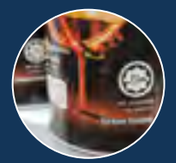


Digitalised & Autonomous Services



Fintech in Islamic Finance

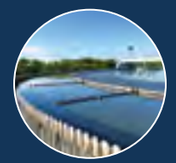
Water & Food



Premium Halal Food



Local Superfood

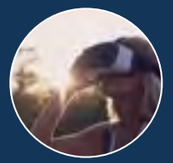


Integrated Water Resources Management

Culture, Arts & Tourism



Creative Content & Heritage



Digitalised Tourism



High-Value Tourism

Agriculture & Forestry



High-Value Seafood



Premium Tropical Fruits



Local Agricultural Input

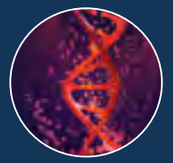


Smart Supply Chain Management for Sustainable Forest Products

Medical & Healthcare



Digital Health



Precision Medicine



Clinical Trials Hub for Developing Countries

Education



Personalised & Experiential Learning

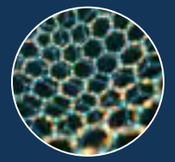


Micro-credentials



Global Online Learning: Promoting Local Content

Smart Technology & Systems (Next-Generation Engineering and Manufacturing)



Advanced Materials for Circular Economy & Sustainable Society



Next-Gen Smart Factories



Manufacturing of Smart Devices & Technology Development

Environment & Biodiversity



Precision Biodiversity



Innovative Eco-Products from Waste

Scan the QR code to read the full report

Position Paper

Precision Medicine Initiative in Malaysia

Precision Medicine Initiative studies the feasibility of mainstreaming precision medicine to complement current clinical practices. Following are the findings from the study:

Regulation and Legislation
To develop a solid legal and regulatory framework including updating relevant Acts.
Regulatory agencies will need to be agile to ensure that this field can advance rapidly.

National Biobank Initiative
To invest in converging biobanks to a central coordinating custodian. Existing HICoE could be considered to be repurposed to function as national level biobank.
There is a need for coordination across pockets of initiatives to ensure an integrated impact of precision medicine. This will require harmonisation at federal, state and institutional levels.

The Big Data Initiative
To invest in infrastructure for a centrally coordinating hub to receive, retrieve and analyse patient data but upholding the patient data privacy act (to be drafted).
Implementing and accepting shared data integrity standards will speed up data sharing. This will catalyse the development of new therapies, technologies and predictive systems.

Talent Management
To ensure adequate and well-trained resources for the effective implementation of the precision medicine initiative.
For this initiative to be successful adequately skilled, educated and accredited workforce across all levels of the system is needed; this includes bioinformaticians and genetic counsellors among others.

Laboratory Accreditation
Accreditation of ISO 15189 for all molecular diagnostic laboratories.
This is to ensure failure-resistant system of the underlying laboratory technologies and to integrate with the whole health system to give maximum health benefit to the community.

Collaboration Efforts in Research
To provide tax incentives such as tax deduction and exemptions to incentivise the industry to partake in the initiatives.
It is imperative for an inclusive, integrated and continuous public-private engagement either with local partners or international collaborators to integrate research, technology and process development for a more impactful precision medicine initiative in Malaysia.

Improved Access to Diagnosis and Treatment
To regulate and ensure availability and accessibility to precision medicine based treatment for all cases and to all WHO essential medicines.
Precision medicine will change the relationship between patients, practitioners and other private service providers. Hence it is imperative for regulatory agencies to develop expertise in this emerging field and ensure synergy in the healthcare system across all states in Malaysia.

The position paper was presented to the Deputy Director-General of Health (Research and Technical Support), Dr Hishamshah Mohd Ibrahim in November 2020, to gather the viewpoints and support of the Ministry of Health (MOH). MOH recognised the need for a national plan to better manage patient care by capitalising on each other's strength. The success of this meeting allowed ASM findings to be incorporated in a joint paper, which was presented by MOH to the HTNC chaired by the Minister of MOSTI, YB Khairy Jamaluddin in December 2020.

This joint paper includes a personalised, predictive, preventive, and participatory approach to medicine, layered with big-data analytics to give personalised recommendations. It was approved to be tabled at the National Science Council in Q1 of 2021.

The HTNC provides strategic direction to existing and upcoming technologies that has the potential to be developed in Malaysia. The HTNC will report directly to the National Science Council, chaired by the Prime Minister.

Chair:
Professor Datuk Dr A Rahman A Jamal FASc

Establishment:
September 2017

Scan the QR code to read the full report

Science Outlook

SO2020 follows the Science Outlook 2015 and Science Outlook 2017 editions. SO2020 explores the progress and development of STI ecosystem since 1991, the year which coincided with the declaration of Vision 2020. SO2020 investigates the STI ecosystem and its impact over the last 30 years on the dimensions of **economy**, **society** and the **environment**.

The past two reports have garnered much attention, and over 50% of its recommendations have been taken up by relevant stakeholders. The online version of both reports have recorded about 100,000 impressions, with SO2020 also anticipated to gain similar traction across stakeholders from the Government, industry, the scientific community and civil society groups.

Objectives of the Study:

- To examine the current and past status of the STI landscape in Malaysia, including key trends, challenges, and achievements
- To determine the impact of Malaysia's STI ecosystem from the perspective of economic, societal and environment
- To identify the strengths and gaps in the STI ecosystem
- To propose key recommendations to future-proof Malaysia against global uncertainties

SO2020 is considered a departure from previous editions, as it emphasises on an "ecosystem approach" that identifies the gaps and strengths in Malaysia's STI ecosystem through the 8i Enablers model. An ecosystem is simply described as key enablers that interact with each other in a specific environment that creates value for society. The study will propose overarching recommendations to transform Malaysia into a developed and progressive nation by 2030.

SO2020's groundwork started in the final quarter of 2019, while its development shifted into full swing throughout 2020. The study is designed to be conducted based on quantitative and qualitative data. The COVID-19 pandemic caused most stakeholder engagements to be carried out in hybrid mode (a mix of virtual and physical engagements). A total of 50 engagements were carried out in 2020, with over 31 meetings (steering committee and working group discussions), five workshops (two harmonisation and three data consolidation exercises) and 14 interviews. A survey with 1,000 participants was also carried out to gain insights on the impacts of STI from the perspective of firms and individuals.

Chairperson:
Professor Dato' Ir Dr Mohd Saleh Jaafar FASc

Deputy Chairperson:
Professor Dr Nik Meriam Nik Sulaiman FASc

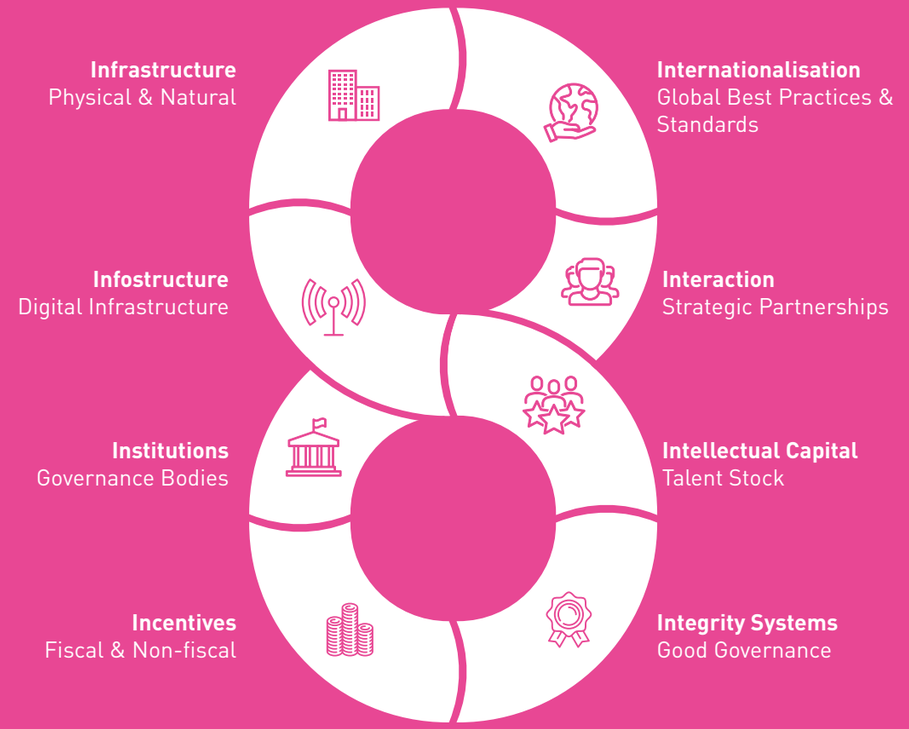
Chairperson, Societal Impact Pillar:
Professor Dr Rofina Yasmin Othman FASc,

Chairperson, Environmental Impact Pillar:
Dr Helen Nair FASc

Chairperson, Economic Impact Pillar:
Professor Dr Mahendhiran Sanggaran Nair FASc

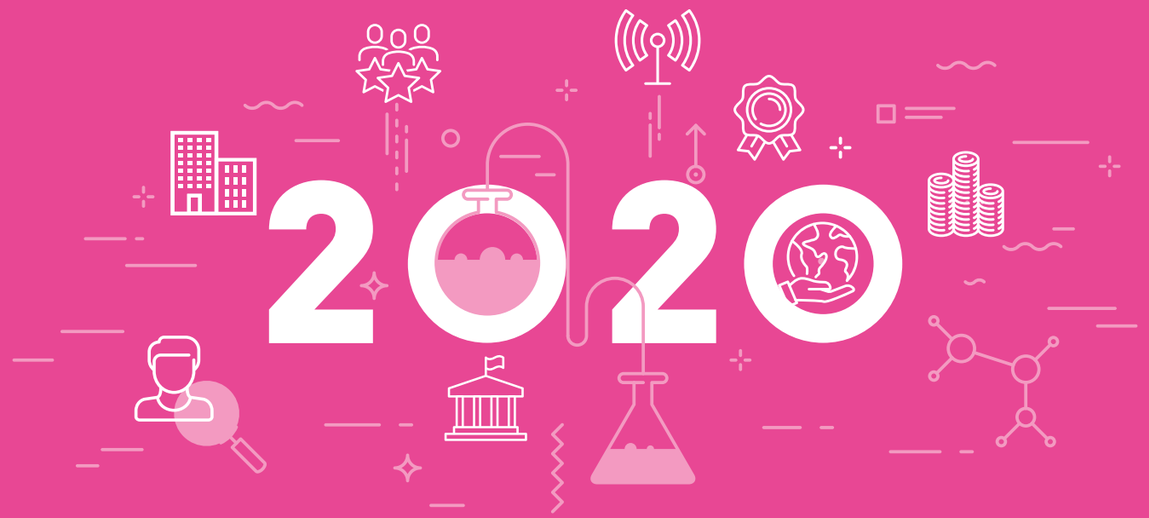
Duration of Study: 21 Months

Scan the QR code to read the past editions



8i Enablers model

SCIENCE OUTLOOK



Natural Rubber - A World Commodity

Natural rubber is a world commodity that is highly sought after in manufacturing thousands of consumer products, including tires, medical gloves, bearings, and fenders. Though Malaysia was once the world leader in the production and export of natural rubber, we are now in 7th place.

Although the Malaysian rubber plantation area is close to 1 million hectares, our production now struggles to beat the 700,000 tonnes mark due several major factors, including low rubber price, ageing smallholders, high cost of replanting, labour shortage and rubber farmers trapped in the low-income bracket.

In addtition to the above, the rubber product industry is also facing serious challenges, such as low productivity, wastage and the commodity's prolonged low price. The COVID-19 pandemic has also aggravated the situation, making it more vulnerable to economic impact.

Following this, a Task Force was set up to study the status and challenges of Malaysia's natural rubber industry and recommend measures to revive this key economic sector. The recommendations will be forwarded to the Government to gather the response needed to ensure the industry remains viable and competitive.

Chair:
Academician Datuk Dr Aziz Sheikh Abdul Kadir FASc

Establishment:
November 2019

Stakeholder engagements organised:
FELDA
6 August 2020

RISDA
24 August 2020

Ministry of Plantation Industries and Commodities
25 August 2020

FELCRA
27 August 2020

FGV Rubber
30 September 2020

Forums/webinars organised:
Workshop on Natural Rubber Systems and Climate Change
23-25 June 2020

Webinar Maladies of Hevea
10 August 2020

The Future of Natural Rubber Industry: Price and Sustainability Challenges
3 September 2020

Webinar on Strategic R&D Towards Sustainable Natural Rubber Industry
20 October 2020

Webinar on Current Status of Rubber Leaf Disease Outbreak
4 December 2020

Building the Future STEM Talent

Being a country that aims to become a developed and high-income nation, STEM talent is crucial and most fundamental for Malaysia to increase its STI capacity and capabilities. Education plays a vital role in building STEM talents through formal and informal learning.

Despite all the policy measures and targets, Malaysia to date has yet to achieve the 60:40 target for STEM to non-STEM students in both secondary and tertiary level. Based on the MOE data 2020, enrolment of students in STEM fields which includes science, technical and vocational stream is still below the 60:40 target, which is 43.7% for STEM and 56.3% for non-STEM in 2019. Only several interventions, policies and action plans that were managed to be adopted and implemented effectively. From 1967 until to date, we also yet to see significant improvements to the students' performance in STEM.

ASM Science Education Committee comprises experts from various fields and key players in education. They are entrusted to identify the gaps and loopholes as well as formulating transformative approaches and recommendations in improving Malaysia's STEM Education. A position paper will be prepared and presented to the relevant stakeholders.

Inputs were gathered through engagements with several key players and stakeholders in STEM education, among others as follows:

1. Ministry of Education
2. National STEM Association
3. YSN-ASM
4. National Science Centre
5. PADU
6. PIBGN
7. MARA Junior Science College
8. IPG
9. *Planetarium Negara*
10. Petrosains Sdn Bhd

Chair:
Professor Dr Ahmad Ismail FASc

Establishment:
December 2019



SPECIAL INTEREST GROUP (SIG)

SIGs are expert-driven and proactive in bridging the gap between the generators and users of knowledge to forge collaborative and transformative action so Malaysia can be ahead of the curve.

SIG on Precision Biodiversity

The COVID-19 pandemic brought into sharp focus how vulnerable humankind is to the impact of changes to the ecosystem, natural environment, and biodiversity. It indicates our failure in controlling zoonosis and in biodiversity preservation efforts. Malaysia is ranked as the 12th most biodiverse country in the world. However, Malaysia registers an alarmingly poor biodiversity status. Its Ecological Footprint Consumption is between 3.5 - 5.25 global hectares which is much worse than other Southeast Asian nations.

Following this, SIG on Precision Biodiversity formulated PBD a next generation approach to better conserve, preserve, and manage biological resources in Malaysia. PBD uses advanced technology platforms for protection of the planet as well as for socio-economic returns.

The major drivers for this approach are advances in:
- **Computer and communications technology** such as AI, ML, robotics, drones, IoT
- **Biotechnology** such as cloning, omics, gene editing and synthetic biology

When applied correctly, PBD reduces uncertainties in managing natural resources. It will also help to ensure optimum deployment for profitability, sustainability, and protection of the environment.

The position paper calls for the following overarching recommendations:
1. Mainstream PBD and conservation through a total government approach that is aligned with all policies and blueprints
2. Leverage PBD through the existing conservation channels of the Quadruple Helix
3. Implement open data sharing and transparency on biodiversity issues via MOSP and i-Connect
4. Establish a strategic genome database of organisms via government- academia-industry partnerships that brings socio-economic benefits
5. Strengthen educational and awareness programmes to incorporate knowledge and wisdom for nationwide PBD applications
6. Establish collaborative platforms for conservation and PBD at national & international level towards achieving the SDGs and the Shared Prosperity Vision
7. Establish a National Natural History Museum (digital/physical) within the Biodiversity Act
8. Establish a National Committee to coordinate all PBD activities based on the 10-10 *My*STIE Framework

Chair:
Dr Helen Nair FASc

Establishment:
November 2019



SIG on COVID-19

The COVID-19 pandemic has led to exceptional socio-economic impact and changed the lives of 7.8 billion people all over the world including Malaysia.

In its efforts to facilitate public's understanding as well as to provide accurate information on the pandemic, the SIG published 11 factsheets and expert reviews that addressed various facets of COVID-19 such as diagnostics, epidemiology, therapeutics, and vaccines in easily understandable formats.

While addressing COVID-19 and future pandemic, the SIG is preparing a position paper that analyses and identifies the strengths and weaknesses of the current procedures in managing the COVID-19 Pandemic.

The paper covers the following scopes:
1. Post-pandemic analysis
2. Application of artificial intelligence and big data analytics for infectious disease research
3. Preparedness of Malaysia for infectious disease outbreak

Chair: Professor Dr Rosnah Mohd Zain FASc

Establishment: March 2020

SIG on Hydrogen Economy

This SIG developed a holistic, evidence-based position paper focusing on the opportunities and implications for Malaysia to venture into Hydrogen Economy. The position paper was endorsed by 142nd ASM Council meeting on 3 December 2020.

The Position Paper emphasised that it was prudent and timely for Malaysia to build a climate-resilient energy system through early adoption of Hydrogen Economy as a key energy source. Two areas of demonstration project were proposed, that are demonstration projects for fuel cell public transport and logistics, and demonstration projects on industrial and residential power generation. A collaborative platform involving government, universities and potential industry players are crucial to build a strong ecosystem with all relevant stakeholders, where a designated government agency shall be chosen to champion the development of Hydrogen Economy in the country.

Regulations and standards shall be reformed to enable deployment of hydrogen technologies in our energy system. Lastly, there is a need for significant national funding and incentive to support the adoption of hydrogen economy in phases.

The position paper has been presented to NanoMalaysia Berhad, MGTC and NVSB in December 2020. The input will be taken as a baseline for the development of a Hydrogen Economy Roadmap which will be commissioned by MOSTI, led by NanoMalaysia and ASM, NVSB and MGTC will be strategic partners for the study.

Chair: Professor Dato' Ir Dr Wan Ramli Wan Daud FASc

Establishment: September 2019

SIG on Zoonosis

Zoonotic diseases have been an important concern to mankind since the beginning of the domestication of animals 10,000 years ago. It is responsible for an estimated 2.5 billion cases of human illness and 2.7 million deaths worldwide each year. In Malaysia itself, several zoonotic diseases have impacted the country before the COVID-19 pandemic, such as Nipah virus, SARS, H5N, H1N1, H7N9 and Zika virus.

Therefore, to better prepare of any possible infectious diseases in the future, it is vital for Malaysia to improve local capacity and understand the zoonoses transmission, its threats to human health, and approaches to minimise the damage of future outbreaks.

In response to this, a short study was carried out to prepare for a position paper that will address zoonoses issues as well as provide strategic recommendations towards ensuring Malaysia's resilience against zoonotic diseases. The main areas that will be covered in the Position Paper are:
1. Enforcement and governance
2. Environmental factors
3. Research and development
4. Capacity and capability development
5. Biosafety and biosecurity management system

Chair: Professor Dato' Dr Mohd Hair Bejo FASc

Establishment: July 2020



SIG on Robotics

Robotics is a key driving technology, which underpins a whole new generation of autonomous devices and cognitive artefacts towards a seamless interaction with the world, socio-economic development, competitiveness, and advancement of the nation. It positively influences every aspect of life, raises efficiency and safety levels, and provides enhanced levels of service.

The global robotics revenue, including industrial and non-industrial segments, is forecasted to reach USD 248.5 billion annually by 2025, up from USD 48.9 billion in 2018. Therefore, it is important for robotics development and application to be given priority towards driving Malaysia's development and advancement.

Following this, a Strategic Paper on Robotics Directions in Malaysia will be prepared to evaluate the current status, address the challenges and gaps, as well as formulate the strategic direction for robotics in Malaysia. It will be crucial in the development of the National Robotics Roadmap 2021 by MOSTI. The scope that will be covered are:
1. Governance and ecosystem
2. Talent
3. R,D,C&I
4. Application
5. Legislation
6. Socio-economic impacts

Chair: Professor Ir Dr Khairul Salleh Mohamed Sahari

Establishment: November 2020

SIG on Machine Learning

SIGML is tasked to formulate a position paper on the Setting the Science, Technology & Innovation (STI) Agenda for Homegrown Artificial Intelligence (AI) Solutions for Common Good. This paper highlights the important role AI will play in Malaysia's development and proposes key policy and strategy recommendations that may take the nation on a fast trajectory of adoption and deployment. An accelerated and wide-ranging initiative for adoption and deployment is urgently needed, given the breadth and depth of AI's rising impact on contemporary society.

The position paper calls for the deployment of AI by capitalising on the expertise already available within the local academic, research and industry community for R&D in S&T to produce home-grown innovations. The position paper calls for the following recommendations to build the necessary ecosystem for home-grown AI solutions:

1. To call for a strategic National STI-focused AI Roadmap to shift Malaysia to a new way of looking at knowledge through AI for economic and social benefits.
2. To propose the establishment of a National AI Committee to coordinate all national level STI related AI projects under the auspices of the National Science Council.
3. To institute a national Data Czar role and data governance framework to ensure an enabling data ecosystem for enhanced accessibility to non-sensitive public and private data towards value creation.
4. To establish an AI Makerspace that would leverage existing collaborative platforms to develop home-grown AI solutions in the four identified focus areas: (i) Smart Cities, (ii) Digital Manufacturing, (iii) Precision Agriculture & (iv) Connected Healthcare.
5. To equip Malaysia's talent pool with competencies and skill sets to deploy AI technology and applications.

An enabling STI ecosystem is needed to ensure the successful adoption and deployment of AI and ML technologies. The position paper also proposes pilot projects in the focus areas of Smart Cities, Digital Manufacturing, Precision Agriculture and Connected Healthcare. These four focus areas were selected based on their level of connectivity, presence of existing national digitalisation efforts and their potential for growth. With the exception of Precision Agriculture, the three focus areas have a strong digital foundation that can enable the move towards adopting AI. The selection of Precision Agriculture as a focus area was due to the need for Malaysia to address the digital gap in the agriculture sector so that AI and ML could be deployed and improve the growth of the sector. Even though AI applications extend beyond the four focus areas, within the short-term, these focus areas present the best areas to rapidly adopt AI and ML technologies.

Chair:
YM Academician Tengku Datuk
Dr Mohd Azzman Shariffadeen FASc

Establishment:
November 2020



SIG on Blue Economy

Blue Economy has been among the important agenda of most countries in the world, aligned with the SDG 14: Life Below Water. Due to its huge potential for socio-economic development, the global ocean economy was estimated to reach USD 3.0 trillion by 2030.

Blue Economy offers tremendous potential economic value and prospects for Malaysia.

As a maritime nation with extensive coastal and marine ecosystem rich with biodiversity, and around 70 percent of its population living along 4,800 kilometers of coastline, it is important for Malaysia to understand the Blue Economy concept. A sustainable, holistic, and informed governance structure is also needed to balance conflicts between marine resource use, habitat recovery and area development. Such an approach is important in identifying some of the key challenges its adoption poses and suggesting some broad next steps to ensure its implementation.

Following this, the SIG prepared a Position Paper on Blue Economy that will provide a constructive framework for sustainable development and economy of marine and maritime sectors in Malaysia.

