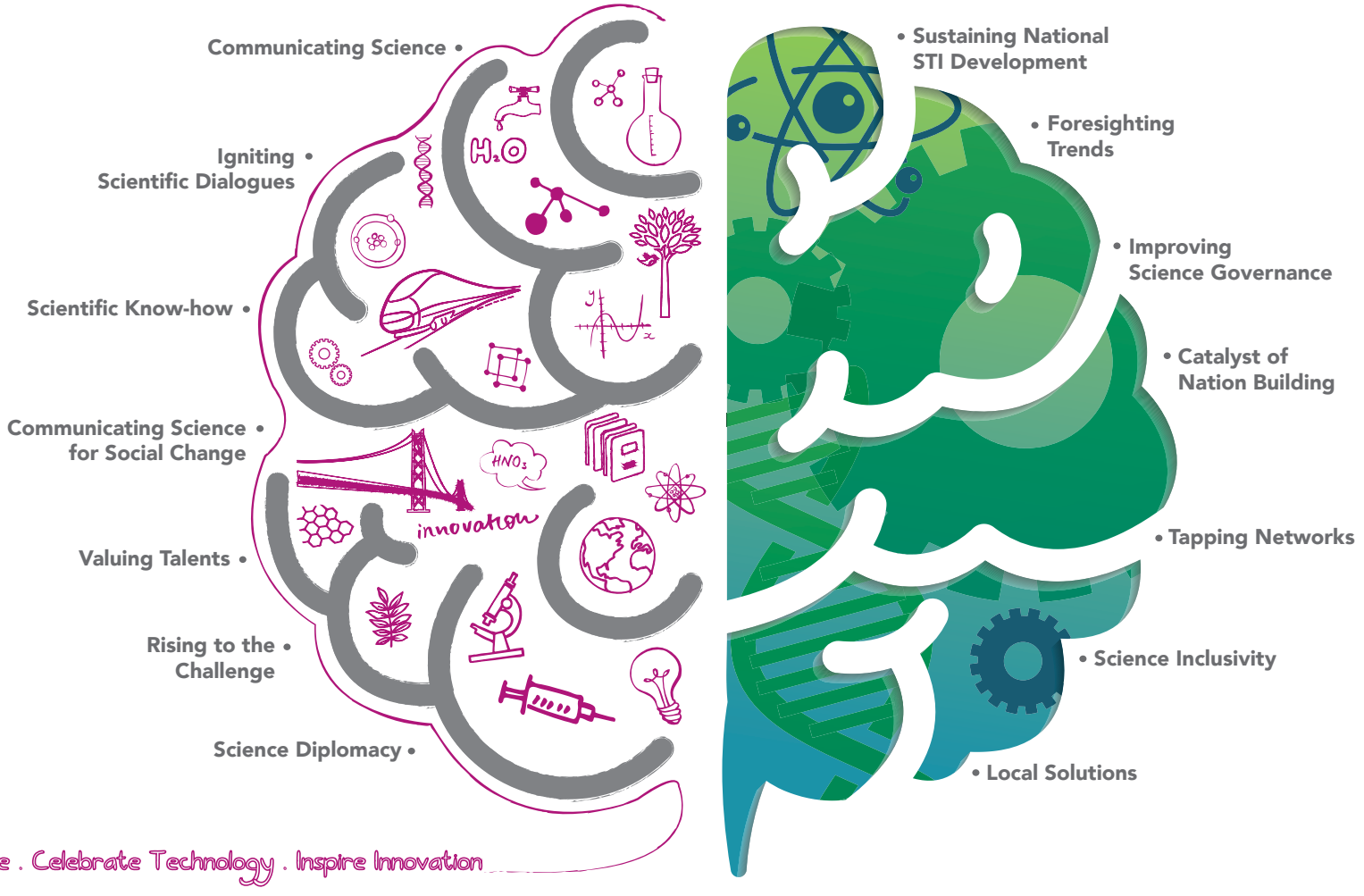
Laporan Tahunan 2013 Annual Report



Think Science . Celebrate Technology . Inspire Innovation

AKADEMI SAINS MALAYSIA

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Kami berusaha untuk

Menjadi 'Badan Pemikir' yang diiktiraf bagi isu berkaitan sains, kejuruteraan, teknologi dan inovasi.
Memupuk kecemerlangan dalam bidang sains, kejuruteraan dan teknologi untuk kebaikan masyarakat keseluruhannya.

Misi

- 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 masyarakat

Fungsi

- Memberi nasihat kepada Kerajaan berkenaan hal sains, teknologi dan inovasi yang berkepentingan kepada negara
- Memupuk budaya kecemerlangan sains dan teknologi di Malaysia
- Membantu meningkatkan kapasiti teknologi sektor industri di Malaysia
- Menggalakkan kesedaran dan pemahaman umum mengenai kepentingan sains, teknologi dan inovasi dalam kehidupan seharian
- Menjalin jaringan dan kerjasama antarabangsa
- Penerbitan saintifik

Strategi

- Memanfaatkan pemikiran saintifik untuk menentukan hala tuju STI negara
- Memupuk budaya kecemerlangan STI
- Memberikan input STI yang berwibawa dan tepat pada masanya
- Menggalakkan pengunaan sains untuk kesejahteraan masyarakat
- Memudahcara pelaksanaan strategi ekonomi berasaskan inovasi
- Menggalakkan penggunaan STI bagi pembangunan luar bandar

Aktiviti kami

Kajian Strategik STI

- Malaysia 2050
- Imbasan Horizon
- Penjelmaan Teknologi Baru
- Kelestarian Sains

Program Strategik STI

- Pembangunan Modal Insan
- Pengantara
- Konsortium Sains
- Fora Perundingan



Pihak Berkepentingan

Dalaman

- Felo
- *Associates*
- *Young Scientists Network (YSN)*-ASM
- Pengurusan ASM

Luaran

- MOSTI dan agensinya
- Kementerian lain dan agensi berkaitan
- Industri
- Institusi Penyelidikan
- Institusi Pengajian Tinggi
- Badan Profesional S&T
- Organisasi antarabangsa STI
- Komuniti bandar dan luar bandar

4 teras Piagam Pelanggan



1. Memberi khidmat nasihat yang bebas, boleh dipercayai berasaskan data yang tepat pada masanya

2. Komited dalam mewujudkan program yang berkualiti ke arah pembangunan asas STI negara yang kukuh

3. Mewakili Malaysia dan komuniti saintifiknya di arena antarabangsa

4. Menyebarkan pengetahuan saintifik

Titipan dari Presiden

Tahun 2013 diraikan dengan hasrat untuk membuat perubahan. Pada tahun ini, Akademi Sains Malaysia telah melakukan perubahan yang ketara dengan terus memperkukuh asasnya untuk bertindak sebagai kumpulan pemikir utama STI di Malaysia. Struktur organisasi diubah bagi menyokong penekanan terhadap memperkasakan peranan sebagai penasihat dan bukan sebagai pelaksana. Susun atur semula struktur kerja kakitangan telah dilakukan bagi menggalakkan penglibatan secara aktif dalam menyokong fungsi Akademi sebagai badan penasihat. AS turut merekrut beberapa bakat baru bagi meningkatkan kebolehan analisis STI dan menyokong aktiviti utama yang berteraskan kajian, seperti kajian Mega Science. Kajian ini seterusnya telah melahirkan satu inisiatif baru - STI Outlook, yang dijangka akan terbit pada akhir tahun 2014. ASM telah berjaya mendapatkan sokongan daripada kementerian bagi kajian Mega Science agar ianya menjadi landasan yang efektif dalam menjana nasihat kepada kerajaan akan perkara yang berkaitan dengan teras akademi iaitu "Sains untuk Dasar". STI Outlook ini diharapkan dapat menjana nasihat mengenai perkara yang berkaitan dengan teras akademi yang kedua iaitu "Dasar untuk Sains".

ASM mendapati tempat kerja yang kondusif merupakan elemen yang amat penting. Pada tahun ini, pejabat operasi kami telah berpindah ke premis baru bertempat di Matrade. Pejabat operasi yang baru ini menyediakan ruang kerja yang diperlukan serta mewujudkan persekitaran pemikiran kreatif. Kami mampu beroperasi dengan lebih cekap dan bersepadu di persekitaran baru ini yang terbuka. Perubahan ini telah menghasilkan pengembangan tenaga kerja dimana ASM telah mengalu-alukan bakat baru dari pelbagai bidang sains untuk menjadikan struktur ASM lebih fleksibel, serba boleh dan berkesan. Bersama-sama dengan 239 Felo dan 42 *Associate*, era baru ini menjanjikan sumbangan positif yang berterusan terhadap fungsi utama akademi dalam memberikan nasihat berkaitan STI kepada kerajaan.

Selaras dengan semangat baru ini dan slogan "*Think Science*", ASM telah menyiapkan beberapa kajian dalam bidang-bidang yang penting kepada negara. Kelestarian sains terus menjadi bidang tumpuan utama tahun 2013. Oleh hal yang demikian, jawatankuasa air ASM telah menghasilkan beberapa kajian yang menilai aspek kelestarian sumber air negara.

Tahun 2013 menyaksikan permulaan rangka kerja ke-2 *Mega Science* untuk pembangunan negara yang berterusan. Kajian ini dijadualkan siap pada April 2014. Rangka kerja ke-2 ini merangkumi sektor perumahan, infrastruktur, pengangkutan, elektrik & elektronik, dan alam sekitar. Penemuan awal kajian ini telah mengetengahkan beberapa bidang yang memerlukan intervensi STI. Melalui program imbasan horizon, beberapa trend STI baru dapat didedahkan serta isu pembudayaan sains juga diketengahkan. Hal ini seterusnya akan memberi input berterusan kepada kajian *Mega Science*. Tahun ini juga menyaksikan sambutan sains tahunan. Pada peringkat global, pemenang baru bagi anugerah nobel dalam bidang sains telah diumumkan. Anugerah kimia telah dinobatkan kepada 3 orang saintis dari Amerika Syarikat dalam usaha membangunkan model komputer yang boleh meramalkan tindak balas kimia yang kompleks dan juga usaha seperti pembuatan ubatan baru. Pendekatan ini menggabungkan fizik klasik & kuantum. Pemenangnya adalah Martin Karplus (Universiti Strasbourg, Perancis dan Universiti Harvard) Michael Levitt (Sekolah Perubatan Universiti Stanford) dan Arieh Warshel (Universiti Southern California, Los Angeles). Teori tentang bagaimana zarah subatom mendapatkan jisim pula telah memenangi anugerah fizik. Teori ini menjadi tajuk utama di dalam akhbar pada tahun 2012 apabila penemuan zarah Higgs yang sukar difahami telah disahkan di makmal CERN CERN, Geneva. Anugerah tersebut dikongsi oleh 2 orang saintis: Peter Higgs dari Britain dan Francois Englert dari Belgium yang telah mencadangkan teori ini secara berasingan pada 1964. Bagi anugerah perubatan pula, penghormatan telah diberikan kepada penemuan dalam memahami bagaimana bahan utama bergerak di dalam sel. Proses ini berlaku melalui vesikel, buih-buih kecil yang menghantar kargo di dalam sel ke tempat yang betul tempat pada masanya. Gangguan dalam sistem penyampaian ini boleh menyebabkan penyakit saraf, kencing manis atau gangguan imunologi. Anugerah ini dikongsi oleh James E. Rothman (Yale) Randy W. Schekman (University of California, Berkeley) dan Dr Thomas C. Sudhof (Sekolah Perubatan Universiti Stanford). Manakala, Anugerah Sains Mahathir yang dianugerahkan kepada Dr Alan Cowman dari Australia, menjanjikan harapan baru melalui penyelidikannya dalam pencarian vaksin malaria. Usaha untuk menyemarakkan inovasi berlangsung secara berterusan sepanjang tahun. Seperti tahun-tahun lalu, kami menekankan usaha untuk meningkatkan kebolehlihatan ASM di kalangan orang ramai dan pihak berkepentingan. ASM telah mengambil bahagian di dalam beberapa siri wacana di televisyen mengetengahkan hasil kajian ASM. Felo ASM terus menjadi rujukan utama media untuk memberikan nasihat pakar berkaitan isu seperti air, tenaga, perubahan iklim dan inovasi secara umum. Beberapa artikel turut diterbitkan di media cetak bagi memaparkan aktiviti-aktiviti akademi. Intervensi media seperti ini umumnya telah menarik perhatian masyarakat akan peranan ASM dalam bidang sains dan pembangunan negara. Dalam usaha menjadi sebuah institusi yang relevan kepada negara, ASM juga telah

> Tahun 2013 diraikan dengan hasrat untuk membuat perubahan.

mengambil lonjakan besar dalam arena komunikasi sains bagi mengukuhkan peranannya sebagai sebuah agensi penasihat sains negara. Usaha untuk memperkukuhkan peranan sebagai komunikator sains dilakukan melalui platform seperti idea exchange, perhimpunan tahunan, siri syarahan bagi menggalakkan Felo dan *Associates* mengutarakan isu-isu sains yang terkini. Media merupakan saluran komunikasi yang penting jika digunakan dengan baik. Saya merasakan bahawa dengan mewujudkan saluran untuk pakar sains negara sebagai jurucakap bagi isu STI, negara kita mampu mengelakkan kontroversi yang sering melahirkan rasa tidak percaya di kalangan orang ramai. Ini menunjukkan pelaburan dalam bidang sains adalah amat penting.

Sudah tentu, bakat yang tepat adalah satu keperluan. Pemupukan bakat merupakan matlamat negara dan kita hanya boleh menanganinya melalui sistem pendidikan. Sehingga kini, negara hanya mempunyai 30% pelajar sekolah menengah dalam aliran sains. Pada hakikatnya, kita memerlukan nisbah 60:40; aliran sains kepada aliran sastera. Bagaimana kita sebagai sebuah negara membangun dapat mencapai kedudukan negara berpendapatan tinggi menjelang tahun 2020 dengan peratusan sebegini? Tidak ada gunanya memperuntukkan sejumlah wang yang besar untuk P&P jika kita kekurangan modal insan bagi tujuan tersebut.

Jelas sekali, sistem yang mampan adalah amat penting bagi mengatasi isu ini. Sebelum ini, penghijrahan cendiakawan merupakan satu kebimbangan kerana kita menyaksikan kehilangan profesional ke negara-negara lain. Kini, kita sedang memberikan tumpuan untuk memupuk bakat dan membina kapasiti tanpa mengira kedudukan geografi. Walaubagaimanapun, kita tidak seharusnya berpuas hati dan perlu berusaha gigih untuk melonjakkan peratusan dan angka tersebut kerana tindakan kita pada hari ini hanya akan memberi impak dalam jangka masa 30-50 tahun dari sekarang. Impian kita untuk muncul sebagai sebuah negara berpendapatan tinggi akan menjadi kenyataan sekiranya terdapat pembaharuan terhadap langkah-langkah yang sedia ada dalam pendidikan untuk meningkatkan pembangunan modal insan ke tahap yang lebih tinggi. ASM akan meneruskan usahanya untuk meningkatkan profil IBSE. Hasil daripada projek rintis di empat buah sekolah rendah di daerah Hulu Langat, didapati bahawa minat untuk mengikuti IBSE telah meningkat. Kami akan terus bekerjasama dengan kementerian pelajaran bagi mengarusperdanakan IBSE dalam pendidikan sains. Tidak dapat dinafikan salah satu faktor yang boleh memacu tadbir urus STI negara adalah menambah bakat dalam bidang santifik. Laporan *"Public Research Assets Performance Evaluation: Unlocking Vast Potentials, Fast Tracing the Future"* mendedahkan bahawa walaupun dana yang besar disalurkan untuk program yang terpilih bagi pembinaan dan pengkomersilan P&P, pulangan pelaburan masih tidak mencapai tahap minimum yang telah ditetapkan. Mengapa? Masalah utama ialah kerana ketiadaan sebuah badan penyelaras untuk mengkordinasikan aktiviti P&P negara. Di samping itu, tiada kesinambungan di antara sektor swasta dan awam. Kita cenderung untuk lupa bahawa kedua-dua sektor ini saling bergantungan di antara satu sama lain. Tanpa jalinan kerjasama kedua-dua pihak ini, ekosistem STI akan menjadi tidak lengkap. ASM memperkenalkan konsortium sains untuk menemukan institusi sains kebangsaan dengan institusi sains antarabangsa bagi memperkukuhkan kepakaran STI negara. Adalah diharapkan melalui pendekatan ini dapat menarik minat sektor industri untuk bekerjasaman dengan saintis. Inisiatif ini membolehkan kita untuk bersaing di pasaran global pada masa akan datang dan berkemungkinan mampu berkembang sejajar dengan perkembangan STI global. Saya berharap laporan tahunan 2013 ini akan terus mengetengahkan STI sebagai satu pelaburan yang tidak harus dikompromi sekiranya negara ingin mencapai aspirasi status negara membangun pada tahun 2020 dan seterusnya.



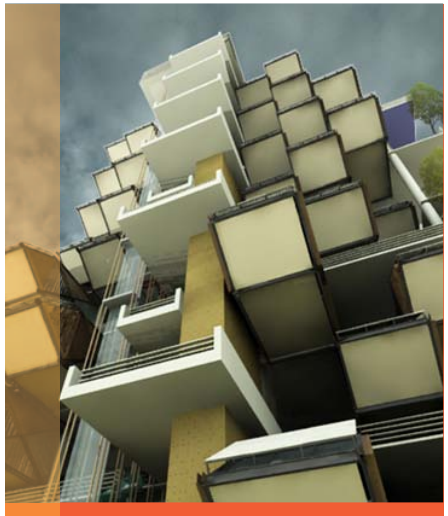


Tan Sri Dr Ahmad Tajuddin Ali FASc


SUSTAIN
- people
- planet
- profit

01___MENASIHATI PENGGUBAL DASAR

——ASM memenuhi keperluan untuk satu rangka kerja yang mantap, bersepadu yang merangkumi kapasiti S&T, sumber dan ecosystem tempatan. Rangka kerja ini membolehkan ASM memberi khidmat nasihat kepada kerajaan khususnya dalam penerokaan kelestarian sains, ramalan tahap pembangunan Malaysia pada 2050, mengenalpasti penjelmaan teknologi baru dan penerbitan laporan Science Outlook.



Tay Yee Wei, arkitek Malaysia, mencadangkan pembinaan unit heksagon yang boleh digabungkan dengan modul lain untuk mewujudkan kawasan yang lebih luas untuk keluarga yang besar.



Sektor infrastruktur dan pengangkutan

Malaysia 2050

Kajian Rangka Kerja *Mega Science* untuk Pembangunan Negara yang berterusan bagi tempoh 2010-2050 (atau Agenda *Mega Science*: Malaysia 2050) adalah kajian kerangka yang mentranformasi ekosistem sains, teknologi dan inovasi (STI) Malaysia melalui pendekatan yang berstruktur, praktikal dan lestari. Output kajian akan memberikan input nasihat secara berterusan kepada kerajaan mengenai pilihan, peluang dan keutamaan STI dalam menyokong agenda sosio-ekonomi negara. Kajian *Mega Science* bertindak sebagai landasan untuk:

1. Menjana idea bagi bidang keutamaan P&P, dan
2. Mengenalpasti peluang untuk penjanaan kekayaan dan kesejahteraan masyarakat.

Lima sektor utama telah dikenalpasti bagi kajian fasa kedua agenda *Mega Science*. Sektor-sektor ini adalah kritis berdasarkan peluang serta potensi sebagai penggerak pembangunan untuk memacu ekonomi negara. Setiap sektor dikategorikan kepada bidang-bidang tumpuan dan dibantu analisa pasaran dan data komersial berkaitan. Setiap bidang tumpuan diteliti dan dibantu oleh rantaian nilai berstruktur untuk pemahaman yang menyeluruh. Berikut adalah ringkasan bagi setiap sektor:

Sektor Perumahan

Bidang Fokus
Penempatan manusia dalam skala yang besar / Bandar mega / Rumah pintar, sihat dan selamat, Bahan bangunan dan teknologi termaju

"Perumahan merupakan pemangkin kepada pembangunan sosio-ekonomi dan penurunan kadar kemiskinan yang merentasi hampir setiap petunjuk pembangunan manusia. (UN, 2011)"

Tumpuan utama bagi sektor perumahan di Malaysia berkisar tentang peningkatan kos, kesan bencana dan perubahan iklim negara dan juga kecekapan tenaga.

Sektor Infrastruktur

Bidang Fokus
Kejuruteraan, Pemerolehan & Pembinaan (EPC), Lapangan terbang, Pelabuhan, Jalanraya & Lebuhraya dan Landasan keretapi

Pembangunan lestari: Pembangunan yang memenuhi keperluan semasa tanpa menjejaskan keupayaan generasi akan datang dalam memenuhi keperluan mereka (UN, 1987)

Infrastruktur yang cekap dan berkemampuan tinggi akan membolehkan negara atau sesebuah rantau untuk memainkan peranan mereka yang lebih tepat dalam ekonomi dunia. Infrastruktur yang memenuhi keperluan dan segmen utama masyarakat harus berdasarkan ketercapaian, kemampuan dan kelestarian.

Semasa dan selepas pembangunan sesuatu infrastruktur, sistem, sumber dan kepelbagaian semulajadi, yang menjadi sandaran kepada masyarakat, perlu diselenggara dan ditingkatkan.

Sektor Pengangkutan

Bidang Fokus
Pengangkutan kereta api, Pengangkutan Jalan Industri Aeroangkasa, Pengangkutan Laut dan Darat Khidmat Pengurusan Keselamatan dan Penguatkuasaan (SEMS)

Industri pengangkutan yang pintar, cekap, bersih, selamat dan lestari adalah menjadi keperluan bagi kebanyakan bandar utama di dunia.

Operasi yang optimum bagi semua komponen yang berkait – infrastruktur, perancangan bandar, kenderaan dan instrumen, prosedur operasi dan pengurusan serta aplikasi ICT – menentukan keupayaan untuk memindahkan manusia dan barang-barang secara cekap dan berkesan. Dengan mengoptimakan keupayaan rangkaian dan dengan menggunakan kelebihan setiap medium pengangkutan seperti kesesakan, pelepasan, kemalangan, pencemaran dan lain-lain, dapat dikurangkan.

Saiz pertumbuhan penduduk Malaysia akan memberi tekanan yang besar ke atas industri pengangkutan bandar dan oleh kerana pertumbuhan penduduk yang ketara dijangka berlaku sebelum tahun 2050, adalah penting merancang dan meneliti pembangunan dan peluasan sektor pengangkutan di Malaysia. Sains dan teknologi boleh menjadi kunci kepada penyelesaian yang diperlukan untuk masalah ini.

Sektor Elektrik dan Elektronik

Bidang Fokus
Industri Sebatian Semikonduktor, Penjanaan, Pengaliran dan Pengagihan Tenaga, Solar sebagai Tenaga Boleh diperbaharui yang Cekap, Keselamatan Siber

Industri Elektrik & Elektronik (E&E) merupakan salah satu daripada 12 Bidang Ekonomi Utama Negara Malaysia (NKEAs) telah menyumbang 24.9% kepada Keluaran Dalam Negeri Kasar (KDNK) pada tahun 2012. Industri ini telah membuahkan kejayaan firma tempatan serta menarik minat firma global terkemuka untuk beroperasi di Malaysia.

Sejak tahun 1960-an, Malaysia menerajui pemasangan komponen E&E. Adalah perlu untuk meningkatkan rantaian nilai daripada menjadi pemasang komponen kepada penghasilan produk tambah nilai. Untuk ini, negara perlu melaksanakan penyelidikan dan pembangunan asas dan gunaan dalam sector E&E.

RM231.23bilion

Jumlah nilai eksport Produk E&E Malaysia (2012)
Destinasi eksport utama adalah China, USA, Singapura, Hong Kong dan Jepun

49.2%

eksport pembuatan barangan

32.9%

jumlah eksport

Sumber: www.matrade.gov.my

Sektor Alam Sekitar

Bidang Fokus
Perubahan Iklim & Karbon, Air, Tenaga, Bahan Buangan & Tanah dan Hutan

Dalam pembangunan yang pesat, perancangan, rekabentuk dan pengurusan alam sekitar memerlukan penyelarasan yang teratur. Kekayaan sumber warisan asli Malaysia telah diiktiraf di atas sumbangan besarnya untuk pembangunan yang mantap dan berkekalan. Akan tetapi, terdapat keperluan untuk melindungi alam sekitar dan mengharmonikan pembangunan seiring dengan matlamat persekitaran. Oleh sebab itu, perkara ini memerlukan komitmen dalam meletakkan agenda pembangunan lestari di dalam dasar kebangsaan. Memandangkan masalah alam sekitar semakin kompleks dan tenat, terdapat keperluan untuk menggunakan Sains & Teknologi yang boleh mengatasi cabaran ini dengan cekap dan berkesan.

HALAMANFAKTA

Indeks Prestasi Alam Sekitar (EPI) menunjukkan prestasi negara dalam melaksanakan isu utama alam sekitar

- 2012 EPI meletakkan Malaysia di kedudukan **25** daripada **132** negara
- 2014 EPI meletakkan Malaysia di kedudukan **51** daripada **178** negara

Sumber: epi.yale.edu



Sektor elektrik dan elektronik



Sektor alam sekitar



Daripada 10 risiko tertinggi yang mendapat perhatian sejagat, 4 daripadanya adalah berkaitan dengan air"

Kelestarian Sains

Informasi dan pengetahuan yang menyumbang ke arah kefahaman berkaitan Planet (S&T), Keuntungan (Ekonomi) dan Manusia (Sosial) menghasilkan kelestarian sains. ASM berusaha untuk membawa agenda kelestarian sains dalam pengubalan dasar dengan memberikan fokus kepada kepada cabaran tempatan, dan juga perspektif serantau dan sejagat.

Kajian Sektor Air

Pemanasan global mengucar-kacirkan iklim dunia. USA dan sebahagian benua Eropah terkesan serta berhadapan dengan fenomena suhu rendah. Di rantau Asia Tenggara, Filipina telah terjejas oleh Taufan Haiyan pada 8 Nov 2013. Taufan Haiyan dinilai sebagai kategori 5-bersamaan dengan taufan ganas pada Skala Angin Taufan Saffir-Simpson. Kelajuan angin yang setara antara 230 km / h kepada 270 km / h diukur oleh pelbagai balai cerap di rantau ini. Sejumlah 6,230 kematian telah direkodkan dengan 1,785 orang masih hilang. Kerosakan telah ditaksirkan sebanyak USD $ 1.5 bilion. Baru-baru ini, pada tahun 2013, banjir besar telah menjejaskan sebahagian Kelantan, Terengganu, Pahang, Johor, Sabah dan Sarawak, menyebabkan pemindahan besar-besaran ke pusat perlindungan mangsa banjir. Nilai kemusnahan masih belum ditaksirkan. Kerana itu, pada hari ini kita masih lagi menyaksikan peristiwa iklim yang melampau kesan daripada pemanasan global.

Kini saintis meramalkan bahawa tahun 2014 berkemungkinan adalah tahun "El-Nino", iaitu tahun di mana suhu akan meningkat. Tahun El-Nino terjadi apabila Asia Tenggara, dan bahagian-bahagian lain di rantau ini terjejas dengan keadaan kering yang luar biasa. Jadi, adakah Malaysia kini akan terjejas oleh kemarau? Lebih buruk lagi, kehidupan laut juga akan terjejas oleh El Nino melalui pengurangan dalam pembawaan zat-zat air yang kaya dengan nutrien yang diperlukan untuk menyokong populasi besar ikan di perairan Malaysia. Pastinya, El Nino akan memberikan kesan kepada hasil pertanian kita secara umum dan sekuriti makanan secara spesifik.

SEKILAS

Skala Angin Taufan Saffir-Simpson
Skala Angin Taufan Saffir-Simpson adalah skala 1 hingga 5 berdasarkan kelajuan angin taufan yang berterusan. Skala ini berpontensi memusnahkan harta benda. Taufan yang telah mencapai Kategori 3 atau lebih tinggi dianggap taufan utama kerana potensi mereka menyebabkan kehilangan nyawa dan kerosakan besar. Pada kategori 1 dan 2, ribut masih berbahaya, dan memerlukan langkah-langkah pencegahan.

Sumber: http://www.nhc.noaa.gov/aboutsshws.php

10 risiko tertinggi yang mendapat perhatian sejagat, 4 daripadanya adalah berkaitan dengan air"

1. Krisis fiskal dalam ekonomi utama
2. Pengangguran / kekurangan pekerjaan yang tinggi
3. **Krisis air**
4. Jurang pendapatan yang tinggi
5. **Kegagalan mitigasi dan adaptasi perubahan iklim**
6. **Peristiwa cuaca yang melampau (contohnya banjir, ribut, kebakaran)**
7. Kegagalan tadbir urus global
8. **Krisis makanan**
9. Kegagalan mekanisme / institusi kewangan utama
10. Ketidakstabilan politik dan sosial yang ketara

Sumber: WEF Global Risks Report 2014
World Economic Forum Insight Report,
Global Risks Perception Survey 2013-2014.