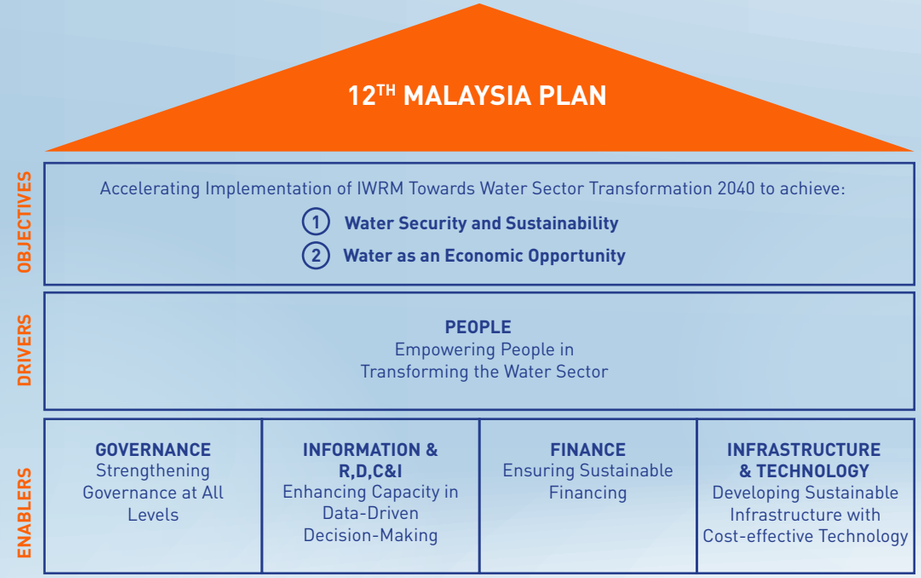
Chair:
Emeritus Professor Dr Phang Siew Moi FASc

Establishment:
November 2019

Strategic Partnership

Roadmap for The National Agenda on Water Sector Transformation 2040

Since the ASM publication titled Transforming the Water Sector: National Integrated Water Resources Management Plan: Strategies and Road Map (NIWRMP) was released in 2016, Integrated Water Resources Management at the national level has gained traction. The report, which is a culmination of the water sector studies conducted by ASM since 2008, has resulted in the involvement of Fellows in the drafting of the 12MP Strategy Paper on Water Sector Transformation and the National Agenda on Water Sector Transformation was conceived.



The Development of the Road Map for the National Agenda on WST2040 Study is commissioned by the EPU, Prime Minister's Department. The study focuses on ensuring nationwide water security and sustainability, in line with global and national targets, beyond 2040. This means that water supply will be available for all, in addition to transforming Malaysia's water sector from being an economic enabler to a dynamic economic sector. The transformation turns Malaysia's water sector into a growth engine that contributes to the country's Gross Domestic Product (GDP) through the four waves of transformation, which is embedded in the four Malaysian Plans from 2021 to 2040.



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 WST 2040.

Chair:
Ir Dr Salmah Zakaria FASc

Duration of Study:
May 2020 - December 2021

Task Forces:

- **Advocacy, Awareness Raising, Capacity Building (AACB) & Public Participatory Platform Task Force** (Chairperson - Professor Dato' ChM Dr Mazlin Mokhtar FASc) – To Improve overall understanding and significance of IWRM concepts at all levels and all sectors so as to ensure the effectiveness of implementation in managing the water resources sustainably
- **Integrated Water Sector Data Center (IWSDC) Task Force** (Chairperson - Datuk Mohd Adnan Mohd Nor FASc) – To look into the establishment of a national Data and R,D,C&I Centre as the basis for strategic planning and decision-making and as a catalyst for developing expertise and local innovative technologies in the water sector
- **Industrial Revolution 4.0 in the Various Water Sub-sectors (IR4.0 WS) Task Force** (Chairperson - Datuk Abdul Kadir Din FASc) – To evaluate the preparedness of the water sector towards IR4.0 and the use of smart technologies to drive the overall development of the water sector
- **Water-Food-Energy (WFE) Nexus Task Force** (Chairperson - Dr Mohd Hezri Adnan FASc) – To establish a Water-Food-Energy Nexus-oriented national water resources management to ensure the country's social and economic sustainability
- **Virtual Water and Water Footprint (VW&WF) Task Force** (Chairperson - Professor Dr Zulkifli Yusop FASc) – To prepare comprehensive quantitative data on the current needs and uses as a guide to identifying economic level of water usage at every level of the economic sectors
- **Climate Change Impact and Adaptation (CCIA) Task Force** (Chairperson - Professor Dr Joy Jacqueline Pereira FASc) – To identify the preparedness in facing the impact of climate change on the water sector
- **Alternative Water Financing Task Force** (Chairperson - Datuk Seri Ir Dr Zaini Ujang FASc) – To develop a new business model to drive the national water industry towards one that is competitive, attractive and profitable
- **Water as an Economic Sector (WES) Task Force** (Chairperson - Professor Dr Mahendhiran Nair FASc) – To look into the implementation of a strategic programme to position the water sector as a new national economic sector

Review of the Environmental Quality Act 1974

The Review of the Environmental Quality Act 1974 (EQA1974) Study is a commissioned project by the then MESTECC in November 2019. This project aims to identify gaps, provide recommendations, and benchmark the existing law with other countries. Aside from addressing pertinent issues in enforcement, access to information and environmental governance, the committee is also looking into provisions for climate change, circular economy, public participation and much more.

The Steering Committee is committed to shifting the current environmental management approach from a reactive approach to a precautionary approach. ASM aspires to assist the current ministry, KASA, in strengthening the environmental rule of law through a more holistic legislation.

The project has officially been extended until 31 October 2021. KASA has decided to enhance the EQA1974 through a two-phase approach focusing on compound and penalty in the first phase and the recommendations from ASM in the second phase.

Task Force Members:
Chair: Academician Professor Emeritus Tan Sri Dr Zakri Abdul Hamid FASc

Expert Members: Professor Dato' Ir Dr A. Bakar Jaafar FASc, Professor Dato' Dr Aishah Bidin FASc, Datuk Dr Abdul Rahim Nik FASc, Ir Dr Salmah Zakaria FASc, Professor Dr Fredolin Tangang FASc, Professor Dr Mohd Talib Latif FASc, Professor Dr Zulkifli Yusop FASc, Professor Dr Haslenda Hashim, Dato' Halimah Hassan, Dr Lulie Melling, Dr Hanim Kamaruddin, Dr Ho Wai Shin, Dr Elizabeth Philip, Dato' Dr Nadzri Yahaya
Senior Legal Drafter: Dato' Dr Gurdial Singh Nijar

On-going since November 2019

Feasibility Study of Local and Transboundary Pollution Act

The Academy was commissioned by the then MESTECC to undertake a feasibility study of the Local and Transboundary Pollution Act.

For the study, a stakeholder engagement workshop was held on 21 January 2020 to gather valuable feedback on the implication and implementation of the proposed act from government agencies, NGOs, CSOs, industry players and research institutes.

The study concluded with five challenges and 14 recommendations on tackling the transboundary pollution issues through a legislative approach. Based on the findings, a Transboundary Pollution Act needs to be enacted to regulate Malaysian-linked companies that operate abroad. The legislation also needs to be supported by other instruments, such as a third-party commission that can handle disputes pertaining to transboundary pollution at the ASEAN level.

The report was successfully submitted to MESTECC on 14 February 2020.

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

Duration of Study: November 2019 - February 2020

National Nanotechnology Policy and Strategy 2021-2030

MOSTI appointed ASM as a strategic partner to review and update the 2016 draft of the National Nanotechnology Policy and Strategy (NNPS) for the development of NNPS 2021-2030. This review provides strategic direction and strengthens national nanotechnology sector which will drive Malaysia's high-tech nation aspirations.

The study evaluated current national nanotechnology progress, gaps and challenges. From this study, four strategic thrusts, 15 strategies and 32 initiatives were recommended for the NNPS 2021-2030.

Additionally, ASM also put forward three leapfrog and high-impact initiatives that prioritises the development and adoption of five impactful emerging nanotechnologies from ASM ESET & Foresight study.

Chair: Professor Dato' Ir Dr Abdul Rahman Mohamed FASc

Co-chair: Professor Dr Zainovia Lockman

Duration of Study: July 2020 - October 2021

Strengthening Governance for a Robust STIE Ecosystem

Based on the recommendations in the Malaysia Policy and Master Plan on Science, Technology & Innovation 2021-2030, ASM translated its mission into action with continuous engagement with the government to strengthen the STI Collaborative Ecosystem and Governance through several interventions, as follows:

a) National Science Council
The National Science Council was reinstated in 2020 with its first meeting held on 3rd February 2020. This is the highest decision making body for STI in the country, involving key Ministers as member.

During the first meeting, ASM presented the paper on the 10-10 Science, Technology, Innovation and Economy (STIE) Framework to Identify National Niche Areas and Mechanism for the Research Fund Allocation based on National STIE Niche Areas. The meeting approved the adoption of the proposal.

On 14 July 2020, during the second meeting which was chaired by YAB Prime Minister, Tan Sri Muhyiddin Yassin, the 30 National STIE Niche Areas (2021-2025) were endorsed for adoption by all relevant ministries to collaboratively transform each of the identified 10 socio-economic sectors of the 10-10 *My*STIE Framework. The meeting also endorsed the establishment of a STIE Task Force that consists of relevant ministries to identify high impact projects that complements the shifts outlined in the new NPSTI 2021-2030 to create impact in all Malaysian localities.

Since the presentation to the Council, more than 80 stakeholders engagements have been conducted involving various ministries, government agencies, industry players, international bodies and higher learning institutions to forge collaborative networks. This also ensures strategic plans are aligned with national aspirations based on the National STIE Niche Areas.

Furthermore, the intensification of STIE investment was also put forward as a strategy to be adopted under the 12MP. The 10-10 *My*STIE Framework was recommended to be a strategic tool to build vibrant and agile ecosystems for each socio-economic sector.

b) STI Act
MOSTI is in the process of drafting an STI Act in line with the recommendation in the NPSTI 2021-2030. This is aimed at strengthening STI Governance and forging a dynamic and collaborative STI ecosystem. ASM is working closely with MOSTI on this and the Task Force is led by Professor Dato' Dr Aishah Bidin FASc.

The main legal provisions for the STI Act are as follows:
a. Appointment & role of National Science Advisor
b. Institutional framework
c. Establishment of PSC on STI
d. Resource allocation
e. Public-private partnership
f. Physical & digital infrastructure
g. Ethics & integrity in STI practices
h. Intellectual properties (IP)
i. STI database & repository management
j. Talent development & management
k. Promotion & enculturation
l. International linkages & networking

c) Establishment of Technology Commercialisation Accelerator (TCA)
An independent body called the TCA is recommended to spearhead economic-oriented research. The TCA will bring together industries, researchers, and financing entities to realise demand-driven research and market-driven delivery. Serving as the commercialisation arm of the RMA, it will identify the necessary mechanism of intervention and facilitation (finance, design, incubation, advisory services, etc.) for products to achieve commercial readiness. With its focus on demand-driven R&D, market-driven delivery, talent development for the industry and technology-based start-ups, TCA will also monitor and report the performance of commercialised products and services.

It will also play a significant role as a conduit to connect business and investors with research institutions and the government. ASM also presented the proposal entitled Forging Local Innovation Ecosystems for a High-Tech Nation through TCA at MOSTI's first HTNC meeting on 17 December 2020, chaired by YB Khairy Jamaluddin, Minister of MOSTI. Subsequently, several discussions were held to gather inputs and buy-in from relevant parties, including EPU and MOF.

d) Malaysia Science Endowment (MSE)
MSE is a vital component of the STI Collaborative Ecosystem to enable sustainable R,D,C&I financing in the nation for basic and applied research, experimental development (pre-commercialisation) and strategic initiatives across the national priority areas. It would function in tandem with the current RMA and the TCA to bridge knowledge and innovation frontiers through diverse and sustainable financing for R,D,C&I. The approval from Cabinet was sought in December 2020 for the rebranding and further extension of the KWA MSPK MOSTI to MSE and ASM as the implementing agency.



Mineral and Rare Earth Industries & Related Activities

a) *Majlis Mineral Negara*
ASM submitted an Information Paper (*Kertas Makluman*) to MMN, titled Issues of Research and Development in the Rare Earths Industry Identified Under ASM Studies. The paper summarised the main recommendations from three of ASM's publications:

i. Revitalising the Rare Earth Mineral Programme in Peninsular Malaysia as a Strategic Industry (2013)
ii. The Blueprint on the Establishment of Rare Earth-Based Industries in Malaysia (2014)
iii. Sustainable Mining: Rare Earth (RE) Industries (2019)

The paper was presented to YB Khairy Jamaluddin, Minister of MOSTI in a Post Cabinet meeting on 4 December 2020. On 7 January 2021, a preparatory meeting of MMN was held and ASM was represented by Academician Datuk Fateh Chand FASc and Mr P. Loganathan FASc, ASM Fellows and the paper was presented to YB Dato' Dr Shamsul Anuar Nasarah, Minister Energy and Natural Resources.

Both meetings took note of ASM's views that research and development are vital in transforming the mineral and rare earth industries towards a sustainable future.

b) Input on Mining and Rare Earths industries
In December 2020, ASM (through MOSTI) also provided input to several memorandums to KeTSA as follows:

i. The framework for SOP for the non-radioactive Rare Earths Mining in Malaysia
- ASM highlighted the importance to craft the SOP towards building a local supply chain of Rare Earths.

ii. The framework for the Transformation of the National Mining Industry 2021-2030
- ASM emphasised the importance of Communication, Education and Public Awareness in improving public understanding and acceptance of mining activities.

iii. Memorandum on SOP for Bauxite mining and export activities
- ASM highlighted the importance of imposing strict regulations to ensure sustainable practices that minimise the negative impact on the Bauxite mining industry. ASM's recommendations in the publication, i.e. Sustainable Mining: Case Study for Bauxite Mining in Pahang published in 2017, was suggested to KeTSA.

Global Innovation Index (GII) Analysis

Inter-Agency Committee of Global Innovation Index (GII) Competitiveness Monitoring was set up in December 2020 involving various ministries and related agencies as strategic partners with the aim to promote more systematic and effective monitoring of Malaysia's competitiveness in GII to boost its position. This is also aligned with the target set in 12MP for Malaysia to rank in the Top 20 in GII by 2025.

Malaysia currently ranked 33th out of 131 countries, showing an improvement from the previous year (35th out of 129 countries). However, Malaysia's score declined from 42.68 (2019) to 42.42 in 2020.

ASM was appointed to chair one of the Working Group Committee (Human Capital and Research Cluster). Professor Dr Yvonne Lim Ai Lian FASc and Professor Dr Mohd Basyaruddin Abdul Rahman FASc are entrusted to carry out the role of Chair and Working Group Member, respectively. ASM has presented a deep dive analysis of the GII to the Committee elucidating Malaysia's performance in comparison to top-performing countries and ASEAN counterparts that are climbing the rank, areas of improvements and proposed way forward. A collaborative and innovative approach among all stakeholders is needed to ensure timely data updates and devising collective strategies to improve Malaysia's position in the index.



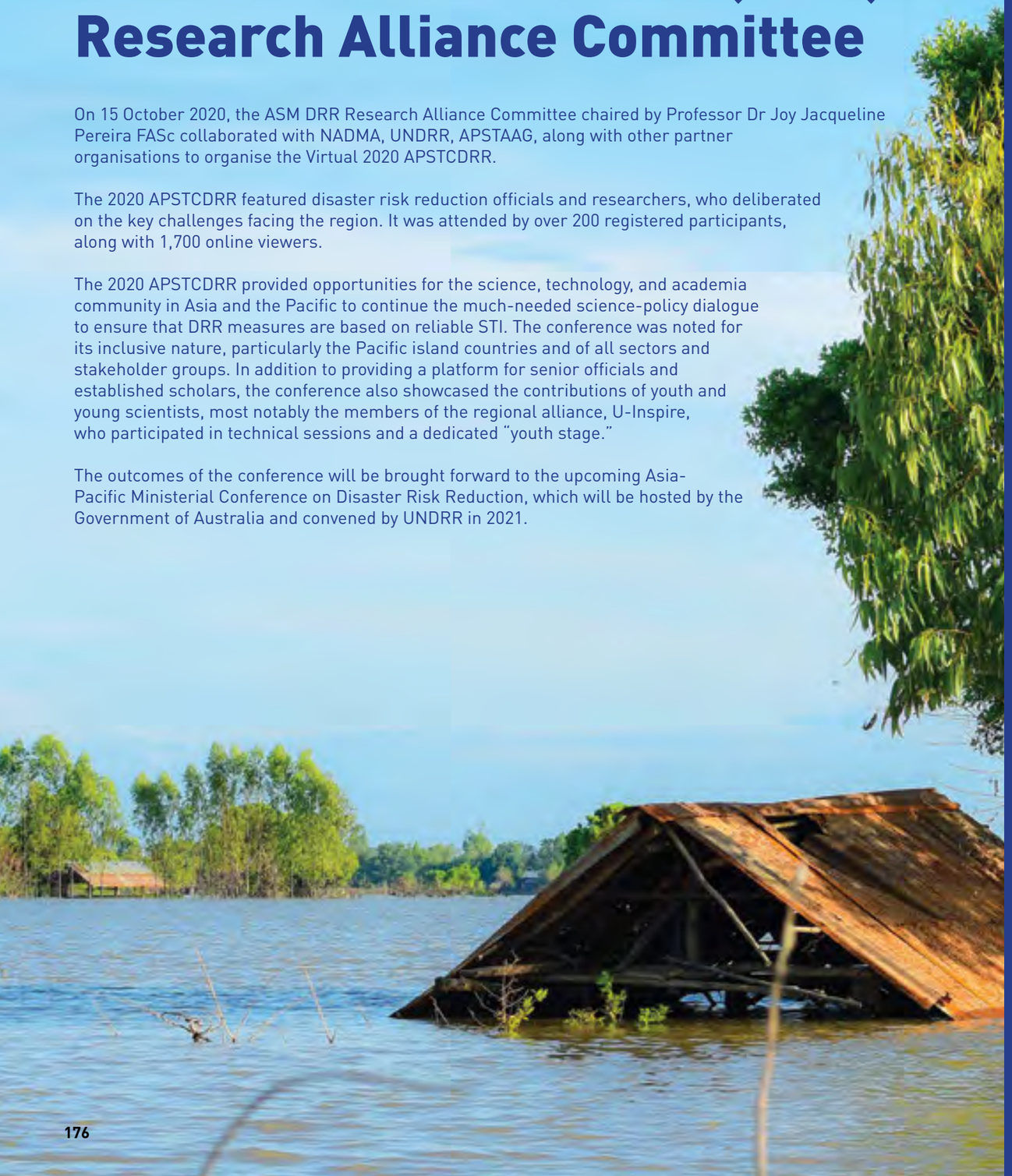
Disaster Risk Reduction (DRR) Research Alliance Committee

On 15 October 2020, the ASM DRR Research Alliance Committee chaired by Professor Dr Joy Jacqueline Pereira FASc collaborated with NADMA, UNDRR, APSTAAG, along with other partner organisations to organise the Virtual 2020 APSTCDRR.

The 2020 APSTCDRR featured disaster risk reduction officials and researchers, who deliberated on the key challenges facing the region. It was attended by over 200 registered participants, along with 1,700 online viewers.

The 2020 APSTCDRR provided opportunities for the science, technology, and academia community in Asia and the Pacific to continue the much-needed science-policy dialogue to ensure that DRR measures are based on reliable STI. The conference was noted for its inclusive nature, particularly the Pacific island countries and of all sectors and stakeholder groups. In addition to providing a platform for senior officials and established scholars, the conference also showcased the contributions of youth and young scientists, most notably the members of the regional alliance, U-Inspire, who participated in technical sessions and a dedicated "youth stage."

The outcomes of the conference will be brought forward to the upcoming Asia-Pacific Ministerial Conference on Disaster Risk Reduction, which will be hosted by the Government of Australia and convened by UNDRR in 2021.



Review / Feedback on Policies / Plans / Cabinet Papers

Focus Point for STI solutions and interventions to the Government
ASM, in its role as a Thought Leader in STI for the nation, fulfilled its commitments through various platforms to provide evidence-based strategic interventions and recommendations to the government.
ASM reviews and feedback were also provided as follows (non-exhaustive):

ASM reviews and feedback were also provided as follows (non-exhaustive):

No.	Plans / Policies	External Stakeholder
1.	ASM Input for the New Industrial Master Plan (NIMP) 2021-2030	MITI
2.	ASM Input for the Formulation of EE Roadmap	MITI
3.	*Kertas Pertimbangan ASM untuk National Science Council 1.2020, 3 February 2020 bertajuk Cabaran yang Dihadapi oleh Sektor Industri Berteknologi Tinggi di Malaysia dan Mekanisma Penggunaan Rangka Kerja 10-10 Sains, Teknologi, Inovasi dan Ekonomi (STIE) Sebagai Panduan Bidang Keutamaan dan Pengagihan Dana Penyelidikan Bagi Setiap Pemacu Sosioekonomi*	MESTECC
4.	ASM Input for 12th Malaysia Plan	MEA, KKMM, MOH, MITI, MOHE, MESTECC
5.	*Penyediaan Kertas Kerja Hala Tuju Industri Bioekonomi Negara*	MOSTI
6.	*Maklumbalas Pelan Pemulihan Ekonomi Pasca COVID-19*	MOSTI
7.	Proposal on the Development of COVID-19 Index	MOSTI
8.	*Semakan & Ulasan Terhadap Terma Rujukan Kajian Impak Dasar Bioteknologi Negara* (DBN 2005-2020)	MOSTI
9.	Proposal to develop Malaysia Advanced Materials Roadmap 2030	MOSTI
10.	*Kertas Pertimbangan ASM untuk* National Science Council 2.2020, 14 July 2020 *bertajuk Bidang Keutamaan Sains, Teknologi, Inovasi dan Ekonomi (STIE) Nasional* (2021-2025)	MOSTI
11.	*Maklumbalas* Technology Commercialisation Accelerator	MOSTI
12.	Input to develop Research, Development, Commercialisation, and Innovation (R,D,C&I) Roadmap – October 2020	MOSTI
13.	*Maklumbalas Sesi Libat Urus RMKe12 dengan YB Menteri MOSTI*	MOSTI
14.	*Maklumbalas Cadangan Pembentangan Rangka Kerja 10-10 MySTIE & Bidang Keutamaan STIE Nasional Sebagai Input ke arah merancang Perlaksanaan Platform di bawah Pasukan Petugas Khas Deeptech & Futureskills*	MOSTI
15.	*Kertas Pertimbangan ASM untuk* High Tech Nation Council 1.2020, 17 December 2020 *bertajuk* Forging Local Innovation Ecosystems for A High-Tech Nation through Technology Commercialisation Accelerator *dan Kertas Pertimbangan MOH bertajuk* Precision Medicine, Digital Health & Clinical Trials Hub (based on ASM Special Interest Group on Precision Medicine - Position Paper on Precision Medicine Initiatives for Malaysia)	MOSTI
16.	*Maklumbalas Lanskap STI untuk MJM Kebenaran Penggubalan Akta STI*	MOSTI

Culture of Excellence in Sciences

National Science Challenge (NSC) Impact Analysis

ASM has been organising NSC for the past 20 years since 1999 until 2018. From November 2019 to April 2020, an Impact Analysis Study on NSC was carried out with the objective to evaluate the impact of the competition (from 2008 to 2018) to improve future implementation of NSC.

The Impact Analysis Study showed that NSC played a significant role in developing students' interest in STEM and increases their soft skills, such as communication, teamwork, critical thinking, creativity, problem solving and time management. NSC was also the turning point for the students to pursue their education and career in STEM related fields, apart from providing an opportunity for students to network among their peers and experts.