Kajian Air ASM



Badan Bertindak **Pengurusan Permintaan Air**

Badan Bertindak sedang melaksanakan kajian semula yang komprehensif mengenai status terkini Pengurusan Permintaan Air di Malaysia termasuk mengenalpasti kelemahan dan jurang berbanding norma-norma prinsip IWRM dan Amalan Pengurusan Terbaik. Kajian ini juga akan menghasilkan kerangka strategi dan pelan tindakan yang menyeluruh, holistik dan lestari dalam Pengurusan Permintaan Air. Laporan Nasihat ini dijangka siap pada tahun 2014



Badan Bertindak **Air dan Pertanian**

Objektif Badan Bertindak ini adalah untuk mengkaji semula penggunaan air dalam sektor pertanian dan mengesyorkan strategi untuk menggiatkan semula sektor ini agar menyediakan perkhidmatan yang lebih cekap dan produktif terhadap sumber air hujan dan pengairan pertanian, ternakan dan perikanan. Laporan Nasihat ini dijangka siap pada tahun 2014.



Badan Bertindak **Penyelidikan & Pembangunan (P&P) Air**

Tujuan utama Badan Bertindak ini adalah untuk menetapkan agenda P&P berasaskan keperluan dan keutamaan STI bagi sektor air. Adalah penting bagi menangani isu pengurusan air melalui pendekatan pelbagai disiplin, bersepadu dan selaras berasaskan kerangka P&P berdasarkan keperluan dan keutamaan negara. Laporan Nasihat ini dijangka siap pada tahun 2014.



Badan Bertindak **Bekalan Air dan Pengurusan Sisa Air**

Tinjauan komprehensif mengenai status terkini bekalan air dan pengurusan sisa air merupakan pendekatan pertama badan bertindak ini dalam usaha untuk mengenalpasti kelemahan dan jurang berbanding norma prinsip IWRM dan Amalan Pengurusan Terbaik (BMPs). Kajian ini juga akan mengenalpasti bidang dan peluang dalam aplikasi STI untuk penjanaan kekayaan dan kelestarian sumber dalam sub- sektor ini. Laporan Nasihat ini dijangka siap pada 2014.



Badan Bertindak **Pengurusan Bersepadu Lembangan Sungai (IRBM)**

Badan Bertindak Pengurusan Bersepadu Lembangan Sungai sedang menjalankan kajian untuk menyediakan Kertas Posisi IRBM di Malaysia bersama-sama dengan strategi untuk menanganinya serta menyediakan Laporan Nasihat ASM IRBM untuk dikemukakan kepada Kerajaan Malaysia. Laporan Nasihat ini dijangka siap pada tahun 2014.



Kumpulan Kerja mengenai **Dasar dan Undang-undang berkaitan Air**

Objektif Kumpulan Kerja ini adalah untuk mengenalpasti jurang didalam Dasar Sumber Air Kebangsaan (NWRP) dan pendekatan pertama adalah menjalankan tinjauan kritis mengenai NWRP bagi mengenalpasti kapasiti dasar ini mengadaptasi perubahan cuaca serta transformasi sosial dan ekonomi ; menilai kapasiti Institusi Sumber Air, terutamanya tahap penggunaan S&T serta P&P; membangunkan kerangka kerja yang menghubungkan diantara institusi Sumber air dengan institusi lain bagi membolehkan NWRP bertindak sebagai pelopor Pengurusan Sumber Asli Bersepadu serta mengenalpasti jurang dan isu berbangkit dengan NWRM serta undang-undang yang berkaitan. Kumpulan kerja ini akan menyiapkan Laporan nasihat secara berkala.

ASM telah mengenalpasti tiga bidang air yang akan menerima impak hasil perubahan iklim. Berikut adalah syor bagi 3 bidang tersebut:

Punca Air & Syor

Sungai
Menjalankan penilaian kesan perubahan iklim bagi sungai-sungai utama

Kawasan pantai
Menjalankan program jangka panjang pengukuran gelombang bagi pantai Malaysia untuk menyokong penyelidikan tentang kesan ribut pusuan dan pola gelombang kepada pantai

Menjalankan pemerhatian jangka panjang bagi evolusi pantai semula jadi yang disebabkan oleh ribut pusuan dan pola gelombang

Menjalankan penyelidikan bagi mengenalpasti kaedah terbaik untuk melaksana perhutanan semula di persisir pantai

Menerima pakai dasar yang memerlukan semua pembangunan pantai berpandukan Pelan Pengurusan Pesisir Pantai Bersepadu (ISMP)

Menyediakan sumber kewangan untuk membangunkan ISMP untuk pantai di negara ini dan mengenalpasti cara untuk memastikan pematuhan dengan syor ISMP seperti pelaksanaan Undang-Undang Kawalan Pembangunan

Tasik
Melaksana strategi pengurusan tasik yang dibangunkan oleh ASM dan NAHRIM pada 2011 yang diguna pakai oleh Kementerian Sumber Asli dan Alam Sekitar dan disahkan oleh Majlis Sumber Air Negara (MSAN) pada 2012

Air bawah tanah
Melaksana strategi pengurusan air bawah tanah yang dibangunkan oleh NRE dan disahkan oleh MSAN pada 2008. Yang menjadi keutamaan adalah penilaian sumber air bawah tanah yang lebih terperinci di seluruh negara.

Perkhidmatan Air & Syor

Pertanian dan Saliran Bekalan Air
Melaksanakan langkah-langkah dan strategi untuk meningkatkan kecekapan pengairan di lapan kawasan jelapang padi

Mewujudkan sistem amaran awal untuk memantau perubahan dalam hasil padi dan tanaman kontan, menggalakkan penuaian air hujan di peringkat ladang, pengurusan air tanah dan penambahbaikan saliran

Menjalankan R&D untuk mengenalpasti jenis tanaman tahan banjir dan sistem saliran pertanian perlu direka untuk kecekapan mengawal jadual air dan membuang air banjir dari tanah pertanian secepat mungkin

Menjalankan R&D untuk meningkatkan unjuran pemodelan tanaman

Menjalankan R&D untuk tanaman yang mampu bertahan kepada keadaan kemarau

Kuasa hidro
Menjalankan pengurusan kawasan tadahan jangka sederhana dan panjang di kawasan tadahan dengan skim kuasa hidro untuk memastikan *runoff* yang mencukupi untuk penjanaan kuasa hidro

Menggalakkan pelaksanaan kebangsaan panel solar bumbung yang disambung grid yang berkaitan untuk mengurangkan risiko gangguan dan menambah keperluan kapasiti kuasa hidro

Ekosistem Air
Mewujudkan sistem inventori kebangsaan untuk tanah lembab di mana maklumat asas berkenaan tanah lembab termasuk maklumat pemantauan yang tetap dapat diperoleh

Menjalankan kajian berkenaan kepentingan tanah lembab untuk mengenalpasti parameter fizikal dan biologikal yang terkesan dengan perubahan iklim

Mewujudkan program pemantauan untuk mengenalpasti kesan perubahan iklim kepada tanah lembab



Air – bahaya dan akibatnya & Syor

Bekalan Air yang boleh diminum (Pengurusan Sumber)
Melaksanakan prinsip dan pendekatan Pengurusan Sumber Air Bersepadu (IWRM) dan Pengurusan Lembangan Sungai Bersepadu (IRBM) dalam merancang guna tanah untuk melindungi kawasan tadahan bekalan air

Membangunkan strategi jangka panjang bagi pengurusan sumber air untuk menjamin keselamatan air

Keperluan bagi negeri yang kaya dengan sumber air untuk melindungi kawasan tadahan air dan membangunkannya untuk dieksport kepada negeri yang mengalami kekurangan air

Bekalan Air yang boleh diminum (Pengurusan Permintaan)
Mewujudkan sekretariat IWRM di peringkat negeri dan kebangsaan, selaras dengan Dasar Sumber Air Kebangsaan, untuk membangunkan strategi, melaksana, memantau dan melapor perkembangan perlaksanaan prinsip IWRM secara tetap, termasuk pendekatan berasaskan sektor bertema bersepadu berdasarkan prinsip IWRM seperti IRBM, Pengurusan Banjir Bersepadu

Mengkaji semula pelan pembangunan infrastruktur sumber air masa kini dan masa hadapan yang telah disyorkan dalam kajian NWRP, untuk menunjang pelan kelestarian penggunaan air per kapita yang disasarkan menjadi tanda aras dengan pencapaian negara lain



Melaksanakan dasar perancangan kapasiti bekalan air berdasarkan sasaran, nilai kelestarian permintaan air per kapita dan memastikan perancang bekalan air, operator dan perunding menyedari kewujudan dasar berkenaan supaya perancangan dan operasi infrastruktur bekalan air adalah berdasarkan keperluan

Suruhanjaya Perkhidmatan Air Negara (SPAN) perlu menetapkan syarat kepada pembekal bekalan air untuk membangunkan dan melaksanakan Pelan Keselamatan Air (WSP). Ia akan meningkatkan keyakinan pengguna terhadap kualiti air yang dibekalkan

SPAN untuk menubuhkan Badan Bertindak Pengurusan Permintaan Air untuk mengenalpasti sasaran, nilai kelestarian permintaan air per kapita

SPAN untuk membangunkan struktur insentif kewangan dalam memastikan pembekal bekalan air memperoleh keuntungan daripada peningkatan prestasi bekalan air

Membangunkan strategi untuk meningkatkan kemampuan sistem bekalan air untuk menampung unjuran peningkatan kebolehubahan pengaliran sungai kesan perubahan iklim

Banjir
Jabatan Pengairan dan Saliran (JPS) Malaysia perlu mengemaskini Prosedur Hidrologi mengenai rekabentuk penurunan hujan dan musim banjir termasuk unjuran rekabentuk penurunan hujan.

JPS untuk mengemaskini rekabentuk penurunan hujan dalam Manual Saliran Mesra Alam (MSMA) termasuk unjuran rekabentuk penurunan hujan.

JPS untuk mengemaskini Laporan Kajian Banjir 2003 dan menghasilkan peta banjir terkini, termasuk peta petunjuk banjir bagi unjuran penurunan hujan

Kekurangan air dan kemarau
Meningkatkan kecekapan penggunaan dan produktiviti air dalam setiap sektor

Membangunkan sistem pembangunan kemarau bersepadu berdasarkan prosedur terkini pengurusan kemarau terbitan Majlis Keselamatan Negara (MKN).

Kesihatan manusia
Bangunan kalis-Aedes untuk mengurangkan wabak denggi

Menggunapakai pemetaan remote sensing kawasan vektor malaria

“Hanya kira-kira 30% pelajar memilih aliran sains - KPM, 2013”

Pendidikan Sains

ASM menyokong sepenuhnya 5 aspirasi dan 6 ciri utama seperti yang dinyatakan dalam Pelan Pembangunan Pendidikan Malaysia (2013 - 2025) yang dilancarkan oleh YAB Timbalan Perdana Menteri, Tan Sri Muhyiddin Yassin pada bulan September 2013.

Kajian Pelaksanaan Pendidikan Sains melalui Amalan Inkuiri (IBSE)

ASM amat mengambil berat tentang kemerosotan minat di kalangan pelajar Malaysia dalam jurusan sains dan matematik walaupun dasar “60-40” bagi pelajar dalam mata pelajaran aliran sains di sekolah menengah telah dilaksanakan sejak tahun 1967.

Kajian ASM bertajuk “ Pengajaran dan Pembelajaran Sains dan Matematik di Sekolah-sekolah - Ke arah Malaysia yang Lebih Kreatif dan inovatif” mengesyorkan bahawa salah satu strategi untuk menangani kemerosotan minat dalam bidang sains dan matematik adalah untuk mengambil pendekatan *“hands-on”* dan berasaskan amalan untuk pengajaran dan pembelajaran sains dan matematik. Pendekatan ini melibatkan peralihan daripada sistem berorientasikan peperiksaan dan hafalan ke pendidikan sains melalui *Inquiry-based Science Education* (IBSE).

ASM berpendapat bahawa pemikiran kritis adalah salah satu kemahiran yang amat diperlukan dalam menguasai sains dan matematik. Oleh itu , pemikiran kritis perlu dipupuk dari usia muda untuk mengelakkan kaedah hafalan - dengan menerapkan kemahiran berfikir secara analitikal. Cabaran di sini adalah mempersiapkan guru-guru dengan latihan yang betul , dari segi kecekapan dan sikap untuk membentuk pelajar ke arah kemahiran pemikiran kritis. Pendekatan IBSE memudahkan pengajaran dan pembelajaran sains dan matematik secara kreatif serta inovatif.





Sumber: National Education Blueprint 2013 - 2025

SEKILAS

Pemikiran secara kritis didefinasikan sebagai “suatu proses pemikiran intelektual yang mahir dalam membentuk gagasan, menerapkan, menganalisa, mensintesis , dan / atau menilai maklumat yang dikumpulkan atau terhasil melalui pemerhatian, pengalaman, refleksi, pertimbangan atau komunikasi, sebagai panduan kepada kepercayaan dan tindakan.”

Source: www.criticalthinking.org

HALAMANFAKTA

Kajian rintis IBSE selama 2 tahun

2 kelas daripada setiap sekolah di daerah Hulu Langat, Selangor telah dipilih bagi Kajian ini;

SK Seksyen 7, Bandar Baru Bangi;
SK Seri Putra, Bandar Seri Putra;
SK Semenyih, Semenyih; and
SK Tasik Kesuma, Bandar Tasik Kesuma

5 bengkel latihan telah diadakan untuk guru-guru yang dipilih dengan penyertaan Pusat Serantau Pendidikan Sains dan Matematik (RECSAM).Laporan Kajian dijangka siap pada April 2014 dan akan dikemukakan kepada Kementerian Pelajaran Malaysia untuk pertimbangan.

PENENTUARAS GLOBAL

Finland sering dijadikan sebagai model untuk pengajaran dan pembelajaran diperingkat sekolah rendah dan menengah. Guru-guru yang berkualiti adalah lambang kejayaan sistem pendidikan Finland. Kerjaya Perguruan di Finland, adalah profesion “yang paling dihormati ” dan menjadi guru di sekolah rendah adalah kerjaya yang paling dikehendaki. Di Finland , guru adalah profesional yang dipilih daripada 10 peratus graduan terbaik negara, untuk dipilih mengikuti ijazah sarjana dalam pendidikan. Hampir 30 peratus kanak-kanak Finland menerima beberapa jenis bantuan khas sepanjang sembilan tahun pertama mereka di sekolah. Mengikut penunjuk piawaian antarabangsa, pada tahun 2009, Finland berada dalam kedudukan pertama pemeringkatan global PISA dalam kategori matematik , sains dan membaca, dan pada tahun 2012, Finland masih mengekalkan kedudukan kesepuluh.

Sumber: http://www.learningfirst.org
http://energizestudents.org

Perancangan Science Outlook 2014

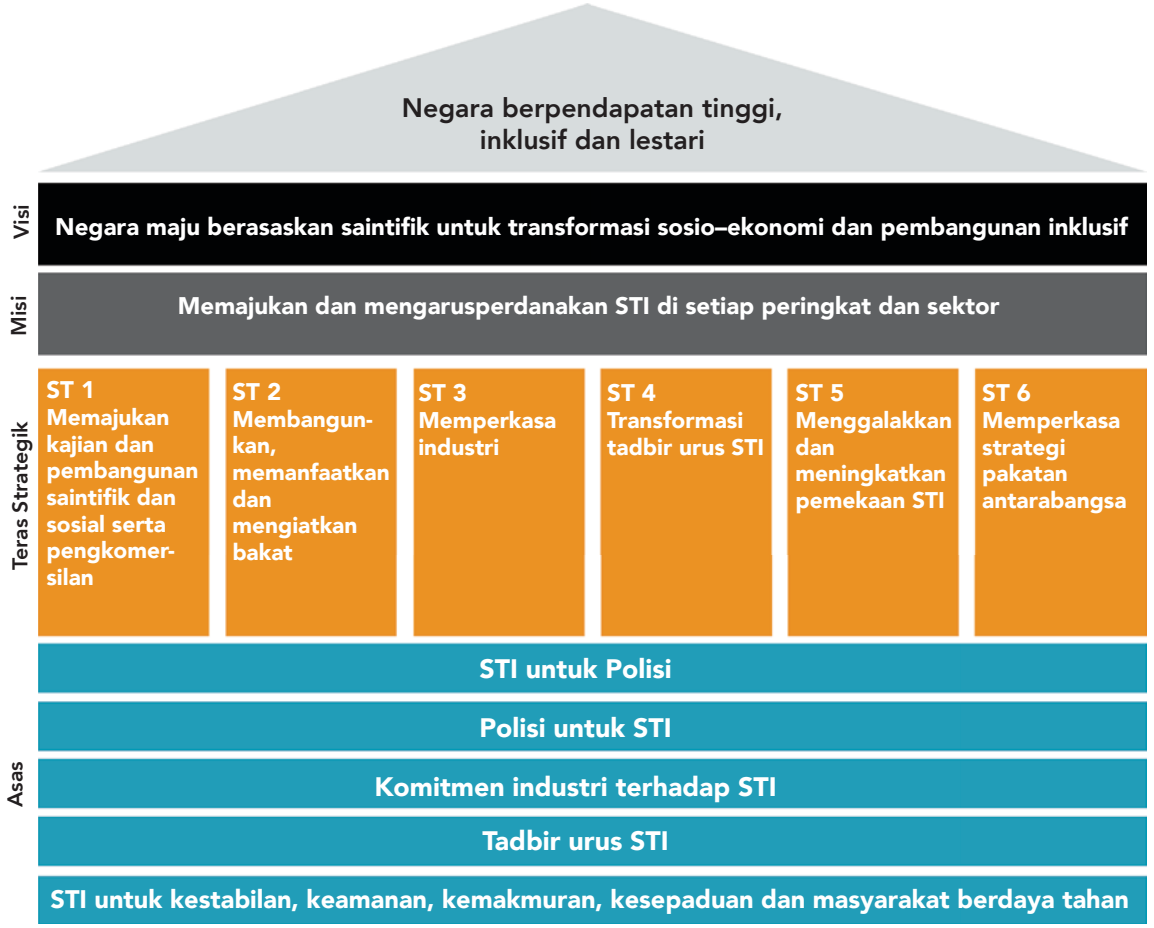
Science Outlook bertujuan memaklumkan pihak yang berkepentingan dan pembuat dasar yang bertanggungjawab untuk kemajuan STI, mengenai pembangunan baru dan perubahan yang dijangka dalam tren sains, teknologi dan inovasi yang berkaitan dengan kemungkinan implikasi semasa dan masa depan untuk pembangunan STI negara berdasarkan keadaan kewangan dan ekonomi sedia ada di peringkat global dan kebangsaan.

Usaha ini adalah penting dalam membantu pihak yang berkepentingan untuk mengembangkan gambaran keseluruhan di sebalik isu-isu politik, alam sekitar, ekonomi dan sosial, bukan sahaja di Malaysia tetapi juga di Amerika, Eropah, Asia Pasifik, Timur Tengah dan Benua Afrika.

Dengan memanfaatkan pelbagai sumber maklumat, aspek-aspek semasa S & T, dan potensinya boleh dikenal pasti di dalam membuat strategi untuk projek nasihat menyeluruh. Maklumat daripada proses horizon yang berterusan telah disediakan melalui buletin dan Science Outlook 2014, yang akan diterbitkan pada penghujung 2014.

Fokus *Science Outlook* berasaskan kepada Enam Teras Utama Dasar Sains, Teknologi dan Inovasi Nasional ke-III seperti yang tertera di gambarajah.

Science Outlook menawarkan pemahaman mengenai pencapaian 6 teras strategik yang dinilai berdasarkan penunjuk yang dikenalpasti. Ianya bertujuan menjadi rujukan utama kepada pengubal dasar, pemimpin S&T, industri dan penyelidik dalam menilai tahap STI global dan nasional serta merancang pelan tindakan dan strategi jangka panjang.



Pencetusan Idea

Pada tahun 2013, dalam usaha untuk memahami dengan lebih baik impak aspek asas sains sosial ke atas dasar sains, dua inisiatif telah dilancarkan:

Science Enterprise dan Politik

Inisiatif ini bermula dengan mengimbas korelasi di antara perbelanjaan kasar ke atas R & D (GERD) dengan H-Indeks ahli sains di 15 buah negara. Maklumat yang diperolehi menunjukkan korelasi positif di antara kesan H-Indeks dan kecenderungan pembuat dasar untuk lebih melabur pada aset awam (GERD) dalam pembangunan sains dan teknologi. Ia juga dirujuk kepada penglibatan yang kukuh di antara ahli-ahli sains dan pembuat dasar.

Dalam tahun-tahun kebelakangan ini, banyak akademi sains menjadi lebih proaktif dalam melibatkan penggubal undang-undang (Ahli Parlimen) bagi menjalin perhubungan persefahaman. Di sesetengah negara, terdapat sekurang-kurangnya satu Ahli Parlimen memperjuangkan S & T dalam forum awam. Di negara-negara kurang maju, saintis mempengaruhi penderma / agensi antarabangsa untuk menggunakan kemajuan S & T di negara terbabit.

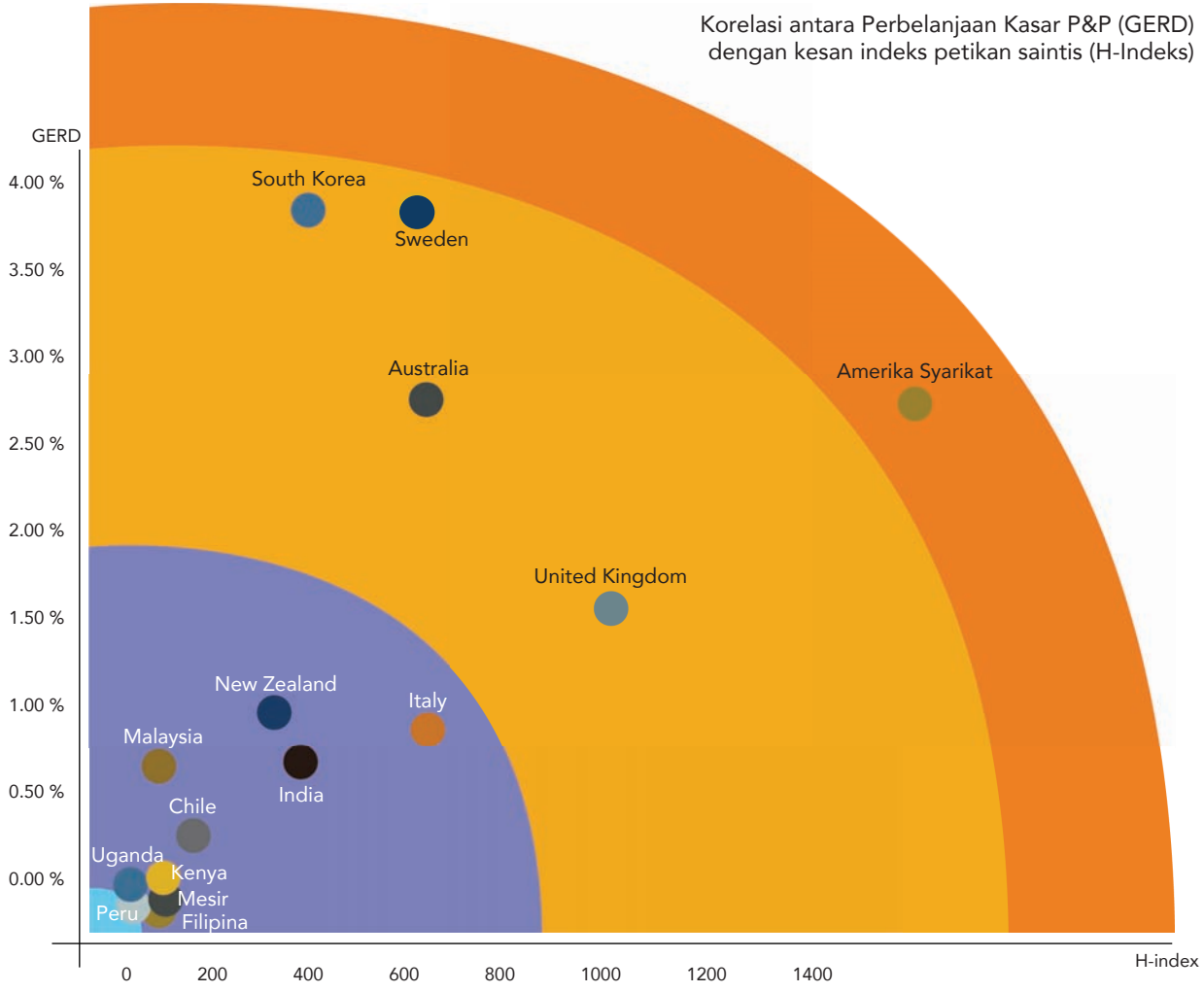
PENENTU ARAS GLOBAL

Menyedari kepentingan perlunya satu platform dialog diantara penggubal undang-undang (MP) dan saintis untuk pembangunan STI, Royal Sociaety di UK telah memulakan Skim Gandingan MP atau Saintis semenjak tahun 2001. Salah satu komponen skim ini adalah lawatan bersaling, dimana MP atau penjawat awam akan melawat ke fasiliti penyelidikan saintis unggul, dan sebaliknya, saintis juga akan memerhati kerja-kerja yang dijalankan oleh MP dan penjawat awam dalam membuat keputusan serta menyelesaikan masalah di dalam kawasan parlimen masing-masing.

Royal Society juga menganjurkan lawatan selama seminggu ke Westminister dan antara pengisiannya adalah majlis resepsi oleh ahli Parliamen, seminar mengenai prosiding parlimen dan penyertaan mesyuarat di parlimen. Maklum balas yang diterima amat positif, di mana jumlah gandingan meningkat dari 6 (2001) kepada 30 (2012). Kejayaan Skim ini telah memberi inspirasi kepada Uganda dan Kenya untuk menganjurkan program yang serupa. Ini membuktikan bahawa adalah tidak mustahil untuk menghubungkan antara dunia saintis dan politik.

Sumber: royalsociety.org

Korelasi antara Perbelanjaan Kasar P&P (GERD) dengan kesan indeks petikan saintis (H-Indeks)



Zon dan penerangannya

- Kurangnya pemahaman dan penghayatan awam dalam S&T
- Kumpulan yang sangat rendah dalam modal insan S&T untuk memulakan advokasi
- Tiada pakar sains atau sokongan am untuk S&T

- Pemahaman dan penghayatan minimum orang awam
- Pengaruh kumpulan penyokong, NGO atau akademi sains rendah
- Kurang perbincangan mengenai sains di bidang awam

- Penduduk secara amnya memahami dan menghayati S&T
- Isu S&T sering dibahaskan di bidang awam
- Ahli-ahli politik yang terkenal memperjuangkan agenda S&T
- Akademi sains mempunyai akses dan pengaruh dalam perbahasan awam

- Penduduk secara amnya memahami and menghayati S&T, menghargai penglibatan politik dalam nilai sainstis
- Setiap cabang kerajaan disokong oleh kumpulan penasihat S&T
- NGO dan persatuan S&T proaktif
- ASM memberikan input sains berasaskan bukti dalam taklimat dan undang-undang

HALAMANFAKTA

1 mesyuarat bersama unit penyelidikan parlimen

2 sesi percambahan dengan Ahli Parlimen (Perhimpunan Tahunan ASM dan *ideaXchange*)

Science Enterprise dan Al-Quran

Terdapat bukti bahawa banyak penemuan saintifik telah diwahyukan di dalam al-Quran. Program ini merupakan satu cubaan untuk menjadikan ianya proaktif dengan meneroka idea-idea yang belum diterokai dalam bidang sains yang disebutkan di dalam al-Quran. Dengan inisiatif ini, idea-idea boleh ditukar melalui penyelidikan asas bagi pengkomersilan produk atau perkhidmatan yang berguna perkhidmatan melalui penubuhan perusahaan saintifik.