Chair: Associate Professor Dr Noor Syamilah Zakaria (UPM)

- 175 respondents including NSC state, semi-finalists, and potential NSC participants were involved in the study:
  - 135 respondents involved in online survey
  - 40 respondents involved in focus group discussion

- NSC increased students' tendency to pursue thier studies and careers in STEM:
  - 90% of the respondents agreed this competition nurtured their interest in STEM
  - 88% of the respondents agreed the competition has increased their interest to continue education and a career in STEM
  - 93% of the respondents are currently studying and working in STEM related fields

Virtual National Science Challenge (VNSC)

In line with the new norm, NSC made a come back under a virtual competition format in 2020. Held from 25 August until 9 November 2020, VNSC was recognised as one of the Signature Programme of *Minggu Sains Negara*. This year's VNSC theme was Towards a Pandemic Resilient Community Through Science.

In total, 1,027 teams took part in the Preliminary Round before the top three teams from each state qualified for the second round: video competition. Among 47 participating teams at the Second Round, six teams were chosen by the Judges to compete in the Grand Final on 9 November 2020.

After a neck-to-neck battle in the Grand Final, SMJK Jit Sin, Pulau Pinang emerged as the Champion of the 2020 VNSC and brought home the Prime Minister's Challenge Trophy, ASM-VNSC Educational Award worth RM 6,000, a laptop and a certificate of achievement for each student. YB Khairy Jamaluddin graced the virtual event with a powerful message through his speech and announced the winners.

Scan the QR to watch the VNSC video



Champion
SMJK Jit Sin, Pulau Pinang



Second Place
Pusat GENIUS@Pintar Negara, Selangor



Third Place
SMK Mat Salleh Ranau, Sabah



Fourth Place
SM Sri Cempaka Cheras, Selangor



Fifth Place
MRSM Kuala Berang, Terengganu



Sixth Place
SMK King George V, Negeri Sembilan

PARTICIPANTS INFO:

3,093 students **42%** Male **58%** Female



Johor
384



Kedah
171



Kelantan
57



Perak
192



Negeri Sembilan
57



Pahang
153



Pulau Pinang
156



Melaka
249



Perlis
36



Selangor
537



Terengganu
168



Sabah
210



Sarawak
432



W.P Kuala Lumpur
192



W. P Labuan
30



W.P Putrajaya
69

Malaysian Code of Responsible Conduct in Research

MCRCR is a national code of ethics in research to enhance Malaysia's competitiveness in research, development and innovation. The objective of the code is also to promote efficient implementation of policies and strategies through transparency and accountability in research.

Throughout three years of its implementation, the MCRCR was updated and enhanced based on the comments and inputs from various parties. This led to the publication of the second edition in 2020. The second edition of the MCRCR was circulated by MOSTI to the Cabinet for it to be the primary reference in all research and development in the country.

The Committee on Research Integrity chaired by Academician Emeritus Professor Dato' Dr Khalid Yusoff FASc was elevated to the National Committee on Research Integrity. This elevation enabled it to perform at the national level to plan, coordinate and monitor the implementation of MCRCR initiatives as well as provide advice and training.



Scan the QR code to read the module

AWARDS & GRANTS

Awards and grants are important to motivate researchers in developing new ideas, discovering new knowledge and solving the problems of society through innovative and practical approach. ASM harnesses the expertise of its members to carry out the selection process and provide independent review, evaluation and recommendation based on merit.

MAKNA Cancer Research Award

Tremendous efforts have been made by scientists to develop cancer prevention strategies, advance technologies to ensure early detection of cancer, as well as to elevate efficacy and precision in cancer treatment. Cancer researchers are confident that their findings are promising and can contribute greatly to society. Hence, MAKNA set up MCRA that is committed towards pushing the potential of Malaysian Young Scientists in cancer research.

As MAKNA's strategic partner, ASM has contributed to the selection exercise of MCRA through an online application platform (ASM Awards and Recognitions System and Database) and providing Expert Network to evaluate candidates. MCRA awards research grants to deserving Malaysian Young Scientists who have made beneficial contributions in cancer research.

2005 - 2020

- 761 applications received
- 60 awardees to date with total grants worth RM 1,731,410.00
- 6 were awarded a grant worth RM 30,000 each (2019 and 2020)

Scan the QR code to read more

Dr Ranjeet Bhagwan Singh Medical Research Trust Fund Programmes

The late Dr Ranjeet Bhagwan Singh's enthusiasm to foster research in the biomedical field has led him to dedicate a portion of his wealth as grants to supplement research in the field. Biomedical research nowadays is becoming increasingly interdisciplinary to ensure our society lives longer and healthier.

To commemorate the late Dr Ranjeet Bhagwan Singh's legacy, a virtual event titled Paradigm Shift in Medical Research was organised. This event comprised an RBS Memorial Lecture on Medical Research in a Doughnut World delivered by Academician Distinguished Professor Datuk Dr Looi Lai Meng FASc. It also included a dialogue titled Pivoting Your Research during COVID-19 and the announcement of the 2019/2020 RBS Research Grant recipients. The positive feedback from the audiences has shown that the late Dr Ranjeet Bhagwan Singh's significant contributions have stood the test of time.

Scan the QR code to read more

Newton-Ungku Omar Fund (NUOF)

Since 2015, NUOF aims to develop a research network among multi- and inter-disciplinary researchers through the integration of STI knowledge that addresses socio-economic issues in Malaysia and the UK.

Activities of the fund include:
a. Fellowships, mobility schemes, and joint centres to fortify the Malaysian science and innovation community.
b. Research collaborations on development topics.
c. Innovation partners and challenge funds to develop innovative solutions on development topics.

In its five years of being Malaysian Delivery Partner, ASM has collaborated with five prominent UK partners. ASM was also responsible for implementing seven NUOF Programmes with a total of 62 projects. The implementation of the NUOF Programmes were monitored by the Chairman of the NUOF Committee.

NUMBER OF GRANTS AND TOTAL AMOUNT AWARDED UNTIL 2020

ROYAL SOCIETY
Natural Sciences
11 Recipients £129,012.00 *Mobility Grants*
11 Recipients £1,008,636.00 *Advanced Fellowships*

ROYAL ACADEMY OF ENGINEERING
Newton Mobility Grants
Engineering
7 Recipients £101,200.00



BRITISH COUNCIL
1 Recipients £31,700.00 *Researchers Link*
18 Recipients £678,490.00 *Researchers Link*

BRITISH ACADEMY
Social Sciences & Humanities
11 Recipients £100,213.90 *Mobility Grants*
8 Recipients £496,977.00 *Advanced Fellowships*

MEDICAL RESEARCH COUNCIL
UK-Malaysia Bilateral Health Research Collaboration Programme
Non-Communicable Diseases
12 Recipients £4,632,625.00

DELIVERY PARTNERS . PROGRAMMES . RECIPIENTS

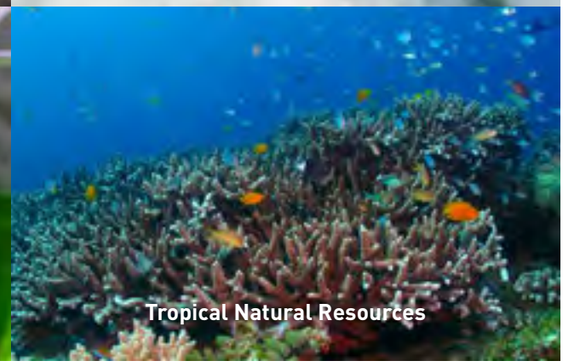
2020 Mahathir Science Award (MSA)

MSA recognises the best science and technology-based contributions and innovations towards solving problems of the tropics. The award is conferred to individuals, institutions or organisations who have made internationally recognised breakthroughs in the fields of:


Tropical Agriculture


Tropical Architecture and Engineering

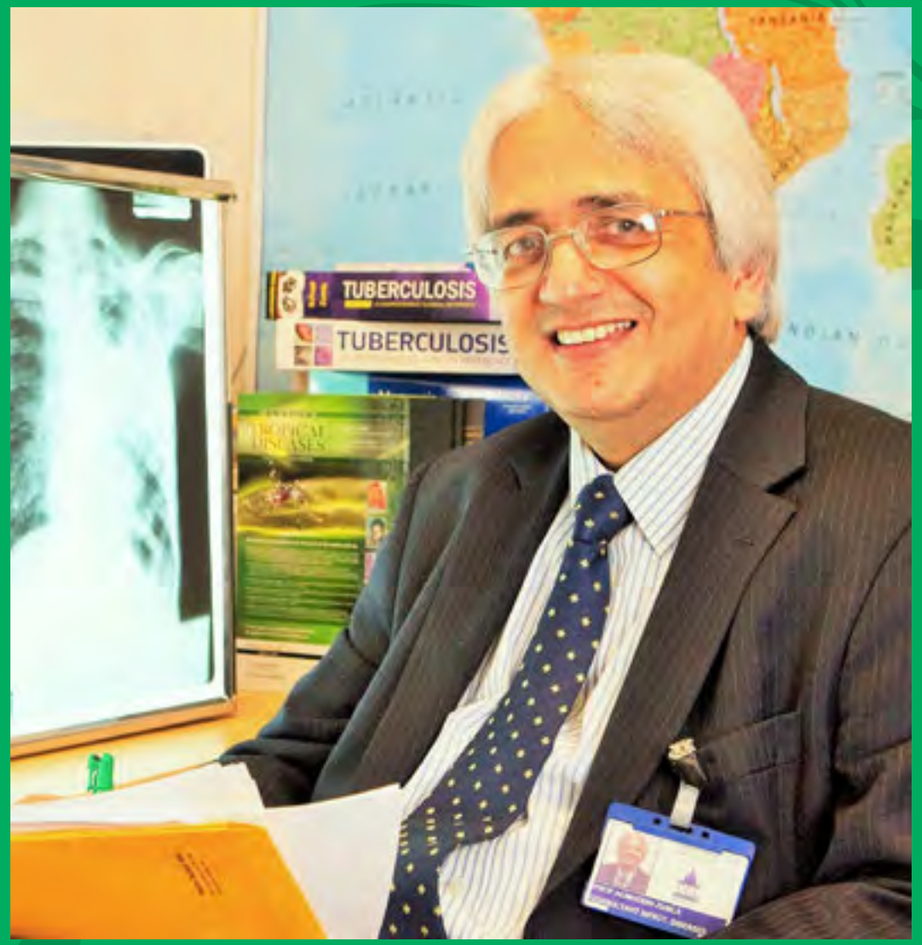

Tropical Medicine


Tropical Natural Resources

The 2020 MSA was open to Tropical Medicine and Tropical Natural Resources category. The evaluation and selection process of the winner was carried out by ASM from 3 February until 2 July 2020.

Scan the QR code to read more

The winner of 2020 MSA is Sir Professor Alimuddin Zumla from the Tropical Medicine category in recognition of his exceptional, globally-acknowledged, health-policy relevant research, capacity development and advocacy contributions to the understanding of the epidemiology, pathogenesis, diagnosis, treatment, and control of Tuberculosis, other respiratory tract infections and emerging pathogens with epidemic potential.



2020 MSA Winner, Sir Professor Alimuddin Zumla
Tropical Medicine

“ I believe that impact on community should be the driving force for any research and being recognised by my peers is a great incentive to persisting in the area of tropical medicine. I am glad that I will have the opportunity to empower the next generation of scientists through the Young Scientists Network of ASM and to engage with my peers, the Fellows of ASM through this award. ”

Fostering Open Innovation

Malaysia Open Science Platform (MOSP)

MOSP is a transformative initiative to strengthen the research ecosystem in Malaysia and to foster collaboration through a raw research data-sharing platform. This pilot project focuses on the key elements in making Open Science a reality which are the landscape and guidelines of open science, capacity building and awareness and infrastructure. Realised through ASM and Malaysia Open Science Alliance, MOSP will encourage a research ecosystem that is "as open as possible, and as closed as necessary".

1. Landscape Report on Open Science in Malaysia
MOSP produced a landscape report on Open Science in Malaysia which captures the current situation and readiness for the nation to embrace open science. This includes the perspectives of researchers, librarians, and top management of universities. The report also touches on the Malaysian infrastructure capabilities and where do we stand beside other nations in Open Science. The landscape study is done through survey and interview of stakeholders mainly from universities and research institutes.

2. National Guidelines of Open Science in Public Funded Research
MOSP developed this guideline to explain how we can execute Open Science following international best practices. This was developed through engagements with stakeholders from ministries, agencies, higher learning institutions, research institutions and many more to get the best idea of achieving open science nationally.

3. Training of Trainers Programme on Data Stewardship for Open Science
Aiming to train 200 data stewards by the end of the pilot project, MOSP organised a training programme to upskill librarians, researchers, and research managers to be data stewards that is mainly responsible to advocate the integrity of research data. The first series was held from 19 September 2020 until 4 January 2021 and successfully trained 56 data stewards from five research universities.

4. Open Science Forum for Asia and the Pacific
This forum was organised on 13 February 2020 to discuss and understand how Malaysia can learn from international strategies and approaches in the open science movement. The forum was attended by international open science nation representatives such as Africa, Australia, Singapore and China. The keynote speaker, Dr Ismail Seragaldin, Emeritus Librarian of Alexandria and Founding Director of Bibliotheca Alexandrina gave an impactful presentation on Open Science for Shared Prosperity in the Asia Pacific Region. The panel discussion on Open Science was moderated by Academician Professor Emerita Dato' Seri Dr Mazlan Othman FASc discussing on what is Open Science, the challenges and opportunities to support this movement.

To take advantage of this forum that was held in conjunction with the meeting of the APEC Policy PPSTI, Malaysia proposed a Forum Statement to support Open Science. The thoroughly discussed statement was then endorsed by the APEC community on 14 August 2020.

The next session further investigated three key areas in open science which are policy, infrastructure, and capacity building & awareness. The discussion was joined by Malaysian participants emphasising how we can apply the knowledge and lessons learned from other nations as well as the opportunities and benefits of pursuing open science.

5. Dialogue on Open Science
Professor Dr Barend Mons, President of CODATA and Dr Ross Wilkinson, Former Executive Director of ANDS shared their experience and knowledge in implementing FAIR research data management and establishing national data services. The dialogue that was held on 14 February 2020 dived deeper from the Open Science forum discussing specifically how Malaysia can thrive in open science.

6. Webinar on Citizen Science from the Malaysia's Perspective
In conjunction with the Training of Trainers program on Data Stewardship for Open Science, a webinar was organised on 5 October 2020 exploring Citizen Science from Malaysia's Perspective. This webinar discussed citizen science, one of the elements of open science, in the Malaysian scene. The keynote speech was delivered by Academician Professor Emerita Dato' Seri Dr Mazlan Othman FASc on Citizen Science in Space. The session was moderated by Datuk Dr Azizan Baharuddin, Director General of Institute of Islamic Understanding Malaysia. Panellists were Dr Nadine Brigitte Rupert, Ms Nadhirah Mohd Rifai and Mr Tan Choo Eng who are experts in biodiversity sciences and have experience in conducting open science in Malaysia. The webinar was a lively session exploring how society can contribute to science from their own backyard.

7. Stakeholder Engagement Workshops
The first stakeholder engagement workshop was held on 4 June 2020 to introduce MOSP to stakeholders of Open Science in Malaysia. This includes researchers, top managements, librarians, government ministries and agencies. The workshop discussed on key areas of MOSP. The workshop garnered a lot of input especially from the researchers' perspective, the main stakeholder of MOSP. Challenges, possibilities, and concerns were shared and reviewed together.

The second stakeholder engagement workshop was held specifically to discuss the national guidelines of open science in Malaysia. Main issues and concerns from stakeholders were addressed and the session added improvements and value to the guideline. Concerns such as data security, benefits to stakeholders and data ownership were a few issues that was brought up in both workshops. These were incorporated in the development and enhancement of the guidelines.



i-Connect

i-Connect is an industry-led collaborative innovation network to create and nurture a conducive innovation ecosystem in Malaysia. The ecosystem will be an enriched and interconnected one, which increases disruptive innovation, and finally enable Malaysia to leverage on new economic opportunities for our industries to enter new and emerging global markets.

The network will empower collaboration for the discovery of new ideas based on S&T knowledge. The ideas then are creatively applied to realise value and result in unique and differentiated products and services, risk sharing and risk reduction as well as facilitating the supply and demand of goods and services between peers.

In this network, members from the quadruple helix (industry, government, researchers, and civil society) are linked via a neutral entity to achieve common goals and shared vision. Thus, the role of the trusted neutral entity is crucial in managing the envisioned network. After two series of evaluation, four trusted Neutral Entities were selected and appointed to manage the collaborative network in respective industry sector based on their experience and expertise as follows:

No.	Industry Sector	Organisation
1.	Industry 4.0 in Manufacturing	CREST & NanoMalaysia
2.	Fintech in Islamic Finance	INCEIF
3.	Health & Wellness	CREST
4.	Halal Supply Chain	HDC

Activities throughout 2020:
a) i-Connect Steering Committee Meeting: five meetings
b) Evaluation & Selection session for Neutral Entities: two sessions
c) Agreement signing with three Neutral Entities
d) Engagement with external stakeholders:

Industry 4.0 in Manufacturing	**52** Industry	**18** Researcher	**23** Government	**10** Civil Society
Fintech in Islamic Finance	**18** Industry	**10** Researcher	**10** Government	**12** Civil Society
Health & Wellness	**39** Industry	**16** Researcher	**13** Government	**21** Civil Society
Halal Supply Chain	**24** Industry	**10** Researcher	**7** Government	**12** Civil Society

Angels in Science

To further enhance and support the Malaysian innovation ecostsyem, ASM embarked on the Angels in Science initiative to encourage investment and entrepreneurship in STI as well as to support commercialisation of outstanding home-grown and high-value STI inventions among the local researchers, scientists, and start-ups. The initiative complements i-Connect through an alternative source of funding, rather than solely depending on the Government and industry's contributions to develop home-grown products. This initiative was first proposed by STILC, chaired by Ir Ts Choo Kok Beng FASc.

ASM collaborated with MBAN and jointly organised two workshops on 25-27 November 2020 and 8 & 9 December 2020. These workshops sparked interest among local philanthropists and investors to invest in early-stage science and technology-based start-ups, provide knowledge and best practices on angel investment, train and empower researchers, scientists, and start-ups on best techniques to pitch product/ invention as well as acquire investment from angels. Both workshops benefitted 25 participants.



Public Awareness & Immersion in Science

2020 ASM artscience™ Prize

In acclamation of the fusion of art and science, the Academy established the ArtScience™ Initiative with the objective to promote the appreciation and outstanding creations of the arts towards culturation of sciences among Malaysians. The initiative also aims to nurture creativity at the convergence of the arts and sciences. ASM ArtScience™ Prize is a programme under this initiative to recognise artworks and projects that embody the ArtScience™ philosophy. The Prize is the first-ever to be established in Malaysia to celebrate the emergent community of artist-scientists.

The evaluation exercise was held on 28-30 September 2020 at ASM by a six panel jury.

65 applications received

13 shortlisted applications

ASM Artscience™ Prize Winner

Project Leader: Dr Ahmad Hanif Ahmad Baharin
Institution: UKM
Team Member: Mohd Nasir Baharuddin & Muhammad Hafiz Mastro
Title of Project: Digital-Tropical Breathing the Waves
Prize: RM 20,000, Challenge Trophy, Certificate & Residency Attachment

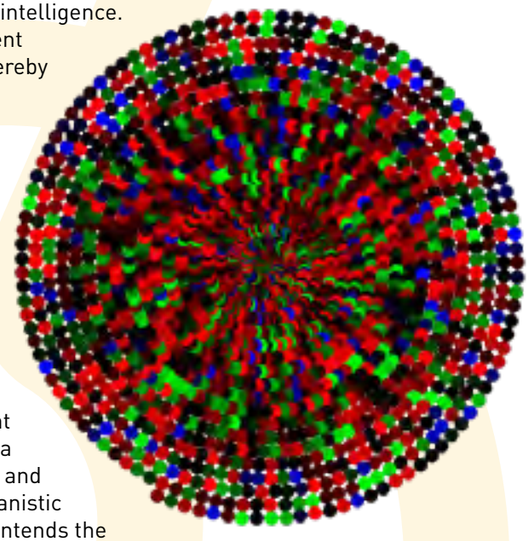


Digital-Tropical: Breathing the Waves
Digital-Tropical is a project that converges the analogue data and the digital flow into 'reality analogical' between the historical resonance of the past with the wave of current technology. In this work, we explore the use of physical computing for data visualisation. Historical data of oceanic wave heights from a renewable energy research project, collected from a location near Tioman Island for two years, are represented using lights which illuminate the underside of a 300-year-old traditional tropical home, Istana Puteri Bongsu at Taman Pantun UKM. This work is not just an artistic representation of scientific data, but a Malay traditional architecture as a form of high culture relic, is being used as a new reality through the manner of representation. Through a process of multidisciplinary discourse, Digital-Tropical extends the scientific explanations of how things are to an artistic/scientific amalgamation of how things can be.

RISING STAR AWARD WINNER

Name: Dr Roopesh Sitharan and Dr Mohd Hafizuddin Mohd Yusof
Institution: MMU
Title of Project: Artificial autonomy and the question of subjectivity in AI
Prize: Trophy, Certificate & Residency Attachment

Artificial autonomy and the question of subjectivity in AI



This research endeavour ruminates the possibility of an autonomous technology in being able to attain subjectivity through its algorithmic intelligence. The rapid acceleration of computing capabilities in recent years forged the creation of autonomous machines whereby instigating an enduring fascination with Artificial Intelligent (AI) and its benefit to human activities. This has led to the mass deployment of AI in daily life, especially in economic affairs and social administration thus making the AI an essential component for the veracity of digitisation. Arguably, no domain or discipline is free from the influence of AI. However, reflecting this phenomenon from an anthropocentric view, especially matters concerning cognition reveals the absorbing of physical and cognitive labour of human into its technical systems. Essentially an AI learns from human culture through data analysis, highly contextual interpretation of content and classification of knowledge. In other words, the data in which AI learns, classify, counts, measures, evaluate and correlates derives from the perception model of a humanistic subjective reality. Based on this premise, the project contends the objective deification of AI considering the data in which an AI depends to build its autonomy encompasses a human worldview.

ASM ARTSCIENCE™ PRIZE TROPHY DESIGN COMPETITION
This competition was organised to find the best design for the Challenge Trophy that will be awarded to the winner of the ASM ArtScience™ Prize. The winner of this competition would be working closely with ASM ArtScience™ Initiative Strategic Partner, ForceMaker Division of Nazca Scientific Sdn Bhd for the fabrication of the trophy.

8 trophy design received

3 top design selected

Engagement Programmes
The ASM ArtScience™ Engagement Programme aims to bring together professionals, artists and scientists to promote the philosophy of convergence between the arts and the sciences. The activities in this programme allow participants to network with experts.

ArtScience™ Webinar for All
The ArtScience™ For All webinar was organised in conjunction with Minggu Sains Negara 2020, which was held on the 9 June 2020, moderated by Academician Tan Sri Dr Salleh Mohd Nor FASc, a member of Task Force on ASM ArtScience™ Initiative.

The webinar was delivered by artist-scientists, Dr Roslina Ismail, Deputy Director (Postgraduate and Research) of UM Cultural Centre and Dr Mohammad Kamal Sabran, a Lecturer from USM. The webinar garnered 1,200 views with 100 registered participants.