Dalam usaha untuk membentuk satu konsortium sains untuk inisiatif ini, Akademi bekerjasama dengan Universiti Sains Islam Malaysia (USIM) dan Institut Kefahaman Islam Malaysia (IKIM). Dengan kesedaran yang mendalam tentang kerja-kerja oleh sarjana Islam, projek ini bertujuan untuk menyediakan asas yang kukuh untuk pelan tindakan strategik oleh penggali manuskrip lama untuk menerajui
penyelidikan lestari yang relevan dan boleh diguna pakai untuk manfaat masyarakat, negara & umat manusia, secara keseluruhanya. Akademi ini akan membentuk satu platform yang rasmi di bawah agenda sains konsortiumnya.

Pencapaian yang dijangka daripada konsortium saintifik termasuk:

1. Satu pangkalan data semantik bersepadu mengenai kesan-kesan kesihatan daripada madu (kedua-dua aqli dan naqli)
2. Penerbitan akademik dalam jurnal diindeks atau kesan dan buku-buku atau Bab dalam buku-buku
3. Projek ini juga akan menghasilkan laporan yang mencadangkan idea-idea bagi penerokaan baru dalam penyelidikan, yang akan menjadi asas bagi merangka pelan hala tuju penyelidikan Sains Islam untuk manfaat masyarakat, negara dan umat manusia.

SEKILAS

Pada awal 2013, satu lawatan sambil belajar ke UK telah dijalankan untuk menyelidik aktiviti-aktiviti semasa yang mengkaji manuskrip Saintis Islam. Pada tahun ini juga, satu mesyuarat telah diadakan diantara ketiga-tiga pihak untuk menetapkan arah kerjasama ini. Adalah dipersetujui bahawa dalam fasa pertama, diketuai oleh USIM, kerjasama ini akan menubuhkan rangka kerja pengetahuan yang sistematik dan holistic mengenai rejim pemakanan Nabi; kedua-dua dalam pemuliharaan kehidupan dan rawatan penyakit, menerusi kajian sistematik bersepadu terhadap ilmu naqli dan aqli.

HALAMANFAKTA

Euro Research Council (ERC)
Kesatuan analisis Bahasa Arab mengenai *'Hippocratic Aphorisms'* (ringkasan penyataan prinsip)

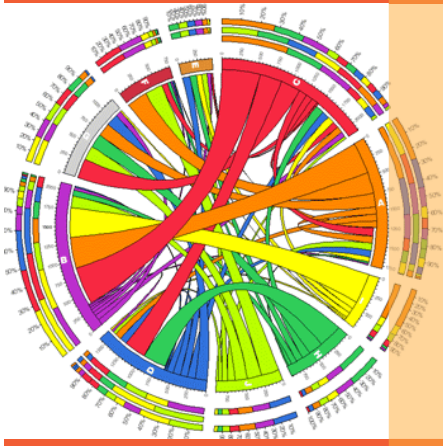
Penterjemahan & analisis manuskrip dari Ancient Near Eastern herbals (Arab, Yunani, Syiria, Babylon

Mewujudkan pangkalan data yang menyenaraikan manuskrip mengenai falsafah Islam dan teologi dari Abad ke 13 hingga 16.

British Library
Pedigitalan manuskrip
(Arab, Parsi, Asia Tenggara, India)

The Warburg Institute, University of London
Kesan Falsafah Islam Tradisional terhadap Teori dan Pengamalan Perubatan, Perubatan Batin dan Etika didalam Perubatan.





Analisis kebarangkalian dan data menunjukkan aplikasi matematik dalam kehidupan harian



Unsur-unsur nadir bumi.



Perlombongan nadir bumi.

Penjelmaan Teknologi Baru

Nadir Bumi – Sumber Baru dalam Pembangunan Ekonomi di Malaysia

Kekangan sumber bekalan nadir bumi dunia selain dari Negara China bukan disebabkan oleh kekurangan sumber mineral yang boleh dilombong, tetapi disebabkan oleh kekurangan kepakaran teknologi pemisah dan kapasiti penapisan.

Dengan perkembangan yang tertumpu kepada ekonomi hijau di peringkat global, permintaan terhadap nadir bumi dunia, khasnya untuk nadir bumi berat dan produk hiliran hijau bersekutu akan semakin berkembang. Kedudukan produk teknologi hijau dalam semua aktiviti manusia berkembang dengan pesat. Memandangkan reaksi dunia terhadap pengurangan eksport nadir bumi oleh China, peluang perniagaan dalam industri nadir bumi berat akan lebih menguntungkan pada tahun-tahun akan datang.

Dalam menuju ke arah permintaan terhadap produk pengguna nadir bumi yang berasaskan teknologi hijau, Badan Bertindak Nadir Bumi ASM telah ditubuhkan untuk membangunkan "Rangka Tindakan Industri Nadir Bumi di Malaysia". Objektif utama bagi inisiatif ini adalah untuk menyediakan satu rangka tindakan yang menggariskan faedah bagi mewujudkan dan membangunkan industri nadir bumi berskala penuh di Malaysia dalam sektor hiliran atas, pertengahan dan bawah (termasuk mengenalpasti keperluan pembangunan kapasiti).

HALAMANFAKTA

Dalam membangunkan Rangka Tindakan tersebut, Badan Bertindak telah membuat lawatan ke organisasi tempatan dan antarabangsa untuk mengumpulkan maklumat relevan dan menjalankan analisis kualitatif yang terperinci terhadap keperluan industri penyelidikan dan pembangunan, bakat dan peningkatan kapasiti untuk Rangka Tindakan:

1. Korea Institute of Rare Metal
2. Samsung SDI Co. Ltd. Cheonan Plant
3. Korea Institute of Geoscience and Mineral Resources
4. National Institute for Material Science (NIMS), Japan
5. Geological Survey of Japan Advanced Industrial Science and Technology (AIST), Japan
6. Centre for Social Responsibility in Mining, University of Queensland
7. University of Western Australia
8. Central Institute of Technology, Australia
9. Commonwealth Scientific and Industrial Research Organisation (CSIRO)
10. Department of Mines and Petroleum Western Australia
11. Polytechnic West – Carlisle Campus
12. TAFE College, Seremban
13. Selinsing Gold Mines, Pahang
14. Edubest Resources Sdn. Bhd., Pahang
15. Aras Kuasa Sdn. Bhd., Pahang

Akademi telah menganjurkan aktiviti-aktiviti seperti berikut:

1. Persidangan Antarabangsa mengenai Nadir Bumi
2. Seminar on the Potential Economic Returns of Rare Earth Industries in Malaysia – A New Source of Green Economic Growth
3. Workshop on Blueprint for the Establishment of Rare Earth Industries in Malaysia – A Strategic New Source for Economic Growth

FACTSHEET

- 2010, **US$2½ bilion – US$3 bilion** nilai pasaran global nadir oksida bumi
- 2011, **US$10 bilion – US$15 billion** nilai pasaran global nadir oksida bumi
- 2013, **US$3 bilion – US$5 bilion** global nilai pasaran global nadir oksida bumi

Permintaan untuk elemen nadir bumi yang berat dijangka meningkat disebabkan bekalannya yang terhad dengan catuan perbelanjaan dari lombong-lombong di negara China, disebabkan China berusaha keras membanteras perlombongan haram dan penggunaan cerucuk untuk kepentingan sendiri.

(Sumber: Kingsnorth, 2013)

Dari segi bahan nadir bumi yang digunakan dalam pembuatan magnet kekal (yang mana elemen nadir bumi berat digunakan), adalah dijangka pasarannya akan bernilai sebanyak USD $18.8 bilion pada tahun 2018.

(Sumber: www.marketsandmarkets.com)

Perundingan STI

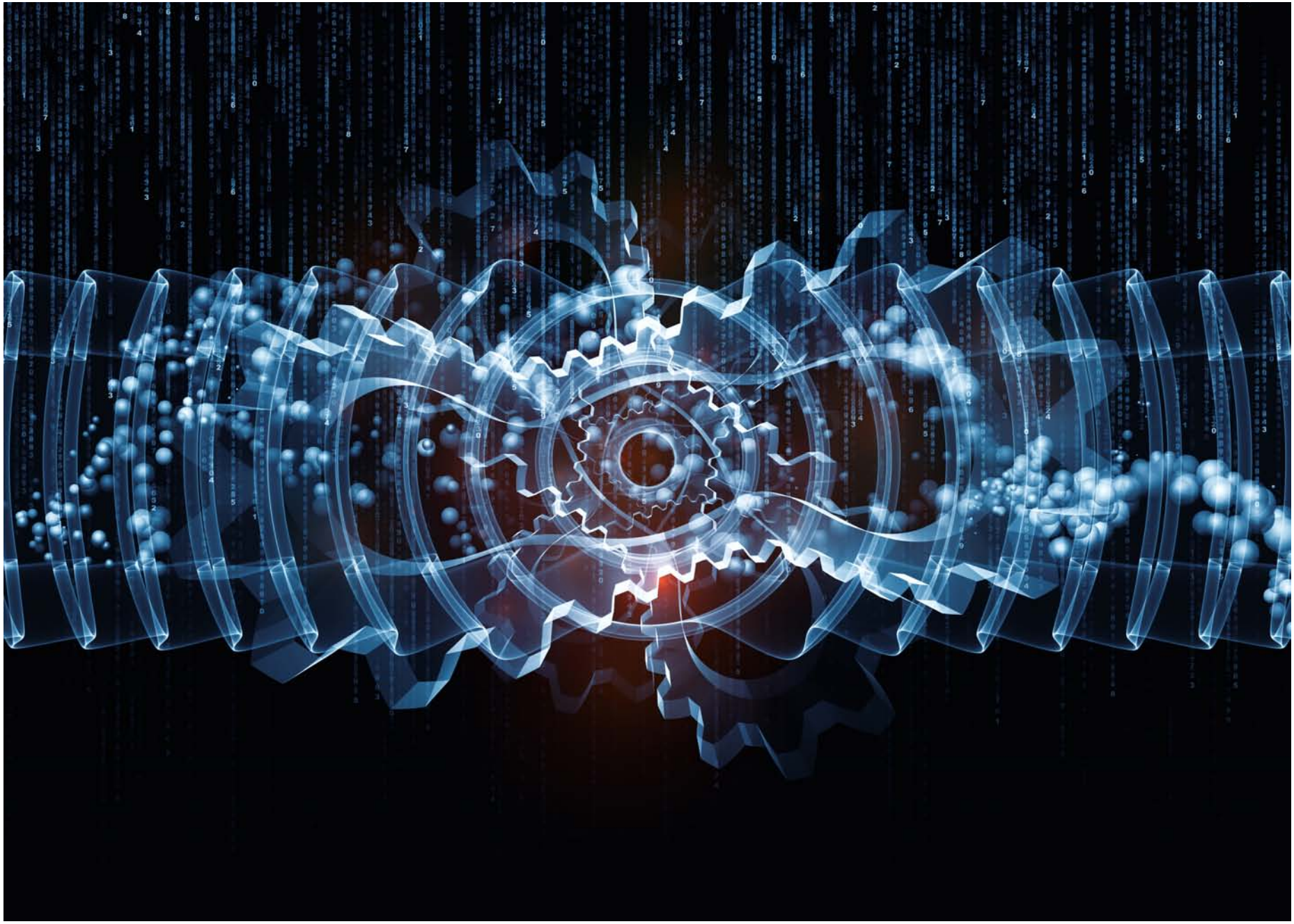
ASM menggunakan sumber dalamannya khususnya kumpulan pakar ASM dan hubungan antarabangsa dalam memberi perkhidmatan perundingan STI dan pandangan yang relevan berdasarkan analisis.

ASM telah menjalankan perundingan berikut pada tahun 2013:

(i) *"Status Report on Sustainability in Malaysian Palm Oil Industry"*
untuk *Malaysian Palm Oil Council (MPOC)*

(ii) *"Impact Assessment of Malaysian Research Universities (MRU) Data"*
untuk Kementerian Pelajaran Malaysia





02___MEMPERKASA KOMUNITI SAINTIFIK

——ASM memperkasakan komuniti saintifiknya melalui Program STI, melalui empat platform utama, iaitu pembangunan modal insan, konsortium sains, pengantara dan fora perundingan. Platform ini disasarkan untuk memudahcara elemen pengiktirafan, bakat dan pakatan kerjasama dalam landskap STI.



Pembangunan Modal Insan

Dalam dunia yang semakin kompetitif, pembinaan kapasiti STI merupakan suatu keperluan yang penting bagi Malaysia untuk terus bersaing. Dalam usaha menggalakkan pembangunan modal insan dalam bidang STI di Malaysia, ASM telah menganjurkan beberapa program yang memberikan tumpuan kepada peningkatan kemahiran insaniah para saintis, dan mengiktiraf bakat cemerlang mereka dalam penyelidikan dan pembangunan. Program-program ini juga bertindak sebagai platform untuk membuka peluang rangkaian di kalangan penyelidik.

Program Latihan

ASM menganjurkan bengkel latihan bagi meningkatkan kemahiran insaniah para saintis dan penyelidik seperti penulisan teknikal, kemahiran komunikasi, pedagogi dan latihan kemahiran amali dalam teknik-teknik penyelidikan. Program-program ini memupuk para penyelidik Malaysia untuk menjadi lebih kompeten dan berkeupayaan tinggi.

SEKILAS

8 sesi latihan dianjurkan dalam tahun 2013, iaitu:

- 2 sesi bengkel latihan "Penulisan Teknikal untuk Penyelidikan dan Penerbitan"
- 2 sesi bengkel latihan "Bagaimana Menulis Cadangan Penyelidikan yang Cemerlang?"
- Kursus Pendek berkenaan "Pasaran Karbon"
- Bengkel Pendidikan Antarabangsa berkenaan "Institut Pendidikan Terhadap Sains yang Bertanggungjawab"
- Kursus Latihan Pengurusan bagi Penyelidik di Negara-negara OIC yang ke-9, Sains, Teknologi dan Inovasi (STI)
- Bengkel Latihan ASM berkenaan "Sains Kewartawanan"

220

peserta antarabangsa menghadiri Program Latihan OIC sejak 2005

114

peserta dari Institusi Pengajian Tinggi

62

peserta dari Badan Penyelidikan

44

peserta dari agensi Kerajaan

10

peserta dari syarikat Swasta

Pembangunan Scientists Muda

Pembangunan Modal Insan merupakan cabaran utama yang dihadapi oleh Negara-negara membangun seperti Malaysia. ASM bekerjasama secara aktif dengan institusi dan organisasi STI antarabangsa untuk membangunkan saintis berkaliber tinggi yang berkebolehan mencapai pengikitirafan antarabangsa dan menyumbang kepada pembangunan STI global.

Program Cuti Semester CERN

Program ini menawarkan siswazah Fizik, Pengkomputeran dan Kejuruteraan peluang untuk menyertai pasukan penyelidikan yang mengambil bahagian dalam aktiviti teorikal dan eksperimen fizik zarah dan pengkomputeran di CERN di Geneva, Switzerland. Siswazah yang terpilih akan mendapat pendedahan budaya penyelidikan cemerlang melalui peluang bekerja di CERN yang mempunyai persekitaran pelbagai disiplin dan pelbagai budaya. Ini merupakan peluang keemasan untuk menjalin jaringan hubungan kerjasama yang berharga dan berkekalan dengan siswazah dan saintis dari seluruh pelusok dunia.

SEKILAS

- 33 peserta dari universiti tempatan dan pusat penyelidikan
- Siswazah yang dipilih untuk mengambil bahagian dalam Program CERN Musim Cuti Pelajar 2013, adalah Nurfikri Norjoharuddeen dari Universiti Malaya, Dhiyauddin Ahmad Fauzi dari Universiti Islam Antarabangsa Malaysia, dan Hoh Siew Yan dari Universiti Kebangsaan Malaysia.

Program *Young Physician Leaders*

Young Physician Leaders (YPL) adalah program tahunan yang dianjurkan oleh Inter Academy Medical Panel (IAMP). IAMP dengan kerjasama Akademik Pusat Kesihatan Perikatan M8 dan Universiti Perubatan di Asia, memilih 20 pemimpin dari 40 pencalonan dari kalangan doktor muda yang cemerlang. Pencalonan diterima dari ahli akademi IAMP di Asia, termasuk ASM dan dari ahli "Perikatan M8".

Calon-calon yang terpilih bagi tahun 2013 telah menghadiri World Health Summit di Berlin, Jerman. Mereka berpeluang untuk mendapatkan pementoran dari ahli-ahli IAMP, dan menyertai alumni khas Young Physician Leaders seluruh dunia untuk tujuan jaringan, mendapatkan sokongan bersama dan pementoran rakan sebaya.

Program ini memberi manfaat dalam pembangunan kepimpinan melalui pelbagai latihan dan perkongsian input dan pengalaman oleh kepimpinan kanan Pengerusi Bersama IAMP dan pemimpin saintifik yang lain. Mereka juga berpeluang untuk melawat *Bayer Science & Education Foundation.*

HALAMANFAKTA

- **4** saintis muda Malaysia telah menghadiri program sejak tahun 2011

Mesyuarat Saintis Muda bersama Pemenang Hadiah Nobel

Sejak tahun 2004, 46 saintis muda Malaysia telah bertemu dengan Pemenang Hadiah Nobel dalam bidang Fizik, Kimia dan Fisiologi atau Perubatan di Mesyuarat Saintis Muda di Lindau. Dialog antara generasi ini merupakan saluran terbaik untuk meningkatkan pengetahuan dan memperkukuhkan interaksi saintis muda dengan Pemenang Hadiah Nobel serta membina jalinan interaksi dengan rakan saintis muda dari seluruh dunia. Peserta Mesyuarat Lindau yang terpilih merupakan yang terbaik daripada institusi akademik dan penyelidikan diseluruh dunia.

46
Saintis Muda Malaysia menyertai mesyuarat sehingga kini

625
siswazah dan pascasiswazah dari 77 negara

34
orNobel Laureate bertemu di Lindau, 2013

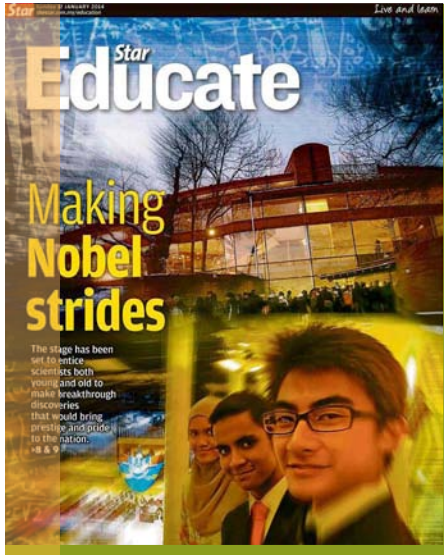
4
Saintis Muda Malaysia menyertai mesyuarat tahun ini

SEKILAS

Mesyuarat Lindau 2013, (khusus kepada Kimia) telah diadakan dari 29 Jun – 5 Julai 2013 di Lindau, Germany. Delegasi Malaysia diketuai oleh Academician Emeritus Professor Dato' Dr VG Kumar Das FASc.

Mesyuarat ini terdiri dari 34 ceramah, 9 sesi perbincangan, kelas master dan 3 perbincangan meja bulat bertemakan *'Chemical Energy Conversion and Storage'*, *'Why Communicate'* dan *'Green Chemistry'*.





Paparan pemenang NSC 2013 di *The Star*



Pasukan NSC 2013 separuh akhir: Pusingan *MyScience Race*

Penglibatan Sains

Aktiviti penglibatan sains bagi golongan dewasa muda membolehkan ASM menerapkan minat terhadap sains dan teknologi serta meningkatkan tahap penghargaan dan penghayatan terhadapnya di kalangan warga Malaysia.

National Science Challenge (NSC)

NSC adalah pertandingan sains yang dirangka untuk menggalakkan kefahaman, kesedaran dan penghayatan terhadap sains, kejuruteraan dan teknologi di kalangan pelajar sekolah menengah. Hadiah utama pertandingan ini termasuklah 'Trofi Cabaran Perdana Menteri, lawatan sambil belajar ke Stockholm, dan peluang untuk menyaksikan Majlis Penyampaian Hadiah Nobel.

Pertandingan ini dianjurkan dengan kerjasama ExxonMobil Subsidiaries Malaysia Incorporated, Kementerian Pendidikan Malaysia (MOE), YSN-ASM, dan Universiti Putra Malaysia (UPM).

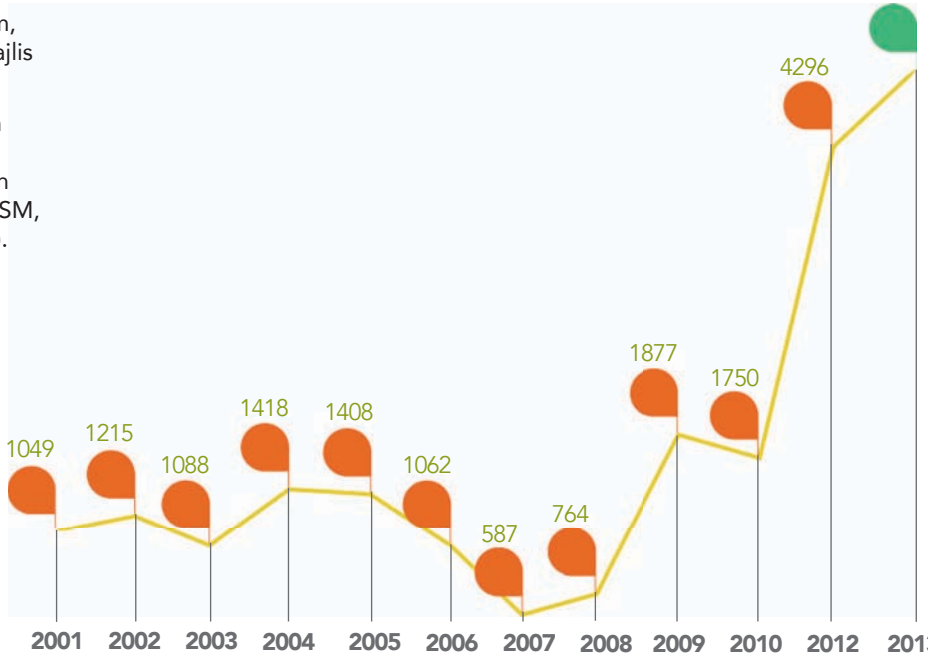
80
pasukan di peringkat negeri

16
pasukan di peringkat Separuh akhir

4
pasukan di peringkat akhir

2013
Pemenang NSC 2013 Kolej Yayasan Saad Melaka

4847
pasukan telah mengambil bahagian pada tahun 2013



Jumlah pasukan yang mengambil bahagian dalam Pertandingan National Science Challenge 2013

i-INOVA'13

Cabaran Inovasi 2013 (i-INOVA'13) adalah satu program di bawah program Inovasi Menyeluruh oleh MOSTI, dan ianya dianjurkan oleh ASM dengan kerjasama Universiti Sains Islam Malaysia (USIM) dan Universiti Sains Malaysia (USM). Program ini bertujuan untuk menggalakkan penciptaan produk inovatif bagi memenuhi keperluan semasa melalui pameran dan pertandingan. Ia disertai oleh institusi pengajian tinggi tempatan dan antarabangsa dan institusi penyelidikan.

HALAMANFAKTA

- **140** produk mengambil bahagian dan bertanding

Keputusannya adalah seperti berikut:
- **12** produk menerima Pingat Emas
- **16** produk menerima Pingat Perak
- **30** produk menerima Pingat Gangsa

7,000 orang telah menghadiri pameran yang terdiri daripada orang ramai, para penyelidik, pegawai kerajaan dan para NGO

Untuk maklumat lanjut, rujuk kepada www.i-inova2013.usim.edu.my

ScienceBuzz

Sciencebuzz.my menggalakan penghargaan terhadap sains melalui penyediaan maklumat sains dalam bentuk yang ringkas dan mudah difahami. Portal ini mensasarkan golongan dewasa muda yang berumur 13-40 tahun. Portal ini mengandungi artikel berunsur tempatan yang menerangkan fenomena dan aplikasi sains dalam kehidupan harian serta aktiviti untuk pelawat berinteraksi dan berbincang dengan saintis mengenai isu berkaitan sains.

SEKILAS

I'm a Scientist, Get Me Out Of Here merupakan program reality UK yang digunakan oleh Sciencebuzz. Pelajar dan saintis terpilih boleh berkomunikasi antara satu sama lain melalui perbincangan atas talian. Perbincangan bertema ini membolehkan pelajar memperolehi pengetahuan mengenai topic perbincangan.

ASM menganjurkan sesi ini dengan kerjasama Gallamanor Communications Ltd, UK.

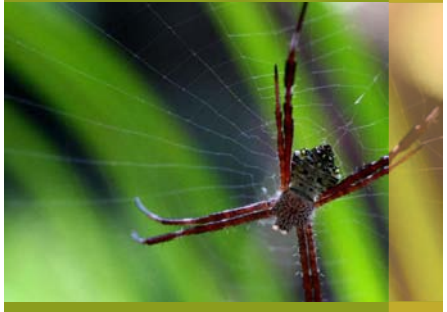
HALAMANFAKTA

- **22** artikel baru
- **34774** pelawat melihat artikel *'The Power of Karaoke'*
- **436** pelawat melihat gambar *'Spider Hearing'*
- **3** *memes* sains
- **42** penyertaan untuk pertandingan poster
- **7** sekolah dengan jumlah **223** pelajar dan **5** saintis menyertai *I'm a Scientist, Get Me Out Of Here*
- **4** *roadshows*

230,725 pelawat unik
278,128 jumlah pelawat
47,341 pelawat yang melawat semula



Rekaan poster, untuk artikel *The Power Of Karaoke* oleh Mohd Rafiuddin Dasuki Shaari.



'Spider Hearing'

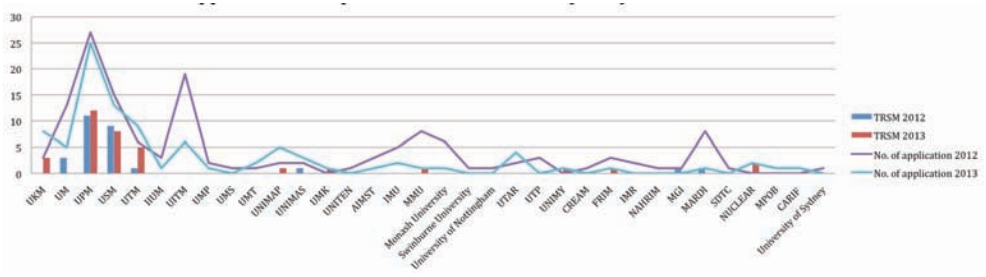
Pengiktirafan

Top Research Scientists Malaysia

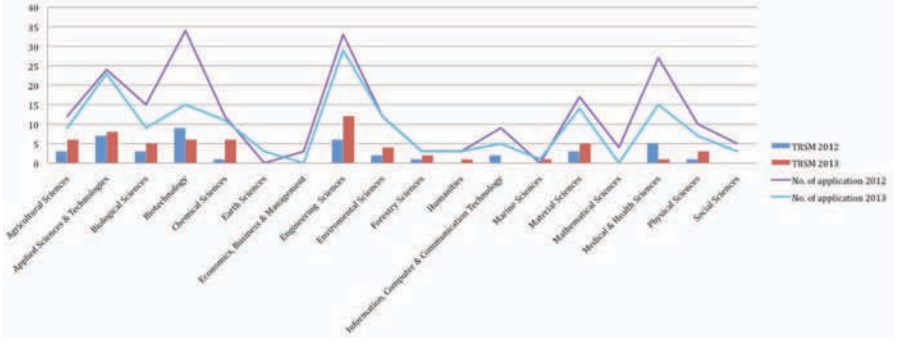
Program Top Research Scientists Malaysia (TRSM), merupakan pengkalan data saintis penyelidik Malaysia. Setiap tahun, ASM mengiktiraf saintis penyelidik yang mempunyai sumbangan yang cemerlang bagi 5 tahun kebelakangan di dalam bidang masing-masing.

Pengkalan data ini merupakan inisiatif ASM untuk membina budaya kecemerlangan di kalangan komuniti saintifik Malaysia.

ASM menyediakan peluang pencapaian geran penyelidikan *top down*, memudahcara penerimaan geran antarabangsa, penggunaan pusat kecemerlangan antarabangsa dan lain-lain peluang untuk meningkatkan taraf penyelidikan mereka. Mereka juga turut menjadi pakar rujuk bagi bidang kepakaran mereka.



Bilangan permohonan berbanding dengan TRSM terpilih mengikut institusi 2012 - 2013



Bilangan permohonan berbanding TRSM terpilih mengikut bidang kepakaran 2012 - 2013

HALAMANFAKTA

TRSM

- **35** saintis penyelidik terpilih di dalam pusingan pemilihan kedua (2013). Mereka dikenalpasti berdasarkan pencapaian dan prestasi yang cemerlang mewakili institusi penyelidikan dan pengajian tinggi.
- **62** saintis penyelidik telah diiktiraf sebagai *TRSM*.