Poster of ASM ArtScience™ for All webinar

Interview at the Fresh Brew@RTM2
Interview with Fresh Brew from RTM2 was held on the 31 May 2020. The panels were Academician Professor Emerita Dato' Seri Dr Mazlan Othman FASc and Puan Wan Zaleha Radzi. The interview was held to promote ASM ArtScience™ Initiative to the public. It also served to introduce and promote the 2020 ASM ArtScience™ Prize which is one of the main programme under this initiative.



Interview at Fresh Brew@RTM2 on 31 May 2020



ASM ArtScience™ for All webinar on 9 June 2020

FAScinate

Open Minds, Spark Ideas

For the second year, the FAScinate continues to engage Malaysian public on the latest advances in science and technology and be inspired by renowned Malaysian scientists' journey. The programme was well-received with high views and engagements via Facebook and Zoom Live and was listed as one of the Minggu Sains Negara (Kuala Lumpur) programmes.

The 2020 series featured seven Fellows across different disciplines who shared their expertise virtually, in two sessions:

2nd FAScinate
30 June 2020



Straightening the Nose to the Sinus: A One Team Surgical Approach

Professor Dato' Dr Balwant Singh Gendeh FASc

Since 1991, combining rhinoplasty and endoscopic sinus surgery (ESS) has benefitted us greatly with minimal complications outcome.



My God, Your Gum Bleeds

Emeritus Professor Dato' Dr Hashim Yaacob FASc

Bleeding gum is a common affliction of the oral cavity. This could be prevented as the saying goes-prevention is always better than cure.



A Brighter Path for Solar Cell

Professor Dr Zainal Abidin Talib FASc

Based on material science, synthesis of the photovoltaic materials is a fast-growing research area.



STEM and Competencies for the 21st Century

Professor Dr Lee Sze Wei FASc

As Malaysia strives to be a developed nation, STEM literacy and competency are essential for Malaysia's sustainable socio-economic development.

3rd FAScinate
3 November 2020



Reimagining Ageing: Debunking Myths and Stereotypes

Professor Dato' Dr Tengku Aizan Tengku Abdul Hamid FASc

Malaysia is projected to have a larger elder population by 2050. The myths and stereotypes of ageing is still a worrying concern in our society. This talk debunked all of these stereotypes.



Amazing Mushrooms - Nature's Gift

Professor Dr Vikineswary Sabaratnam FASc

Mushrooms are one of the natural wonders, consumed by human since thousand years ago. It is beneficial to human in terms of wellness and bioremediation.



What a Waste!

Professor Dr Nik Meriam Nik Sulaiman FASc

The management of waste in our everyday lives has greater philosophical meaning as the saying goes- time and tide wait for no men.

6,500 views on Facebook live

7 Speakers

Watch the FAScinate videos on our YouTube channel

Minggu Sains Negara

The Magic of Science was the chosen theme for the third year of MSN. The programme was organised from April until November 2020. ASM was appointed as the Lead Agency for Kuala Lumpur Federal Territory together with *Pusat Sains Negara* and *Planetarium Negara*. Due to the pandemic COVID-19, all programmes under MSN were held virtually on various platforms.

ASM also collaborated with other partners in organising the programmes, such as Merck Sdn Bhd and British High Commission Kuala Lumpur. Despite the constraints, the MSN KL garnered high participation and engagement from the public. The objective of enculturating science still could be met even though there were no physical programmes like in previous years. The success of VNSC as one of the signature programmes of MSN 2020 was very encouraging to continue the agenda of nurturing more STEM talents in this country.

21 programmes

158, 622 views

6,850 participants

11 Science Café series

3 Rounds of VNSC

2 FAScinate™ series

2 Artscience™ engagements

2 YSN-ASM Merck Back to Lab Series

1 IdeaXchange™ session

2 Collaboration with British High Commission Kuala Lumpur

2 Kembara STIE MOSTI at Rembau











The Future Belongs to The Tropics

TropSc Webinar series:
MSAF, ASM and ISC ROAP jointly organised seven TropSc Webinars themed The Future Belongs to the Tropics. These webinars aimed to increase visibility, encourage participations and build awareness of the goals of the International Conference on Tropical Sciences (TropSc) 2021.



International Day of the Tropics
On 29 June 2020, the International Day of the Tropics was celebrated to remind Malaysians of the past and current successes as well as to provoke thought on Malaysia's potential leadership roles. Four themes of the Mahathir Science Award were highlighted by the webinar, which are Tropical Agriculture, Tropical Natural Resources, Tropical Medicine and Tropical Architecture and Engineering. The webinar also featured a panel discussion on the vision for a Federated Data Platform for Tropical Biodiversity and a discussion on Kuala Lumpur Declaration for the Tropics. The webinar was attended by 423 participants from all over the world.



International Day of the Conservation of the Mangrove Ecosystem
Mangroves cover around 15 million hectares worldwide, 95% of which are in the Tropics. These extraordinary ecosystems contribute to the well-being, food security, and protection of coastal communities worldwide. In conjunction with the International Day of the Conservation of the Mangrove Ecosystem, a webinar themed People and Mangroves was organised on 28 July 2020 to provide an overview of the latest scientific findings and conservation efforts of mangroves. Three representatives from the local communities who are directly dependent on mangroves for their livelihoods shared their experiences in the webinar. The webinar attracted 239 participants from 31 countries.



Engineering for Sustainability: Water and Energy in the Tropics
The tropical region is rich in natural resources that can benefit the people who live there. The existence of rivers and rain-fed arable land in the tropics provide the conditions for most renewable energy sectors to flourish. Acknowledging this, a webinar themed Engineering for Sustainability: Water and Energy in the Tropics was organised on 22 September 2020. ASM Fellows from the Engineering Discipline explored how energy and water in the Tropics can be sustainably provided and managed.

The webinar stressed the importance of enforcement in preventing water pollution and crises, developing national policies that incentivise academic-industry collaboration for CO_2 reduction, assessing the suitability of green energy in tropical regions and analysing the cost-benefit ratio of implementing large-scale renewables. The webinar was attended by over 100 participants from all over the world.



International Youth Day
In conjunction with International Youth Day, two webinars themed Youth for the Tropics were organised on 12 and 13 August 2020. The webinar aims to create awareness among youth in the Tropics on the issues that are vital to them and celebrate youths with valuable contributions through science, policy engagement and social entrepreneurship in solving problems of the Tropics. The webinar on 12 August talked about how youths could contribute to the Tropics with a focus on climate change and harnessing and protecting natural resources. Meanwhile, the webinar on 13 August focused on social entrepreneurship to build communities that are resilient towards disasters and climate change. The webinars attracted 398 participants from 30 countries.



International Coffee Day
A webinar themed Black Gold of the Tropics was organised on 1 October 2020, in conjunction with International Coffee Day. The webinar celebrated coffee as a major trade commodity in the tropics and recognised the plight of coffee growers. The hybrid webinar attracted 76 online participants from 14 countries alongside a live audience.



World Cities Day
By 2050, 2.5 billion people will be added to the world's urban population, with nearly 90% of this increase taking place in tropical Asia and Africa. Therefore, cities in the tropics will drive the future global discourse on urbanisation. On 4 November 2020, a webinar with the theme The Soul of the City was organised in conjunction with World Cities Day to explore the diverse elements that make up the "soul" of cities in the tropics. More than 150 participants from 12 countries attended this webinar.



International Mountain Day
A webinar on Mountains and Life was organised on 11 December 2020, in conjunction with the International Mountain Day to discuss the various ways mountains can support life in the tropics. The webinar has attracted participation from 14 countries.

ASM Northern Chapter

Commenced in 2011, ASM Northern Chapter is a platform for the ASM Expert Network to increase ASM's visibility in the Northern Region.

ASM Northern Chapter collaborated with NIH and USM in organising two R,D,C&I webinar series. The series was organised as a part of NIH's programme to drive strategic networking and collaboration towards developing a sustainable innovation ecosystem among ASM Expert Network, tertiary-level learning institutions, schools, industries, small-medium enterprises (SMEs), government agencies and the corporate sector.

The first effort was held in webinar format on 18 June 2020, which educated 163 participants on IP as well as its importance in R,D,C&I. The next webinar held on 18 November 2020 has informed around 100 participants on the strategy to match and connecting research in universities with the industry and society to increase commercialisation.

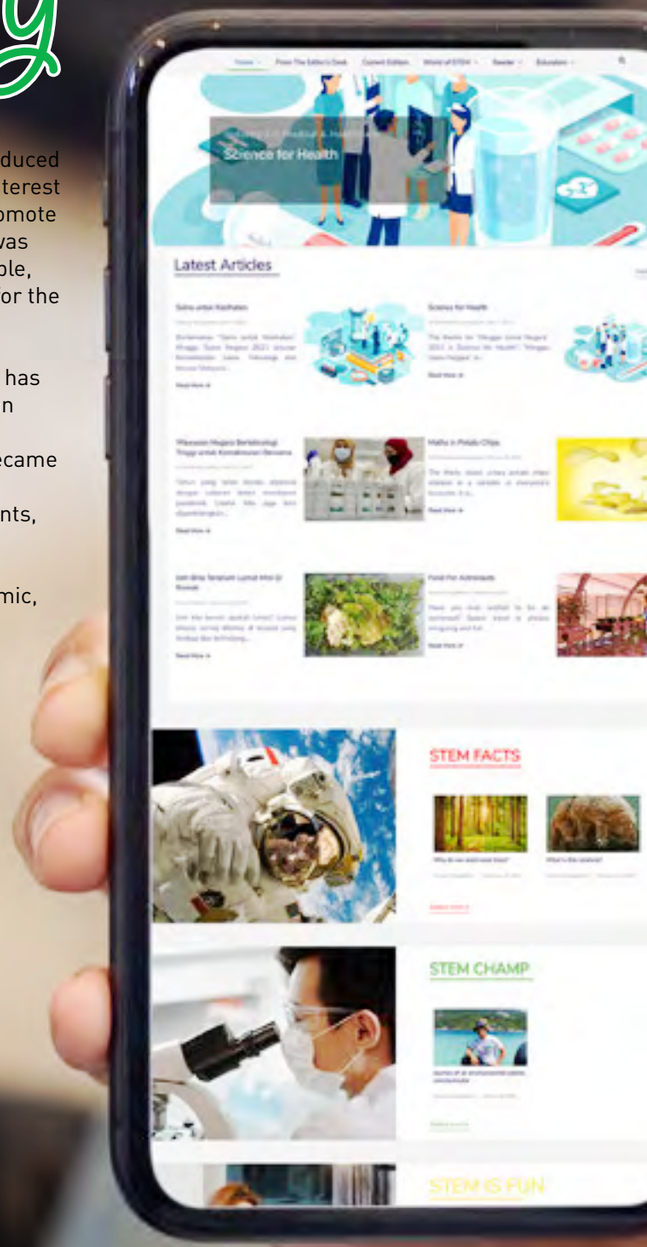


e-estidotmy

Reviving the Lost Treasure
In 2002, the first science magazine, estidotmy, was introduced to the public. It is an initiative by the Academy to instil interest in science, especially among young generations, and promote STI to the community. The publication of the magazine was mainly intended for school students. Therefore, the simple, understandable, and digestible language used suitable for the public.

Throughout its publication from 2002 to 2012, estidotmy has produced over 100 thematic issues as an insert in Utusan Malaysia. Funded by MOSTI, ASM worked as the content provider while MOSTI as the publisher. Its publication became a primary reference for teachers in providing scientific knowledge to students. However, due to budget constraints, the publication of estidotmy was halted in 2012.

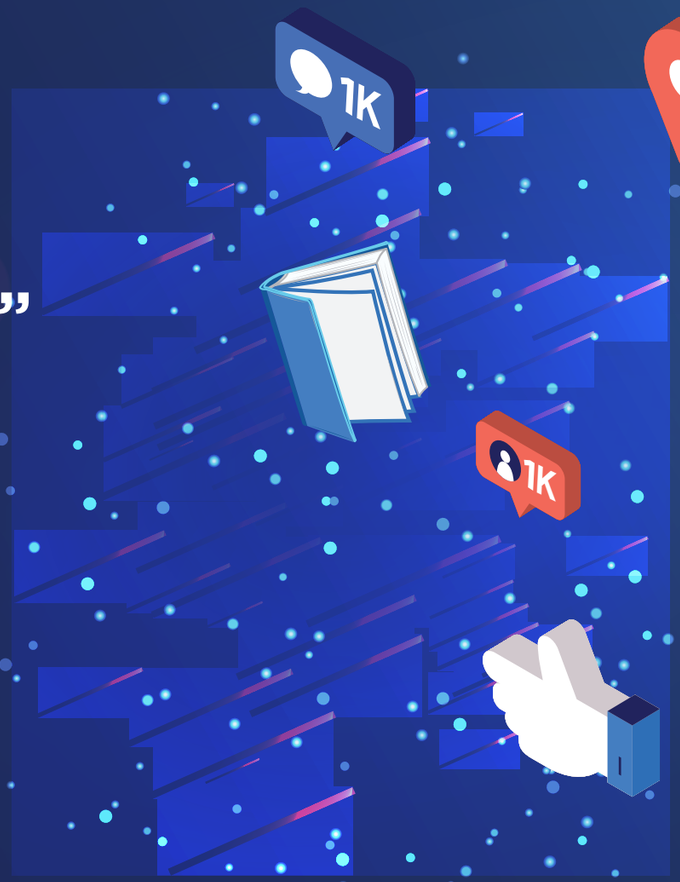
When Malaysia was hit with the deadly COVID-19 pandemic, the country's economic and educational activities were greatly affected. Prolonged school closure due to the pandemic has severely disrupted the learning experience for school children. Fortunately, digitalisation has helped everyone adapt to the new norm in every aspect of life, including education. In support of the advancement, ASM started an initiative to revive Estidotmy through a digital platform to ensure the knowledge of science, technology, and innovation remains lively and reachable to the public, called e-estidotmy. This initiative is a collaboration between YSN-ASM and SMC Malaysia.



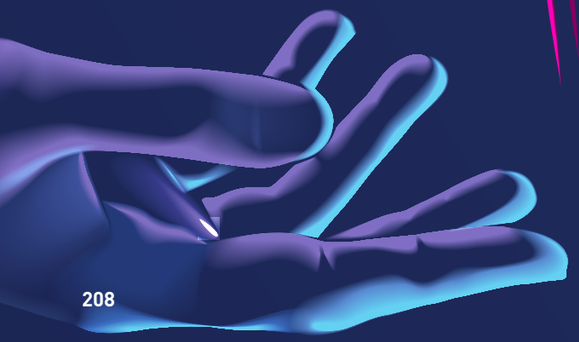
Scan the QR code to visit e-estidotmy website

“Science isn’t finished until it’s communicated”

Mark Walport







Communicating Science

Science Communication

The Science Communication team works hand in hand with ASM's expert network to curate content in the most engaging manner for public consumption. Various media are used to package and disseminate information by the in-house production team. Ranging from assembling a policy document to producing a campaign video, ASM's works in communication is ever-evolving and cuts across multiple disciplines.

The role of science communication was instrumental in providing evidence-based information to promote understanding among public about the COVID-19 related facts and data in a digestible manner.

The Academy's work was showcased through impactful means on various platforms adapting to the fully virtual mode. The new normal pushed our boundaries of outreach and challenged our conventions.

PUBLICATIONS & JOURNAL:



- MCRCR 2nd Edition
- 2019 Annual Report
- Precision Medicine Inititative in Malaysia
- Lessons from Sungai Kim Kim, Pasir Gudang (English & Bahasa Melayu)
- 10-10 *My*STIE Framework

ASM Science Journal 123 articles

6 SPECIAL ISSUES

VOL. 13

- ICFICE
- ICSCC2019
- CIIDT2018
- NCAFM2018
- APRU2018
- InCOMR2019

COVID-19 Factsheet
10

ONLINE READERSHIP:

e-Publications	Readership	Impression
101 to date	30,940	82,510

ASM FOCUS: e-Newsletter

Issues	Articles	Readership
11	38	20,616

COMING SOON...



Just an Individual of a Species: An Autobiography of Ahmad Mustaffa Babjee
Academician Tan Sri Dr Ahmad Mustaffa Babjee FASc needs no introduction. He was a prominent figure in nature conservation and played an instrumental role in the preservation of Malaysia's rare and unique biodiversity species.

Just an Individual of a Species contains every element of knowledge you want to know about this legendary naturalist. The autobiography humbly presents the stories and experiences of Tan Sri Dr Ahmad Mustaffa Babjee. The wonderful journey in his life, the emotions he went through, and his perspectives on welfare, science and technology are well-captured in this autobiography, making it interesting to understand the unseen side of the nation's green warrior.

The Biology of a Long-Necked Weevil (*Cycnotrachelus* sp.)
Are insect-inspired technologies the potential problem solvers?

There are endless questions about insects. Answering them requires years of training and research. Luckily, Academician Tan Sri Dr Ahmad Mustaffa Babjee's passion for nature prodded him to search the roles of any species and the technology that can be mimic to produce sustainable products and services.

The Biology of a Long-Necked Weevil is about the life cycle of *Cycnotrachelus* sp. and its anatomy, which Tan Sri Dr Ahmad Mustaffa Babjee thought can show high-tech technologist sensors for sound, vibration, odour, and even mechanical leverage.

Corporate Relations

Visibility. Views. Vision

The Corporate Relations team was formally established in July 2020 to ensure that the Academy develops a presence within the media and social media space. We were able to build national conversation about COVID-19 through appearances on broadcast and print channels as well as provide depth to national topics of interest such as water, education and health issues, among some.

We want to show the who and the how behind the what and aspire to translate insight and knowledge from our Expert Network and promote it to the community, via the media and social media.

We welcome contributions from each of our Experts- please drop us a line at corporate_relations@akademisains.gov.my so we can explore how to collaborate in this effort.

Our thought leaders appeared on:

Astro Awani

Bernama TV

Radio Televisyen Malaysia

Business Station FM

New Straits Times

Berita Harian

Utusan Malaysia

Sin Chew Daily

Malay Mail Online

The Malaysian Insight

Malaysiakini

The Vibes

Malaysia Now

Bernama

Science Media Centre Malaysia

Code Blue

Sinar Harian

The Star

The Sun

Dayak Daily

Utusan Borneo

The Edge

SOCIAL MEDIA

(2020-2021)

10,785

2,151

6,131

1,630

443

TOTAL FOLLOWERS

21,140



Enhancing International Networking and Collaborations

Regional Meeting of the AASSA Working Group on Climate Change and Health

The German National Academy of Sciences (Leopoldina) and IAP global network are undertaking a new project on Climate Change and Health.

Climate change is already affecting human health and health systems, projected changes in climate are expected to increase the burden of a variety of climate-sensitive health outcomes. Research has done much to contribute to past improvements in health in many countries but in terms of understanding the effects of climate on health, the evidence base is rather fragmented. Health effects of climate change have been relatively neglected by policymakers until recently, it begins to change. This change requires increasingly robust scientific evidence to guide policy options and assess current commitments. Threats to health must drive decisive action by the scientific and health communities, as well as public policy makers, to protect the health of current and future generations, as a critical contribution to the SDGs.

In light of these developments, the new project will produce three regional reports for Africa, Asia and the Americas (the regional report for Europe is already available). These reports will analyse the respective situation on Climate Change and Health and produce science-based recommendations for the region. Furthermore, a global synthesis based on the regional results will highlight the similarities and differences, providing advice on Climate Change and Health for implementation at global, regional and national levels. These advices will be customised according to local circumstances and strategic needs, with particular regard to adaptation and mitigation solutions.

IAP consists of over 140 national academies of sciences from Africa, Asia, the Americas and Europe structured according to four regional networks: AASSA, EASAC, IANAS and NASAC. Experts and representatives of these four regional networks - AASSA (Asia), EASAC (Europe), IANAS (Americas) and NASAC (Africa) - convened in Halle, Germany, from 4 to 5 November 2019 for the first project meeting.

To address the urgency of climate change and its effects on the health of the Asian region, the first Regional Meeting of AASSA Working Group on Climate Change and Health was held from 24 to 25 February in Kuala Lumpur. It was led by Academician Professor Dato' Dr Khairul Anuar Abdullah FASc, President-elect of AASSA and Project Leader of the AASSA Working Group on Climate Change and Health. Professor Yoo Hang Kim (President of AASSA) was in attendance to provide a brief introduction on AASSA and to share his experience on the former InterAcademy Panel Project.

During this Workshop, Dr Robin Fears (Director cum IAP Coordinator from EASAC Biosciences Programme shared his experience on Europe's Study on Climate Change and Health. The Workshop also featured a report on the state of climate change, which covers the mitigation, adaptability and country policies by representatives from several countries:

- Australia: Professor Anthony Capon
- India: Dr Shabana Khan (virtually)
- Indonesia: Professor Dr Sofia Mubarika Haryana (virtually)
- Malaysia: Professor Dr Jamal Hisham Hashim
- New Zealand: Professor Alistair Woodward
- Nepal: Dr Megnath Dhimal
- Pakistan: Professor Dr Mohammed Perwaiz Iqbal
- Russia: Professor Victor Bogatov
- Turkey: Professor Ismail Koyuncu

The Asia Report on Climate Change and Health would include Oceania and all Asian regions. The AASSA Climate Change and Health project is expected to be completed by July 2021.

Scan the QR code to read more

APEC Open Science Webinar & 2020 Apec Science Prize for Innovation, Research and Education (ASPIRE)

There's no better time to celebrate science and technology than during the pandemic; it drives home the value and importance of this field in our lives.

Open Science represents a new approach to the scientific process based on cooperative work and new way of disseminating knowledge using digital technologies and new collaborative tools to address global challenges. The aim of APEC Policy Sharing Webinar on Open Science is to build a community of purpose that works together to identify platform governance measures and technical know-how; and serves as a medium to share best practices in APEC economies and international policies for platform governance.

Invited experts from member of economies emphasised on the need for data and information sharing at an unprecedented scale by the paradigm of Open Science, which has been further triggered by the COVID-19 pandemic. The experts in attendance were:

I. Dr Alan Paic, Senior Policy Analyst, Science & Technologies Policies, OECD
II. Dr Yasuhiro Murayama, Member, Science Council of Japan
III. Dr Virginia Barbour, Australasian Open Access Strategy Group (AOASG)
IV. Prof Dr Noorsaadah Abdul Rahman FASc, Chairperson, MOSP
V. Dr Anders Karlsson, Vice President, Global Strategic Networks, Elsevier

An APEC PPSTI Statement on Open Science was developed during the Webinar to promote engagement and knowledge sharing among APEC Economies through Open Science. In the statement, the APEC economies recognise that Open Science has a vital role in fostering sustainable and inclusive economic growth and development, bringing with it the full benefit of innovation. This can only be realised by increasing the public and private sector's commitment to a robust Open Science ecosystem which will underpin the aspirations of society for a more equitable sharing of scientific information.
In conjunction with APEC 2020 and to celebrate its ten-year anniversary, the Webinar featured the award ceremony of 2020 ASPIRE. It is an annual award that recognises young scientists with demonstrated commitment to excellence in scientific research.

Dr Huai Chen (a professor at the Chengdu Institute of Biology, Chinese Academy of Sciences, is a leading researcher focusing in wetland biodiversity and ecosystem services) was named the region's top early career researcher. Wetlands conservation contributes to important works in climate change mitigation, as wetlands are one of the most effective carbon sinks. Dr Chen's findings led to a better understanding of these wetlands, including protecting, developing new generation models for methane emissions and enhancing assessment of carbon storage and ecological value. Dr Chen was selected from a group of twelve finalists, each nominated by one of the APEC member economies under the 2020 ASPIRE theme, "Biodiversity for a Prosperous Economy" and was awarded a prize of USD 25,000, supported by publishers of scholarly scientific knowledge, Wiley and Elsevier

The winner for ASPIRE Prize was announced by YB Datuk Ir Dr Siti Hamisah Tapsir, the Secretary-General of MOSTI.