Anugerah dan Geran Penyelidikan

Pemberian anugerah dan geran merupakan suatu pengiktirafan penting bagi para saintis tempatan dan antarabangsa kerana ia menggalakkan kajian saintifik bernilai merit yang mungkin akan membawa kepada penciptaan dan penyelesaian masalah tempatan dan global. Ini membolehkan Malaysia berada pada kedudukan yang strategik dalam arena saintifik global. ASM menggunakan kepakaran para Felo dalam menilai pelbagai anugerah dan geran.

Mahathir Science Award

Anugerah antarabangsa yang diberi oleh Mahathir Science Award Foundation (MSAF) bertujuan untuk mengiktiraf sumbangan yang unggul dalam perintisan penemuan penyelidikan tropika atau penyelesaian inovatif yang membawa kesan positif kepada kesejahteraan masyarakat dalam bidang Pertanian Tropika, Perubatan Tropika, Sumber Asli Tropika dan Senibina dan Kejuruteraan Tropika.

SEKILAS

Profesor Alan Cowman dari Walter and Eliza Hall Institute of Medical Research, Australia telah dianugerahkan Anugerah Sains Mahathir 2013 dalam bidang Perubatan Tropika. Beliau menerima pengiktirafan ini di atas kajian penyelidikan beliau yang inovatif terhadap Malaria yang telah membawa kepada pemahaman yang berkesan tentang patogenesis jangkitan dan pembangunan teknologi inovatif genetik berbalik Plasmodium falciparum, yang menggambarkan gen pertama yang terunggul untuk organisma ini.

Makna Cancer Research Award

Majlis Kanser Nasional (MAKNA) menyediakan anugerah kepada penyelidik muda Malaysia yang menjalankan penyelidikan berkaitan kanser. Anugerah ini bertujuan untuk menggalakkan penyelidikan kanser di kalangan saintis muda dan juga untuk meningkatkan penyertaan Malaysia dalam mencari penawar kanser. ASM telah terlibat dalam pelaksanaan pemilihan ini semenjak tahun 2002.

Anugerah Saintis Muda Negara

Anugerah Saintis Muda Negara mengiktiraf saintis muda Malaysia untuk sumbangan dan pencapaian mereka dalam penyeldikan dan pembangunan. Profesor Madya Dr M. Iqbal Saripan dari Universiti Putra Malaysia merupakan penerima bagi Anugerah Saintis Muda Negara 2013.

Anugerah Juruteknologi Negara

Kementerian Sains, Teknologi dan Inovasi (MOSTI) menganugerah juruteknologi dan tenaga separa profesional, seperti juruteknik dan pembantu makmal, di atas sumbangan dan pencapaian dalam bidang sains dan teknologi. Anugerah Juruteknologi Negara 2013 telah dimenangi oleh Norman Jamlus, dari Telekom Research & Development Sdn. Bhd

Anugerah Harta Intelek Negara

Anugerah ini diberikan oleh Kementerian Perdagangan Dalam Negeri, Koperasi dan Kepenggunaan (KPDNKK) melalui Perbadanan Harta Intelek Malaysia (My-IPO) untuk mengiktiraf pencipta atau pencipta harta intelek Malaysia di atas sumbangan mereka dalam bidang harta intelek, dalam pertumbuhan sosioekonomi negara bagi kategori organisasi dan paten. Seramai 2 Felo ASM telah dijemput untuk mewakili MOSTI sebagai panel penilai dalam pemilihan biasiswa itu.

HALAMANFAKTA

ANUGERAH

Mahathir Science Award

- **140** pencalonan dari tahun (2005 - 2013) **22** buah negara
- **8** penerima anugerah, dengan hadiah anugerah yang bernilai RM 1,200,000
- **29** pencalonan diterima dari **11** buah negara (2013)

Anugerah Saintis Muda Negara

- **38** saintis muda telah menerima anugerah ini
- **31** pencalonan diterima

MAKNA Cancer Research Award

- **345** permohonan (2001- 2013)
- **38** pemohon dianugerahkan geran bernilai RM 1,265,000
- **3** pemohon dianugerahkan geran bernilai sebanyak RM30,000 setiap satu pada 2013

Anugerah Juruteknologi Negara

- **1** penerima anugerah dari **5** pencalonan



Profesor Alan Cowman, pemenang MSA 2013, sedang meneliti piring petri yang mengandungi parasit malaria dalam darah manusia



Penilaian dana *ScienceFund*, *Community Innovation Fund (CIF)* dan *Aplikasi TechnoFund*

Geran penyelidikan yang dianugerahkan oleh MOSTI, diberikan kepada para saintis penyelidik dan para jurutera, kumpulan komuniti dan industry. Felo ASM telah terlibat dalam proses penilaian geran ini sejak tahun 2007.

Pemantauan Project *ScienceFund*, *Community Innovation Fund (CIF)*, *TechnoFund* dan Program *Flagship* yang diluluskan oleh Pasukan Pemantauan Projek ASM (PMT)

Projek ScienceFund, CIF dan TechnoFund yang telah diluluskan, dipantau oleh Pasukan Pengurusan Projek ASM (PMT) melalui bengkel pemantauan, mesyuarat dan lawatan tapak. Bagi urusan PMT, ASM bertanggungjawab untuk kelulusan pengagihan pembayaran projek berdasarkan fasa. Semua peruntukan yang diterima dari MOSTI (2007-2013) untuk pemantauan dan penilaian telah diuruskan mengikut garis panduan MOSTI.

HALAMANFAKTA

- **268** jumlah *ScienceFund*
- **5** *CIF*
- **12** projek *TechnoFund* telah dinilai oleh 42 Felo ASM dan *Associates*

HALAMANFAKTA

GERAN

Penilaian permohonan Geran MOSTI (2007-2013) oleh Felo ASM

- **1568** projek *ScienceFund*
- **55** projek *Community Innovation Fund (CIF)*
- **28** projek *TechnoFund*

Pemantauan projek-projek penyelidikan yang dibiayai oleh Geran MOSTI oleh Felo ASM (2007-2013)

- **380** projek *ScienceFund*
- **36** projek *CIF*
- **2** projek *TechnoFund*
- **1** program Perdana

Projek *ScienceFund* yang diketuai oleh Felo ASM.

- **2** projek telah diluluskan dan sedang berterusan. Topik penyelidikannya adalah:
  - *Geopolymer Cement from Ground POFA by Alkali Activation Method*
  - *Time Dependent Changes of Morphology and Molecular Characterization Around the Intracerebellar Haemorrhage (ICbH) Penumbra in C57B6/J Mice Brain Slices*

Pemantauan projek penyelidikan yang dibiayai oleh geran MOSTI oleh Felo ASM pada 2013

- **62** projek *ScienceFund*
- **5** projek *CIF*
- **2** projek *TechnoFund*
- **1** program Perdana
- **15** orang Felo ASM terlibat dalam pelaksanaan pemantauan ini.

Pengantara

Dalam abad ke-21, Sains menjadi suatu 'enterprise' global. Menurut laporan "The Knowlegde Networks and Nations Report on Scientific Collaboration in the 21st Century" oleh Royal Society jelas menunjukkan 7 juta saintis dan penyelidik yang didorong untuk berkerja dengan kumpulan dan kemudahan yang terbaik di dunia mencorakkan trend lanskap saintifik global.

Menyedari hal ini, ASM berfungsi sebagai pengantara bagi saintis tempatan untuk bekerjasama di peringkat global. Tujuannya adalah untuk memberi peluang kepada penyelidik Malaysia untuk berkongsi pengetahuan, membina kepakaran serta meningkatkan keupayaan sains dan teknologi. Ini membolehkan negara mengarus perdanakan agenda STI di peringkat global melalui kerjasama antarabangsa.

Usaha Malaysia untuk Menyertai Uji kaji *Compact Muon Solenoid CMS* di CERN

Presiden ASM telah bertemu dengan Ketua Pengarah CERN, Profesor Rolf-Dieter HEUER, dan telah mengadakan perbincangan ringkas mengenai usaha kerjasama di masa hadapan di antara CERN dan Malaysia. Langkah pertama ke arah ini adalah pencalonan Malaysia untuk menyertai kerjasama Compact Muon Solenoid (CMS) di CERN. Pada September 2013, Malaysia dipilih oleh Lembaga CMS sebagai ahli kolaborasi CMS. Ini telah membuka peluang yang besar bagi para penyelidik Malaysia untuk turut serta dalam penyelidikan usahasama dengan penyelidikan dengan para saintis, jurutera, dan ahli teknologi yang terlibat dalam penyelidikan canggih di CERN.

Pejabat Serantau ISTIC & ICSU

Dua organisasi STI antarabangsa ditempatkan di bawah ASM iaitu Pejabat International Council for Science Regional Office for Asia and the Pacific (ICSU-ROAP) dan International Science, Technology and Innovation Centre for South-South Cooperation under the Auspices of UNESCO (ISTIC). Melalui organisasi ini, ASM dapat memanfaatkan capaian sains antarabangsa dan memudah cara pembangunan STI di negara-negara selatan.

Felo ASM dijemput untuk berkongsi kepakaran dan pengalaman mereka di dalam aktiviti-aktiviti yang dianjurkan ICSU-ROAP dan ISTIC. Ini termasuklah dalam bidang dasar sains, pendidikan sains, wanita dalam sains, usahawan teknologi, tenaga, alam sekitar dan neksus kesihatan. Felo ASM turut dilantik sebagai ahli jawatankuasa projek ICSU-ROAP berkaitan Kesihatan dan Kesejahteraan Bandar.

SEKILAS

Anugerah Nobel 2013 dalam bidang Fizik telah dianugerahkan secara bersama kepada François Englert dan Peter Higgs bagi penemuan mekanisma teoretikal (yang diteorikan pada tahun 1964) yang menyumbang kepada pemahaman asal-usul jisim zarah subatom, yang telah disahkan pada tahun 2013 melalui penemuan zarah asas yang diramalkan, oleh ATLAS dan eksperimen CMS di CERN, *Large Hadron Collider*.

HALAMANFAKTA

Kajian berkaitan CMS

- **4300** ahli fizik zarah, jurutera, juruteknik, pelajar dan staf sokongan dari **182** institutions di **42** buah negara

Sumber: home.web.cern.ch/



Saintis Muda Mengukuhkan Rangkaian ASM

Young Scientists Network (YSN-ASM) berfungsi sebagai satu landasan untuk menggembeling saintis muda Malaysia yang cemerlang ke satu forum perundingan umum bagi memudahkan:

(i) peluang rangkaian dan kerjasama
(ii) pertukaran pengetahuan dan pandangan berkenaan sains, teknologi dan inovasi (STI) untuk mempengaruhi keputusan dasar bagi pembinaan negara
(iii) gabungan perwakilan suara saintis muda berkaitan isu STI yang penting kepada negara dan dunia antarabangsa
(iv) Pewujudan sekumpulan saintis muda yang amat berbakat dan bermotivasi, yang boleh berinteraksi, menyelaras dan melaksanakan program-program yang relevan untuk menyumbang ke arah peningkatan kapasiti STI dan keupayaannya di Malaysia.

YSN-ASM telah menganjurkan satu bengkel strategik untuk menyelaras aktiviti yang akan datang dan merasmikan keahlian 20 ahli baru YSN-ASM.

52
ahli YSN-ASM sehingga kini

11
Medical & Health Sciences

6
Chemical Sciences

7
Biological, Agricultural and Environmental Sciences

4
Mathematics, Physics and Earth Sciences

SEKILAS

Ahli YSN-ASM menyertai aktiviti berikut:

- *'Expert Workshop on the Global State of Young Scientists' Hannover,* Germany (12 - 15 Mei 2013)
- ASM *Roadshow: Top Research Scientists Malaysia, Young Scientists Network & Mahathir Science Award,* Universiti Malaysia Sabah (23 Julai 2013)
- ASM *Roadshow: Top Research Scientists Malaysia, Young Scientists Network & Mahathir Science Award,* Universiti Malaysia Sarawak (30 Ogos 2013)
- Penganjur bersama National Science Challenge 2013
- *International Seminar on Enhancing National Youth Policy: Incoperating Internationalization of Youth and Professionalising Youth Work,* Kuala Lumpur (30 September - 5 Oktober 2013)
- *'An Open World: Science, Technology and Society in the Light of Niels Bohr's Thoughts' Conference,* Copenhagen, Denmark (4 - 6 Disember 2013)
- Penganjur bersama *Science Journalism Workshop* (9 - 11 Disember 2013)
- Penganjur YSN-ASM 2013 *Strategic Workshop* (12 - 14 Disember 2013)

Penglibatan Bersama Akademi Sains Dunia

4 akademi terlibat dalam penganjuran 3 misi tinjauan dan 1 bengkel latihan untuk komuniti saintifik. Berikutan ini, beberapa inisiatif telah dimulakan oleh ASM, iaitu:

- *National Academy of Science Belarus* sebagai tumpuan utama dalam konsortium sains ASM untuk penyelidikan sains bahan.
- *Hassan II Academy of Sciences* and Technology, Maghribi, bagi program penyelidikan bersama dan pertukaran kepakaran dalam bidang tenaga boleh diperbaharui, dan pendidikan sains dan matematik.
- *Australian Academy of Technological Sciences and Engineering* untuk pembangunan modul pengajaran subjek kejuruteraan.
- Bengkel Pendidikan Antarabangsa tentang *"Educational Institute on Responsible Science"*, yang dianjurkan oleh *National Academy of Sciences (NAS)*, Amerika Syarikat. Bengkel ini bertujuan untuk membangunkan suatu rangkaian serantau yang terlatih untuk mengajar isu yang berkaitan dengan penyelidikan sains hayat.

HALAMANFAKTA

ASM mempunyai hubungan kerjasama dengan **51** akademi dunia dari **106**. Selain itu, ASM bekerjasama erat dengan **21** organisasi STI antarabangsa.

- **13** Fasilitator untuk Bengkel Pendidikan Antarabangsa (dilantik oleh *US National Research Council*):
  - **6** dari Amerika Syarikat, **1** dari UK, **1** dari Egypt, **2** dari Pakistan, **1** dari India & **2** dari Malaysia
- **19** peserta - **8** dari Pakistan, **7** dari India & **4** dari Malaysia

Konsortium Sains

Salah satu peranan ASM adalah menyediakan pelbagai landasan bagi komuniti saintifik Malaysia untuk berinteraksi dengan komuniti saintifik global dengan tujuan meningkatkan kapasiti sains, teknologi dan inovasi (STI) serta keupayaan dalam konteks sains dan teknologi melalui perkongsian ilmu pengetahuan dan kepakaran.

Konsep konsortium sains merupakan inisiatif ASM bagi memudahkan kerjasama penyelidikan dan meningkatkan pembangunan modal insan dalam sains asas dan sains gunaan melalui kerjasama antara pihak kerajaan, institusi penyelidikan, universiti dan pusat kecemerlangan global. Konsortium ini dilaksanakan dengan usaha penyelidikan bersama di peringkat kebangsaan, dalam bidang STI yang terpilih melalui satu pusat kebangsaan, yang akan menjadi penghubung utama dengan pusat antara institusi dan kerjasama antarabangsa dalam projek sains global.

Penubuhan Pusat Fizik Zarah Kebangsaan (NCPP)

Pusat Fizik Zarah Kebangsaan (NCPP) adalah pusat pertama yang ditubuhkan di bawah konsep konsortium sains, yang dianjurkan oleh Universiti Malaya.

ASM membuka peluang kepada para saintis tempatan untuk mengambil bahagian di dalam penyelidikan bersama kumpulan penyelidik Compact Muon Soleniod (CMS) di CERN melalui NCPP. Kumpulan Penyelidikan CMS ini disertai oleh para saintis daripada 42 buah negara.

Pada tahun 2013, ASM telah berjaya dalam usahanya untuk menyertai Kumpulan Penyelidikan CMS. Penyertaan ini telah memberi ASM peluang untuk mengisi jurang yang penting dalam senario penyelidikan di Malaysia terutamanya di dalam bidang Fizik.

Melalui perjanjian yang berasingan dengan universiti-universiti dan rakan kongsi atau institut penyelidikan yang berminat, pusat kebangsaan ini akan dapat memainkan peranan penting dalam pembentukan sebuah konsortium untuk penyelidikan fizik zarah di Malaysia. Pusat ini juga akan bertindak sebagai asas kerjasama dengan pusat-pusat antarabangsa yang lain untuk kajian fizik zarah.

SEKILAS

Dalam usaha untuk merasmikan penubuhan pusat itu, satu Memorandum Persefahaman (MoU) bagi Kerjasama Akademik telah ditandatangani antara ASM dan UM pada 27 Ogos 2013.

Kolaborasi Bersama KTH Royal Institute of Technology dan National Academy of Sciences of Belarus dalam bidang Sains Bahan

ASM memberi tumpuan kepada pemupukan budaya kecemerlangan dalam bidang sains, teknologi dan inovasi, memudahcara dalam pertukaran saintifik dan jaringan kerjasama dengan pusat kecemerlangan sains, teknologi dan inovasi (STI) terkemuka. Satu bengkel telah dianjurkan sebagai langkah permulaan kerjasama dengan KTH Royal Institute of Technology, Sweden. Sebuah misi khas ke Akademi Sains Kebangsaan Belarus (NASB) juga telah dianjurkan bagi membincangkan kemungkinan kerjasama di dalam bidang Sains Bahan. Tujuan perbincangan ini adalah untuk menubuhkan satu rangkaian kerjasama penyelidikan sains bahan yang membabitkan NASB, KTH Sweden, konsortium institusi pengajian tinggi dan institusi penyelidikan di Malaysia.

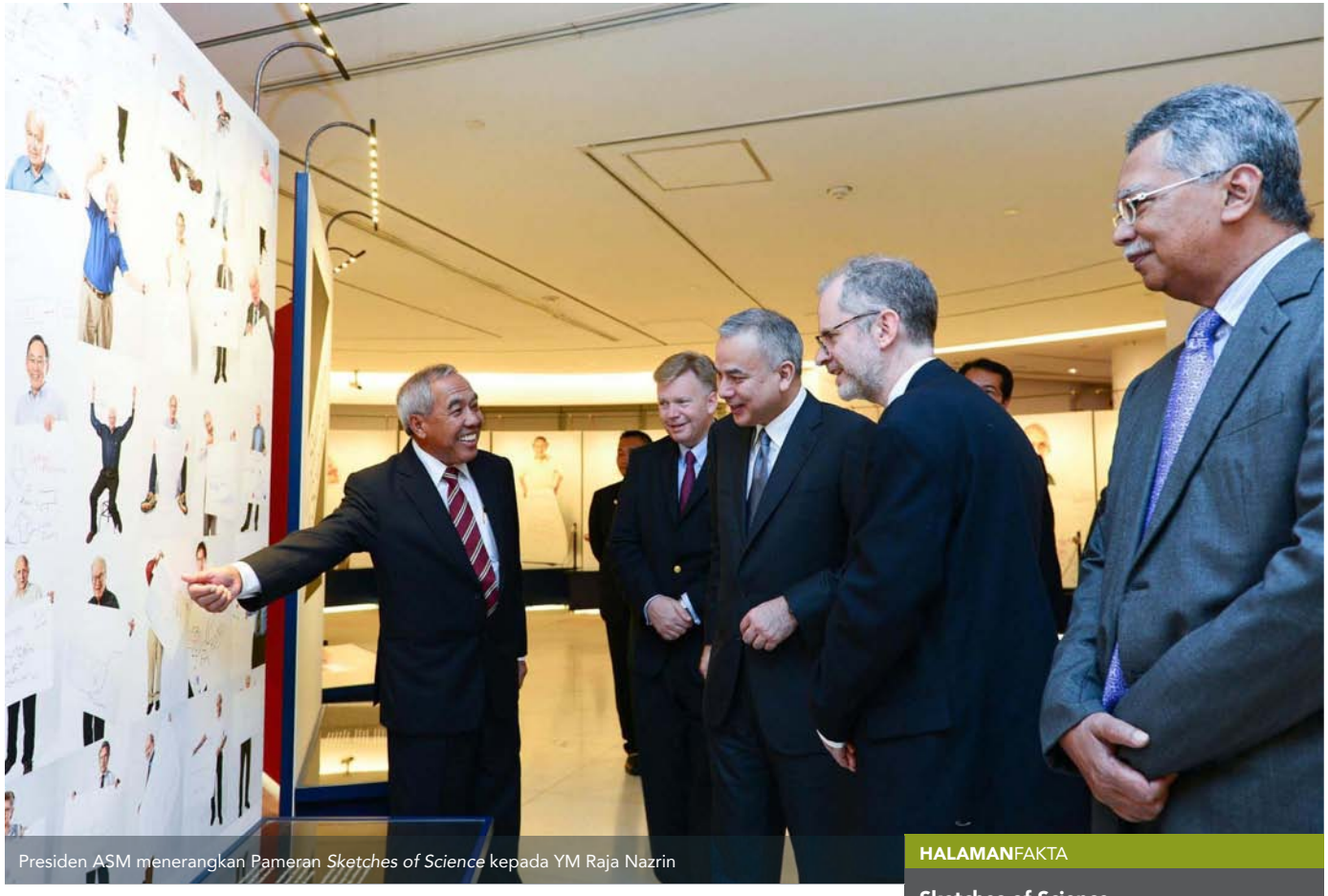


Kolaborasi Global *1996 - 2000*



Kolaborasi Global 2004 - 2008

Peta jaringan yang memaparkan corak kolaborasi antara negara – dipetik dari laporan *'Knowledge, Networks and Nations: Global Scientific Collaboration in the 21st Century'*.



Presiden ASM menerangkan Pameran *Sketches of Science* kepada YM Raja Nazrin

HALAMANFAKTA

3 saintis tempatan terkenal telah memberi ceramah Café Scientifique ASM di "Faces Sains@my"

1 sesi Ceramah Motivasi disampaikan oleh seorang pemenang Hadiah Nobel, Profesor Dr Lee Yuan Tseh, Felo Kehormat ASM

HALAMANFAKTA

Sketches of Science
Pameran Foto Pemenang Hadiah Nobel, oleh Muzium Nobel, dengan kerjasama *Foundation Lindau Nobel Laureates Meeting*.

- **50** potret pemenang Hadiah Nobel dan lakaran penemuan mereka telah difotokan oleh jurugambar Jerman, Volker Steger, dan dipamerkan.
- Kuala Lumpur merupakan bandar ke-7 yang dipilih untuk pameran ini.
- **10 000** orang pengunjung sepanjang **51** hari

Fora Perundingan

ASM menyediakan platform bagi wacana intelek, menggalakkan advokasi pembangunan sains dan teknologi, serta meningkatkan pengiktirafan global untuk pakar sains tempatan dan antarabangsa. Ia juga memberi maklumbalas, syor serta nasihat untuk pertimbangan penentu utama negara untuk pelaksanaan yang memenuhi ekosistem STI tempatan.

Mempamerkan *Role Model* Sains.

Penganjuran *Sketches of Science*: Pameran Foto Pemenang Hadiah Nobel mencerminkan seruan ASM, terutamanya kepada generasi muda untuk *Think Science, Celebrate Teknology* dan *Inspire Inovation*. Ia bertujuan menyampaikan bidang sains dengan cara yang menarik, memberi inspirasi terhadap budaya kecemerlangan dan membangunkan masyarakat berfikiran inovatif dan progresif. Sejajar dengan ini, 21 para saintis terkemuka Malaysia yang telah memberi sumbangan berimpak besar dalam bidang masing-masing, telah dipaparkan di bawah panji "Faces of Science @my".

03 WACANA

——Penjanaan pengetahuan sering kali datangnya dari perhimpunan ilmiah yang membolehkan pembelajaran, pengembangan rangkaian, pengwujudan informasi dan perkongsian. ASM menganjurkan pelbagai wacana yang berteraskan objektif ini dan ianya diterima dengan positif.

Mesyuarat Agung Tahunan

Mesyuarat Agung Tahunan ke-18 yang telah diadakan pada 27 April 2013 telah dihadiri oleh 100 orang Felo.Mesyuarat ini telah meluluskan Laporan Tahunan 2012, kenyataan kewangan (berakhir 31 Disember 2012) dan melantik audit luar. Ahli Majlis ASM untuk tempoh 2013-2015 dan Felo baru turut dilantik.

Perhimpunan Tahunan

Ini merupakan perhimpunan tahunan ASM yang diadakan dengan agenda yang lebih tertumpu untuk membincangkan isu-isu STI berkepentingan nasional.

Perhimpunan Tahunan ke-3
Science and the Economy: Challenges for Malaysia oleh YB Tan Sri Rafidah Aziz.

Perhimpunan Tahunan ke-4
Future of Science in Nation-Building: How can Youths Contribute?

Berikut adalah penceramah jemputan:

YB Dr Hj Noor Azmi Ghazali
Ahli Parlimen Malaysia,
ADUN Bagan Serai, Perak

Dato' Saifuddin Abdullah
Ketua Pengarah,
Global Movement of Moderates

YB Tuan Nik Nazmi Nik Ahmad
Timbalan Speaker Dewan Negeri
Selangor dan Wakil Rakyat Seri Setia

Associate Professor Dr Abhimanyu Veerakumarasivam
Ahli, *Young Scientists Network-ASM*

IdeaXchange

Program ini merupakan landasan untuk membincangkan isu inter-disiplin, perbahasan bertemakan STI dan perkongsian idea antara ahli ASM dan komuniti saintifik. Berikut adalah topik yang dibincangkan pada tahun 2013:

18 Januari 2013
- *ASM Science Journal – The way forward Study on "Sustainability in Palm Oil Industries in Malaysia"*

15 Mac 2013
- *'i3C Platform'* oleh Academician Dr Ho Chee Cheong FASc
- *Human Capital Roadmap* oleh Professor Datuk Dr Halimaton Hamdan FASc
- *ASM Research Fellowship*

21 Jun 2013
- *Forum on Scientific Enterprise & Politics – Bridging the Two Worlds*

12 September 2013
- *Discovery of an important gene that impacts oil palm yield in two groundbreaking publications in Nature* oleh Dr Ravigadevi Sambanthamurthi FASc
- *Patents & Intellectual Property Rights* oleh KASS International Sdn. Bhd

04___KEAHLIAN

— Keahlian ASM adalah terdiri daripada pelbagai kepakaran bidang sains dan sains sosial.

Felo Kanan

Akademi telah melantik 2 Felo sebagai Felo Kanan untuk tahun 2013. Majlis Penganugerahan yang telah diadakan pada 17 Disember 2013 menyaksikan pelantikan Felo Kanan berikut:

- Dr Chia Swee Ping FASc, pengiktirafan di atas sumbangan dan penglibatan aktif beliau dalam meningkatkan status Malaysia dikalangan komuniti fizik di peringkat negeri dan antarabangsa.
- Tan Sri Datuk Dr Yusof Basiron FASc, pengiktirafan di atas sumbangan beliau dalam pembangunan penyelidikan minyak kelapa sawit Negara dan usaha beliau dalam menerajui aktiviti ASM terutamanya memperkukuhkan fungsi sebagai badan pemikir.

Felo

Setiap tahun, Akademi membuat pemilihan ahli baru dari kalangan warganegara Malaysia unggul yang mempunyai pencapaian yang cemerlang dan luar biasa dalam bidang sains, kejuruteraan dan teknologi.

19 Felo baru yang telah dipilih di Mesyuarat Agung Tahunan ke-18, yang diadakan pada 27 April 2013 telah dianugerahkan sijil di Majlis Penyampaian Sijil pada 17 December 2013. Mereka terdiri daripada 12 ahli akademik, 4 dari industri dan 3 dari agensi kerajaan.

Pemilihan Felo baru adalah penting untuk memastikan kelestarian ASM. ASM menggunakan kepakaran, pengetahuan, kebijaksanaan dan jaringan kerjasama Felo dalam memberikan input STI kepada kerajaan dan pihak berkepentingan. Melalui Felo juga, ASM memainkan peranan penting dalam arena STI global melalui keahlian jaringan strategik multilateral STI, memainkan peranan aktif dalam tadbir urus jaringan antarabangsa dan penglibatan dalam interaksi saintifik global. Di peringkat Negara pula, Felo melalui ASM menerajui bidang kepakaran mereka dan mengutarakan idea mereka dalam pembentukan STI Negara.

Felo ASM berkongsi kepakaran mereka dengan komuniti saintifik dan khususnya masyarakat umum dengan cara yang merangsangkan penglibatan menerusi sesi ceramah. Pada tahun 2013, 9 sesi ceramah telah dianjurkan.