2020 World Conference on Science Literacy

Improve Public Science Literacy, Promote Global Anti-pandemic Effort

The global COVID-19 pandemic has once again proved that human beings are a community with a shared vision and we should bring into full play the leading role of science and technology innovation in overcoming the crisis and achieving sustainable development, as well as maximising the role science literacy can play in supporting development.

Looking into that, the World Conference on Science Literacy 2020 was successfully held on 8 December 2020 in Beijing, with the theme Improve Public Science Literacy, Promote Global Anti-pandemic Effort. The conference was organised by CAST and supported by WFEO, UNESCO, ISC, and TWAS.

Representatives from international and regional science & technology organisations and experts (including Nobel Prize winners and academicians in related fields from all around the world) joined the conference to talk about enhancing public science literacy and science in the fight against COVID-19. The objectives of the conference was to share wisdom, experience and results in combating COVID-19, as well as to discuss countermeasures and plans for public health crisis response. The conference also served as a medium to advance the construction of the international cooperation mechanism for promoting public science literacy, as well as to improve the capacity of the global science and technology communities in coping with crises and challenges including major pandemics.

On the plenary session, several panellists from different countries were invited to deliver keynote speeches on science literacy and science in the fight against the pandemic: Zhang Boli, (academician of the Chinese Academy of Engineering), Michael Levitt (Nobel Laureate in Chemistry), Hazami Habib (CEO, ASM), Ehud Menipas (Chairman of Association of Engineers, Architects and Graduates in Technological Sciences in Israel) and Huai Jinpeng (Executive Vice President and Chief Executive Secretary of CAST, Academician of Chinese Academy of Sciences (CAS)). Puan Hazami Habib shared key experience and measures taken by Malaysia to combat COVID-19 and emphasised the importance of scientific research and outreach during this trying time.

It was proposed that the international science and technology community should adhere to multilateral exchanges, open cooperation, shared development, and join hands to promote science literacy around the globe. The scientific community should also continuously combat the COVID-19 pandemic and facilitate economic recovery, as well as contribute to building a community with a shared future for mankind, achieving SDGs to make the world a better place.

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

ISTIC under the auspices of UNESCO is the only Category 2 Centre under the Natural Sciences sector and thematically specialised in STI Policy for the South-South countries. Throughout its decade-plus existence, the Centre has focused on its seven priority agendas: STI Policy; Women in STI; IBSE and STEM Education; Maintenance of Infrastructure; Technopreneurship; Accreditation and Mobility of Engineers and Technicians; and Digital Technology. Since its establishment, ISTIC has successfully organised 101 programmes that covered eight SDGs with 4,298 participants (of which 1,566 were Malaysians) from 105 countries (including 99 members of G77 countries) and collaborated with more than 150 strategic partners.

The year 2020 will be remembered as the year of the COVID-19 pandemic. For ISTIC, it is the time to face the challenges and adapt to a new normal. It took stock of its progress to date, continued working to consolidate existing partnerships and scientific initiatives and explored new opportunities.

ISTIC continued organising key programmes under its priority agenda (such as Technopreneurship) together with the MTDC and NAM S&T Centre. ISTIC organised training programmes on STI Policy with the KISTEP, and on Big Data with IKCEST. ISTIC embarked on a tripartite collaboration with UTM and the National STEM Centre to bring a Computer Science Education training programme to teachers in Malaysia. ISTIC partnered with OCE and SEAMEO RECSAM and LESTARI to conduct an online training on Climate Change Education. ISTIC had also embarked on a new programme on Open Science, which will see an inter-sectoral collaboration among established science stakeholder networks and provide pathways to the achievement of SDGs.

While the challenges of the pandemic are likely to remain for some time, ISTIC is confident that it will continue to create value for its stakeholders and make a positive contribution through a focused approach for many years to come.

International Science Council-ROAP

In 2020, ROAP maintained its priority areas, with the COVID-19 pandemic requiring ROAP to think of more effective ways of engaging its regional members.

Open Science was at the forefront of ROAP's activities. It worked closely with the UNESCO Science Bureau for Asia and the Pacific in Jakarta to contribute towards UNESCO's regional consultation aimed at building consensus on Open Science. Moving forward, ROAP will continue to collaborate and co-organise activities to support the development of the Recommendation on Open Science.

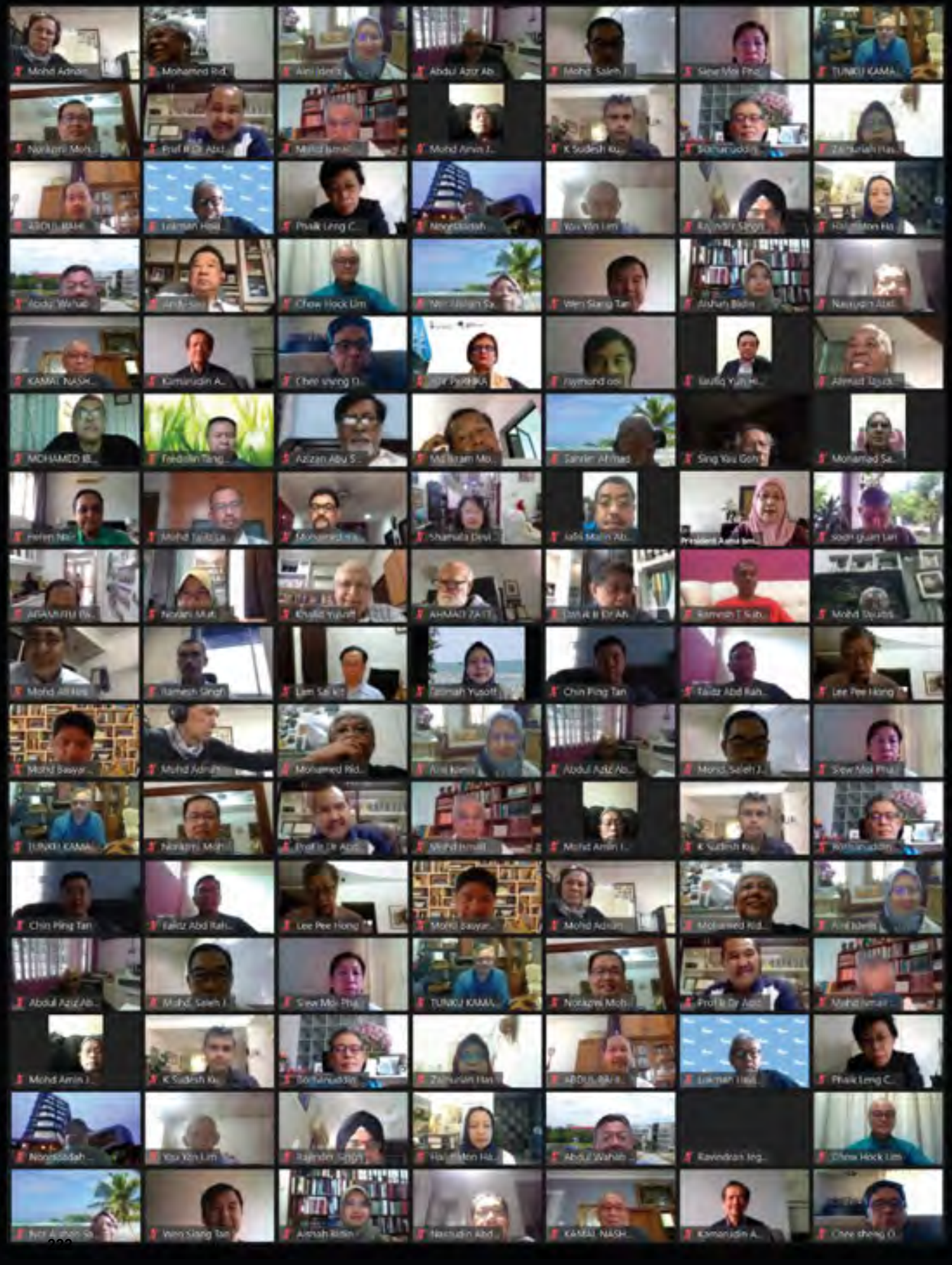
In addition, together with ASM and MOSTI, ROAP advocated for an Open Science agenda at APEC. These efforts culminated in APEC PPSTI's endorsement of the Open Science Statement. This calls on all APEC economies to support Open Science to promote science-based evidence in the promulgation of domestic policies and enhance collaboration through capacity building and experience sharing.

To address the SDGs, ROAP together with MSAF and ASM organised the TropSc Webinar Series: The Future Belongs to the Tropics that aimed to highlight sustainability issues in the Tropics.

The first webinar was held in conjunction with the International Youth Day, carrying the theme of Youth for the Tropics. The Webinar focused on climate change, harnessing as well as protecting natural resources and the role of social entrepreneurship. ROAP launched the Register of Disaster Risk Reduction (DRR) Social Entrepreneurs that will contribute towards the development of a DRR Social Entrepreneurs Handbook and Roadmap.

Other than that, ROAP also co-organised:
1. Black Gold of the Tropics to celebrate International Coffee Day
2. The Soul of The Cities in conjunction with World Cities Day
3. Mountains and Life in conjunction with International Mountain Day

As part of a new impetus, ISC partnered with UNDP to encourage a global conversation on a webinar titled Rethinking Human Development. The resulting ISC Publication was launched during World Science Day for Peace and Development. To catalyse discussion in the region, ROAP brought together contributors to the Publication that highlighted issues pertaining to planetary boundaries and indigenous people. To celebrate the diversity of the region, ROAP organised the same webinar in *Bahasa Malaysia*. The outcome of the Webinar will be published.



Expert Network

25th Annual General Meeting

The 25th Annual General Meeting was ASM's first in being conducted virtually due to restriction of movement imposed during the COVID-19 pandemic. A total of 186 Fellows attended the meeting with 184 Fellows joining virtually and two Fellows attending physically. This was the highest attendance recorded in 25 years.

A two-minute video of ASM's 25-year journey was shown on that day, touching attendees' hearts, showcasing a humble beginning of 50 Foundation Fellows that expanded to its current body of 374 Fellows. ASM will also publish a commemorative book that provides a recollection of various ASM activities throughout its 25-year journey.

In delivering her Presidential address, Professor Datuk Dr Asma Ismail FASc presented an overview of ASM initiatives, key activities in 2020 and related ASM's study on how the sciences could impact the nation's economy. Datuk Asma also proudly announced the 10-10 *My*STIE Framework that was recommended as one of Malaysia's post-COVID economic recovery plan. For the first time, the Minister of MOSTI, YB Khairy Jamaluddin mentioned the term STIE in Parliament and embedded STIE into the new *Dasar Sains, Teknologi, dan Inovasi Negara*, which allows for the integration of the sciences with the economy for impact creation to be formally acknowledged.

The meeting also announced the 2019 Senior Fellow, Academician Professor Datuk Dr Halimaton Hamdan FASc. Datuk Dr Halimaton's election was to recognise her tireless effort in building Malaysia's scientific talent as well as her outstanding achievements and contributions in nanotechnology through research, development, and commercialisation.

Top Research Scientists Malaysia

Top-notch Malaysian scientific minds carry out researches that scrutinise fundamental facts, disseminate knowledge for future generations and translate their findings for a better nation. These scientific minds, also known as research scientists, have the potential to lead the implementation of Malaysia's STI agenda.

ASM has initiated the TRSM database that aims to recognise the achievements of Malaysian research scientists and position them as role models of excellence and mentors to younger generation of scientists. This online repository is also a hub for knowledge dissemination that can spur the growth of STI in Malaysia.

Registered Users: 5,152
Completed Researcher's data and information: 4,833
Total TRSM Recipients (2012-2020): 196

TRSM Recipients by disciplines:
- Engineering Sciences: 69
- Biological, Agricultural and Environmental Sciences: 45
- Medical and Health Sciences: 24
- Information Technology and Computer Sciences: 21
- Mathematics, Physics and Earth Sciences: 17
- Chemical Sciences: 16
- Social sciences and Humanities: 3
- Science & Technology Development and Industry: 1

2020 FELLOWS — 1 Senior Fellow — 20 New Fellows

2019 TRSM — 30 Recipients — 196 Total Recipients

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

New Norms, Impacts and Beyond
2020 imposed unprecedented challenges to YSN-ASM in continuing the impacts while adapting to the new norm. Under Dr Chai Lay Ching's leadership, YSN-ASM is committed in embracing the all-virtual phenomenon, striving to be the national STI ecosystem's driving force.

23 scientists from public and private universities, research institutes, non-governmental organisations, and the industry were newly appointed in 2020. The new members' comprehensive background will be an advantage to bring YSN-ASM to greater heights, alongside YSN-ASM's new affiliates.

Some of the virtual programmes anchored by YSN-ASM in 2020 include:

1. Collaboration with Industries
The footprint of YSN-ASM as a collective voice of young Malaysian scientists is now recognised nationally, with more invitations to collaborate with industry players. Merck Malaysia Sdn Bhd and ViTrox Corporation Sdn Bhd were the industry partners for the YSN-ASM Chrysalis Award 2020. YSN-ASM also co-organised three Merck Back to Lab webinar series to discuss the challenges researchers faced during the pandemic. Apart from that, a continuous partnership with Petrosains Sdn Bhd also showed a positive impact via the Petrosains STEM Live project.

2. YSN-ASM Chrysalis Award 2020
The panel of judges selected 15 finalists from 46 submissions for this inaugural award. All finalists had undergone extensive training on various skills such as responsible conduct of research, science communication, science advisory, commercialisation, and proposal drafting. The grand final event was graced by the MOSTI Secretary-General, Datuk Ir Dr Siti Hamisah Tapsir on 9 January 2021. Lam Jia Yong from Universiti Putra Malaysia was announced as the First Place Winner, brought home a cash reward, a reagent sponsorship from Merck, a career development fund from ASM and a certificate of achievement. The ultimate aim of this award is to identify and nurture promising PhD candidates to be the future pillars of our Science, Technology and Innovation (STI) ecosystem.

3. Science Café
Science Café, one of YSN-ASM's signature events to promote science communication, brought science to the comfort of Malaysians home's via YSN-ASM Facebook live with enticing STI topics ranging from from online learning to snake venoms. Twelve virtual Science Cafés were organised featuring YSN-ASM members and affiliates that garnered 8,601 views on Facebook.

4. Launch of YSN-ASM IBSE modules
Begitulah Sang Suria and *Gen, Inovasi Kehidupan!* were two sets of IBSE Modules aimed for primary school teachers. Both were completed by the YSN-ASM Science Education working group. ASM President launched both modules during the 2020 YSN-ASM Virtual Colloquium. The online courses will be available on Openlearning.com in 2021. It will also be used for online training in an upcoming collaboration with the National STEM Centre.

5. Kembara STIE MOSTI
This was the only physical outreach programme in 2020, which was held in conjunction with *Minggu Sains Negara* (Negeri Sembilan). Two outreach modules on forensic science and genetic were organised by the YSN-ASM Outreach team at *Universiti Teknologi MARA* (UiTM) Rembau, which was also attended by YB Khairy Jamaluddin. The event still managed to amaze school students with the wonders of science despites strict SOP implementation.



68 Members **111** Affiliates

23 New Members **23** New Affiliates

Facebook **22.3%** **24.6%**

Instagram **16.4%**

Live **4,900** views Grand Final Pitch 2020 YSN-ASM Chrysalis Award

Scan QR Code to know more



In Memoriam

Academician Emeritus Professor Tan Sri Dato' Dr Mohd Rashdan Baba FASc



(31 October 1935 - 30 March 2020)

> "At every turn we make around the world to-day we witness a mounting wave of diligent persuit of knowledge by every progressive nation and emphasis made in transforming education attainment into progress."

Academician Emeritus Professor Tan Sri Dato' Dr Mohd Rashdan Baba was born in Chembong, Rembau, Negeri Sembilan. He obtained a Diploma in Agricultural Science from the Malayan Agricultural College (1954-1957), a Bachelor of Science (BSc) in Agriculture from University of Reading, UK (1960), and a Doctor of Philosophy Degree in the University of Leeds, UK (1964).

His first career started in 1957 as an officer at Agricultural Department in Seremban, Negeri Sembilan. Years later, he worked as an assistant lecturer in the Agricultural College of Malaya and an agronomist in the Agricultural Department (1964).

Tan Sri Rashdan's leadership skill was shown when he became the Principal at Agricultural College of Malaya (1965-1969). His indisputable credibility in the education sector was proven in 1969 when he was appointed as the first Vice-Chancellor of UKM by then Prime Minister Tun Abdul Razak. He has taken the initiative to use Bahasa Melayu as the main language in teaching and writing with the aim to elevate the language on par with the knowledge of the day.

He was also appointed as the first Vice-Chancellor of UPM (1971-1982). As UPM's VC, he successfully established nine faculties and two centres that handle 19 degree programs, nine diploma programs and one professional program, and advanced degrees. After retiring from UPM, he was the Executive Chairman of Guthrie Berhad Group from 1982 to 1987 replacing the British manager. Not long after that, he became the chairman of Telekom Malaysia Bhd (TM) for 12 years, and he contributed significantly to the growth of the telecommunications industry.

Throughout his career, Tan Sri Rashdan received numerous awards locally and abroad, including the title of Professor Emeritus by UPM (1982), Honorary Doctorate in Law by UKM (1999), Honorary Doctor of Science from University of Reading (1986), and Honorary Doctor of Law from University of Leeds (1989). He also received the CEO of The Year Award from Business Times and American Express Corporate Services (1995). In 2013, he was conferred with the National Academic Award (AAN).

Tan Sri Rashdan is seen as a successful icon, educator, and corporate member. He will always be remembered by all.

Dr Lim Boon Liat FASc



(21 August 1926 – 11 July 2020)

> "Do not be deterred by failure as persistency and perseverance will overcome it."

Dr Lim Boon Liat was a legendary zoologist in Malaysia. He has dedicated his professional life to working in bio-medical research on small animals in relation to zoonotic diseases. His interest piqued when he was in Klang High School. The school had a small plot of land for a nursery of flowery plants and vegetables. Birds, insects, and occasionally, rats and snakes frequented the garden. He was fascinated by such varied flora and fauna that he visited the garden to observe the ecosystem.

The onslaught of World War II had disrupted his studies. His enterprising spirit took him to Carey Island in coastal Selangor, where he set up a factory to produce salt from sea water. There, he met orang asli villagers who taught him how to identify different animals, which they hunted for their livelihoods.

His profound interest in nature grew bigger. Equipped with newfound knowledge on animals, he was offered a job at IMR as a temporary laboratory assistant in the Scrub Typhus Research Unit. Dr Lim was involved with many projects under the auspices of the Bishop Museum, University of Hawaii. He also had the opportunity to help establish the National Zoo in Malaysia, working together with the late Tan Sri V M Hutson and the late Datuk Kington Loo, as well as officers from DWNP.

In 1959, Dr Lim was offered a Sino-British Fellowship Trust Award under the British Council. He spent one and a half years studying animal ecology at Oxford and the taxonomy of mammals at the British Natural History Museum in Britain. On his return in 1961, he was appointed the head of the newly created Medical Ecology division of the IMR.

He then pursued his Masters at the University of Aberdeen in Scotland. He then returned to the IMR and subsequently was promoted as a zoologist. In 1977, he earned his PhD in Zoology at Universiti Sains Malaysia. He was seconded to WHO in Indonesia, where he was appointed as the head of the Vector Biology Control Research Unit. After he retired from WHO in 1987, he became the honorary advisor to the Department of Wildlife and National Parks and the Malaysian Nature Society. He also worked as a consultant with the FRIM and DANCED-Management of Krau Wildlife Reserve, Pahang.

Dr Lim has been bestowed many notable awards, including the Sandosham Gold Medal by the Malaysian Society of Parasitology and Tropical Medicine (1978), Malaysia Toray Science Foundation (1995), Honorary Membership to The American Society of Mammalogists (2003), Spallanzani Award by the North American Society for Bat Research (2007), and Merdeka Award (2013).

He passed away at the age of 94, but his legacy as the country's most outstanding zoologists and top naturalists remain.

The resilient of ASM in facing the challenges due to the COVID-19 pandemic is evident in ASM 2020 Financial Statements. Although the pandemic outbreak was unprecedented, the Academy embraced itself in facing the challenges. The Academy continued its operation with work from home mode and manoeuvred through its available resources and technologies. It was a time to assess the need to move from manual to system, physical to virtual, limited to unlimited and rigid to flexible.

The agility of the Academy enabled ASM to quickly rearrange and reschedule its activities and programmes to meet the year's objectives. Council meetings, Annual General Meetings, stakeholder engagements and committee meetings were all held virtually, enabling more members to participate. Webinars become a popular platform to organise talks, seminars and workshops reaching out to larger audiences with multiply effects.

The pandemic has given the Academy the opportunity to fast-forward the readiness of the organisation and the mindset of its people in embracing the technologies. Apart from this, new challenges arise in managing and sustaining the people, leadership and performance. Nevertheless, the opening of a new horizon promises progressive growth for ASM.



Statement of ASM Financial Performance

ASM Financial Position was strengthened in 2020 as the accumulated surplus was recorded at RM10,330,774 [2019: RM9,720,072].

Total assets was recorded at RM25,232,047 with a major contributions from fixed deposit amounting RM20,378,558. Government grants and International Grants received for operations and activities are invested in fixed deposits approved by MOF.

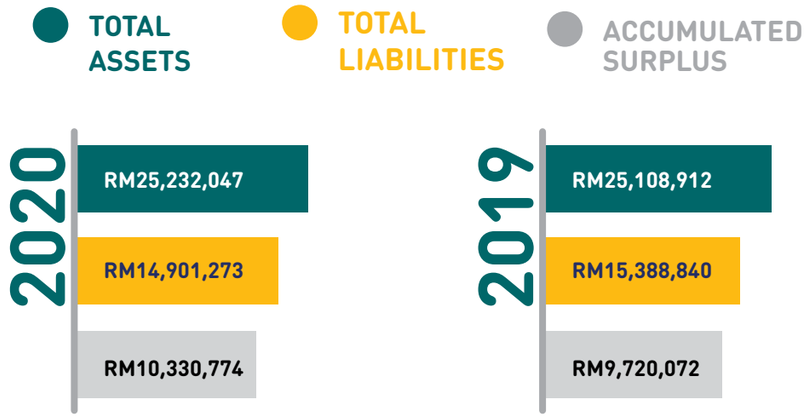
Total liabilities was majorly contributed by deferred grants received from Malaysian Government for ASM and International Office hosted by ASM namely ISC ROAP and ISTIC. This is decreased by 3% for the year 2020 compared to 2019 (2020: RM14,901,273 2019: RM15,388,840).

Statement of ASM Financial Position

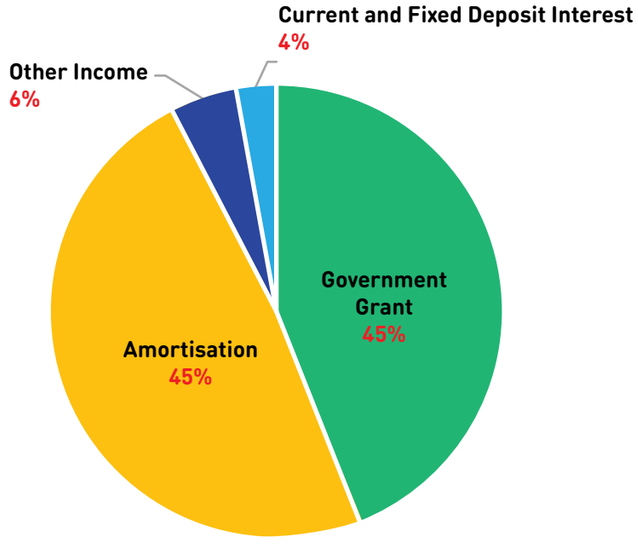
ASM Financial Performance for the year ended 31 December 2020 has shown a surplus before tax of RM910,151 compared to 2019 a surplus of RM2,688,803.