HALAMANFAKTA

Siri *ASM Fellow's Lecture* 2013

Datuk Seri Lim Chong Keat FASc
Challenges For Malaysian Botany

Professor Dato' Dr Khalid Yusoff FASc
Medicine at the cross-roads in the Tropics: Defining Moments, Refining Thoughts and Definitive Actions

Professor Dr Awg Bulgiba Awg Mahmud FASc
The Evolution of Public Healthcare in Malaysia

Professor Dr Fredolin Tangang FASc
Climate Change: Old News New Threats! IPCC Fifth Assessment Report (AR5) "Climate Change 2013: The Physical Basis"

Professor Dr Rauzah Hashim FASc
Prospecting the Self-Assembly Science: Back to Basics

Professor Dr Joy Jacqueline Pereira FASc
Disaster Risk Reduction in a Changing Climate

Professor Dr Hamdani Saidi FASc
Looking for Green Solutions to our energy need

Professor Dato' Dr Kamaruzzaman Sopian FASc
Renewable Energy Technology: Sustainable Path for a Carbon Free Future

Dr Tan Ken Hong FASc
The fruit fly - orchid association: Sex pheromones, allomones and synomones in pollination and biodiversity

Associates

Associates dilantik oleh Majlis ASM untuk memperlengkapkan lagi kumpulan kepakaran ASM. Associates merupakan individu yang diiktiraf kepakarannya dan merangkumi pelbagai bidang – sains hinggalah sains sosial. ASM kini dapat menyumbang, menyertai kumpulan kajian serta mewakili Malaysia di pelbagai mesyuarat antarabangsa dengan adanya lebih ramai ahli. Pada akhir tahun 2013, ASm mempunyai 60 *Associates*.

SEKILAS

Felo 2013
Professor Dr Awg Bulgiba Awg Mahmud FASc
Professor Dr Khor Geok Lin FASc
Professor Dr Mustafa Ali Mohd FASc
Professor Ir Dr Abd Halim Shamduddin FASc
Professor Dr Abdul Latif Ahmad FASc
Professor Dr Hamdani Saidi FASc
Professor Dato' Dr Kamaruzzaman Sopian FASc
Ir Mohd Adnan Mohd Nor FASc
Professor Dr Fatimah Md Yusoff FASc
Professor Dr Hj Ibrahim Che Omar FASc
Professor Dr Mohd Tajuddin Abdullah FASc
Professor Dr Ng Wing Keong FASc
Dr Saw Leng Guan FASc
Dr Low Kwai Sim FASc
Dr Mazlan Madon FASc
Professor Dr Norani Muti Mohamed FASc
Dr Amir Hashim Md Yatim FASc
Ir Choo Kok Beng FASc
Pn Fadilah Baharin FASc

DALAM MEMORI

Datuk Dr A Hamid A. Hadi FASc

10 Jun 1953 - 12 Jun 2013

Ahli, Institut Kimia Malaysia, 1990
Ahli, Malaysian Natural Product Society , sejak 1984, Bendahari, 1997-2009
Penasihat, Institut Kajian Sejarah dan Patriotisme Malaysia, 1998
MOLECULE, Penasihat, 2000
Lembaga Penasihat, the American Biographical Institute, 2006-2009
Ahli, American Chemical Society, 2011



Professor Datuk Dr A Hamid A Hadi merupakan pakar unggul di dalam bidang produk semulajadi dan bertangungjawab dengan penubuhan Center for Natural Products and Drugs Discovery (CENAR), Universiti Malaya (UM). Pusat ini mengumpulkan penyelidik dan perkhidmatan di bawah satu bumbung. Beliau dilahirkan pada 10 Jun 1953 dan telah kembali ke Rahmatullah pada 12 Jun 2013.

Professor Datuk Dr A Hamid A Hadi memperoleh Ijazah Sarjana Muda Kimia, Universiti Kebangsaan Malaysia (UKM) pada tahun 1976 dan Diploma Pendidikan (UKM) pada tahun 1977. Kemudian, beliau mendapat Ijazah Sarjana Kimia Organik pada tahun 1978 dan memperoleh Doktor Falsafah Kimia Organik pada tahun 1981 dari University of Salford, England. Setelah menamatkan pengajian, beliau menyertai UM pada tahun 1981 dan telah dinaikkan pangkat kepada Professor Madya pada tahun 1989 dan Professor pada tahun 1994.
Beliau berkhidmat di UM sebagai Ketua Jabatan Kimia, (1996-2000), Timbalan Dekan Fakulti Sains (2000-2003). Kemudian, beliau dinaikkan pangkat sebagai Timbalan Naib Canselor (Akademik) pada tahun 2003-2006.

Di samping penglibatan aktif beliau di dalam pengurusan universiti, beliau juga aktif di dalam bidang penyelidikan. Beliau telah menubuhkan rangkaian penyelidikan dengan beberapa institusi yang berkaitan di Perancis, Pakistan dan Jepun. Bidang penyelidikannya termasuklah produk bioaktif dari tumbuhan-tumbuhan Malaysia, sebatian perubatan dan pewarna makanan daripada bunga raya, kajian kimia dan farmakologikal mengenai Andrograhis paniculata, dan penyelidikan mengenai mekanisme nitrik oksida daripada tiada penderma sebatian bioaktif.

Bagi menghargai sumbangannya, beliau telah dianugerahkan beberapa anugerah dan penghargaan iaitu Perkhidmatan Cemerlang (20 tahun), UM (2001), Anugerah Khidmat Cemerlang, UM (2003), Pingat Kebesaran Negeri Melaka (2003), Anugerah Saintis Cemerlang oleh Kementerian Pengajian Tinggi Malaysia (2005) dan Top 100 Scientists oleh International Biographical Centre, Cambridge, England (2011).

Professor Datuk Dr A Hamid telah dilantik sebagai Felo di ASM pada 2006 dibawah kumpulan Disiplin Sains Kimia.
Al-Fatihah.



DALAM MEMORI

Profesor Datuk Dr Ir Radin Umar Radin Sohadi FASc

13 November 1960 – 13 Oktober 2013

Felo, Institut Jurutera Malaysia (IEM)
Ahli, English Institute of Highways and Transport
Pengerusi, Jawatankuasa Standing Penyelidikan & Latihan,
Persatuan Kejuruteraan Jalanraya Malaysia
Editor, Jurnal IEM
Editor-bersama, Road Journal,
Association of Engineers Asia and Australiasia (REAAA)
Pengerusi, Jawatankuasa Piawaian Keselamatan Jalanraya
Ahli, International Council Road Injuries Traffic Network (Paris)
Ahli Lembaga Pengarah, Universiti Teknologi MARA (UiTM) dan
Universiti Pertahanan Nasional Malaysia (UPNM)
Majlis Penasihat, Jurnal Pencegahan dan Keselamatan Kemalangan

Profesor Datuk Dr Ir Radin Umar dikenali dalam bidang keselamatan trafik. Beliau aktif dalam institut profesional dan disegani oleh ahli akademik dan profesional. Beliau telah dipilih sebagai Felo ASM di bawah Kumpulan Disiplin Kejuruteraan dan Komputer Sains, pada tahun 2005. Beliau telah kembali ke rahmatullah pada 13 Oktober 2013.

Beliau mendapat pendidikan awal di Sekolah Menengah Aminuddin Baki Chemor, dan kemudian melnajutkan pelajaran di Maktab Tentera Diraja. Beliau menyambung pengajian di Sheffield University, United Kingdom dan memperoleh Ijazah Kejuruteraan (Kepujian) Awam dan Kejuruteraan Struktur pada tahun 1984. Kemudiannya beliau meyambung pengajian di universiti yang sama dan memperoleh Ijazah Sarjana dalam bidang Pengangkutan dan Kejuruteraan Trafik pada tahun 1985. Pada tahun 1996, beliau telah dianugerahkan Ijazah Kedoktoran (Ph.D) Kejuruteraan Keselamatan Trafik dari Accident Research Centre, Birmingham University.

Kerjaya beliau bermula pada tahun 1984 apabila beliau menyertai UPM sebagai tutor di Jabatan Kejuruteraan Awam dan Alam Sekitar. Beliau telah dilantik sebagai Dekan Fakulti Kejuruteraan UPM pada tahun 1999 dan semasa dalam perkhidmatannya sebagai Dekan, beliau telah membawa fakulti ke tahap yang lebih tinggi dan meningkatkan prosedur pengajaran dan aktiviti yang membawa kepada pensijilan ISO kepada fakulti. Pada tahun 2005, beliau telah dilantik sebagai Timbalan Naib Canselor (Akademik dan Hubungan Antarabangsa), UPM.

Ir Radin mempunyai 27 tahun pengalaman dalam keselamatan trafik kebangsaan dan bertanggungjawab ke atas hal ehwal keselamatan. Beliau juga telah dilantik sebagai Ketua Pengarah, Institut Penyelidikan Keselamatan Jalanraya Malaysia (MIROS), Kementerian Pengangkutan yang pertama pada tahun 2007. Beliau juga terlibat secara aktif dan memainkan peranan penting dalam kempen keselamatan jalan raya, promosi dan program di dalam dan luar negara. Pada tahun 1995, beliau telah membangunkan Sistem Sasaran Keselamatan Jalanraya Negara (Model Radin) yang digunapakai kerajaan Malaysia pada tahun 1996. Sejak daripada itu, beliau telah terlibat dalam program pelaksanaan keselamatan jalan raya.

Sebelum pelantikannya sebagai Naib Canselor UPM (2011-2012), beliau merupakan bekas Ketua Pengarah Jabatan Pengajian Tinggi, Kementerian Pengajian Tinggi (2008). Beliau telah memenangi pelbagai anugerah di peringkat antarabangsa dan kebangsaan, pingat dan paten bagi kerja penyelidikannya. Beliau telah menerima Katahira Young Engineer Award, Jepun pada 2000 ; BP/ Highways and Transport Road Safety Award, United Kingdom (2002); dan *UK Prince Michael Road Safety Award* (2005).

Al-Fatihah.

DALAM MEMORI

Dr Chan Kook Weng FASc

16 Mei 1943 – 13 Disember 2013

Felo, Malaysian Oil Scientists and Technologists Association (MOSTA), 1998
Felo, Incorporated Society of Planters (FISP)
Ahli seumur hidup, Malaysian Nature Society
Ahli seumur hidup, Malaysian Soil Science Society
Ahli seumur hidup, Agriculture Institute of Malaysia
Ahli seumur hidup, UMAGA
Ahli, Technical Education Scheme, Incorporated Society of Planters



Keunggulan kerjaya Dr Chan Kook Weng di dalam bidang perladangan telah mendapat pengiktirafan yang luas. Beliau dilahirkan pada 16 Mei 1943 di Teluk Intan, Perak dan telah kembali ke Rahmatullah pada 13 Disember 2013.

Dr Chan Kook Weng menamatkan pengajian di Universiti Malaya (UM) dengan memperoleh Ijazah Sarjana Muda Sains Pertanian (1967) dan Ijazah Sarjana (1972). Beliau mendapat Doktor Falsafah Sains Pertanian dari University of Ghent, Belgium dengan cemerlang pada tahun 1992.

Dr Chan telah menghasilkan 320 penulisan dan lebih 160 daripadanya adalah merupakan penulisan tunggalnya Beliau mempunyai 31 tahun pengalaman bekerja di lapangan perladangan di Gutherie Research Chemara, Kumpulan Gutherie Berhad (1967-1998).

Sementara beliau berkhidmat sebagai penyelia R&D (1991-1998), beliau memimpin kesemua keperluan penyelidikan syarikat juga meningkatkan penyelidikan saintifik. Penghasilan penyelidikan dan penemuan beliau yang praktikal telah menjadi contoh dan ikutan di dalam estet. Penyelidikan beliau merangkumi disiplin agronomi, persekitaran, baja, pemakanan tumbuhan, penjenteraan, pengurusan dan penyelidikan dan pembangunan umum.

Berikutan pengalamannya yang luas di dalam bidang penyelidikan dan pembangunan kelapa sawit, beliau telah dilantik sebagai felo penyelidikan kanan di Malaysian Palm Oil Board (1998 – 2013). Beliau telah mencapai status yang agak tinggi dalam komuniti saintifik serta telah banyak menumbang kepada industri kelapa sawit.

Beliau mewakili beberapa jawatankuasa kebangsaan dan antarabangsa, di antara yang ketara adalah perlantikan sebagai pengerusi Malaysian Mirror Committee of ISO/TC 207; Working Group 5 mengenai perubahan iklim pada tahun 2002. Beliau juga mengetuai perwakilan Malaysia pada tahun 2003 di ISO/TC 207 berkaitan rundingan pleno standard pengurusan persekitaran.

Dr Chan telah dilantik sebagai Felo Akademi di bawah kumpulan Disiplin Pembangunan Sains & Teknologi dan Industri pada tahun 2003.



DALAM MEMORI

Tan Sri Dato' Seri Dr Haji Abdul Majid Ismail FASc

15 November 1921 – 24 Mac 2013

Presiden, Malaysian Orthopaedic Association, 1967 – 1982
Ahli, 1959 – 1987 and Pengerusi, 1978 -1987, Universiti Malaya Council
Ahli, Universiti Kebangsaan Malaysia Council, 1970 – 1978
Ahli Pengasas and Presiden, College of Surgeons Malaysia
Pengerusi Malaysia, National Medical Research Council
Timbalan Presiden, National Council of Social Welfare Malaysia
Inti Universal Holdings Bhd (Inti College)
Pengerusi, Syarikat Endah Sari Sdn. Bhd

Tan Sri Abdul Majid Ismail dilahirkan pada 15 November 1921 di Kampung Baru, Kuala Lumpur. Beliau menerima pendidikan awal di Sekolah Melayu Segambut dan Sekolah Maxwell, Kuala Lumpur. Pada tahun 1934, beliau melanjutkan pelajaran di Batu Road School dan Victoria Institution (1936 – 1939). Beliau merupakan pelajar yang cemerlang dan pengakap yang aktif juga pelari rentas desa. Beliau menyertai King Edward VII College of Medicine, Singapura pada tahun 1940 dengan biasiswa negeri Selangor. Pengajiannya di dalam bidang perubatan terganggu dengan serbuan kuasa Jepun pada awal tahun 1942. Beliau menyambung pengajiannya pada tahun 1946 – 1950 dan berjaya menamatkan Ijazah Sarjana Muda Perubatan (MBBS).

Pada tahun 1950, beliau berkhidmat sebagai pegawai perubatan di Hospital Besar Kuala Lumpur. Pada tahun 1953, beliau telah dianugerahkan Queen's Scholarship untuk belajar di England dan beliau menggunakannya untuk Fellowship dalam pembedahan di Royal College of Surgeons, Edinburgh. Beliau menamatkan Ijazah Sarjana Ortopedik (M.Ch.Orth.) pada tahun 1957. Kemudian beliau telah dikurniakan sebagai Felo Eisenhower di USA pada tahun 1963.

Pada tahun 1958, beliau telah dilantik sebagai perunding doktor bedah ortopedik untuk Persekutuan Tanah Melayu dan kemudiannya dilantik sebagai Timbalan Pengarah Kesihatan (Perancangan & Penyelidikan) ada tahun 1969.

Pada tahun 1971, beliau telah dinaikkan pangkat sebagai Ketua Pengarah Kesihatan dan berkhidmat sehingga beliau bersara pada tahun 1976 di umur 55 tahun. Beliau telah berkhidmat dalam perkhidmatan awam selama 26 tahun.

Tan Sri Abdul Majid telah memegang pelbagai jawatan dalam badan berkanun dan professional sepanjang perkhidmatannya di dalam sektor awam. Beliau telah terlibat di dalam banyak projek kebangsaan termasuklah penubuhan Universiti Kebangsaan Malaysia (UKM), hospital di Kubang Kerian, Hospital Pantai, Hospital Mata Tun Hussein Onn dan banyak lagi. Beliau juga aktif dalam mewakili Malaysia di persidangan antarabangsa seperti persidangan World Health Organization (WHO) di Geneva dan Manila pada tahun 1971.

Dedikasi beliau telahpun diiktiraf oleh negara di mana beliau telah dianugerahkan pelbagai penghormatan dan penganugerahan. Beliau telah dilantik sebagai Felo Yayasan Akademi Sains Malaysia pada tahun 1995 di bawah Disiplin Perubatan dan Sains Kesihatan.

Al-Fatihah.

05___PERANCANGAN HADAPAN

——Dalam usaha menyusun langkah untuk mencapai aspirasi ASM sebagai sebuah badan unggul yang mewakili komuniti saintifik ia memerlukan pelan pelaksanaan yang dinamik. Perancangan yang teliti, koordinasi yang efisyen dalam menjalankan peranan untuk mencapai kepuasaan bersama, ASM dengan ini melakarkan beberapa perancangan program untuk tahun-tahun akan datang.



2014

Persidangan Majlis Sains Asia ke-14:
18-19 Jun 2014

Persidangan ini merupakan platform antara disiplin bagi saintis untuk melaporkan kemajuan penyelidikan saintifik berkaitan kemampanan global dan pengurangan kemiskinan di Asia.

Tema persidangan ini ialah: "Masa depan bumi: Penyelidikan bagi kemampanan global dan pemahaman holistik akan pembangunan mapan di Asia". Mereka dapat membincangkan bagaimana saintis Malaysia, NGOs dan pihak berkuasa boleh menyatukan pengetahuan tempatan dan kemajuan teknologi dalam membina masyarakat yang berdaya tahan, perkhidmatan ecosystem yang kukuh dan industri hijau melalui contoh-contoh kejayaan dan kegagalan yang ketara di seluruh dunia.

Forum Pemimpin P&P dan Ketua Pegawai Eksekutif Global 2014: "*Injecting Soul into R&D*":
29 - 30 September 2014

Ini merupakan satu inisiatif dalam melibatkan pemain P&P global untuk membangunkan dan mencari penyelesaian bagi isu-isu global seperti keselamatan makanan, penjagaan kesihatan, kemerosotan alam sekitar dan kemiskinan yang dihadapi oleh kebanyakan golongan bawahan. Situasi ini memerlukan komitmen untuk mengurangkan P&P di luar batas keuntungan dan penerbitan.

Lima bidang tindakan forum ini adalah:
- Pembiayaan mapan dan pelaburan berimpak
- Pencarian keprihatinan di dalam P&P
- Penghasilan bersama penyelesaian yang berasaskan nilai
- Perkongsian teknologi
- Pencungkilan inovasi sosial dan perusahaan

Science Outlook

Laporan Science Outlook bertujuan untuk memberitahu pihak-pihak berkepentingan dan penggubal dasar akan pembangunan dan trend terkini dalam STI. Laporan Science Outlook yang pertama dijangka akan terbit pada 2014.

Kajian Rangka Kerja *Mega Science* 3.0

Fasa ke-3 Kajian Rangka Kerja Mega Scienceakan menjurus kepada sektor-sektor berikut:
- Industri Automatif
- Industri Pelancongan
- Industri Plastik & Komposit
- Industri Perabot
- Industri Makanan

Sektor Air: Masa Depan dan Penyelesaian

Laporan nasihat yang bakal diterbitkan adalah:
- Bidang Ekonomi Utama Negara (NKEA) bagi sektor air
- Rancangan strategik bagi mengetengahkan impak perubahan iklim dalam isu-isu berkaitan sektor air di Malaysia
- Strategi bagi permintaan pengurusan sektor air di Malaysia
- Status semasa dan keperluan penilaian dalam penyelidikan sumber air di Malaysia
- Isu semasa dan keperluan dalam pembekalan air dan pengurusan air buangan di Malaysia
- Status semasa dan isu berkaitan pengurusan bersepadu lembangan sungai di Malaysia

Penjelmaan Teknologi Baru

Pelan tindakan yang bakal diterbitkan adalah:
- Industri Nadir Bumi di Malaysia
- Industri Sel Bahan Api di Malaysia
- Tenaga Bebas Karbon di Malaysia

Persidangan Antarabangsa Mengenai "Sains Untuk Keamanan"

Tema persidangan 'More for Science, Less for War' bertujuan untuk menyedia satu platform yang efektif bagi penggubal dasar, ahli akademik, penyelidik, ahli industri, korporat, kewangan dan kumpulan professional STI mengenal pasti dan membincangkan isu, cabaran dan jurang yang dihadapi untuk keamanan dan kemanusiaan. Persidangan ini akan diadakan pada 8-9 September 2015.

Kajian Rangka Kerja *Mega Science* 4.0

Fasa ke-4 Kajian Rangka Kerja *Mega Science* akan menjurus kepada sektor-sektor berikut:-

- Teknologi Hijau: Sel Bahan Api
- Perkhidmatan Ekosistem Marin
- Bencana Alam
- Komunikasi
- Industri Angkasa

Pusat Sains Media

ASM sedang mengusahakan penubuhan pusat sains media berfungsi sebagai sumber maklumat STI kebangsaan bagi melaporkan informasi sains tempatan dan antarabangsa. Matlamat pusat ini adalah untuk meningkatkan liputan sains dan teknologi melalui penyaluran maklumat kepada kelompok kewartawanan yang tepat dan padat untuk manafaat orang ramai, komuniti sains dan media serta penggubal dasar.

Sektor Air: Masa Depan dan Penyelesaian

Kajian yang bakal dijalankan adalah:

- Nilai air
- Pengurusan kualiti air berfokuskan STI
- Pengurusan bersepadu air di kawasan bandar

Sektor Air dan Pertanian

Laporan nasihat yang akan mengetengahkan strategi sektor air dan pertanian

2015



A year in review.

What we strive for

To be the 'Think Tank' of the nation for matters related to science, engineering, technology and innovation.
To pursue excellence in the fields of science, engineering and technology for the benefit of all.

Mission

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

Functions

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

Strategies

Harnessing scientific minds to charter STI direction for the country
Fostering culture of excellence in STI
Ensure independent authoritative and timely STI input
Promote the utilization of science for societal well being
Facilitate the implementation of the innovation-led economy strategy
Promote the application of STI for rural development

What we do

STI Strategic Studies

- Malaysia 2050
- Horizon Scanning
- Emerging Technology
- Sustainable Science

STI Strategic Programmes

- Human Capital Development
- Gateway
- Science Consortium
- Consultative Fora



Stakeholders

Internal

- Fellows
- Associates
- Young Scientists Network (YSN)-ASM
- ASM Management

External

- MOSTI and its agencies
- Other Ministries and relevant agencies
- Industry organizations
- Research institutions
- Higher Learning Institutions
- STI Professional Bodies
- STI International organizations
- Public and Rural communities

4 point Client Charter



1. Provide independent, evident based, reliable and timely advice

2. Committed in initiating quality programmes towards developing strong STI foundation for the nation

3. Represent Malaysia and its scientific community at the international arena

4. Disseminate scientific knowledge

A word from our President

We greeted 2013 with an appetite for change. This year, the Academy of Sciences Malaysia embraced change in a significant way, further strengthening the foundation to be the leading STI think-tank in Malaysia. We did some tweaking to the organizational structure, reflecting the emphasis on the advisory role rather than a doer function. We have also taken steps to realign the work structure of the staff to be more actively involved in supporting the Academy's advisory function. We have recruited some new talents to give more punch to the analytical aspects of STI again to support our flagship activities of Mega-Science studies and this has led to the new initiative of STI outlook which we hope to finalize by the end of 2014. Thus far we have managed to gain support from the Ministry on our Mega Science studies as an effective platform for generating advice to the government on matters related to the Academy's "Science for Policy" thrust. We hope to use the STI Outlook platform to generate advice on the matters related to the Academy's other thrust which is "Policy for Science".

Just like any other think-tanks, a conducive workplace is imperative. The year also saw us moving to a new premise at the Matrade building where we have available to us the much needed space to further enhance the environment for creative think-tanking. Henceforth, we are now able to run operations much more efficiently in a new and improved environment which breaks down the wall of silos into an open platform for integrated working atmosphere. As a result, the big move facilitated expansion in our workforce whereby we welcomed new faces from various areas of science, only to make ASM's structure flexible, versatile and impactful. Together with all the 239 fellows and 42 associates, there is now promise of a new era of further positive contributions to the Academy's core business of delivering advice on STI to the government.

In line with this new vigor and the Academy's tag line of "Think Science", ASM completed several studies during the year in areas which count as of national importance. Sustainability science continues to be a prominent area of focus this year. Thus, the ASM Water Committee produced a number of studies assessing the sustainability aspects of the nation's water resources. Also, the year saw the start of the second installation of Mega Science Framework Study for Sustained National Development. It should be completed by April 2014. This time we looked at housing, infrastructure, transportation, electric and electronic, and environments sectors. Initial findings have indicated new possible areas for STI intervention. With our horizon scanning program, we have uncovered some new trends in STI. These will provide inputs to the ongoing Mega Science studies.

The year also saw the usual celebration of science. On the global level, new winners were announced for the Nobel Prize in science. The chemistry prize was given to three U.S.-based scientists for developing computer models that predict complex chemical reactions that can be used for tasks like creating new drugs. Their approach combined classical physics and quantum physics.

The winners are Martin Karplus of the University of Strasbourg, France, and Harvard University; Michael Levitt of the Stanford University School of Medicine, and Arieh Warshel of the University of Southern California in Los Angeles. The physics prize was awarded for a theory about how subatomic particles get their mass. The theory made headlines last year when it was confirmed at the CERN laboratory in Geneva by the discovery of the elusive Higgs particle. The prize was shared by two men who proposed the theory independently of each other in 1964: Peter Higgs of Britain and Francois Englert of Belgium. The medicine prize, the first of the 2013 awards, honoured breakthroughs in understanding how key substances are moved around within a cell. That process happens through vesicles, tiny bubbles that deliver their cargo within a cell to the right place at the right time. Disturbances in the delivery system can lead to neurological diseases, diabetes or immunological disorders. The prize was shared by Americans James E. Rothman of Yale and Randy W. Schekman of the University of California, Berkeley; and German-American Dr. Thomas C. Sudhof of the Stanford University School of Medicine. Our own Mahathir Science Award was bestowed on Dr Alan Cowman of Australia whose research on the search for the malaria vaccine has demonstrated new promises.

Efforts to inspire innovation continued during the year. As in previous years, we pressed on with efforts to boost ASM's visibility in the eye of the public and relevant stakeholders. We participated in a number of discourses on television highlighting the many studies that ASM anchored. Fellows of the ASM continued to be sought by the media to provide expert opinion on issues including water, energy, climate change and innovation in general. A number of articles were planted in the print media publicizing the activities of the Academy. Together, all such media intervention had to a significant extent helped promote better public appreciation of ASM's role in science and nation building. In efforts to stay relevant with the society, ASM has taken a giant leap into science communication to maintain a strong voice as a science-advisory agency in the country. Inadvertently, horizon scanning and spearheading studies help prosper the science culture.

> We greeted 2013 with an appetite for change.

In line with this, ASM has strengthened its role as a science communication platform via IdeaXchange series, General Assembly, lecture series, to name a few, to encourage our esteemed fellows and associates to spark new conversations on scientific issues. Media is an important communication entity if utilized well. I do feel that by setting an outlet for our science experts to be the spokesperson for science, technology and innovations (STI), our nation saves on a lot of unnecessary controversies which results in public's distrust. This is another aspect which underlines the fact that investment in science is indeed crucial.

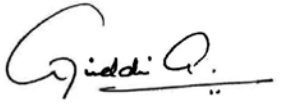
Of course, having the right talent is a requirement. Nurturing these talents is a national aim and we can only tackle this via our education system. Currently, we have a mere 30 % of high school students pursuing the science stream. In reality, we require a ratio of 60:40, science to art students. With this figures in mind, how are we, as a developing nation, able to reach the stature of high-income nation by 2020? There is no point in allocating significant amount of money into R&D when we lack the human capital for it.

Clearly, a sustainable system is of essence to overcome this issue. Previously, national brain drain was a concern as we witness the loss of professionals to other countries. Now, we are steering our focus to nurture talents and build capacities regardless where their geographical constraints. However, we must not remain complacent; in fact, there should be rigorous effort to boost these figures because our actions today will only prevail 30-50 years from now. Emerging as a high-income nation will materialize in due time if we innovate existing measures in education to push capacity-building to greater heights. ASM's work to raise the profile of IBSE continued. As a result of our pilot projects with four primary schools in the Hulu Langat district, the interest to embrace IBSE has increased. We will continue to work with the Ministry of Education to eventually mainstream IBSE in science education.

There is no denying that having a scientific battalion is one of the factors that can drive STI-driven governance in the country. The report, "Public Research Assets Performance Evaluation: Unlocking Vast Potentials, Fast Tracing the Future" revealed that despite immense funding that is channeled into designated programs to build and commercialize R&D, the return of investment is still not up to par. Why? One prominent signpost for this problem is the absence of a coordinating body to synergize nation's R&D sphere of activities. In addition to this, there is a disconnect between the private and public sectors. We tend to forget that these two sectors are dependent on each other. This brings to a void in the STI ecosystem, hence, ASM has introduced a science consortium in order to bring national scientists together to build international linkages to tap the global STI expertise. This initiative enables us to compete in the global market in the near future and this is deemed possible only when our national STI expertise resonates with the global climate.