This is a decrease in surplus by 66% compared to 2019. The decrease in 2020 is because there were no additional grant from the government while the expenditures for science programmes increased by 43%. (2020: RM8,699,537; 2019: RM6,072,266).

The income recorded for the year 2020 was RM18,027,164. The income is derived from contribution by Malaysian Government at 45% amounting to RM8,164,709 while 45% of income derived from amortisation of deferred grants, deferred income and donation amounting RM8,101,533. The balance 10% is contributed by other income and gain of investment amounting RM1,760,922.



SOURCE OF ASM INCOME



TOTAL INCOME
RM18,027,164

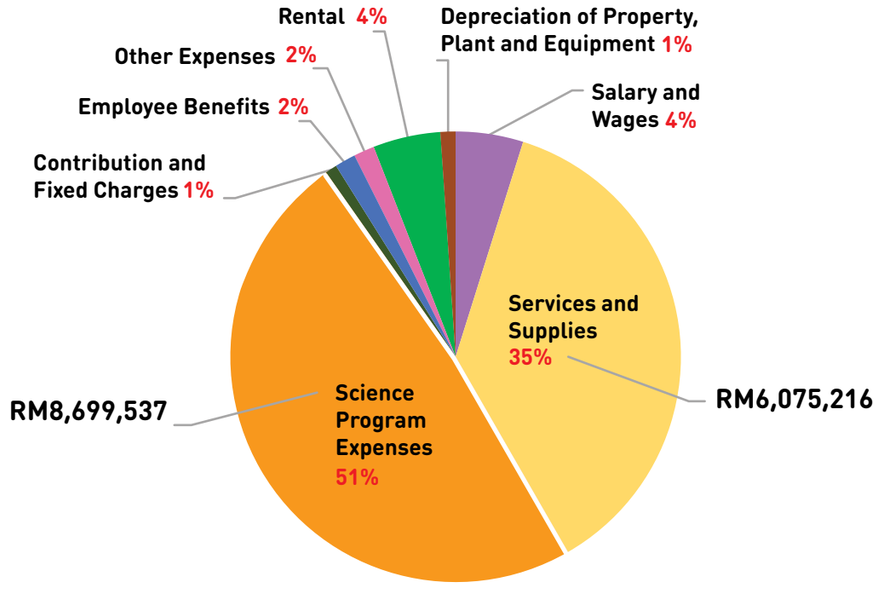
45% -ASM Operating Grant amounting **RM8,164,709**.

45% -Amortisation of deferred grants, deferred income and donation amounting **RM8,101,533**.

6% -Other income of **RM1,067,095** from management fees, rental charges, surplus from project, GST refund and etc.

4% -Gain on investment of ASM funds amounting **RM693,827** from fixed deposit interest and current accounts.

EXPENDITURE



TOTAL EXPENSES
RM17,117,013

ASM recorded a total expenditure in 2020 amounting RM17,117,013 compared to 2019 which recorded expenditure of RM15,862,331. The breakdown of expenditures are as follows:

51% - Science Programme Expenses is the activities undertaken by ASM to fulfill the 14 functions of ASM as stipulated in ASM Act 1994.

35% - Services and Supplies expenses comprises of ASM's operating expenses which includes administrative expenses, wages and salaries for 83 contract staff, science communication, membership and international affairs.

4% - Rental expenses includes rental of office space, equipment and stores. There was a significant reduction on office rental as ASM received a waiver of 6 months following government decision due to Covid-19.

4% - Salary and wages for permanent staff

2% - Other expenses consist of fees, insurance, accrued interest and bad debt.

2% - Employee Benefits consist of employee replacement leave and gratuity.

1% - Depreciation of Asset (Property, Plant and Equipment).

1% - Contribution and Fixed Charges consist of contribution to Kelab Sukan dan Kebajikan Kakitangan ASM, pension and yearly international subscription.

CERTIFICATE OF THE AUDITOR GENERAL
ON THE FINANCIAL STATEMENTS OF
ACADEMY OF SCIENCES MALAYSIA
FOR THE YEAR ENDED 31 DECEMBER 2020

Certificate on the Audit of the Financial Statements

Qualified Opinion

I have audited the Financial Statements of Academy of Sciences Malaysia, which comprise the Statement of Financial Position as at 31 December 2020 and the Statement of Financial Performance, Statement of Changes in Net Assets and Statement of Cash Flows 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 35.

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 2020, and of its financial performance and its cash flows for the year then ended in accordance with Malaysia Public Sector Accounting Standards (MPSAS) and Academy of Sciences Malaysia Act 1994 (Act 524).

Basis for Qualified Opinion

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 qualified opinion.

a. Prepayment Expenses

Expenditure on services and supplies and other expenses is recorded in excess of RM 76,243 for the year 2020. The expenses should be recorded in the financial statement for the year ended 31 December 2021.

Independence and Other Ethical Responsibilities

I am independent of the Academy of Sciences Malaysia and I have fulfilled the 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 information other 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 Malaysia Public Sector Accounting Standards (MPSAS) and Academy of Sciences Malaysia Act 1994 (Act 524). The Council is also responsible for such internal control as it determines is necessary to enable the preparation of the Financial Statements of 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 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 skepticism 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 have to draw attention in my Auditor's Certificate to the related disclosures in the financial statements of the Academy of Sciences Malaysia 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.

e. Evaluate the overall presentation of the Financial Statements, including the disclosures, and whether the Financial Statements of the Academy of Sciences Malaysia represents the underlying transaction and events in a manner that achieves fair presentation.

I communicate with the Council regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control identified during my audit.

Report on Other Legal and Regulatory Requirements

In accordance with the requirements of Academy of Sciences Malaysia Act 1994 (Act 524), I also report that in my opinion, the accounting and other records required by the Act to be kept by Academy of Sciences Malaysia have been properly kept in accordance with the provision of the Act.

Other Matters

a. On 31 December 2017, Academy of Sciences Malaysia has recognised a building at Jalan Tun Ismail, Kuala Lumpur. To date, Academy of Sciences Malaysia has yet to obtain the document to support its ownership of the building.

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

(SELWAH BINTI HJ. SAID)
ON BEHALF OF AUDITOR GENERAL

PUTRAJAYA
22 APRIL 2021

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

Kami, **PROFESSOR DATUK DR ASMA BINTI ISMAIL FASc** dan **DATUK DR. ABDUL RAZAK BIN MOHD ALI 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 2020 dan hasil kendaliannya serta perubahan kedudukan kewangannya bagi tahun berakhir pada tarikh tersebut.

*We, **PROFESSOR DATUK DR. ASMA BINTI ISMAIL FASc** and **DATUK DR. ABDUL RAZAK BIN MOHD ALI 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 2020 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 DATUK DR. ASMA BINTI ISMAIL FASc
Presiden / *President*

Akademi Sains Malaysia / *Academy of Sciences Malaysia*

Bagi pihak Majlis
On behalf of the Council

DATUK DR. ABDUL RAZAK BIN MOHD ALI FASc
Bendahari Kehormat / *Honorary Treasurer*
Akademi Sains Malaysia / *Academy of Sciences Malaysia*

KUALA LUMPUR, MALAYSIA

Tarikh / *Date*: 21 APR 2021

20th Floor, West Wing, MATRADE Tower
Jalan Sultan Haji Ahmad Shah off Jalan Tuanku Abdul Halim, 50480 Kuala Lumpur
t : 03 6203 0633 f : 03 6203 0634
www.akademisains.gov.my

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* :

21 APR 2021

PESURUHJAYA SUMPAH
W 465
KAPT (B) JASNI BIN YUSOFF
1 JAN 2019 - 31 DIS 2021
MALAYSIA

Di hadapan saya / *Before me* :

Lot 1.08, Tingkat 1,
Bangunan KWSP, Jln Raja Laut,
50350 Kuala Lumpur
Tel:019-660074[illegible]

20th Floor, West Wing, MATRADE Tower
Jalan Sultan Haji Ahmad Shah off Jalan Tuanku Abdul Halim, 50480 Kuala Lumpur
t : 03 6203 0633 f : 03 6203 0634
www.akademisains.gov.my

STATEMENT OF FINANCIAL POSITION
AS AT 31 DECEMBER 2020

	Note	2020 RM	2019 RM
ASSETS			
Current Assets			
Cash and Balance at Bank	3	681,387	596,349
Fixed Deposit	4	20,378,558	20,795,161
Receivables for Exchangeable Transactions	5	2,326	7,379
Other Receivables	6	77,824	136,821
Total Current Assets		21,140,095	21,535,710
Non-current Assets			
Property, Plant and Equipment	7	3,683,921	3,551,676
Work in Progress	8	408,031	21,526
Total Non-current Assets		4,091,952	3,573,202
TOTAL ASSETS		25,232,047	25,108,912
LIABILITIES			
Current Liabilities			
Payables for Exchangeable Transactions	9	649,214	942,497
Employee Benefits	10	238,610	229,395
Donation Fund	11	-	337,385
Deferred Income	12	1,258,404	1,438,383
Provision for Tax	24	380,333	214,676
Total Current Liabilities		2,526,561	3,162,336
Non-current Liabilities			
Employee Benefits	10	29,771	23,586
Deferred Grants	13	11,235,099	10,613,173
Deferred Grants - International Office	14	1,109,842	1,589,745
Total Non-current Liabilities		12,374,712	12,226,504
TOTAL LIABILITIES		14,901,273	15,388,840
NET ASSETS		**10,330,774**	**9,720,072**
NET ASSETS			
Accumulated Surplus		10,330,774	9,720,072
TOTAL NET ASSETS		**10,330,774**	**9,720,072**

STATEMENT OF FINANCIAL PERFORMANCE
FOR THE YEAR ENDED 31 DECEMBER 2020

	Note	2020 RM	2019 RM
INCOME			
Non-exchangeable Transactions	15	16,331,552	17,892,773
Exchangeable Transactions	16	1,695,612	658,361
TOTAL INCOME		18,027,164	18,551,134
EXPENSES			
Salaries and Wages	17	739,509	771,506
Services and Supplies	18	6,075,216	5,860,156
Science Program Expenses	19	8,699,537	6,072,266
Contribution and Fixed Charges	20	124,626	134,231
Employee Benefits	21	284,571	237,644
Other Expenses	22	274,877	1,362,201
Rental	23	754,476	1,251,995
Depreciation of Property, Plant and Equipment	7	164,201	172,332
TOTAL EXPENSES		17,117,013	15,862,331
SURPLUS BEFORE TAX		910,151	2,688,803
Tax	24	299,449	274,156
SURPLUS AFTER TAX		**610,702**	**2,414,647**

STATEMENT OF CHANGES IN NET ASSETS
FOR THE YEAR ENDED 31 DECEMBER 2020

	Note	Accumulated Surplus RM	Total RM
Balance as at 01 January 2019 - *(As Restated)*		7,305,425	7,305,425
Surplus Income on Expenditure - *(As Restated)*		2,414,647	2,414,647
Balance as at 31 December 2019 - *(As Restated)*		9,720,072	9,720,072
Surplus Income on Expenditure		610,702	610,702
Balance as at 31 December 2020		**10,330,774**	**10,330,774**

STATEMENT OF CASH FLOWS
FOR THE YEAR ENDED 31 DECEMBER 2020

	2020 RM	2019 RM
		(As Restated)
CASH FLOWS FROM OPERATING ACTIVITIES		
Surplus before Tax	910,151	2,688,803
Adjustment:		
Tax Paid	(133,792)	(15,279)
Previous Year's Tax Payment	-	(44,201)
Depreciation of Property, Plant and Equipment	164,201	172,332
Interest from Short Term Deposits and Fixed Deposits	(693,827)	(530,345)
Accrued Interest	77,824	133,204
Reversal of Fixed Deposit Interest	133,204	846,945
Adjustment from Property and Equipment Write off	119	5,014
Profit from Disposal of Property, Plant and Equipment	(2,367)	(1,771)
Bad Debts	-	500,000
Amortisation of Deferred Income	-	(10,091)
Adjustment of Employee Benefits	-	52,326
Amortisation of Deferred Grant	105,552	(1,479,550)
Deficit from Operation Before Changes in Working Capital	561,065	2,317,387
Decrease in Receivable from Exchangeable Transactions	64,050	4,682,097
(Decrease) in Payables from Exchangeable Transactions	(277,883)	(3,973,507)
Net Cash from Operating Activities	347,232	3,025,977
CASH FLOWS FROM INVESTMENT ACTIVITIES		
Income from Disposal of Property, Plant and Equipment	2,367	1,771
Purchase of Property, Plant and Equipment	(296,565)	(124,994)
Work in Progress	(386,505)	(21,526)
Interest Received	482,799	(449,804)
Net Cash (used in) Investment Activities	(197,904)	(594,553)
CASH FLOWS FROM FINANCING ACTIVITIES		
Proceeds from Donation	20,630	98,233
Repayment of Donation	(358,015)	(6,050)
Proceeds from Deferred Income	358,545	1,931,363
Repayment of Deferred Income	(538,524)	(1,350,184)
Proceeds from Deferred Grant	6,686,555	7,498,227
Repayment of Deferred Grant	(6,170,181)	(42,587,554)
Proceeds from Deferred Grant - International	844,916	2,505,000
Repayment of Deferred Grant - International	(1,324,819)	(2,580,127)
Net Cash (used in) Financing Activities	(480,893)	(34,491,092)
DECREASE IN CASH AND CASH EQUIVALENTS	(331,565)	(32,059,668)
CASH AND CASH EQUIVALENTS AT THE BEGINNING OF THE FINANCIAL YEAR	21,391,510	53,451,178
CASH AND CASH EQUIVALENTS AT THE END OF THE FINANCIAL YEAR	**21,059,945**	**21,391,510**
CASH AND CASH EQUIVALENTS:		
Fixed Deposit	20,378,558	20,795,161
Cash and Balance at Bank	681,387	596,349
	21,059,945	**21,391,510**

STATEMENT OF COMPARISON BUDGET AND ACTUAL
FOR THE YEAR ENDED 31 DECEMBER 2020

	Total Budget		Total	Variance	
	Initial 2020 RM	Final 2020 RM	Actual 2020 RM	Budget 2020 RM	Note
RECEIPTS					(a)
Non-exchangeable Transactions					
Government Grant	7,329,418	8,164,709	8,084,857	79,852	
External Contributions	-	-	-	-	
Exchangeable Transactions					
Other Income	-	-	-	-	
	7,329,418	**8,164,709**	**8,084,857**	**79,852**	
PAYMENTS					(b)
Salaries and Wages	880,852	776,832	743,888	32,944	
Services and Supplies	6,091,319	6,913,469	6,877,712	35,757	
Fixed Asset	-	-	-	-	
Contribution and Fixed Charges	320,787	291,832	284,866	6,966	
Other Expenses	36,460	182,576	178,391	4,185	
	7,329,418	**8,164,709**	**8,084,857**	**79,852**	
NET RECEIPTS	**-**	**-**	**-**	**-**	

*Refering to the variance between Final Budget Amount and Actual Amount.

Nota (a):
The difference in variance in the original budget and final budget of operating grants from the Government is due to the reduction in grants given to the International Office hosted by ASM. Therefore, the ASM final budget has been increased to cover the current year's expenses.

Nota (b):
The difference in the variance of expenditure is due to the current year operation of the program which is affected by the COVID-19 pandemic situation. Programs that were planned at the beginning of the year were carried out online and there were also activities that were postponed to 2021 or canceled. Therefore, ASM has reviewed and revised program planning and budget for the current year.

NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED ON 31 DECEMBER 2020

1 GENERAL INFORMATION

a) ASM Establishment and Main Objectives

The Academy of Sciences Malaysia (ASM) was established under 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 2020 was approved by ASM Council on 21 April 2021.

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).

This is the fifth year the financial statements is prepared based on MPSAS. ASM adopted MPSAS on 1 January 2015 (earlier than the effective date of 2020). The adoption of MPSAS required application of all MPSAS standards in the preparation of the Financial Statements for the Financial Year Ended on 31 December 2016, Comparative Statements for the Preceding Year Ended on 31 December 2015 and the balance of the Statement of Financial Position as at the date of the transition to MPSAS. Previously, ASM Financial Statements was prepared based on Public Entity Reporting Standards (PERS).

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 Fund

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.

iii. Rental

Income from the rental is recognised when it is received in accordance with the rental agreement. Office rental rates are below market rates.

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.

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

Building	1.82%
Office Renovation	10%
Motor Vehicle	20%
Office Equipment	20%
Computer	20%

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.

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.

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 Asset

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 (SOCSO) 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 (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 a reimbursement for annual leave (compensated absences / *Gantian Cuti Rehat (GCR)*) upon their retirement whether they chose a 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 X salary + allowances received X 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 cash awards 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.

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.

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 lessor is recognised as a reduction of rental expense over the lease term using the straight-line method. The amount of future minimum sublease payments expected to be received under sublease cannot be canceled at the reporting date.

Lease and sublease payments are recognised as an expense over the period, with separate amounts for minimum lease payments, contingent rent, and sublease payments.

ASM does not declare the land at Lot 20000 section 60, GRN 74954, amounting to RM40,430,000 as an asset as it has been recognised in the Ministry's Financial Statements. The land value is based on the valuation by *Jabatan Penilaian dan Perkhidmatan Harta* (JPPH) as at 2017.

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.

2 ACCOUNTING POLICIES (CONT.)

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

ii. Sources of Estimation Uncertainty (Cont.)

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.

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 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 Company 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 recognized for deductible temporary differences, unutilized 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.

2 ACCOUNTING POLICIES (CONT.)

q) Tax (Cont.)

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 recognized 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

	2020 RM	2019 RM
Cash in Hand	6,000	3,953
Cash at Bank	675,387	592,396
	681,387	596,349

4 FIXED DEPOSITS

	2020 RM	2019 RM
Fixed Deposit	20,378,558	20,795,161
	20,378,558	20,795,161

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 2020 is 2.08% per annum (2019: 3.48% per annum).

5 RECEIVABLES FOR EXCHANGE TRANSACTIONS

	2020 RM	2019 RM
Receivables	2,326	7,379
	2,326	7,379

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.

5 RECEIVABLES FOR EXCHANGE TRANSACTIONS (CONT.)

Analysis of account receivable aging is as follows:

	2020 RM	2019 RM
Does not exceed duration and is not affected	-	6,250
1 to 3 months	2,326	729
3 to 12 months	-	-
More than 12 months	-	400
	2,326	7,379
Affected	-	-
	2,326	7,379

6 OTHER RECEIVABLES

	2020 RM	2019 RM
Advances to Staff	-	3,617
Accrued Interest	77,824	133,204
	77,824	136,821

7 PROPERTY, PLANT AND EQUIPMENT

	As at 1 January 2020 RM	Additions RM	Disposal/ Classification RM	As at 31 December 2020 RM
COST				
Building	3,399,000	-	-	3,399,000
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
	9,013,385	296,565	(125,894)	9,184,056

	As at 1 January 2020 RM	Additions RM	Disposal/ Classification RM	As at 31 December 2020 RM
ACCUMULATED DEPRECIATION				
Building	203,940	56,650	-	260,590
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
	5,461,709	164,201	(125,775)	5,500,135

	As at 31 December 2020 RM
NET CARRYING AMOUNT	
Building	3,138,410
Vehicle	6
Office Equipment	98,237
Computer	306,382
Office Renovation	140,886
	3,683,921

7 PROPERTY, PLANT AND EQUIPMENT (CONT.)

	As at 1 January 2019 RM	Additions RM	Disposal/ Classification RM	As at 31 December 2019 RM
COST				
Building	3,399,000	-	-	3,399,000
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
	8,943,619	124,994	(55,228)	9,013,385

	As at 1 January 2019 RM	Additions RM	Disposal/ Classification RM	As at 31 December 2019 RM
ACCUMULATED DEPRECIATION				
Building	135,960	67,980	-	203,940
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
	5,339,591	172,332	(50,214)	5,461,709

	As at 31 December 2019 RM
NET CARRYING AMOUNT	
Building	3,195,060
Vehicle	6
Office Equipment	40,809
Computer	146,800
Office Renovation	169,001
	3,551,676

The building value was recognised at fair value in accordance to MPSAS 13 para 28 at RM3,399,000 in 2017 based on valuation carried out by *Jabatan Penilaian dan Perkhidmatan Harta* (JPPH). While the depreciation of the building shall be depreciated over its useful life of 55 years, according to MPSAS 13 para 36.

There is a difference of RM11,330.00 between the Asset Movement Report produced by the financial system compared to the actual calculation of building depreciation. The actual calculation of depreciation is based on the useful life of 55 years, while the financial system takes into account the depreciation rate in percentage as a whole number.

8 WORK IN PROGRESS

	2020 RM	2019 RM
Balance as at 01 Januari	21,526	-
Additional	386,505	21,526
Balance as at 31 December	408,031	21,526

ASM received an additional one-off grant from MESTECC for repairing the roof top of ASM building at Jalan Tun Ismail. The grant was received in fourth quarter of 2019 and the repairing work were expected to be accomplished in second quarter of 2020.

However, the roof repairing works was disrupted due to Covid-19 pandemic and unpredictable weather factors. The first phase of the roof repairing works were completed on 6 July 2020. The second phase focusing painting and earthing works is estimated to be completed in second quarter of 2021.

9 ACCOUNT PAYABLES FOR EXCHANGE TRANSACTIONS

	2020 RM	2019 RM
Payables - Institutions	609,216	905,128
Payables - Others	20,000	18,750
Audit Fees	19,998	18,619
	649,214	942,497

10 EMPLOYEE BENEFITS

	2020 RM	2019 RM
Balance as at 01 January	252,981	200,655
Add : Employee Benefit for the Year	284,571	237,644
Deduct : Employee Benefit Paid During the Year	(269,171)	(185,318)
Balance as at 31 December	268,381	252,981

	2020 RM	2019 RM
Current Liability	238,610	229,395
Non-current Liability	29,771	23,586
	268,381	252,981

11 DONATION FUND

	2020 RM	2019 RM
Balance as at 01 January	337,385	245,202
Additions	20,630	98,233
Expenses	(358,015)	(6,050)
Balance as at 31 December	-	337,385

The breakdown of the fund is as follows:

	2020 RM	2019 RM
Main Fund	-	140,930
Talent Development Program	-	35,193
Science Awareness Program	-	5,300
ArtScience	-	90,151
Frontier of Science	-	5,011
Sustainable Development	-	15,000
S&T Based Start-ups	-	800
Publications	-	32,000
Young Scientists Network	-	13,000
	-	337,385

ASM receives donation from ASM members and non-members for the implementation of various programs. Contributions are made on a voluntary basis on a monthly, yearly or one-off basis. Contributions are based on specific objectives in which ASM is responsible for implementing the program when it achieves a certain value.

However, ASM tax relief egilibility for donors under Subsection 44 (6), Income Tax Act 1957 has been shortened to 31.12.2020. Program expenses utilising the donation fund can be referred to note 19 - Science Program Expenditures.