I hope this 2013 Annual Report will further highlight the fact STI is an investment which should not be compromised if the nation is to effectively realized the aspiration to reach the developed country status by 2020 and beyond.



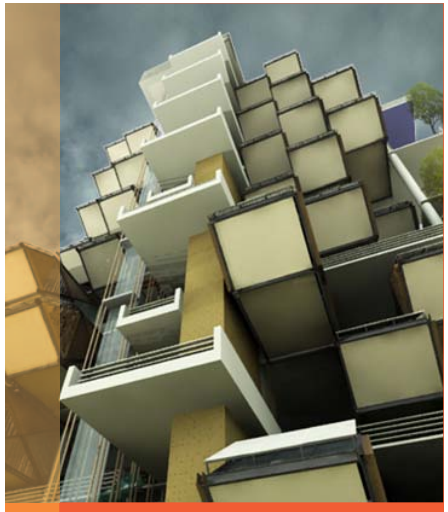


Tan Sri Dr Ahmad Tajuddin Ali FASc


SUSTAIN
- people
- planet
- profit

01___ADVISING THE POLICY MAKERS

——ASM meets the needs for a robust and integrated STI Framework which encompasses S&T capacity, resources and local ecosystem. This framework enables ASM to advice the government on exploring Sustainability Science, forecasting Malaysia in 2050, identify Emerging Technologies and producing Science Outlook.



A Malaysian architect, Tay Yee Wei, proposes hexagon unit that could be combined with other modules to create larger homes for bigger families.



Malaysia 2050

The Mega Science Framework Study for Sustained National Development for the period 2010-2050 (or the Mega Science Agenda: Malaysia 2050) is a structured, practical and sustainable model that transforms the business of Science, Technology and Innovation (STI) for Malaysia. The outputs of the Study will provide advisory inputs on potential STI areas on a continuous basis to the government on the strategic STI options, opportunities and priorities in support of the nation's socio-economic agenda. The Mega Science Study acts as a platform to:

1. Generate ideas for R&D priority areas
2. Identify opportunities for wealth creation and societal well-being

5 major sectors have been identified to be studied in the second phase of the Mega Science agenda. These sectors are critical on the basis of their potential contribution as engines of growth to drive the economy of the nation. Each of the sectors was compartmentalized into focus areas and supported by Global Market Information and relevant commercial data. Each focus area was scrutinized and supported by a structured value chain for comprehensive understanding of the sector and focus area.
The following is a brief description of each of the 5 sectors.

Housing Sector

Focus Areas
Mega Human Settlement/ Megacities, Intelligent, Healthy and Safe Homes, Advanced Building Materials and Technology

"Housing is a catalyst for socio-economic development and poverty reduction that cuts across almost every other indicator for human development. (UN, 2011)"

The major concerns of the housing sector in Malaysia revolve around rising costs, impact of national disasters and climate change, as well as energy efficiency.

Infrastructure Sector

Focus Areas
Engineering, Procurement & Construction (EPC)
Airports, Ports, Roads & Highways and Railways

Sustainable development : Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (UN, 1987)

An efficient and high performing infrastructure will enable a country or a region to play their rightful role in the world economy. Infrastructure that reaches out to the masses and key segments of the society should fulfill needs based on accessibility, affordability and sustainability.

The natural system, resources and diversity, upon which society is dependent, would then need to be maintained and enhanced in, during and after the development of the infrastructure.

Transportation Sector

Focus Areas
Rail Transport, Road Transport, Aerospace Industry Marine and Inland Water Transport, Safety and Enforcement Management Services (SEMS)

An intelligent, highly efficient, clean, safe and sustainable transport industry is sought after in almost every major city in the world.

The optimal operation of all interlinked components – infrastructure, urban planning, vehicles and instruments, operational and administrative procedures and ICT applications – determines the capability to move people and goods effectively and efficiently. By optimizing the capacity of the network and better exploiting the relative advantages of very mode, problems such as congestion, emissions, accidents and pollution can be reduced.

Malaysia's population growth size will exert a great pressure on her cities' transportation industry. Since the most significant portion of the population growth is expected to happen before 2050, a set of carefully planned development and expansion of the Malaysian transportation sector is crucial. Science and technology shall be the key to the needed solutions for the problem.

Electrical and Electronics Sector

Focus Areas
Compound Semiconductor Industry, Energy Generation, Transmission and Distribution Solar as an Efficient Renewable Energy and Cyber Security

The Electrical and Electronics (E&E) industry is one of the 12 National Key Economic Areas (NKEAs) for Malaysia, contributing 24.9% to Malaysia's Gross Domestic Product (GDP) in 2012. The industry has given rise to successful local firms while attracting leading global firms to operate in Malaysia. Since the 1960s, Malaysia has been a leading assembler of E&E components.

There is a need to move up the value chain from being mere assemblers to producing value-added products. This necessitates that the nation undertake fundamental and applied R&D in E&E.

RM231.23 billion

Malaysia's E&E Products (2012) export. Major export destinations are China, USA, Singapore, Hong Kong and Japan

49.2%

manufactured goods exports

32.9%

total exports

Source: www.matrade.gov.my

Environment Sector

Focus Areas
Climate Change & Carbon, Water, Energy, Waste and Land & Forests

Malaysia's rapid development demands well-coordinated environmental planning, design and management. The rich natural heritage and resources of Malaysia are recognized for their important contribution to robust and sustained development. However, there is increasing concern on the need to safeguard the environment and harmonize development with environmental goals. This calls for a commitment to place the sustainable development agenda at the heart of national policies. As environmental problems become more complex and urgent, there is a need to find S&T-based interventions that can deal with these challenges effectively and efficiently.

FACTSHEET

The Environmental Performance Index (EPI) ranks how well countries perform on high priority environmental issues.

- 2014 EPI ranks Malaysia at **51** out of **178** countries
- 2012 EPI ranked Malaysia at **25** out of **132** countries

Source: epi.yale.edu







"Out of the 10 Global Risks of Highest Concern, 4 are water-related."

Sustainability Science

The information and knowledge that contribute to the understanding of Planet (S&T), Profit (Economics), and People (Social) make up sustainability science. ASM strives to bring in forward-looking sustainability science solutions into policy-making by focusing on local challenges, while keeping in mind, regional and global perspectives.

Water Program

Global warming is playing havoc with the world's climate. The USA and parts of Europe are being affected by record low temperatures. In the South-East Asian region, the Philippines were impacted by Typhoon Haiyan on 8 November 2013. Typhoon Haiyan was assessed as a Category 5-equivalent super typhoon on the Saffir-Simpson Hurricane Wind Scale. Sustained wind speeds of between 230 km/h to 270 km/h were measured by various Observatories in the region. Some 6,230 fatalities were recorded with 1,785 still missing. Damages were assessed at USD$1.5 billion.

Closer to home, in 2013, massive floods affected parts of Kelantan, Terengganu, Pahang, Johor, Sabah and Sarawak, causing mass evacuations to relief centres. The damages have yet to be assessed. We are therefore witnessing extreme climate events today as a result of global warming.

Scientists are now predicting that 2014 will be an "El Nino" year, a year when temperatures will rise. An El Nino year is when Southeast Asia, and other parts of the region, will be affected by unusually dry conditions.

So, will Malaysia now be affected by droughts? Worse, marine life will also be affected by El Nino through the reduction in the upwelling of nutrient-rich water that is necessary to support the large fish population of Malaysia's waters. El Nino for sure will impact our agricultural produce in general and food security specifically.

iNBRIEF

Saffir-Simpson Hurricane Wind Scale
The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 rating based on a hurricane's sustained wind speed. This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. Category 1 and 2 storms are still dangerous, however, and require preventative measures.

Source: http://www.nhc.noaa.gov/aboutsshws.php

10 Global Risks of Highest Concern, 4 are water-related

1. Fiscal crises in key economies
2. Structurally high unemployment / underemployment
3. **Water crises**
4. Severe income disparity
5. **Failure of climate change mitigation and adaptation**
6. **Greater incidence of extreme weather events (e.g. floods, storms, fires)**
7. Global governance failure
8. **Food crises**
9. Failure of a major financial mechanism / institution
10. Profound political and social instability

Source: WEF Global Risks Report 2014 World Economic Forum Insight Report, Global Risks Perception Survey 2013-2014.

ASM Studies on Water



Water Demand Management Task Force

The Task Force is undertaking a comprehensive review of the current status of Water Demand Management in Malaysia. This includes identification of shortcomings and gaps as against the norms of sound IWRM principles and Best Management Practices. It is also developing a preliminary conceptual framework of strategies and broad action plans for holistic and sustainable Water Demand Management. The Advisory Report is expected to be completed in 2014.



Water and Agriculture Task Force

The objective of the task force is to review agricultural water use and recommend strategies to revitalize the sector to provide more efficient and productive service to rain-fed and irrigated agriculture, livestock and fisheries development and production in the country. The Advisory Report is expected to be completed in 2014.



Water R&D Task Force

This task force is to set and facilitate a national R&D agenda based on STI needs and priorities for the water sector. There is a need to address water management issues in a multi-disciplinary, integrated and coordinated manner under-pinned by an overall R&D framework based on national needs and priorities than the on-going sectoral, ad hoc and dispersed research. The Advisory Report is expected to be completed in 2014.



Water Supply and Wastewater Management Task Force

A comprehensive review of the current status of Water Supply and Wastewater Management will be the first step for this task force in order to identify the shortcomings and gaps as against the norms of sound application of IWRM principles and best management practices (BMPs). The areas for opportunities in the application of STI for "wealth creation" and in "sustaining the resource" within this sub-sector will also be determined. The Advisory Report is expected to be completed in 2014.



Integrated River Basin Management Task Force

The task force on Integrated River Basin Management is overseeing a study to prepare a Position Paper on the status of IRBM. The Position Paper will identify issues and gaps facing IRBM. Arising from this Position Paper, an Advisory Report will be produced and expected to be completed in 2014.



Working Group on **Water-related Policies and Legislation**

This Working Group identifies gaps in the National Water Resources Policy (NWRP). Its specific objectives are to conduct critical reviews of the NWRP with respect to its advancement of adaptive capacity for climate change as well as other social and economic transformation; assess the adaptive capacity of water resource institutions, particularly with respect to their level of knowledge, usage of S&T as well as R&D; develop a framework that links water resource institutions to other institutions to enable the NWRP to serve as a precursor that promotes integrated natural resources management as well as to identify gaps and emerging issues of relevance to NWRP and related legislation. The Working Group will submit periodic Advisory Reports.

In a study conducted by ASM on Climate Change and Impact on Water Resources, 3 areas were identified. The recommendations are as follows:

Water Bodies & Recommendations

Rivers
Conduct climate change impact assessments for important rivers

Coastal Areas
Conduct long term wave measurement programmes for Malaysian coasts to support research on the impacts of storm surges and wave patterns on the coastlines

Conduct long term observation of the natural coastal evolution caused by storm surges and wave patterns

Conduct research to find the best methods to implement coastal reforestation

Adopt a policy that requires all coastline development to be guided by Integrated Shoreline Management Plans (ISMP)

Provide financial resources to develop ISMP for the country's coastlines and identify ways to ensure compliance with the ISMP recommendations such as the implementation of the Coastal Development Control Law

Lakes
Implement the lake management strategies developed by ASM and NAHRIM in 2011 that were adopted by the Ministry of Natural Resources and Environment (NRE) and endorsed by the National Water Resources Council (MSAN) in 2012

Groundwater
Implement the groundwater management strategies developed by NRE and endorsed by MSAN in 2008. Of utmost priority is a more detailed assessment nationwide of the groundwater resource

Water Services & Recommendations

Agriculture and Irrigation Water Supply
Implement measures and strategies to improve irrigation efficiencies in the eight granary areas

Implement low intensity tapping system and rain gutters for the rubber industry and enhance workers' skill to use new technology

Establish early warning system to monitor changes in rice and cash crop yield, promote farm-level rain-water harvesting, soil water management and drainage improvement

Conduct R&D to identify flood resistant crop varieties and agricultural drainage system should be designed to efficiently regulate water tables and remove flood waters from agricultural land as quickly as possible

Conduct R&D to improve crop modelling projections

Conduct R&D on crops that are more resistant to drought conditions

Hydropower
Conduct medium- and long-term catchment management in catchments with hydropower schemes to ensure sufficient runoff for hydropower generation

Promote the national implementation of grid-connected roof-top solar panels to reduce disruption risks and ease hydropower capacity requirements

Water Ecosystems
Setup a national inventory system for wetlands where basic information on the wetlands, including regular monitoring information can be archived

Conduct studies in important wetlands to identify the sensitive physical and biological parameters that will be affected by climate change

Setup monitoring programs to detect the impacts of climate change on the wetlands



Water-related Hazards & Recommendations

Potable Water Supply (Resource Management)
Adopt Integrated Water Resources Management (IWRM) and Integrated River Basin Management (IRBM) principles and approach in land-use planning to protect water supply catchments

Develop a long-term strategy for water resources management to achieve water security

Need for water-resources-rich states to protect their water catchments and develop them for export to water–stressed states

Potable Water Supply (Demand Management)
Set-up National and State-level IWRM Secretariats, in line with the National Water Resources Policy(NWRP), to develop strategies, implement, monitor and report regularly on the progress in the implementation of IWRM principles, including integrated thematic sector-based approaches based on IWRM principles, such as IRBM, Integrated Flood Management

Review the existing and future water supply infrastructure development plans recommended in the NWRP study, to anchor the plans on a targeted, sustainable per capita water consumption figure that is benchmark with the contemporary figures achieved by other countries



Adopt a policy of water supply capacity planning based on a targeted, sustainable per capita water demand figure, and make water supply planners, operators and consultants aware of such a policy so that the planning and operations of water supply infrastructures will be based on a constrained demand

Suruhanjaya Perkhidmatan Air Negara (SPAN) to impose requirement on water supply providers to develop and implement Water Safety Plans (WSP).This will address consumer confidence in quality of potable water supply

SPAN to setup a Water Demand Management Task Force to address the targeted, sustainable per capita water demand

SPAN to develop financial incentive structures to make water supply providers earn revenue from improved water supply performance

Develop strategies to increase the resilience of water supply system to cope with the projected increase in variability of river runoff arising from climate change

Flood
Department of Irrigation and Drainage Malaysia (DID) to update Hydrological Procedures related to design rainfalls and flood peaks to include projected design rainfalls

DID to update the design rainfalls in the Manual Saliran Mesra Alam (MSMA) to include projected design rainfalls

DID to update its 2003 Flood Study Report and derive the latest flood maps, including indicative flood maps for the projected design rainfalls

Water scarcity and drought
Increase water use efficiency and productivity of water in each sector

Develop an integrated drought management system based on the current procedure for drought management published by the National Security Council (MKN)

Human health
Aedes-proof buildings to mitigate dengue epidemic

Undertake remote sensing mapping of malaria vector areas on a regular basis

"Only about 30% of students are in the science -MOE,2013"

Science Education

ASM is fully supportive of the 5 aspirations and 6 attributes spelt out in the National Education Blueprint (2013 – 2025), launched by Deputy Prime Minister, YB Tan Sri Muhyiddin Yassin, in September 2013.

Study on the Implementation of Hands-On Inquiry-Based Science Education (IBSE)

ASM is concerned about the declining interest among Malaysian students in science and mathematics although the policy of "60-40" ratio of students pursuing science-stream subjects in secondary schools has been in place since 1967.

The ASM Study entitled "Teaching and Learning of Science and Mathematics in Schools – Towards a more creative and innovative Malaysia" recommends to adopt a hands-on and practical-based approach to teaching and learning of science and mathematics as a strategy to address the declining interest. This will entail moving away from a merely examination oriented and rote-learning system towards an Inquiry-Based Science Education (IBSE).

ASM is of the view that critical thinking is one of the much needed skills in mastering science and mathematics and it should be inculcated from a young age to avoid rote-learning by instilling independent analytical skills. The challenge here would be to have teachers with the right training, competence and attitude to mould students towards developing this skill. The IBSE approach facilitates creative as well as innovative teaching and learning of science and mathematics.





iNBRIEF

Critical thinking is defined as "intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and /or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action."

Source: www.criticalthinking.org

FACTSHEET

A 2-year pilot IBSE study

2 classes from each of the following Hulu Langat district, Selangor schools were chosen for the study:

SK Seksyen 7, Bandar Baru Bangi;
SK Seri Putra, Bandar Seri Putra;
SK Semenyih, Semenyih; and
SK Tasik Kesuma, Bandar Tasik Kesuma

The main objective of the study is to assess the effectiveness of applying "Inquiry-Based Hands-On" teaching and learning methodologies in Science Education.

5 training workshops were held for selected teachers with the participation of the Regional Centre for Education in Science and Mathematics (RECSAM). The Study Report is expected to be completed in April 2014 and will be submitted to the Ministry of Education for its consideration.

GLOBALMODEL

Finland has often been cited as an exemplary model in primary and secondary schools teaching. High quality teachers are the hallmark of Finland education system. Teaching in Finland, the "most respected" profession and primary school teaching is the most sought-after career. In Finland, teachers are professionals selected from the top 10 percent of the nation's graduates to earn a required master's degree in education. Nearly 30 percent of Finland's children receive some kind of special help during their first nine years of school. As an indicator in global ranking standards, in 2009, Finland was first in the PISA global rankings in mathematics, science and reading and in 2012, Finland was still top 10 in the ranking.

Source: http://www.learningfirst.org
http://energizestudents.org

Planning of Science Outlook 2014

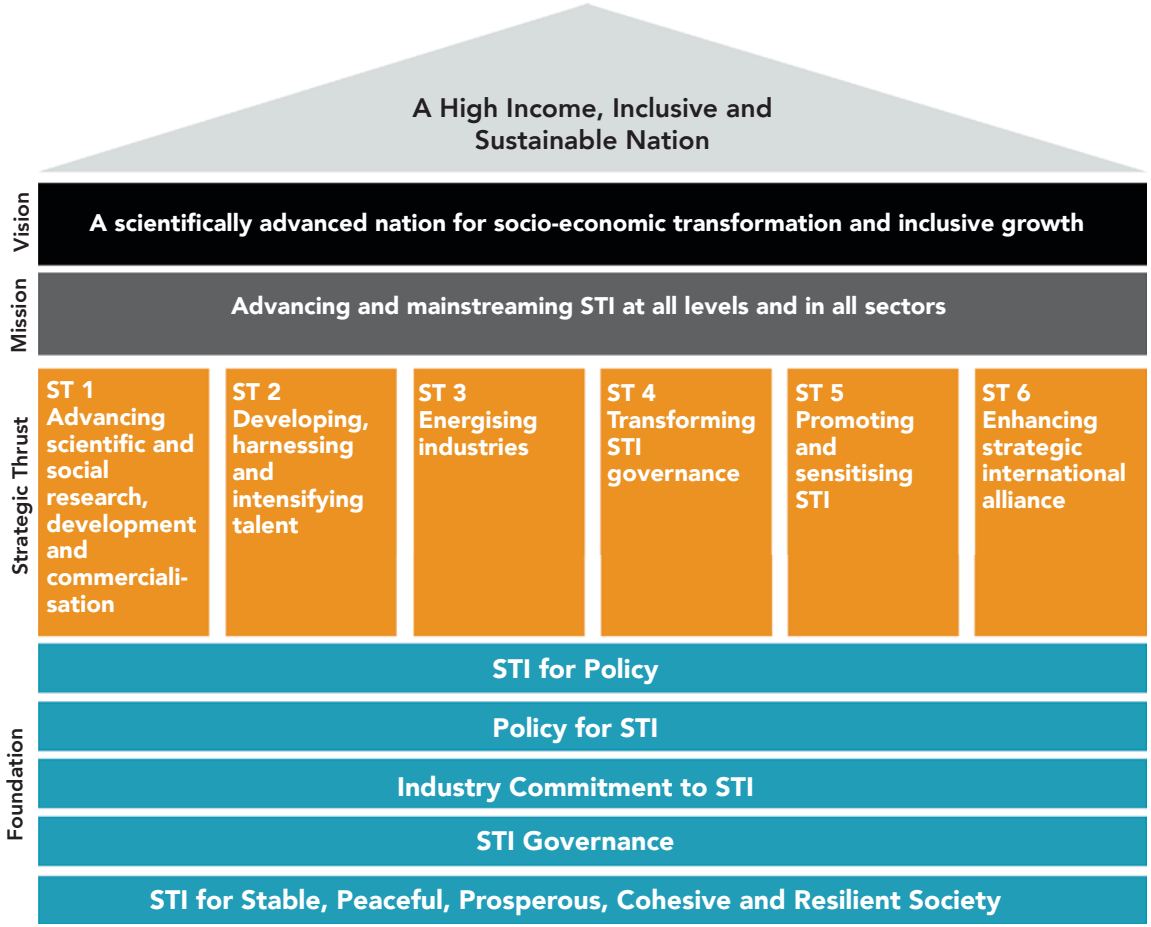
Science Outlook aims at informing stakeholders and policy-makers responsible for STI advancement about recent development and anticipated changes in the patterns of science, technology and innovation in relations to current and possible future implications for national STI development in light of the existing financial and economic situation at global and national levels.

This effort is imperative in helping the stakeholders to develop the big picture behind political, environmental, economic and social issues.

By capitalizing on diverse information resources, current aspects of S&T and its potential can be identified as well as to strategize for comprehensive advisory project. Information from on-going horizon process is provided through newsletters and Science Outlook projected to be published in 2014.

Science Outlook is based on 6 strategic thrusts of the National Science, Technology and Innovation Policy III *as seen on the diagram*.

Science Outlook offers insight into the performance of these 6 strategic thrusts; benchmarked against selected indicators. It intends to be the principal reference for policy-makers, S&T leaders, industries and researchers in evaluating the current global and national states of STI and to plan the long-term agenda and direction.



Seeding Ideas

ASM launched 2 initiatives to understand the fundamental aspects of how social science impacts policy for science.

Scientific Enterprise and Politics

This initiative started by scanning the correlation between the Gross Expenditure on R&D (GERD) with citation impact (H-Index) of scientists in 15 countries. The data gathered shows a positive correlation of high citation impact and inclination of policy makers to invest more public assets (GERD) in the development of science and technology. It also alluded to strong engagement between scientists and policy makers.

In recent years, science academies are becoming more proactive in engaging law makers to forge mutual understanding. In some countries, there is at least 1 member of Parliament championing science and technology in public forums. In less developed countries, scientists leverage on international donors or agencies to push S&T progress in the country.

GLOBALMODEL

Realizing the importance of comprehensive dialogue between lawmakers and scientists for the development of STI, Royal Society in UK has embarked on MP/Scientist Pairing Scheme since 2011. One of the components of the scheme is reciprocal visit, in which an MP or a civil servant will spend a few days visiting the research facility of a leading scientist, and in return, the scientist will be observing the works of the MP or civil servant in formulating decisions and solving issues in his/her constituency. In another component, Royal Society organises a week trip to Westminister that includes reception by the Parliament, seminars on general parliamentary proceedings and participation in Parliament's meetings. The response has been very positive, with the number of pairings increases from 6 in 2001 to 30 in 2012. The success of the Scheme has inspired similar programs in Uganda and Kenya, proving that bridging the world of scientists and the sphere of politics is a possibility.

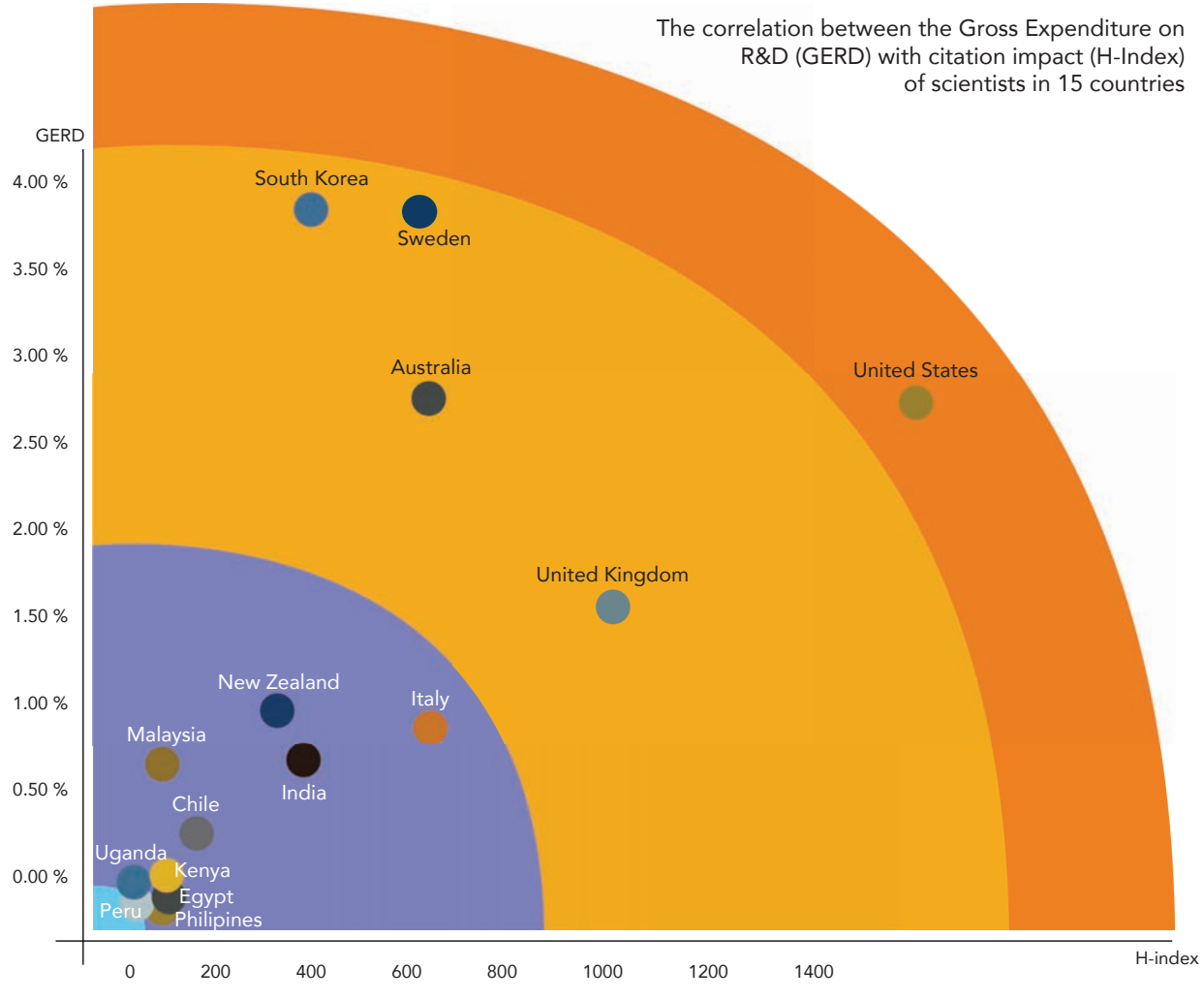
Source: royalsociety.org

FACTSHEET

1 meeting with Research Unit of Parliament

2 engagement activities with parliament members (General Assembly and ideaXchange)

The correlation between the Gross Expenditure on R&D (GERD) with citation impact (H-Index) of scientists in 15 countries



Zones and its attributes

- Lack of public understanding and appreciation of S&T
- Very low pool of S&T human capital to start advocacy
- No science think tank or local advocates for S&T

- Minimal public understanding or appreciation of S&T
- Advocacy groups, NGOs or academy of science has low influence
- Minimal discussion of science at public sphere

- General population have understanding and appreciation of S&T
- S&T issue frequently debated at public sphere
- Prominent politicians champion S&T agenda
- Academy of science has access to public debate and has influence

- General population have understanding and appreciation of S&T, value political involvement of scientists
- Each branch of government is supported by S&T advisory group
- NGOs, S&T association are proactive
- ASM's evidence-based input in briefings and laws

Scientific Enterprise and Al-Quran

There has been evidence that much of the scientific breakthroughs have been revealed in the Quran. This program is an attempt to be proactive by exploring untapped ideas in science mentioned in the Quran. With this initiative, ideas can be converted via fundamental research to purposeful commercialization of useful products or services through the establishment of scientific enterprises.

In an attempt to form a science consortium for this initiative, ASM partnered with Universiti Sains Islam Malaysia (USIM) and Institut Kefahaman Islam Malaysia (IKIM). With a deep acknowledgement of the works by the Muslim scholars, this project aims to provide a solid basis for a strategic action plan by digging up old manuscripts to spearhead sustainable researches that are relevant and applicable for the benefits of the society, nation and humanity at large. ASM plans to form a formal platform under its science consortium agenda.

Expected outcomes of the scientific consortium include:

1. An integrated semantic database on the health effects of honey (both naqli and aqli)
2. Academic publications in indexed or impact factor journals and books or chapters in books.
3. The project will also produce report that proposes ideas for new areas of research, which will serve as the basis for charting the roadmap of Islamic Science research for the benefit of the society, nation and humanity.

iNBRIEF

In early 2013, study visits to UK were done to stock take what other international organizations are doing in studying old Muslims scientists' manuscripts. Later in the year, a meeting was held among local partners to decide on the direction of this collaborative project. It was agreed that in the first phase, as led by USIM, the collaboration will establish a systematic and holistic knowledge framework on the Prophet's dietary regime; both in the preservation of life and treatment of disease, by an integrated systematic review of naqli (revealed) and aqli (current scientific) knowledge.

FACTSHEET

Euro Research Council (ERC)
Corpus analysis of Arabic Commentaries on Hippocratic Aphorisms (concise statements of principles)

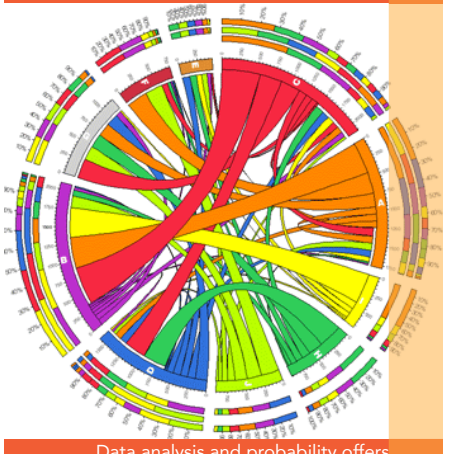
Translations & analysis of manuscripts from Ancient Near Eastern herbals (Arabic, Greek, Syriac, Babylonian)

Creating a database of published & unpublished manuscripts on Islamic Philosophy & Theology from 13th to 16th Century

British Library
Digitalization of Manuscripts (Arabic, Persian, Southeast Asia, India)

The Warburg Institute, University of London
Impact of Islamic Philosophy Tradition towards the Theory & Practice in Medicine, Medicine of the Soul, Ethics in Medicine





Data analysis and probability offers the chance to apply real life situations to mathematics.



Rare Earth elements



Mining of Rare Earth

Emerging Technology

Rare Earths – A New Source of Economic Growth for Malaysia

The expansion of the world's rare earth supply outside of China has been severely constrained not by a lack of mine-able mineral resources, but by a lack of necessary separation and refining capacity.

With the projected expansion in the green economy globally, the world demand for rare earths and the associated green downstream products will further expand. The deployment of green technology products in all spheres of human activities are growing by leaps and bounds.

In view of the reaction generated worldwide due to the reduction of rare earths export by China, what is certain is that the business opportunities in the rare earth industry are destined to be even more lucrative in the coming years.

Towards capitalizing on the expected demand for rare earth-based green technology consumer products, the ASM Task Force on Rare Earths was established to develop a "Blueprint on Rare Earths Industries in Malaysia". The main objective of this initiative was to prepare a blueprint outlining the benefits of establishing and developing a total full scale rare earths industry in Malaysia in the upstream, mid-stream and downstream sectors (including identifying the necessary capacity building needs).

FACTSHEET

In developing the Blueprint, the Task Force visited the following local and international organizations to gather relevant information and conducting in-depth qualitative analyses on industry R&D needs, talent and capacity enhancement for the Blueprint:

1. Korea Institute of Rare Metal
2. Samsung SDI Co. Ltd. Cheonan Plant
3. Korea Institute of Geoscience and Mineral Resources
4. National Institute for Material Science (NIMS), Japan
5. Geological Survey of Japan Advanced Industrial Science and Technology (AIST), Japan
6. Centre for Social Responsibility in Mining, University of Queensland
7. University of Western Australia
8. Central Institute of Technology, Australia
9. Commonwealth Scientific and Industrial Research Organisation (CSIRO)
10. Department of Mines and Petroleum Western Australia
11. Polytechnic West – Carlisle Campus
12. TAFE College, Seremban
13. Selinsing Gold Mines, Pahang
14. Edubest Resources Sdn. Bhd., Pahang
15. Aras Kuasa Sdn. Bhd., Pahang

The Academy had also organized the following events:

1. International Seminar on Rare Earths
2. Seminar on the Potential Economic Returns of Rare Earth Industries in Malaysia – A New Source of Green Economic Growth
3. Workshop on Blueprint for the Establishment of Rare Earth Industries in Malaysia – A Strategic New Source for Economic Growth

FACTSHEET

- 2010, **US$2½ billion – US$3 billion** global market value of rare earths oxides
- 2011, **US$10 billion – US$15 billion** global market value of rare earths oxides
- 2013, **US$3 billion – US$5 billion** global market value of rare earths oxides

The demand for heavy rare earths elements is expected to be on the rise as their supply is limited with cut-backs from the mines in China owing to China clamping down on illegal mining and stock-piling for its own use.

(Source: Kingsnorth, 2013)

In terms of rare earths use in manufacture of permanent magnets (where heavy rare earths elements are used), it is expected that the market will be worth some US$18.8 billion by 2018.

(Source: www.marketsandmarkets.com)

"by Malaysians, of Malaysians and for Malaysians"

STI Consultancy Provider

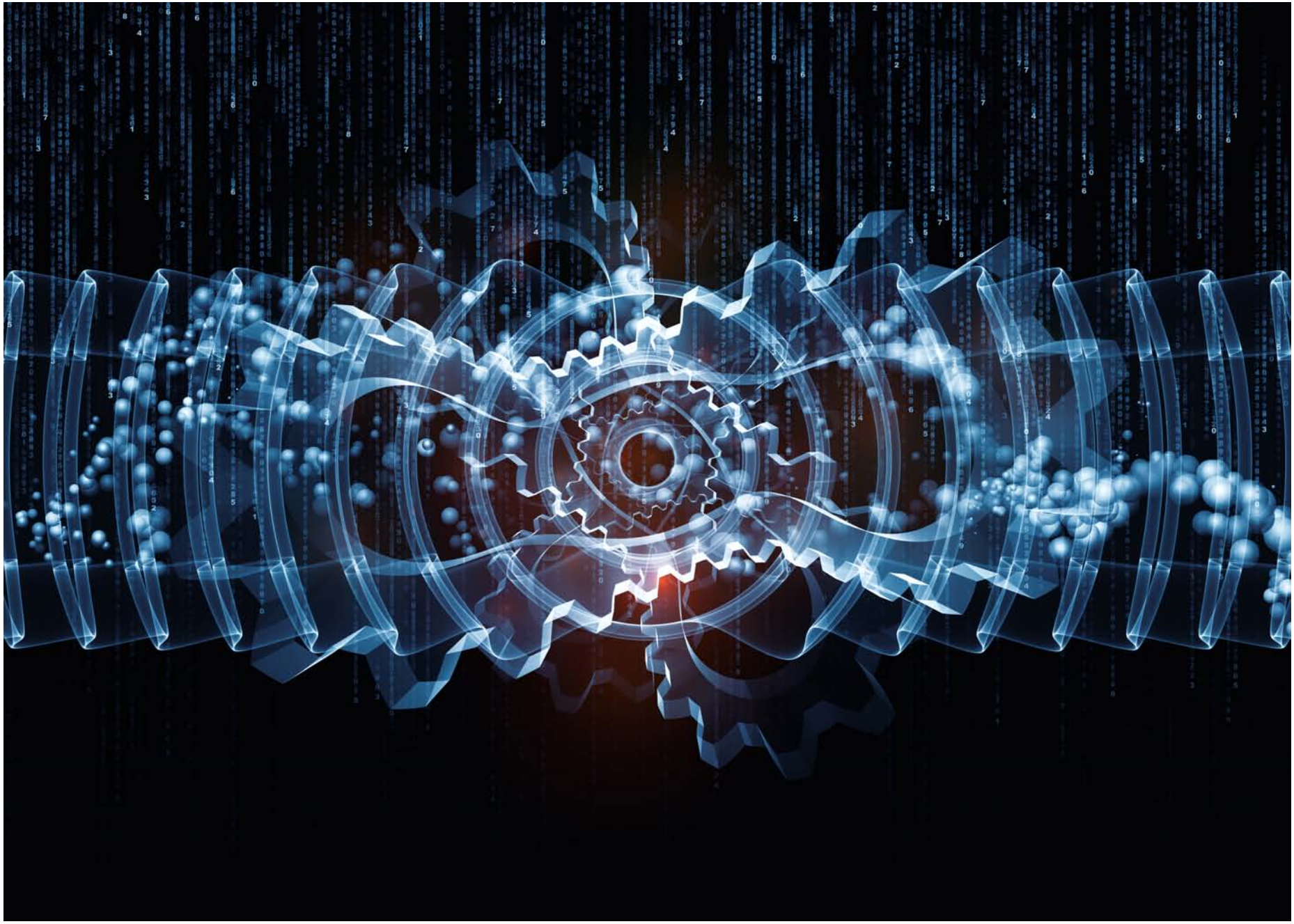
ASM has focused on this initiative to extend our pool of expertise and strong international linkages towards STI consulting services to use resources within organizations to provide relevant insights and analysis for informed decision making.

In 2013, consultancy work undertaken by ASM were:

(i) "Status Report on Sustainability in Malaysian Palm Oil Industry" for Malaysian Palm Oil Council (MPOC)

(ii) "Impact Assessment of Malaysian Research Universities (MRU) Data" for Ministry of Education Malaysia





02___EMPOWERING THE SCIENTIFIC COMMUNITY

—— ASM empowers the scientific community through its STI Programmes channeled through four major platforms which are capacity-building, science consortium, global linkage gateway and consultative fora. These channels are targeted to facilitate the elements of recognition, talent and alliance in the STI landscape.



Human Capital Development

STI capacity building is an absolute necessity for Malaysia to compete in today's increasingly competitive world. In its effort to promote the development of the Malaysian human capital in the STI fields, ASM has organised a number of programmes focusing on enhancing the soft skills of our scientists and recognizing their outstanding talents in research and development. These programmes also act as a platform for networking opportunities among researchers.

Training Programmes

ASM organised training workshops to enhance the soft skills of scientists and researchers such as in technical writing, communication skill, pedagogy and hands-on training in research techniques. These programmes nurture Malaysian researchers to become more competent and highly capable.

iNBRIEF

8 trainings were organised in 2013

- 2 Training Workshops on "Technical Writing for Research and Publications"
- 2 ASM Training Workshops on "How to Write a Winning Research Proposal?"
- ASM Short Course on "Carbon Markets"
- International Education Workshop on "Educational Institute on Responsible Science"
- 9th Science, Technology and Innovation (STI) Management Training Course for Researchers in OIC Countries
- ASM Training Workshop on "Science Journalism"

220

International participants benefitted from OIC Training Programme organised by ASM since 2005

114

participants from higher education institute

62

participants from research organisation

44

participants from government agencies

10

participants from private companies

Young Scientists Development

One of the greatest challenges facing a rapidly developing country such as Malaysia is the development of human capital. ASM actively partners with STI institutions and organizations globally to develop high calibre young scientists capable of gaining international recognition and contributing to global advancement of STI. These programmes take various forms such as study visits, organizational attachments and mentor-mentee engagements.

CERN Summer Student Programme

This programme offers undergraduate students of Physics, Computing and Engineering a unique opportunity to join the research teams participating in theoretical and experimental particle physics and computing at CERN in Geneva, Switzerland. The selected students will work in a multidisciplinary and multicultural environment in order to gain exposure and insights into an excellent research culture at CERN. It is a rare opportunity to make valuable and long lasting contacts with other students and scientists from all over the world.

iNBRIEF

- 33 participants from local universities and research centres which includes applicants for the CERN Summer Student Programme attended the ASM-UM-NM School on Nuclear and Particle Physics.
- Nurfikri Norjoharuddeen (UM), Dhiyauddin Ahmad Fauzi (IIUM), Hoh Siew Yan (UKM) were selected to participate in the 2013 CERN Summer Student Programme.

Young Physician Leaders Programme

Young Physician Leaders (YPL) is a yearly programme organised by the Inter Academy Medical Panel (IAMP). Together with the partnership from M8 Alliance of Academic Health Centers and Medical Universities in Asia, IAMP selected 20 outstanding young physician leaders amongst 40 nominations received from IAMP member academies in Asia, including ASM and from member institutions of the "M8 Alliance".

Selected candidates for the year of 2013 attended the World Health Summit in Berlin, Germany. They were provided with mentorship opportunities by IAMP members, and to join a unique alumnus of Young Physician Leaders worldwide for networking, mutual support and peer mentorship.

This programme provided benefits in leadership development by carrying out various exercises and getting inputs from experiences in senior leadership from IAMP Co-Chairs and other scientific leaders. They also had their chance to visit the Bayer Science & Education Foundation.

FACTSHEET

- **4** Malaysian young scientists have attended the programme since 2011.

Young Scientists Meeting with Nobel Prize Winners

Since 2004, 46 Malaysian young scientists have met with the Nobel Prize Winners in the fields of Physics, Chemistry and Physiology or Medicine, at the Young Scientists Meeting in Lindau. This inter-generational dialogue offers an excellent avenue to develop our young scientists by providing them an opportunity to not only gain knowledge and enhance interaction with Nobel Laureates but also their peers from all over the world. Participants at the Lindau Meeting are chosen from among the best in academic institutions and foundations all over the world.

46
Malaysian Young Scientists have since participated

34
Nobel Laureates congregated in Lindau, 2013

625
undergraduate and postgraduate students from 77 countries

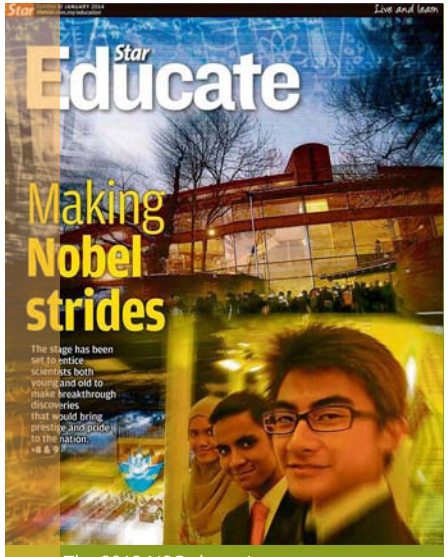
4
Malaysian young scientists participated in the meeting

iNBRIEF

The 2013 Lindau Meeting, (dedicated to Chemistry) was held from 29 June – 5 July 2013 at Lindau, Germany. The Malaysian delegation was led by Academician Emeritus Professor Dato' Dr VG Kumar Das FASc.

The meeting featured 34 lectures, 9 discussion sessions, master classes and 3 roundtable discussions on 'Chemical Energy Conversion and Storage', 'Why Communicate' and 'Green Chemistry'.





The 2013 NSC champions featured in The Star



2013 NSC Semi finalists: MyScience Race Round

Science Engagement

Engaging young adults in science engagement activities enables ASM to inculcate the interest of science and technology and increase the level of appreciation among Malaysians.

National Science Challenge

NSC is a science competition designed to promote understanding, awareness and appreciation of science, engineering and technology among secondary school students. The Grand Prize includes the 'Prime Minister's Challenge Trophy, a Study Visit to Stockholm and the opportunity of witnessing the Nobel Prize Presentation Ceremony.

The competition was organized in collaboration with ExxonMobil Subsidiaries Malaysia Incorporated, Ministry of Education Malaysia (MOE), the Young Scientists Network-ASM (YSN-ASM) and Universiti Putra Malaysia (UPM).

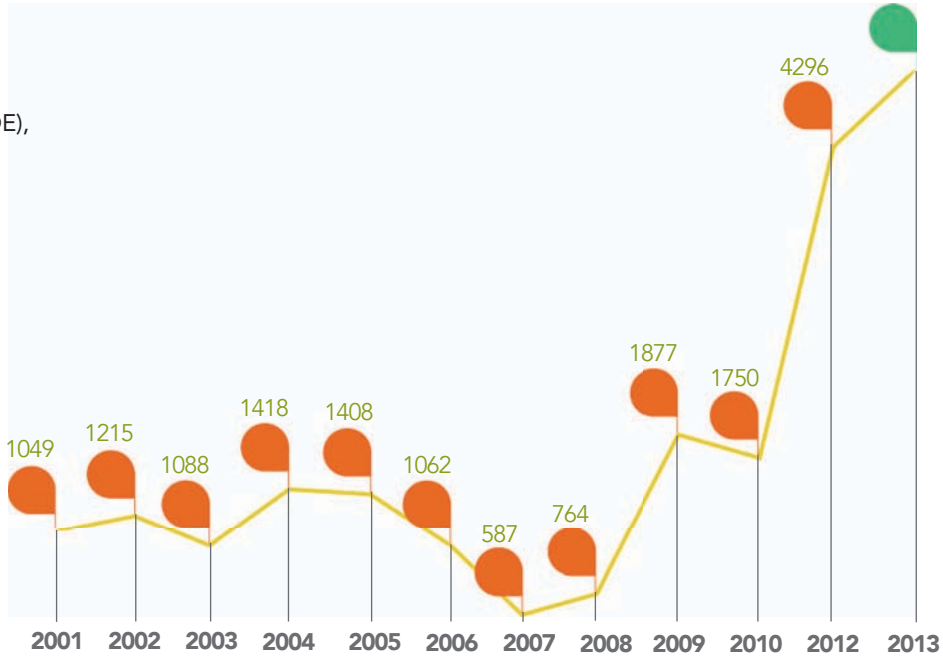
80
teams at State Level

16
teams at Semi Finals

4
teams at Grand Finals

2013
NSC Champion: Kolej Yayasan Saad Melaka

4847
Teams took part in the 2013 preliminary level



Total number of teams participated in the 2013 National Science Challenge

i-INOVA'13

Cabaran Inovasi 2013 (i-INOVA'13) was a programme under the Inclusive Innovation Programme by the Ministry of Science, Technology and Innovation (MOSTI) and co-organized by ASM, Universiti Sains Islam Malaysia (USIM) and Universiti Sains Malaysia (USM). The programme aims to encourage the invention of innovative products among local and international institutions of higher learning (IHLs) and research institutes (RIs) to meet current needs through an exhibition and competition.

FACTSHEET

- **140** products participated and competed

Following are the results:
- **12** received Gold Medals
- **16** received Silver Medals
- **30** received Bronze Medals

7,000 attendees including researchers, government officials and NGOs

For further information, refer to www.i-inova2013.usim.edu.my

ScienceBuzz

Sciencebuzz.my promotes appreciation of science by presenting information in a digestible and understandable form. The portal targeting young adult aged 13-40 years, comprises of local flavoured articles which explains science in daily life and featured activities for visitors to interact with scientists and discuss on science issues.

iNBRIEF

I'm a Scientist, Get Me Out Of Here is an online reality programme adapted from UK where students and scientists get engaged through online chatting. The themed chatting enables students to gain knowledge on the selected subject.

ASM conducts the session in collaboration with Gallamanor Communication Ltd, UK.

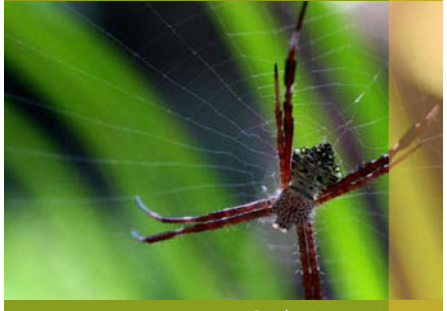
FACTSHEET

- **22** new articles
- **34774** people viewed "The Power of Karaoke" article
- **436** people viewed the "Spider Hearing" photo
- **3** science memes
- **42** entries for Poster Contest
- **7** schools participated in the I'm A Scientists, Get Me Out of Here programme with a total of **223** students and **5** scientists
- **4** roadshows

230,725 unique visitors
278,128 number of visitors
47,341 returning visitors



Mohd Rafiuddin Dasuki Shaari's winning poster for the article titled *The Power Of Karaoke*



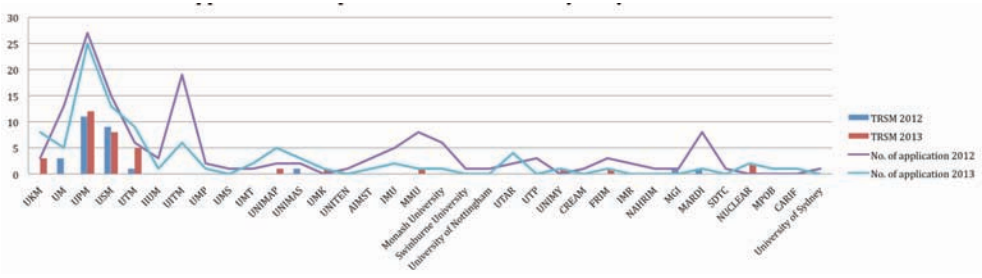
'Spider Hearing'

Recognition

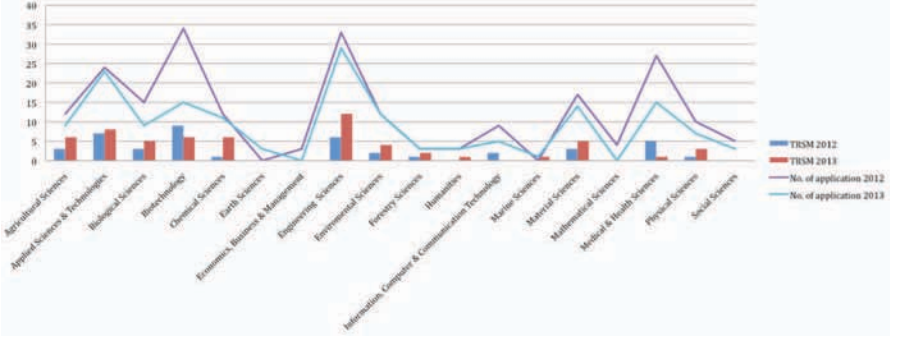
Top Research Scientists Malaysia

The Top Research Scientists Malaysia (TRSM) is a database of Malaysian research scientists. Each year, research scientists with outstanding contribution for the last 5 years in their respective fields are recognisezd by the ASM. The database is an initiative of ASM to build a culture of excellence among Malaysian scientific fraternity.

ASM provides TRSM scientists access to top down research, facilitation to international grants and attachments in centre of excellence and many other opportunities to elevate their work further. They also become the point of reference in their area of expertise.



Number of applications and Top Research Scientists Malaysia by Institutions 2012 & 2013



Number of applications and Top Research Scientists Malaysia by Main Area of Expertise 2012 & 2013

FACTSHEET

TRSM

- **35** Top Research Scientists Malaysia were identified in the second cycle (2013) from research and higher learning institutions based on their outstanding achievements and performance.
- **62** scientists have been recognised as Top Research Scientists to date

Awards and Grants

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

Mahathir Science Award

This international award by the Mahathir Science Award Foundation (MSAF) recognizes remarkable contributions and innovations in pioneering tropical research discovery or innovative solution in the field of Tropical Agriculture, Tropical Medicine, Tropical Natural Resources and Tropical Architecture and Engineering that have brought positive impact on the well-being of the society.

iNBRIEF

Professor Alan Cowman from the Walter and Eliza Hall Institute of Medical Research, Australia was awarded the 2013 Mahathir Science Award in the field of Tropical Medicine. He was recognised for his ground-breaking research on Malaria that has led to effective understanding of the pathogenesis of the infection and innovative technological development of reverse genetics of Plasmodium falciparum, describing the first gene knock out for this organism.

Makna Cancer Research Award

The National Cancer Council (MAKNA) provides awards to young Malaysian researchers who undertake cancer related research. The award aims to promote cancer research among young scientists as well as to increase Malaysia's participation in finding cure for cancer. ASM has been involved in the selection exercise since 2002.

Anugerah Saintis Muda Negara

The Anugerah Saintis Muda Negara recognises Malaysian young scientists for their contribution and achievement in R&D. Professor Madya Dr M. Iqbal Saripan from Universiti Putra Malaysia received the 2013 Anugerah Saintis Muda Negara.

Anugerah Juruteknologi Negara

The Ministry of Science, Technology and Innovation (MOSTI) awards technologists and semi-professionals, such as technicians and laboratory assistants, for their contribution and achievement in the fields of science and technology. The 2013 Anugerah Juruteknologi Negara was won by Norman Jamlus from Telekom Research & Development Sdn. Bhd.

Anugerah Harta Intelek Negara

An award by the Ministry of Domestic Trade, Co-operatives and Consumerism (MDTCC) through the Intellectual Property Corporation of Malaysia (My-IPO) to recognize Malaysian inventor or intellectual property inventors for their contribution in the area of intellectual property in social and economic growth of the country for the category of organisation and patent. 2 ASM Fellows contributed as members of evaluation panel in the selection of the awardee.

FACTSHEET

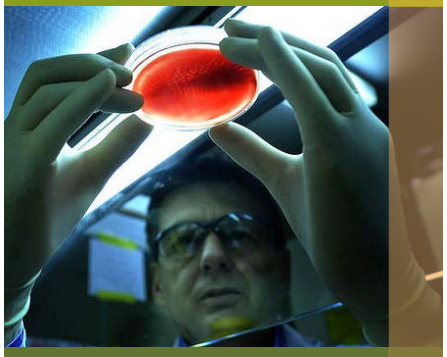
AWARDS

Mahathir Science Award
- **140** nominations received from **22** countries (2005 - 2013)
- **8** awardees to date, with total prize worth RM 1,200,000
- **29** nominations received from **11** countries (2013)

Anugerah Saintis Muda Negara
- **38** young scientists awarded to date
- **31** nominations received

MAKNA Cancer Research Award
- **345** applications (2001- 2013)
- **38** awarded to date with total grants worth RM 1,265,000
- **3** were awarded in 2013 with a total grant worth RM30,000 each

Anugerah Juruteknologi Negara
- **5** nominations received and **1** was awarded



Professor Alan Cowman, winner of 2013 MSA, inspecting a petri dish of human blood with malaria parasites



Evaluation of ScienceFund, Community Innovation Fund (CIF) and TechnoFund Applications

Research grants by MOSTI are given to research scientists and engineers, community groups as well as industries. ASM Fellows have been involved in the evaluation process of the grants since 2007.

Monitoring of Approved ScienceFund, Community Innovation Fund (CIF), TechnoFund and Flagship Programme Projects by the ASM Project Monitoring Team (PMT)

The approved ScienceFund, CIF and TechnoFund projects have been monitored by the ASM Project Management Team (PMT) through monitoring workshops,meetings and site visits. As the PMT, ASM is responsible for the approval of disbursement for the subsequent phase of the project.
All allocation received from MOSTI (2007-2013) for monitoring and evaluation were dealt with in accordance with MOSTI's guidelines.

FACTSHEET

- **268** total ScienceFund
- **5** CIF
- **12** TechnoFund projects evaluated by 42 ASM Fellows and Associates during the evaluation process in 2013

FACTSHEET

GRANTS

Evaluation of MOSTI's Grant applications by ASM Fellows (2007 - 2013)

- **1568** ScienceFund projects
- **55** Community Innovation Fund (CIF) projects
- **28** TechnoFund projects

Monitoring of research projects funded by MOSTI Grants by ASM Fellows (2007 - 2013)

- **380** ScienceFund projects
- **36** CIF projects
- **2** TechnoFund projects
- **1** Flagship Programme

ScienceFund projects led by Fellows under ASM platform

- **2** projects were approved and on-going
  - Geopolymer Cement from Ground POFA by Alkali Activation Method
  - Time Dependent Changes of Morphology and Molecular Characterization Around the Intracerebellar Haemorrhage (ICbH) Penumbra in C57B6/J Mice Brain Slices

Monitoring of research projects funded by MOSTI Grants by ASM Fellows in 2013

- **62** ScienceFund projects
- **5** CIF projects
- **2** TechnoFund projects
- **1** Flagship Programme
- **15** ASM Fellows involved in the monitoring exercise

Gateway

In the 21st Century, Science has become an increasingly global enterprise. As reported in the Knowledge, Networks and Nations Report on Scientific Collaboration in the 21st Century by the Royal Society, the current global scientific landscape is marked by over 7 million researchers worldwide who are motivated by the desire to work with the very best people and facilities in the world.