12 DEFERRED INCOME

	2020 RM	2019 RM
Balance at 01 January	1,438,383	867,295
Income	358,545	1,931,363
Amortisation to Financial Statements		
Expenses	(538,524)	(1,350,184)
Adjustment on Income	-	(10,091)
Balance as at 31 December	1,258,404	1,438,383

The deferred income fraction is as follows:

	2020 RM	2019 RM
ASM		
ASEAN Young Scientists Network	48,697	48,697
ISC ROAP	1,209,707	1,389,686
	1,258,404	1,438,383

12 DEFERRED INCOME (CONT.)

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.

13 DEFERRED GRANT

	2020 RM	2019 RM
Balance as at 01 January	10,613,173	47,182,050
Income	6,686,555	7,498,227
Adjustments (Surplus from Program)	105,552	(1,479,550)
Returns of Allocation	(290,007)	(40,603,135)
Amortisation to the Financial Statements		
Expenses	(5,880,174)	(1,984,419)
Balance as at 31 December	11,235,099	10,613,173

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:

	2020 RM	2019 RM
Non-current Liability	11,235,099	10,613,173
	11,235,099	10,613,173

The breakdown of the deferred grant allocation is as follows:

	2020 RM	2019 RM
ASM		
Newton Ungku Omar Fund (NUOF)	3,022,124	3,484,360
Impact Study on the Implementation of the Malaysian Research Universities	-	23,350
Mid - Term Review of Malaysia Education Blueprint 2015 - 2025	-	19,620
National Entrepreneurship Policy	-	3,541
Task Force Sg Kim Kim	-	94,369
ASEAN Foresight Alliance	-	8,983
Malaysian Collaborative Network Platform for Disruptive Innovation (i-CONNECT)	2,421,238	3,988,807
Malaysia Open Science Platform (MOSP)	538,072	991,475
Review & Update Study on Environmental Quality Act	1,717,047	1,998,668
Water Sector Transformation 2040	3,372,125	-
Virtual National Science Challenge (VNSC) & *Minggu Sains Negara*	29,838	-
Review of National Nanotechnology Policy	6,250	-
MOE Studies	128,405	-
	11,235,099	10,613,173

14 DEFERRED GRANT – INTERNATIONAL OFFICE

	2020 RM	2019 RM
Balance as at 01 January - (As Previously Stated)	1,589,745	1,664,872
Income	844,916	2,505,000
Amortisation to the Financial Statements		
Expenses	(1,324,819)	(2,580,127)
Balance as at 31 December	1,109,842	1,589,745

Deferred grants are analysed as follows:

	2020 RM	2019 RM
Non-current Liability	1,109,842	1,589,745
	1,109,842	1,589,745

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

	2020 RM	2019 RM
Balance as at 01 January - (As Previously Stated)	996,234	864,019
Income	374,372	1,000,000
Amortisation to the Financial Statements		
Expenses	(552,288)	(867,785)
Balance as at 31 December	818,318	996,234

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 and while programme funded by ISC. The third term will end on 18 September 2021.

For the year 2020, ASM channeled a management allocation of only 37% which is RM374,372 compared to the original allocation ceiling amounting to RM1,000,000 per year. ASM recommends ISC ROAP to use the accumulated balance to cover its operating expenses.

14 DEFERRED GRANT – INTERNATIONAL OFFICE (CONT.)

International Science, Technology and Innovation Centre (ISTIC)

	2020 RM	2019 RM
Balance as at 01 January - (As Previously Stated)	593,511	800,853
Income	470,544	1,505,000
Amortisation to Financial Statements		
Expenses	(772,531)	(1,712,342)
Balance as at 31 December	291,524	593,511

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 will end on 7 September 2021. The operational cost and programmes of the Centre is funded by Malaysian Government.

For the year 2020, ASM channel a management allocation of only 31% which is RM470,544 compared to the original allocation ceiling of RM1,500,000 per year. ASM recommends that ISTIC use the accumulated balance to cover its operating expenses.

15 NON-EXCHANGEABLE TRANSACTIONS

	2020 RM	2019 RM
Operating Grant	8,164,709	5,879,871
Additional Grant	-	4,795,783
	8,164,709	10,675,654
Program Grant	-	1,182,849
Amortisation of Deferred Grant	5,880,174	1,984,420
Amortisation of Deferred Grant – International Office	1,324,819	2,580,127
Amortisation of Deferred Income	538,524	1,350,184
Amortisation of Donation Fund	358,016	6,050
Other Income:		
Office Rental Charges	40,300	82,000
Refund from International program	25,010	-
Fund Collection for Dinner	-	400
Surplus from Project	-	31,089
	16,331,552	17,892,773

16 EXCHANGEABLE TRANSACTIONS

	2020 RM	2019 RM
Program Management Charges	752,608	-
Current Account Interest	2,029	18,037
Fixed Deposit Interest	691,798	512,308
Recoverable Bad Debt	-	2,300
GST Refund	132,658	33,900
Other Income	116,519	91,816
	1,695,612	658,361

17 SALARIES AND WAGES

	2020 RM	2019 RM
Permanent staff:		
Salaries and Wages	526,706	549,976
Fixed Allowance	158,398	168,527
Statutory Contribution to Employees	40,528	40,160
Overtime Allowance	4,348	3,149
Other Employee Benefits	9,529	9,694
	739,509	771,506

ASM's permanent staff are civil servant personnel who fill out the PSD's employment warrant. Payment of salaries, wages and fixed costs are in accordance with Service Circular No. 1/2016.

18 SERVICES AND SUPPLIES

	2020 RM	2019 RM
Administrative Cost	976,245	1,288,425
Emoluments for Contract Employees	4,283,234	3,856,849
Science Communication	442,771	208,936
Membership Affairs	372,966	505,946
	6,075,216	5,860,156

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 governance 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.

19 SCIENCE PROGRAMME EXPENSES

	2020 RM	2019 RM
Collaborative Networking Activities and Science Excellence		
Science Outlook	371,020	20,350
Special Interest Group (SIG)	53,568	-
STI Policy and Advisory Committee – STIPAC	43,870	40,457
STI Initiative and Partnership	62,523	268,058
International Affairs	7,512	(217,448)
Science Communication	59,511	40,068
	598,004	151,485
Deferred Grant Expenditure		
Newton Ungku Omar Fund (NUOF)	462,236	929,355
National Policy on Science, Technology and Innovation (NPSTI)	-	161,122
Science Technology and Innovation Master Plan (STIMP)	-	238,434
Roadmap for Water Sector Transformation 2040	1,627,875	-
Impact Study on the Implementation of the Malaysian Research Universities	8,275	283,318
Mid - Term Review of Malaysia Education Blueprint 2015 - 2025	4,833	159,493
National Entrepreneurship Policy	8,300	55,775
Minggu Sains Negara	3,750	75,576
Virtual National Science Challenge (VNSC)	48,562	-
Task Force Sg Kim Kim	-	19,280
Review of National Nanotechnology Policy and Strategy	13,750	-
ASEAN Foresight Alliance	-	41,017
Malaysian Collaborative Network (i-Connect)	2,967,569	11,193
Malaysia Open Science Platform (MOSP)	453,403	8,525
Review and Update Study on Environmental Quality Act	281,621	1,332
	5,880,174	1,984,420
Deferred Grant Expenditure – International Office		
International Science Council Regional Office for Asia the Pacific (ISC ROAP)	552,288	867,785
International Science, Technology & Innovation Centre (ISTIC)	772,531	1,712,342
	1,324,819	2,580,127
Deferred Income Expenditure		
ISC ROAP	538,524	1,293,160
2019 CCM STEM Up Challenge	-	23,267
ASEAN Young Scientists Network	-	33,757
	538,524	1,350,184
Donation Fund Expenditure		
Estidotmy	205,000	-
Artscience Prize	87,396	4,050
Virtual National Science Challenge (VNSC)	45,076	-
Young Scientists Network (YSN-ASM)	20,543	-
Biography	-	2,000
	358,015	6,050
	8,699,536	6,072,266

19 SCIENCE PROGRAMME EXPENSES (CONT.)

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 or 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.

20 CONTRIBUTION AND FIXED CHARGES

	2020 RM	2019 RM
Kelab Sukan dan Kebajikan Kakitangan (KSKK)	25,000	25,000
Pension	61,534	67,696
International Subscriptions	38,092	41,535
	124,626	134,231

21 EMPLOYEE BENEFITS

	2020 RM	2019 RM
Permanent Employee Replacement Leave	6,185	1,768
Contract Employee Replacement Leave	30,424	25,727
Contract Employee Rewards/ Gratuity	247,962	210,149
	284,571	237,644

22 OTHER EXPENSES

	2020 RM	2019 RM
Fees, Insurance, Taxes, Stamp Duty	43,130	15,256
Reversal of Accrued Interest	133,204	846,945
Reversal of Reimbursement Cost	98,543	-
Bad Debts	-	500,000
	274,877	1,362,201

23 RENTAL

	2020 RM	2019 RM
Office Rental	643,006	1,143,667
Store Rental	18,390	18,340
Parking Rental	25,170	23,400
Electronic Equipment Rental	4,125	4,248
Office Equipment Rental	63,785	62,340
	754,476	1,251,995

24 TAXATION

	2020 RM	2019 RM
Tax Liability:		
Tax Liability as at 01 January	214,676	-
Tax	299,449	274,156
Tax Paid	(133,792)	(59,480)
Tax Liability as at 31 December	380,333	214,676
Taxation		
Current Year Tax	380,333	229,955
Under/(Over) Provision of Previous Year's Tax	(80,884)	44,201
Tax	299,449	274,156

25 HUMAN RESOURCE

ASM Management consist of permanent and contract employees. The total number of ASM employees as at 31 December 2020 was 83 (2019: 75). Below is the details:

	2020 RM	2019 RM
Permanent Staff:		
Top Management Group	1	1
Management and Professional Group	2	2
Support Group	6	6
Contract Staff:		
Management and Professional Group	54	46
Support Group	20	20
Total Staff		
Top Management Group	1	1
Management and Professional Group	58	48
Support Group	26	26
	83	75

26 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.

	2020 RM	2019 RM
Member of Council:		
Total Allowance	32,000	37,500
Member of the Finance Committee:		
Total Allowance	9,500	11,200
Member of Exco Committee:		
Total Allowance	2,100	2,500
Key Management Personnel:		
Short Term Benefits	246,304	243,764
	289,904	294,964

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, Honarary Treasurer and 12 Ordinary Council members. Council convene 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 Honarary Treasurer. EXCO meets on behalf Council to deliberate on urgent matters and provide input and decision to ASM Management.

ASM Finance Committee is responsible to oversee the planning and implementation of ASM activities, monitor compliance and 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.

27 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 minimized 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.

	Less Than 1 Year RM	More Than 1 Year RM	Total
On 31 December 2020			
Accounts Payable for Exchangeable Transactions	-	-	-
On 31 December 2019			
Accounts Payable for Exchangeable Transactions	-	-	-

v. Fair Value

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

28 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 Energy, Science, Technology, Environment and Climate Change (known as MESTECC) by letter MESTECC.400.4/1/5 JLD.5 dated 16 January 2020.

29 IMPACT OF COVID-19 PANDEMIC

In general, Covid-19 pandemic is an ongoing global issue that has impacted general society, economy, culture, ecology and other areas. As for ASM, the impact were indirect and insignificant as ASM is a non-profit statutory body. Activities for the year were rescheduled with different approach in order to meet the objective of the Academy. The new working norms supported by technologies has opened unlimited opportunities.





Tell Me More

DISCIPLINE GROUPS

Biological, Agricultural and Environmental Sciences
Sains Biologi, Pertanian dan Alam Sekitar
Professor Dato' Dr Ibrahim Che Omar FASc (Chairperson)
Emeritus Professor Dato' Dr Rahmah Mohamed FASc (Alternate-Chair)

Chemical Sciences
Sains Kimia
Professor Dr Kamal Harun FASc (Chairperson)
Professor Dr Mohd Basyaruddin Abdul Rahman FASc (Alternate-Chair)

Engineering Sciences
Kejuruteraan Sains
Dato' Ir Dr Gue See Sew FASc (Chairperson)
Dato' Sri Professor Ir Dr Judin Abdul Karim FASc (Alternate-Chair)

Mathematics, Physics and Earth Sciences
Matematik, Fizik dan Sains Bumi
Professor Dr Kurunathan Ratnavelu FASc (Chairperson)
Professor Dr Fredolin Tangang FASc (Alternate-Chair)

Medical and Health Sciences
Sains Perubatan dan Kesihatan
Professor Dr Rosnah Mohd Zain FASc (Chairperson)
Datin Paduka Dr Teo Soo Hwang FASc (Alternate-Chair)

Information Technology and Computer Sciences
Teknologi Maklumat dan Sains Komputer
Emeritus Professor Dato' Seri Ir Dr Mashkuri Yaacob FASc (Chairperson)
Professor Dr Mohamed Ridza Wahiddin FASc (Alternate-Chair)

Science & Technology Development and Industry
Pembangunan Sains & Teknologi dan Industri
Academician Emeritus Professor Dato' Seri Dr Mazlan Othman FASc (Chairperson)
Dato' Dr Jalaluddin Harun FASc (Alternate-Chair)

Social Sciences and Humanites
Sains Sosial dan Kemanusiaan
Professor Dato' Dr Aishah Bidin FASc (Chairperson)
Professor Dr Mahendhiran Sanggaran Nair FASc (Alternate-Chair)

CHAPTERS

ASM Northern Region Chapter
Professor Dr Hanafi Ismail FASc

ASM Southern Region Chapter
Professor Datuk Dr Ahmad Fauzi Ismail FASc

MANAGEMENT AND SERVICES OF WORKING COMMITTEES

Finance and Investment Committee
Jawatankuasa Kewangan dan Pelaburan
Datuk Dr Abdul Razak Mohd Ali FASc (Honorary Treasurer)

Audit Committee
Jawatankuasa Audit
Professor Dato' Dr Roslan Abd Shukor FASc

Membership Committee
Jawatankuasa Keahlian
Professor Dato' Ir Dr A. Bakar Jaafar FASc (Vice-President)

Publication Committee
Jawatankuasa Penerbitan
Datuk Professor Dr Awg Bulgiba Awg Mahmud FASc (Secretary-General)

ASM Science Journal Editorial Board
Lembaga Editorial Jurnal Sains ASM
Professor Dato' Dr Mohd Ali Hassan FASc

Task Force on Review of ASM Act
Badan Bertindak Kajian Semula Akta ASM
Academician Tan Sri Dato' Ir Ts Ahmad Zaidee Laidin FASc

ASM Endowment Fund Committee
Jawatankuasa Dana Sumbangan ASM
Datuk Dr Mohinder Singh S Sucha Singh FASc

Disciplinary Committee for the Top Management Group
Jawatankuasa Tatatertib bagi Kumpulan Pengurusan Tertinggi ASM
Datuk Professor Dr Awg Bulgiba Awg Mahmud FASc (Secretary-General)

Disciplinary Appeal Committee for the Top Management Group
Jawatankuasa Rayuan Tatetertib bagi Kumpulan Pengurusan Tertinggi ASM
Professor Dato' Ir Dr A. Bakar Jaafar FASc (Vice-President)

Senior Fellows Committee
Jawatankuasa Fellow Kanan
Academician Emeritus Professor Tan Sri Datuk Dr Omar Abdul Rahman FASc

STRATEGIC STUDIES

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

Science Policy Sub-Committee under STIPAC
YM Academician Tengku Datuk Dr Mohd Azzman Shariffadeen FASc

ASM Water Committee
Dr Ir Salmah Zakaria FASc

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

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

Task Force on Precision Medicine Initiative for Malaysia
Professor Datuk Dr A Rahman A Jamal FASc

Malaysian Blockchain Alliance
Datuk Fadilah Baharin FASc

Task Force on Sustainable Mining
Professor Dato' Dr Azizan Abu Samah FASc

Science Outlook 2020 Steering Committee
Professor Dato' Mohd Salleh Jaafar FASc (Chairperson)
Professor Dr Nik Meriam Nik Sulaiman FASc (Deputy Chair)

Special Interest Group of Hydrogen Economy
Professor Dato' Ir Dr Wan Ramli Wan Daud FASc

STI STRATEGIC INITIATIVES & PARTNERSHIPS

ASM Strategic Plan 2021-2030 Working Committee
Datuk Professor Dr Awg Bulgiba Awg Mahmud FASc (Secretary-General)

Special Interest Group on COVID-19
Professor Dr Rosnah Mohd Zain FASc (Chairperson)

Task Force on ASM ArtScience™ Initiative
Ar Hijjas Kasturi FASc (Chairperson)
Emeritus Professor Dr Muhamad Awang FASc (Co-Chair)

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

National Committee on Research Integrity (NCRI)
Academician Emeritus Professor Dato' Dr Khalid Yusoff FASc

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

Dr Ranjeet Bhagwan Singh Medical Research Trust Fund Programme Steering Committee Academician Distinguished Professor Datuk Dr Looi Lai Meng FASc (Past Chairman)
Datin Paduka Dr Teo Soo Hwang FASc (Chairman)

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

YSN-ASM Membership Selection Panel
Professor Dato' Ir Dr A. Bakar Jaafar FASc (Vice-President)

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

Newton-Ungku Omar Fund (NUOF) Committee for Programmes with Royal Society
Academician Tan Sri Datuk Ir TS Ahmad Zaidee Laidin FASc

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

ASM Science Education Committee
Professor Dr Ahmad Ismail FASc

Young Scientists Network (YSN) – ASM Exco
Dr Chai Lay Ching (Chairperson)
Dr Manraj Singh Cheema (Vice-Chair)

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

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

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

Imbak Canyon Rainforest Research & Training Programme Task Force
Academician Tan Sri Dr Salleh Mohd Nor FASc (Chairperson)
Professor Dr Ahmad Ismail FASc (Alternate Chair)

National Science Challenge Steering Committee
Professor Dr Noorsaadah Abd Rahman FASc

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

Professor Dato' Ir Dr Abdul Rahman Mohamed FASc (Chairperson)
Professor Dr Zainovia Lockman (YSN-ASM) (Co-Chair)

Task Force on Robotics
Professor Ir Dr Khairul Salleh bin Mohamed Sahari (Non-Fellow)

Special Interest Group on Biodiversity
Dr Helen Nair FASc

Special Interest Group on Natural Rubber Industry
Academician Datuk Dr Abdul Aziz Sheikh Abdul Kadir FASc

Special Interest Group on Oceanography
Professor Dr Phang Siew Moi FASc

National Science Challenge (NSC) Steering Committee
Professor Dr Noorsaadah Abd Rahman FASc

Special Interest Group on Zoonosis
Professor Datuk Dr Mohd Hair Bejo FASc

Task Force on Nanotechnology National Policy & Strategy 2021-2030

Professor Dato' Ir Dr Abdul Rahman Mohamed FASc (Chairperson)
Professor Dr Zainovia Lockman (YSN-ASM) (Co-Chair)

Task Force on Robotics
Professor Ir Dr Khairul Salleh bin Mohamed Sahari (Non-Fellow)

SPECIAL PROJECTS

WST 2040: Project Management Committee (PMC)
Academician Tan Sri Ir Shahrizaila Abdullah FASc (Advisor)
Ir Dr Salmah Zakaria FASc (Chair)

Task Force on Advocacy, Awareness, Capacity Building and public participatory platforms (AACB)
Professor Dato' Dr Mazlin Mokhtar FASc

Task Force on Integrated Water Sector Data Centre (IWSDC)
Datuk Ir Mohd Adnan Mohd Nor FASc

Task Force on IR 4.0 in the various Water Sub-sectors (IR4.0 WS)
Datuk Ir Abdul Kadir Mohd Din FASc

Task Force on Water-Food-Energy Nexus (WFE Nexus)
Dr Ahmad Hezri Adnan FASc

Task Force on Virtual Water and Water Footprint (VW&WF)
Professor Dr Zulkifli Yusop FASc

Task Force on Climate Change Impact and Adaptation (CCIA)
Professor Dr Joy Jacqueline Pereira FASc

Task Force on Alternative Water Financing (AWF)
Dato' Seri Ir Dr Zaini Ujang FASc

Task Force on Water as an Economic Sector (WES)
Professor Dr Mahendhiran Nair FASc

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

i-Connect Technical Committee
Academician Tengku Datuk Dr Mohd Azzman Shariffadeen FASc (Chair)

Malaysian Open Science Platform Alliance
Professor Dr Noorsaadah Abdul Rahman FASc

Working Group on Policy
Datuk Professor Dr Rohana Yusof FAsc

Working Group on Capacity Building and Awareness
Professor Dr Abrizah Abdullah

Working Group on Infrastructure
Dr Liew Chee Sun

REPRESENTATIVES IN NATIONAL AND INTERNATIONAL MEETINGS AND COMMITTEES

Association of Academies and Societies in Asia (AASSA)
Academician Professor Dato' Dr Khairul Anuar Abdullah FASc
(President-elect 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 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 Datuk Dr Asma Ismail FASc
(ASM President)

Science Council of Asia (SCA)
Professor Dr Phang Siew Moi FASc

Academy of Sciences in Developing World (TWAS)
Professor 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 Datuk 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 Datuk Dr Asma Ismail FASc
(ASM President)
Permanent Alternative Rep: 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)

International Collaboration Strategic Plan (ICSP) 2021-2030
Academician Professor Emerita Datuk Dr Mazlan Othman
(Chairperson)

LIST OF ACTIVITIES

JANUARY

Staff Gathering with ASM CEO
6 January

National Robotic Plan Meeting
7 January

4th Local and Transboundary Pollution Law Feasibility Study (LT-PLFS) TF Meeting
7 January

2nd SO2020 Societal Impact Pillar WG Meeting
15 January

ASM Team Building
17 – 19 January

2nd SO2020 Environmental Impact Pillar WG Meeting
20 January

LT-PLFS Task Force Workshop
21 January

5th LT-PLFS Task Force Meeting
21 January

Imbak Canyon Rainforest Research and Training Programme (ICRRTP) Discussion
21 January

1st YSN-ASM Exco Meeting
22 January

National Robotics Plan Talent WG Meeting
22 – 23 January

4th SIG on Biodiversity Meeting
23 January

1st TWAS Steering Committee Meeting
23 January

2nd National Robotics Plan Meeting
28 January

32nd ASM Water Committee Meeting
30 January

FEBRUARY

ASM Science Awards Steering Committee Meeting
3 February

2nd Review of the Environmental Quality Act 1974 Steering Committee Meeting
3 February

12th ASM ArtScienceTM Initiative TF Meeting
5 February

5th Precision Medicine TF Meeting
7 February

5th SIG on Biodiversity Meeting
10 February

SO2020 Harmonization Workshop
11 February

Open Science Forum for Asia and the Pacific Region
13 February

ASM Science Awards Technical Evaluation Committee Meeting - Tropical Medicine
12 February

ASM Chapters Meeting
14 February

Dialogue on Open Science
14 February

2nd SIG on Oceanography Meeting
17 February

Novel Coronavirus (2019-nCoV) Outbreak Discussion
17 February

136th Finance Committee Meeting
18 February

BERNAMA Radio - Akademi Sains Malaysia 25 Tahun
25 February

MARCH

Lecture on Acoustofluidics - A Novel Approach to Manipulate and Isolate Cells and Extracellular Vesicles by Professor Thomas Laurell
10 March

Dialogue on Environmental Law with Swedish Judge and Expert in Environmental Law
12 March

SO 2020 Steering Committee Meeting
19 March

Astro AWANI - Hapus COVID-19 dengan Sains dan Teknologi
25 March

Penyesuaian Terhadap Cabaran COVID-19 bersama YB Khairy Jamaluddin dan Felo-felo Akademi Sains Malaysia (Facebook Live)
26 March

APRIL

137th Finance Meeting
3 April

Malaysia Open Science Alliance Meeting
3 April

Astro AWANI - Flattening COVID-19 Curve: Australia and South Korea Perspective
6 April

31st STIPAC Meeting
7 April

BERNAMA Radio - Diagnosis COVID-19: Ketahui Cara Membuat Tafsiran
9 April

Meeting on Data Governance
13 April

Bicara Naratif RTM – COVID-19: Kesan Terhadap Industri Air
18 April

Open Science Meeting
20 April

140th Council Meeting
21 April

2nd Membership Committee Meeting
30 April

Special Panel Meeting
30 April

MAY

Meeting on YSN Online Platform
5 May

Discussion on Biotechnology Policy
6 May

Perbincangan Berkaitan Cadangan Penggubalan Akta Sains Teknologi & Inovasi
8 May

Meeting with Digital Axiata
8 May

Science Café Kuala Lumpur - The Power of Music for Athletes and Home Exercises
17 May

Meeting with Science Media Centre
18 May

Meeting on MSAF
19 May

i-Connect Technical Committee Meeting
28 May

Discussion on Advanced Material Roadmap
29 May

Science Café Johor - What if the World goes Online Learning?
29 May

RTM Fresh Brew - Creating Collaborative Spaces for ArtScience™
31 May

JUNE

4th Natural Rubber TF Meeting
1 -2 June

1st Malaysia Open Science Alliance Stakeholders Engagement
4 June

RTM – Pelan Pemulihan Ekonomi Jangka Pendek
5 June

ArtScience™ for All Webinar
9 June

Visit to ASM by YB Minister of MOSTI
11 June

WST2040 Pre-Council Technical Committee Meeting
12 June

SO2020 Environmental Impact Pillar Engagement Session
15 June

BERNAMA Radio – Program Dalam Radar: Menggembleng Komuniti Demi Pemulihan Ekonomi
16 June

AASSA Climate Change & Health (CC&H) Regional Zoom Meeting
17 June

32nd STIPAC Meeting
18 June

Discussion on the Partnership of Climate Change Programme with BHC
18 June

i-Connect Technical Committee Meeting
19 June

SO2020 4th Environmental Impact WG Meeting
19 June

Science Café Kuala Lumpur - Connecting Mega Telescopes to Observe Black Holes
20 June

3rd SO 2020 Steering Committee Meeting
22 June

SO 2020 Interview session with SMEs Corporation
23 June

2nd Science Education TF Meeting
24 June

Discussion on Proposal of Blue Economy Blueprint for Malaysia
25 June

33rd IdeaXchange - Structural Changes in the Global Economy: Building an Agile and Resilient Malaysian STIE Ecosystem
26 June

Science Café Johor - Hand Sanitizers: Fake or Genuine
26 June

13th ASM ArtScience™ Initiative TF Meeting
26 June

Celebrating International Day of the Tropics Webinar
29 June

FAScinate Talk
30 June

i-Connect Meeting with Neutral Entities
30 June

WST 2040 Harmonisation Workshop
30 June

JULY

67th Exco Meeting
2 July

SO2020 Interview Session With Vitrox Corporation
2 July

i-Connect Technical Committee Meeting
3 July

Bengkel Penetapan Bidang Keutamaan Sains
3 July

SO2020 Interview Session With Clarion (Malaysia) Sdn Bhd
9 July

ArtScience™ Prize Screening Meeting
10 July

1st Covid-19 SIG Meeting
10 July

Merck YSN-ASM Webinar Series - Back To Lab: How Ready Are You?
10 July

2020 YSN-ASM Selection Meeting
14 July

2nd i-Connect Steering Committee Meeting
15 July

ASPIRE Prize 2020
16 July

3rd Science Education TF Meeting
16 July

SO 2020 Interview Session With Department Of Standards Malaysia
16 July

ASMSCJ Editorial Board Meeting
17 July

WST 2040: WFE Nexus Discussion With ISIS
17 July

Science Café Kuala Lumpur - Is Your Meds Suitable for You?
18 July

2020 YSN-ASM Interview
21 July

25th MSAF Board Meeting
21 July

Mesyuarat Jawatankuasa Akaun Amanah Tabung Penyelidikan Dr Ranjeet Bhagwan Singh Bil 1/2020
21 July

ASEAN-YSN Meeting
22 July

SO2020 (Environmental Impact Pillar): Engagement Session With Metmalaysia
23 July

Training Module Evaluation Workshop (I) on Open Science Skills, Working Group on Capacity Building and Awareness, Malaysia Open Science Alliance
24 July

SO2020 Environmental Impact Pillar Engagement Session
27 July

Mesyuarat Jawatankuasa Pembangunan Organisasi Dan Sumber Manusia Bil.1/2020
28 July

Mesyuarat Kerja Berhubung Cadangan Penambahbaikan Skim Perkhidmatan Researchers, Scientists, Engineers, Technologists (Rset) Bil 1/2020
28 July

SO2020 Societal Impact Discussion
28 July

Tropsc2021 - The Future Belongs to the Tropics, People & Mangrove Webinar
28 July

Mesyuarat Jawatankuasa Pengurusan Pembaikan Bumbung Bangunan ASM JTI
29 July

SO2020 Discussion
29 July

Meeting of TOR on NR REE
30 July

AUGUST

Meeting with CityNexus Sdn Bhd
4 August

SO2020 Societal Impact Pillar Discussion
4 August

SO2020 Environmental Impact Pillar Discussion
5 August

SO2020 Societal Impact Pillar Discussion
6 August

Launching of Roadmap for the National Agenda on Water Sector Transformation 2040 (WST 2040) Development Study
6 August

WST2040 Virtual Water & Water Footprint TF Meeting
10 August

Rubber Disease Webinar
10 August

4th SO2020 Steering Committee Meeting
11 August

TropSc2021 – The Future belongs to the Youth Webinar
12 August

TropSc2021 – Youth for the Tropics: Regional Workshop on Social Entrepreneurship
13 August

2nd National Nanotechnology Policy & Strategy (NNPS) 2021-2030 TF Meeting
13 August

Science Café Johor - Tips dan Pelaksanaan Pembelajaran Dalam Talian
14 August

Science Café Kuala Lumpur - Lurking Snakes on the Run
15 August

SO2020 Writing and Data Consolidation Workshop - Societal Impact
17 – 19 August

5th Malaysia Open Science Alliance Meeting
19 August

APEC Policy Sharing Webinar on Open Science and the 2020 ASPIRE Prize Ceremony
21 August

5th WST2040 Project Management Committee Meeting
24 August

SIG Biodiversity Stakeholders Workshop
24 August

Training Module Evaluation Workshop (II): Data Stewardship
25 August

VNSC Online Preliminary Quiz (East Coast & Northern Zone)
25 August

VNSC Online Preliminary Quiz (Central Zone)
26 August

VNSC Online Preliminary Quiz (East Malaysia & Southern Zone)
27 August

SO2020 Writing and Data Consolidation Workshop - Economic Impact
27 August

WST2040 Advisory Council Meeting
27 August

Science Café Kuala Lumpur - Food Poisoning: Appearance Can Be Deceiving
30 August

SEPTEMBER

VSNC 2nd Round - Video Competition
1 – 20 September

Meeting on Hydrogen Economy Position Paper
2 September

2nd SO2020 Harmonisation Workshop
2 September

Forum on the Future of Natural Rubber Industry: Price and Sustainability Challenges
3 September

Presentation to MIDA on 10-10 MySTIE Framework
4 September

Forum & Workshop on Science Education
9 September

Meeting with CREST & NanoMalaysia Berhad
10 September

NNPS 2021-2030 Framework Discussion
10 September

WST2040 Advisory Council Meeting
11 September

10th SIG on Precision Biodiversity Meeting
14 September

68th Exco Meeting
15 September

3rd YSN-ASM Exco Meeting
17 September

I-Connect: Meeting with Human Resources Development Fund (HRDF)
17 September

4th TropSc2021 Conference Steering Committee Meeting
17 September

VSNC 2nd Round – Interview Session
21 September – 9 October

TropSc2021 - Engineering for Sustainability: Water & Energy for the Tropics Webinar
22 November

ASM ArtScienceTM Prize Trophy Design Competition Meeting
23 September

Discussion on ASM Angels in Science
23 September

141st Council Meeting
24 September

Finalisation of 10-10 MySTIE Framework Transformation Book
24 September

Forum Science & Technology for Evidence-Based Policy Making: Supporting Credible Climate Action in Malaysia
24 September

4th WST2040 Advisory Group Meeting
25 September

Corporate Services Division Meeting
25 September

10-10 MySTIE Transformation Book Synthesizing Workshop
25 – 27 September

ASM ArtScience™ Prize Artwork Display
28 – 30 September

Meeting with INCEIF on i-Connect
29 September

Meeting with Futurise Sdn Bhd
30 September

OCTOBER

33rd STIPAC Meeting
1 October

SO2020 Steering Committee Meeting
1 October

TropSc2021 – Coffee: The Black Gold of the Tropics Webinar
1 October

SO2020 Societal Impact Meeting
2 October

6th Project Management Committee Meeting (WST2040)
2 October

Citizen Science from Malaysia's Perspective Webinar
5 October

SO2020 Steering Committee Meeting
5 October

VNSC Video Competition Interview
6 October

AASSA Climate Change & Health (CC&H) Regional Zoom Meeting
8 October

15th ASM ArtScience™ Initiative TF Meeting
8 October

Discussion on Biomedical Research Platform
8 October

Workshop on WST2040 from the Perspective of Awareness, Advocacy, Capacity Building (AACB) and Public Participatory Platforms: Issue, Responsibilities and Options
8 October

ASM ArtScience™ Trophy Design Competition Contestants Selection Meeting
9 October

11th SIG on Precision Biodiversity Meeting
12 October

Virtual 2020 Asia Pacific Science and Technology Conference for Disaster Risk Reduction
15 October

SIG on Zoonosis Meeting
19 October

Brainstorming Session on estidotmy
20 October

Strategic R&D Towards Sustainable Natural Rubber Industry Webinar
20 October

25th ASM Annual General Meeting
24 October

Discussion on the Framework & Timeline to Develop the RDC&I Roadmap
26 October

2nd WST2040 Technical Committee Meeting
28 October

NOVEMBER

FAScinate Talk
3 November

TropSc2021 – World Cities Day: The Soul of the City Webinar
4 November

2nd NRRE TF Meeting
6 November

Workshop Evaluation Rubric & Guidelines for Fellows Nomination
7 November

2020 Virtual National Science Challenge (VNSC) Grand Final
9 November

International Financial Landscape for Climate Change Adaption
19 November

Forum on Zoonoses in Malaysia: Ensuring Malaysia's Resilience against Zoonotic Diseases
20 November

139th Finance Committee Meeting
27 November

DECEMBER

FAScinate Talk
3 November

TropSc2021 – World Cities Day: The Soul of the City Webinar
4 November

2nd NRRE TF Meeting
6 November

Workshop Evaluation Rubric & Guidelines for Fellows Nomination
7 November

2020 Virtual National Science Challenge (VNSC) Grand Final
9 November

International Financial Landscape for Climate Change Adaption
19 November

Forum on Zoonoses in Malaysia: Ensuring Malaysia's Resilience against Zoonotic Diseases
20 November

139th Finance Committee Meeting
27 November

ASM MANAGEMENT

AS OF DECEMBER 2020

CHIEF EXECUTIVE OFFICE

Hazami Habib
Chief Executive Officer
Nina Azrah Razali
Special Officer CEO
Norazirah Ramli
Secretary

BUREAU OF INTERNATIONAL AFFAIRS

Nurhanani Zainuddin
Executive
Aimi Suraya Abdul Kahar
Executive
Hazman Al-Hafiz Hazal
Assistant Executive

STI STRATEGIC STUDIES UNIT

Nitia Samuel
Principal Analyst
Jagdish Kaur Chahil
Senior Analyst
Joy Grace A. Rayappan
Senior Analyst
Nur Zuriany Zaki
Senior Analyst
Loh Chia Hur
Analyst
Ratnamalar Rajasingam
Analyst
Muhammad Haikal Hikmal Hazam
Analyst
Noratiqah Ahmad
Analyst
Nurhani Mat Razali
Analyst
Teng Yu He
Analyst
Nurul Rahimah Abu Bakar
Analyst
Rahmat Shah Putra Samsul Rizal
Analyst
Fatin Anis Azzahra Kamarudin
Analyst
Sazarul Aini Sabot
Assistant Executive

STI STRATEGIC PROGRAMMES UNIT

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Senior Executive
Nur Dayana Razmi
Senior Executive
Hazrul Liki
Senior Executive
Hendy Putra Herman
Executive
Norain Farhana Ahmad Fuaad
Executive
Afiah Nasuha Aznan
Executive
Khalil Munawar Makhdum Munawar
Executive
Varsheta Selapah
Executive
Muadz Norazan
Executive
Siti Farhana Bajunid Shakeeb Arsalaan Bajunid
Executive
Nur Adila Miswan
Executive
Amira Aqilah Shaidin
Executive
Hannah Norazharuddin
Executive
Kalyani Raman
Executive
Musliha Asha'ari
Assistant Executive
Khairul Nisak Alias
Clerk

SCIENCE COMMUNICATION UNIT

Dharshene Rajayah
Senior Executive
Mohd Najmie Mohd Yusoff
Executive (Multimedia Designer)
Mohamad Haziq Rosli
Executive (Graphic Designer)
Nazmi Lao
Executive (Writer)
Syazwani Abu Bakar
Executive (Editor)

CORPORATE RELATIONS UNIT

Laviinia Dhanagunan
Senior Executive
Ammielyya Jusnieza Ahmad Jafri
Executive
Muhammad Syafiq Mohamad Shafiee
Assistant Executive
(Corporate Communication)

CORPORATE SERVICES DIVISION

Seetha Ramasamy
Manager

LEGAL AND COMPLIANCE

Siti Nuradiba Ahmad Shahrudin
Legal Executive

HUMAN RESOURCE UNIT

Muhammad Hafizuddin Mohd Amin
Executive
Nur Shafawaty Ahmad
Assistant Executive
Suhaila Sabri
Assistant Executive
Murni @ Zahani Ariffin
Senior Clerk

FACILITY MANAGEMENT & IT UNIT

Saiful Suhairi Suarni
Senior Executive
Norsuhada Adnan
Executive (Facility)
Syed Abdul Haliq Syed Abdul Malik
Executive (IT)
Ahmad Khudri Abd Razak
Assistant Executive (IT)
Siti Maslinda Basiron
Assistant Executive
Mohd Zairi Mansor
Senior Clerk
Rohani Mohd Yusop
Clerk
Mohamad Fathorossoim Al-Sani Abdullah Sani
Assistant Coordinator
Norehan Kadir
Receptionist
Rusli Othman
Assistant Operation
Mohd Zuhairi Zakbar
Driver
Mohd Azmy Abdul Rahman
Driver

EVENTS & LOGISTIC UNIT

Charlin Rajoo
Procurement Executive
Shahridzal Aizat Shahrum
Executive
Muhammad Zakwan Shah Shahrudin
Assistant Executive
Mohd Zefri Mohd Zulkefli
Assistant Coordinator
Muhammad Saiful Bahri Wan Din
Clerk

FINANCE & ACCOUNTS UNIT

Anis Adilla Mohd Arif
Senior Accountant
Nurul Ain Asyimah Mohammad
Accountant
Chan Wen Nee
Financial Analyst
Nurhani Zawani Posari
Assistant Accountant
Nur Idayu Abd Aziz
Assistant Accountant
Nor Hayati Johan
Clerk

INTERNATIONAL OFFICES HOSTED BY ASM

THE INTERNATIONAL COUNCIL FOR SCIENCE REGIONAL OFFICE FOR ASIA AND THE PACIFIC (ICSU ROAP)

Academician Professor Emerita Dato' Seri Dr Mazlan Othman FASc
Director
Ahmad Sufyan Mohamed Aslam
Science Officer
Farah Atiqah Ag Ismail
Science Officer
Arjun Thanaraju
INGSA Regional Program Officer
Muhammad Zulkifli Sulaiman
Administrative Executive
Nurul Farhana Mohd Farizah
Assistant Executive
(Administrative)

THE INTERNATIONAL SCIENCE, TECHNOLOGY AND INNOVATION CENTRE CENTRAL FOR SOUTH-SOUTH COOPERATION (ISTIC)

Tengku Sharizad Tengku Chik
Director
Zarmila Salmi Sabot
Admin Officer
Abdul A'dzim Abd Rashid
Science Officer
Intan Diana Fishal
Science Officer
Norkhalizatul Akmal Mohd Jamil
Science Officer
Mohd Azim Noor
Information Technology Officer
Shareeza Shaari
Driver

ASM MANAGEMENT

AS OF DECEMBER 2020





ACRONYM

12MP	Twelfth Malaysia Plan
AASSA	Association of Academies and Societies in Asia
AI	Artificial Intelligence *Kecerdasan Buatan*
ANDS	Australian National Data Service
APEC	Asia-Pacific Economic Cooperation
APSTAAG	Asia-Pacific Science and Technology Academia Advisory Group
APSTCDRR	Asia Pacific Science and Technology Conference for Disaster Risk Reduction
ASEAN	Association of Southeast Asian Nations
ASM	Academy of Sciences Malaysia *Akademi Sains Malaysia*
ASPIRE	APEC Science Prize for Innovation, Research and Education
CAST	Chinese Association for Science and Technology
CMCO	Conditional Movement Control Order
CODATA	Committee on Data of the International Science Council
CREST	Collaborative Research in Engineering, Science and Technology Centre
CSO	*Organisasi Masyarakat Sivil*
DRR	Disaster Risk Reduction *Pengurangan Risiko Bencana*
DWNP	Department of Wildlife and National Parks
EASAC	European Academies' Science Advisory Council
EPU	*Unit Perancang Ekonomi*
ESET	Emerging Science, Engineering & Technology
FELDA	*Lembaga Kemajuan Tanah Persekutuan*
GDP	Gross domestic product
GII	Global Innovation Index *Indeks Inovasi Global*
HDC	Halal Development Corporation
HICoE	Higher Institution Centre of Excellence *Pusat Kecemerlangan Pendidikan*
HTNC	High-Tech Nation Council
IANAS	InterAmerican Network of Academies of Sciences
IAP	The InterAcademy Partnership
IBSE	Inquiry Based Science Education *Pendidikan Sains Berasaskan Inkuiri*
IKCEST	International Knowledge Centre for Engineering Sciences and Technology
IMR	Institute of Medical Research
INCEIF	International Centre for Education in Islamic Finance
IoT	Internet of Things *Internet Kebendaan*
IP	*Harta Intelektual*
IPG	*Institut Pendidikan Guru*
IPT	*Institut Pendidikan Tinggi*
ISC ROAP	International Science Council Regional Office for Asia and the Pacific
ISC	International Science Council
ISTIC	International Science, Technology and Innovation Centre for South-South Cooperation
KASA	*Kementerian Alam Sekitar dan Air*
KDNK	*Keluaran Dalam Negara Kasar*
KeTSA	*Kementerian Tenaga dan Sumber Asli*
KISTEP	Korea Institute of S&T Evaluation and Planning
KKM	*Kementerian Kesihatan Malaysia*
KWA MSPK	*Kumpulan Wang Amanah Majlis Sains dan Penyelidikan Kebangsaan*
LESTARI	Institute for Environment and Development
MBAN	Malaysian Business Angel Network
MCO	Movement Control Order
MCRA	MAKNA Cancer Research Award
MCRCR	Malaysian Code of Responsible Conduct in Research
MESTECC	Ministry of Energy, Science, Technology, Environment and Climate Change *Kementerian Tenaga, Sains, Teknologi, Alam Sekitar dan Perubahan Iklim*
MGTC	Malaysian Green Technology and Climate Change Centre
MIDA	Malaysian Investment Development Authority
ML	Machine Learning *Pembelajaran Mesin*
MMN	*Majlis Mineral Negara*
MMU	Multimedia University
MOF	Ministry of Finance *Kementerian Kewangan Malaysia*
MOSP	Malaysian Open Science Platform
MOSTI	Ministry of Science, Technology and Innovation *Kementerian Sains, Teknologi dan Inovasi*
MSA	Mahathir Science Award
MSAF	Mahathir Science Award Foundation
MSE	Malaysia Science Endowment
MSN	*Minggu Sains Negara*
MTDC	Malaysian Technology Development Corporation
MySTIE	Malaysian Science, Technology, Innovation and Economic
NADMA	*Agensi Pengurusan Bencana Negara*
NASAC	Network of African Science Academies
NGO	*Pertubuhan Bukan Kerajaan*
NIH	National Innovation Hub
NIWRMP	National Integrated Water Resources Management Plan
NKEA	National Key Economic Area
NNPS	National Nanotechnology Policy and Strategy *Polisi dan Strategi Nanoteknologi Kebangsaan*
NPSTI	National Policy for Science, Technology and Innovation
NSC	National Science Challenge
NSRC	National Science Research Council
NUOF	Newton Ungku-Omar Fund
NVSB	NanoVerify Sdn Bhd
OCE	Office for Climate Education
PADU	Education Performance and Delivery *Unit Pelaksaan dan Prestasi Pendidikan*
PBD	Precision Biodiversity
PIBGN	*Persatuan Ibu Bapa dan Guru Nasional*
PKS	*Perusahaan kecil sederhana*
PPSTI	Policy Partnership on Science, Technology and Innovation
R&D	Research & development Penyelidikan & pembangunan
R,D,C&I	Research, development, commercialisation & innovation *Penyelidikan, pembangunan, pengkomersialan, dan inovasi*
RISDA	*Pihak Berkuasa Kemajuan Pekebun Kecil Perusahaan Getah*
RMA	*Agensi Pengurusan Penyelidikan*
RMKe-12	*Rancangan Malaysia Ke-12*
S&T	*Sains & Teknologi*
SARS	Severe Acute Respiratory Syndrome Sindrom Pernafasan Akut Teruk
SCA	Science Council of Asia
SDG	Sustainable Development Goal *Matlamat Pembangunan Lestari*
SEAMEO	Southeast Asian Ministers of Education
RECSAM	Organisation–Regional Centre for Education in Science and Mathematics
SET	Science, Engineering and Technology Sains, Kejuruteraan dan Teknologi
SIG	Special Interest Group
SIGML	Special Interest Group on Machine Learning
SMC	Science Media Center
SME	Small-medium Enterprise
SO2020	Science Outlook 2020
SOP	Standard operating procedure *Prosedur Operasi Standard*
STEM	Science, Technology, Engineering, Mathematics
STI	Science, Technology and Innovation Sains, Teknologi dan Inovasi
STILC	Science and Technology Industry Linkages Committee
TCA	Technology Commercialisation Accelerator
TRSM	Top Research Scientists Malaysia
TWAS	The World Academy of Sciences
UiTM	*Universiti Teknologi MARA*
UKM	*Universiti Kebangsaan Malaysia*
UM	*Universiti Malaya*
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
UNESCO	United Nations Educational, Scientific and Cultural Organization
UPM	*Universiti Putra Malaysia*
USM	*Universiti Sains Malaysia*
UTM	*Universiti Teknologi Malaysia*
VNSC	Virtual National Science Challenge
WFEO	World Federation of Engineering Organizations
WHO	World Health Organization *Pertubuhan Kesihatan Dunia*
WST2040	Water Sector Transformation 2040
YSN-ASM	Young Scientists Network-Academy of Sciences Malaysia

ACADEMY OF SCIENCES MALAYSIA
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