In cognisance of this, ASM serves as an international gateway for local scientists to reach out to the world. The aim is to provide opportunities for Malaysian researchers to share knowledge, to build expertise as well as to intensify scientific and technological capabilities. This enables the nation to mainstream its STI agenda in global science and technology advancement via international partnerships.

Malaysia's Bid to Join the Compact Muon Solenoid CMS experiment at CERN

ASM President met the Director General of CERN, Professor Rolf-Dieter Heuer and discussed on taking the collaborative efforts between CERN and Malaysia forward. One of the first steps in this direction was Malaysia's candidacy to join the Compact Muon Solenoid (CMS) collaboration at CERN. In September 2013, Malaysia was successfully elected by the CMS Board as a member of the CMS Collaboration. This has opened up a tremendous opportunity for Malaysian researchers to be involved in joint-research with scientists, engineers, and technologists involved in cutting-edge research at CERN.

ISTIC & ICSU Regional Offices

ASM continues to host two international STI offices namely the International Council for Science Regional Office for Asia and the Pacific (ICSU-ROAP) and the International Science, Technology and Innovation Centre for South-South Cooperation under the Auspices of UNESCO (ISTIC). Through these offices, ASM has access to international network and able to facilitate countries in the south in STI development.

ASM Fellows have been invited to share their expertise and experience at ICSU-ROAP and ISTIC organised activities including in the areas of science policy, science education, women in science, technopreneurship,energy, environment and health nexus. A Fellow of ASM has also been appointed as steering committee member of ICSU-ROAP project on Urban Health and Well-being.

iNBRIEF

The 2013 Nobel Prize in physics was awarded jointly to François Englert and Peter Higgs for the theoretical discovery (initially theorised in 1964) of a mechanism that contributes to our understanding of the origin of mass of subatomic particles, which was confirmed in 2013 through the discovery of the predicted fundamental particle, by the ATLAS and CMS experiments at CERN's Large Hadron Collider.

FACTSHEET

CMS - related Research

- **4300** particle physicists, engineers, technicians, students and support staffs from **182** institutions in **42** countries

Source: home.web.cern.ch/



Young Scientists Add Strength to ASM Network

The Young Scientists Network of the Academy (YSN-ASM) functions as an avenue to bring together outstanding Malaysian young scientists to a common consultative platform that facilitates:

(i) Networking and collaboration opportunities

(ii) Exchange of science, technology and innovation (STI) knowledge and views to influence policy decisions for nation building

(iii) Consolidated representation of the voice of young scientists on STI matters of national and international significance

(iv) Creation of a pool of highly talented and motivated young scientists that can interact, coordinate and implement relevant programmes to contribute towards enhancement of STI capacity and capability in Malaysia.

YSN-ASM organized a strategic workshop to coordinate YSN-ASM future activities and to officially inaugurate 20 new YSN-ASM members.

52

total YSN-ASM members to date

11

Medical & Health Sciences

6

Chemical Sciences

7

Biological, Agricultural and Environmental Sciences

4

Mathematics, Physics and Earth Sciences

iNBRIEF

YSN-ASM members participated in the following activities:

- 'Expert Workshop on the Global State of Young Scientists' Hannover, Germany (12 - 15 May 2013)
- ASM Roadshow: Top Research Scientists Malaysia, Young Scientists Network & Mahathir Science Award, Universiti Malaysia Sabah (23 July 2013)
- ASM Roadshow: Top Research Scientists Malaysia, Young Scientists Network & Mahathir Science Award, Universiti Malaysia Sarawak (30 August 2013)
- Co-organized the 2013 National Science Challenge
- International Seminar on Enhancing National Youth Policy: Incoperating Internationalization of Youth and Professionalising Youth Work, Kuala Lumpur (30 September - 5 October 2013)
- 'An Open World: Science, Technology and Society in the Light of Niels Bohr's Thoughts' Conference, Copenhagen, Denmark (4 - 6 December 2013)
- Co-organized the Science Journalism Workshop (9 - 11 December 2013)
- Organized the 2013 YSN-ASM Strategic Workshop (12 - 14 December 2013)

Engaging With World Academies of Science

ASM organized 3 exploratory missions and 1 training workshop with 4 academies:

- National Academy of Science Belarus to become a focal point in ASM's science consortium for materials science research.
- Hassan II Academy of Sciences and Technology, Morocco for joint research programs and exchange of expertise in the areas of renewable energy as well as science and mathematics education.
- Initial discussion with the Australian Academy of Technological Sciences and Engineering to develop teaching module on engineering subject.
- International Education Workshop on "Educational Institute on Responsible Science", organized by the U.S. National Academy of Sciences (NAS). It aimed to develop a regional network of faculty trained to teach on issues related to life sciences research.

FACTSHEET

ASM has connected with **51** world academies out of **106**. In addition, **21** international STI organizations work closely with ASM

- **13** Facilitators for International Education Workshop (appointed by US National Research Council)
  - **6** from the USA, **1** from the UK, **1** from Egypt, **2** from Pakistan, **1** from India & **2** from Malaysia
- **19** Participants
  - **8** from Pakistan, **7** from India & **4** from Malaysia

Science Consortium

One of ASM's role is to facilitate various platforms for Malaysian scientific community to connect with the global scientific community to leverage on opportunities for sharing of knowledge, building expertise as well as enhancing science, technology and innovation (STI) capacity and capability in the context of global science and technology advancement.

The science consortium concept is an ASM initiative to bring together the government, research institutions, universities and global centres of excellence to facilitate research collaborations and enhance human capital development in fundamental and applied sciences. This is done by synergizing local research efforts in selected STI areas through a national centre that would be a focal point for inter-institutional and international collaboration in global scientific projects.

Establishment of the National Centre for Particle Physics (NCPP)

The first centre to be established under the science consortium concept is the National Centre of Particle Physics (NCPP) hosted at University of Malaya. ASM is the enabler for local scientists to participate in research with the members of the Compact Muon Solenoid (CMS) Research Group at CERN through the NCPP. The CMS Research Group comprises of 42 countries.

In 2013, ASM had successfully bid to join the CMS Research Group. This provides ASM with an opportunity to fill an important gap in the Malaysian research scene in the area of Physics .

The centre would be able to play a central role in the formation of a consortium for particle physics research in Malaysia through separate agreements with interested partner universities or research institutes. The centre would also serve to nucleate collaborations with other international centres for particle physics.

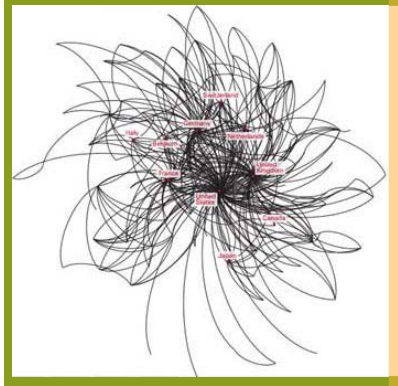
iNBRIEF

In order to formalise the establishment of the centre, a Memorandum of Understanding (MoU) for Academic Cooperation has been signed between ASM and UM on 27 August 2013.

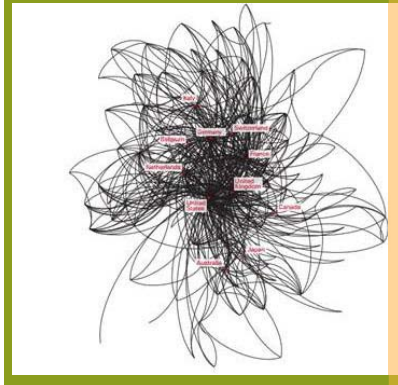
Prospective Collaborations with KTH Royal Institute of Technology and the National Academy of Sciences of Belarus in Materials Science

ASM focuses on fostering a culture of excellence in science, technology and innovation, facilitates scientific exchange and collaboration with world renowned centers of excellence and science, technology and innovation (STI) institutions.

A workshop was organized as an exploratory step in that direction with the KTH Royal Institute of Technology, Sweden. An exploratory mission was also organized to hold discussions with the National Academy of Sciences of Belarus (NASB) on Materials Science. The aim of the discussion was to set-up a collaborative network on materials science research involving NASB, KTH Sweden and a consortium of Malaysian institutions of higher learning and research institutes.

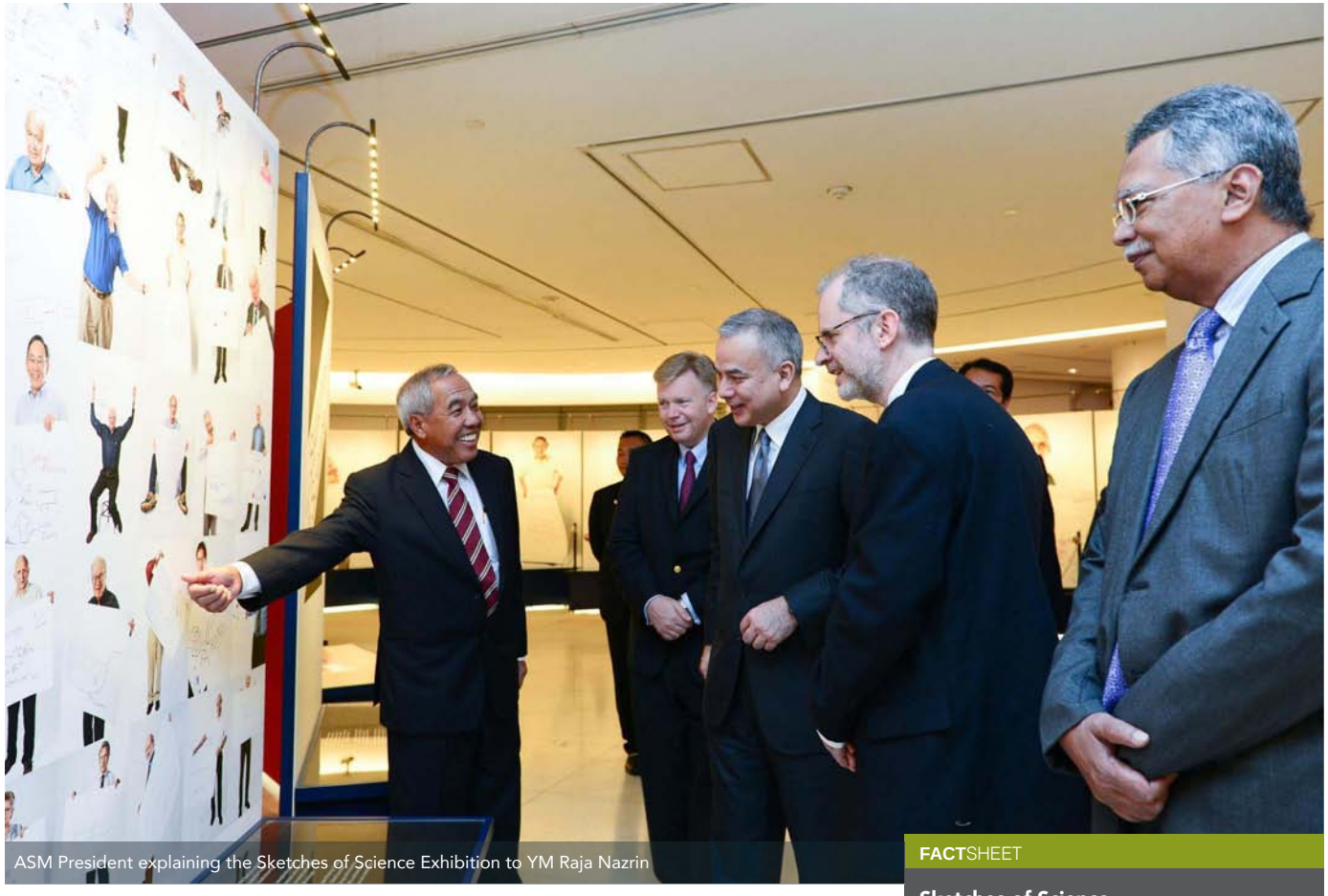


Global Collaboration 1996 - 2000



Global Collaboration 2004 - 2008

The network maps represent patterns of collaborations between countries – quoted from 'Knowledge, Networks and Nations: Global Scientific Collaboration in the 21st Century' Report .



ASM President explaining the Sketches of Science Exhibition to YM Raja Nazrin

Consultative Fora

ASM paves a platform to initiate intellectual discourses, promote advocacy in science and technology development, and boost global recognition for both international and national science experts. It provides feedback, recommendations and advice for consideration by key decision makers of the country for further implementation that fits the local STI ecosystem.

Showcasing role models of science.

The hosting of Sketches of Science: Photo Sessions with Nobel Laureates exhibition is an apt reflection of the ASM's call to the Malaysian people particularly the young generation to 'Think Science', 'Celebrate Technology' and 'Inspire Innovation'. It is about communicating science in an interesting manner. It is about inspiring a culture of excellence. It is about developing a thinking, innovative and progressive society. Complementing this, 21 eminent Malaysian scientists who have made a major impact in their respective fields, were featured under the banner of "Faces of Science @my".

FACTSHEET

3 eminent local scientists who were featured in Faces of Science @my" delivered thematic talks in ASM Café Scientifique.

1 Nobel Laureate Motivational Talk was delivered by Nobel Laureate Professor Dr Lee Yuan Tseh, ASM Honorary Fellow.

FACTSHEET

Sketches of Science
Photo Sessions with Nobel Laureates, is an exhibition by the Nobel Museum in collaboration with the Foundation Lindau Nobel Laureates Meetings.

- **50** portraits of Nobel Laureates and drawings of their discoveries were captured by German photographer Volker Steger and displayed in exhibition.
- Kuala Lumpur is the **7**th city to be chosen for this travel exhibition.
- **10 000** visitors over **51** days

03___GATHERINGS

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

Annual General Meeting

ASM's 18th Annual General Meeting held on 27 April 2013 congregated 100 ASM Fellows. The meeting approved the 2012 Annual Report, the financial statements (ending 31 December 2012) and appointed the external auditors for ASM. ASM Council members for the term 2013 - 2015 and new Fellows were also elected.

General Assembly

This was the largest assembly of ASM Fellows which was organized with a more focused agenda to deliberate on STI issues of national importance.

The 3rd General Assembly themed ***Science and the Economy: Challenges for Malaysia*** was deliberated by YB Tan Sri Rafidah Aziz.

The 4th General Assembly was also held on 23 November 2013 to deliberate on the theme, ***Future of Science in Nation-Building: How can Youths Contribute?*** The following four speakers were invited to share their views on the topics:

YB Dr Hj Noor Azmi Ghazali
Member of the Parliament of Malaysia for the Bagan Serai constituency in Perak

Dato' Saifuddin Abdullah
Chief Executive Officer,
Global Movement of Moderates

YB Tuan Nik Nazmi Nik Ahmad
Deputy Speaker of the Selangor State Assembly and the Seri Setia State Assemblyman

Associate Professor Dr Abhimanyu Veerakumarasivam
Member of the Young Scientists Network-ASM

IdeaXchange

This is a platform for scientific community especially ASM Members to exchange ideas, discuss interdisciplinary matters and debate on STI topical issues. In 2013, the following topics were discussed:

18 January 2013
- ASM Science Journal – The way forward Study on "Sustainability in Palm Oil Industries in Malaysia"

15 March 2013
- 'i3C Platform' by Academician Dr Ho Chee Cheong FASc
  Human Capital Roadmap by Professor Datuk Dr Halimaton Hamdan FASc
  ASM Research Fellowship

21 June 2013
- Forum on Scientific Enterprise & Politics – Bridging the Two Worlds

12 September 2013
- Discovery of an important gene that impacts oil palm yield in two groundbreaking publications in *Nature* by Dr Ravigadevi Sambanthamurthi FASc
- Patents & Intellectual Property Rights by KASS International Sdn. Bhd

04___MEMBERSHIP

—— The Academy's membership is a wide spread of expertise from various field of science to social sciences.

Senior Fellows

ASM appointed 2 Fellows as Senior Fellows in 2013. They were conferred at the Conferment Ceremony held on 17 December 2013. They are,

- Dr Chia Swee Ping FASc, for his active contribution and involvement both nationally and internationally in raising the stature of Malaysia among the physics community.
- Tan Sri Datuk Dr Yusof Basiron FASc for his enormous contribution to the development of palm oil research in the country as well as in initiating and spearheading activities focused on strengthening ASM as a STI think tank.

Fellows

Each year, ASM identifies highly distinguished Malaysians, who by virtue of their respective achievements in the field of science, engineering and technology (SET) are regarded as being of exceptional merit and distinction.

19 new Fellows were elected at the 18th Annual General Meeting, held on 27 April 2013 and they were conferred at the Conferment Ceremony held on 17 December 2013. Of the lot, 12 were academics, 4 from the private sector and 3 from government agencies.

The election of new Fellows is crucial to ensure sustainability of ASM. ASM taps the expertise, knowledge, wisdom and network of its Fellows to provide STI input to the government and its stakeholders. Through its Fellows, ASM continues to demonstrate commitment in international STI arena through its strategic membership of multilateral STI networks, its active role in governance of these networks, and its participation in important global scientific interactions. At national level a Fellow, through the Academy, has the opportunity to advance their ideas to push the envelope for S&T development in the country.

ASM Fellows share their expertise in a stimulating and engaging manner with the scientific community and public through informative talks. In 2013, 9 ASM Fellows' Lectures were organized.

FACTSHEET

2013 ASM Fellow's Lecture Series

Datuk Seri Lim Chong Keat FASc
Challenges For Malaysian Botany

Professor Dato' Dr Khalid Yusoff FASc
Medicine at the cross-roads in the Tropics: Defining Moments, Refining Thoughts and Definitive Actions

Professor Dr Awg Bulgiba Awg Mahmud FASc
The Evolution of Public Healthcare in Malaysia

Professor Dr Fredolin Tangang FASc
Climate Change: Old News New Threats! IPCC Fifth Assessment Report (AR5) "Climate Change 2013: The Physical Basis"

Professor Dr Rauzah Hashim FASc
Prospecting the Self-Assembly Science: Back to Basics

Professor Dr Joy Jacqueline Pereira FASc
Disaster Risk Reduction in a Changing Climate

Professor Dr Hamdani Saidi FASc
Looking for Green Solutions to our energy need

Professor Dato' Dr Kamaruzzaman Sopian FASc
Renewable Energy Technology: Sustainable Path for a Carbon Free Future

Dr Tan Ken Hong FASc
The fruit fly - orchid association: Sex pheromones, allomones and synomones in pollination and biodiversity

Associates

Associates are appointed by ASM Council to further enhance the role of ASM as a think tank for the government. The increasing interdisciplinary nature of knowledge demands expert from various fields, ranging from science to social sciences, represent the ASM at external meetings, contribute and participate in various studies and committees. At the end of 2013, the Academy comprised of 60 Associates.

iNBRIEF

2013 Fellows
Professor Dr Awg Bulgiba Awg Mahmud FASc
Professor Dr Khor Geok Lin FASc
Professor Dr Mustafa Ali Mohd FASc
Professor Ir Dr Abd Halim Shamduddin FASc
Professor Dr Abdul Latif Ahmad FASc
Professor Dr Hamdani Saidi FASc
Professor Dato' Dr Kamaruzzaman Sopian FASc
Ir Mohd Adnan Mohd Nor FASc
Professor Dr Fatimah Md Yusoff FASc
Professor Dr Hj Ibrahim Che Omar FASc
Professor Dr Mohd Tajuddin Abdullah FASc
Professor Dr Ng Wing Keong FASc
Dr Saw Leng Guan FASc
Dr Low Kwai Sim FASc
Dr Mazlan Madon FASc
Professor Dr Norani Muti Mohamed FASc
Dr Amir Hashim Md Yatim FASc
Ir Choo Kok Beng FASc
Pn Fadilah Baharin FASc

IN MEMORIUM

Datuk Dr A Hamid A. Hadi FASc

10 June 1953 - 12 June 2013

Member, Malaysian Institute of Chemistry, 1990
Member (since 1984) & Treasurer (1997-2009), Malaysian Natural Product Society
Advisor, Institut Kajian Sejarah dan Patriotisme Malaysia, 1998
Advisor, MOLECULE, 2000
Advisory Board, the American Biographical Institute, 2006-2009
Member, American Chemical Society, 2011



The late Professor Datuk Dr A Hamid A Hadi was an expert in the area of natural products and was responsible for establishing the Center for Natural Products and Drug Research (CENAR). The centre brought together researchers and facilities under one roof. He obtained his Bachelor in Chemistry from Universiti Kebangsaan Malaysia in 1976 and Diploma in Education from the same university in 1977.

He earned his Master in Organic Chemistry from University of Salford, England in 1978. In 1981, he received his PhD in Organic Chemistry from University of Salford, England. After completing his studies, he joined the University of Malaya in 1981 and was promoted to Associate Professor in 1989 and then to full Professor in 1994.

He served as Head of the Department of Chemistry (1996 to 2000), and as Deputy Dean, Faculty of Science (2000 to 2003). Later, he was promoted as the Deputy Vice-Chancellor (Academic) of University of Malaya (2003-2006). Besides his continuous and active involvement with the management of university, he was also active in his research field. He has established research linkages with related institutions in France, Pakistan and Japan. His areas of research include bioactive products from Malaysian plants, medical compounds and food colouring from the hibiscus, chemical and pharmacological studies on Andrograhis paniculata, and investigation into the mechanisms of Nitric oxide (NO) from NO donor bioactive compounds.

In recognition of his contributions, Professor Datuk Dr A Hamid was awarded with several awards and recognitions such as Perkhidmatan Cemerlang (20 tahun) by University of Malaya (2001), Anugerah Khidmat Cemerlang by University of Malaya (2003), Pingat Kebesaran Negeri Melaka (2003), Anugerah Saintis Cemerlang by Ministry of Higher Education Malaysia (2005) and Top 100 Scientists for 2011 by the International Biographical Centre, Cambridge, England (2011). Professor Datuk Dr A Hamid was elected as ASM Fellow in 2006 under the Chemical Sciences Discipline Group. He passed away on 12 June 2013.

Al-Fatihah.



IN MEMORIUM

Profesor Datuk Dr Ir Radin Umar Radin Sohadi FASc

13 November 1960 – 13 October 2013

Fellow, Institute of Engineering Malaysia (IEM)
Member, English Institute of Highways and Transport
Chairman, Jawatankuasa Standing Penyelidikan dan Latihan, Persatuan Kejuruteraan Jalanraya Malaysia
Editor, IEM Journal
Co-Editor, Road Journal, Association of Engineers Asia and Australiasia (REAAA)
Chairman, Jawatankuasa Piawaian Keselamatan Jalanraya
Member, International Council Road Injuries Traffic Network (Paris)
Member, Board of Directors, Universiti Teknologi MARA (UiTM) dan Universiti Pertahanan Nasional Malaysia (UPNM)
Member of Advisory Council, Jurnal Pencegahan dan Keselamatan Kemalangan

Professor Datuk Dr Ir Radin Umar was well known in the area of traffic safety. He was active in his professional institutions and well-accepted by his academic and professional colleagues. He was elected as ASM Fellow under the Engineering and Computer Sciences Discipline Group in 2005. He passed away on 13 October 2013.

He begins his early education at Sekolah Menengah Aminuddin Baki Chemor, and later Royal Military College, RMC. He studied at the Sheffield University, United Kingdom and obtained his Bachelor Engineering (Hons) in Civil and Structural Engineering in 1984. He later continued studying at the same university and received his Master's degree in Transport and Traffic Engineering in 1985. In 1996, he succeeded in getting his PhD in Traffic Safety Engineering from the Accident Research Centre, Birmingham University.

His career began in 1984 when he joined UPM as a tutor in Department of Civil and Environmental Engineering. He became the Dean of Faculty of Engineering UPM in 1999 and during his tenure as the Dean, he took the faculty to greater heights and the upgrading of the faculty teaching procedures and activities lead to ISO certifications for the faculty. In 2005, he was appointed as the Deputy Vice-Chancellor (Academic and International Relations), UPM.

Ir Radin has over 27 years' experience in national traffic safety and responsible to numerous safety interventions. He was appointed as the first Director General of Malaysia Institute of Road Safety Research (MIROS), Ministry of Transport in 2007. He was been actively involved and instrumental in road safety campaigns, promotion and programmes locally and internationally. In 1995, he developed the National Safety Target (Radin's Model) which was later implemented by the Malaysian Government in 1996. Since then he was involved in implementing road safety programmes.

Prior to his appointment as the Vice Chancellor in Universiti Putra Malaysia (2011 – 2012), he was the former Director General of Department of Higher Education in Ministry of Higher Education (2008). He won numerous international and local awards, medal and patent for his research work.

Al-Fatihah.

IN MEMORIUM

Dr Chan Kook Weng FASc

16 May 1943 – 13 December 2013

Fellow, Malaysian Oil Scientists and Technologists Association Malaysia (FMOSTA), 1998
Fellow, Incorporated Society of Planters (FISP)
Life Member, Malaysian Nature Society
Life Member, Malaysian Soil Science Society
Life Member, Agriculture Institute of Malaysia
Life Member, UMAGA
Member, Technical Education Scheme, Incorporated Society of Planters



Dr Chan Kook Weng's career in the field of plantation is widely recognized. He was born on 16 May 1943 in Teluk Intan, Perak and passed away on 13 December 2013.

He graduated from the University of Malaya with a Bachelor of Agriculture in Science (1967) and received his Master's Degree in 1972. In 1992, he received his PhD in agricultural science from the University of Ghent, Belgium with the greatest distinction.

Dr Chan has written over 160 papers as single author out of 320 papers.
He had over 31 years experience working with plantation in the Gutherie Research Chemara, Kumpulan Gutherie Berhad (1967-1998).

While he was working as Controller of Research and Development (1991-1998), he guided and directed all research requirements of the company, raising the level of scientific research. His contributions consisted of good research and practical papers of findings of which are now implemented as best developed practices in the estates. His research covers numerous disciplines of agronomy, environment, fertilizer, plant nutrition, mechanization, management and general R&D.

Due to his wide experience on oil palm R&D, he was appointed as the Senior Research Fellow of Malaysian Palm Oil Board (1998 – 2013).

He achieved considerable standing and status in the scientific community and contributed tremendously to the oil palm industry. He seats on a number of national and international committees, among the notable is his appointment as Chairman of Malaysian Mirror Committee of ISO/TC 207 Working Group 5 on Climate Change in 2002. He also headed the Malaysia Delegation in 2003 to the ISO/TC 207 Plenary negotiations on environmental management standards.

Dr Chan was elected as Fellow of the Academy under the Science and Technology Development and Industry Discipline Group in 2003.



IN MEMORIUM

Tan Sri Dato' Seri Dr Haji Abdul Majid Ismail FASc

15 November 1921 – 24 March 2013

President, Malaysian Orthopaedic Association, 1967 – 1982
Member, 1959 – 1987 and Chairman, 1978 -1987, Universiti Malaya Council
Member, Universiti Kebangsaan Malaysia Council, 1970 – 1978
Founding Member and President, College of Surgeons Malaysia
Malaysia Chairman, National Medical Research Council
Vice-President, National Council of Social Welfare Malaysia
Inti Universal Holdings Bhd (Inti College)
Chairman, Syarikat Endah Sari Sdn. Bhd

Tan Sri Abdul Majid Ismail was born on 15 November 1921 in Kampung Baru, Kuala Lumpur. He received his early education at Sekolah Melayu Segambut and Sekolah Maxwell, Kuala Lumpur. In 1934, he continued his studies at Batu Road School and later at Victoria Institution (1936 – 1939). He was a brilliant scholar and was an active scout and cross country runner. He joined the King Edward VII College of Medicine, Singapore in 1940 on a Selangor state scholarship. His medical studies were interrupted by the invasion of the Japanese forces in early 1942. He resumed his studies (1946 – 1950) and successfully completed a MBBS (Malaya) degree.

In the same year (1950), he served as Medical Officer at the Kuala Lumpur General Hospital.

In 1953, he was awarded the Queen's Scholarship to study in England, and he utilized it for the Fellowship in Surgery at the Royal College of Surgeons, Edinburgh. He completed degree in Orthopeadic (M.Ch.Orth.) in 1957. He was conferred as Eisenhower Fellow in the USA (1963).

In 1958, he was appointed as the Consultant Orthopeadic Surgeon for the Federation of Malaya, and later appointed as the Deputy Director of Health (Planning & Research) in 1969. In 1971, he was promoted as the Director General of Health, a position which he held until his retirement in 1976, after having served in government service for a total of 26 years.

He was involved in many national projects including the establishment of Universiti Kebangsaan Malaysia, the hospital in Kubang Krian, Kelantan, the private Pantai Hospital, the Tun Hussein Onn Eye Hospital and many more. He also represented Malaysia at many international conferences which include the World Health Organization (WHO) Conference in Geneva in 1971 and Manila.

His dedication has been acknowledged by the country where he was awarded with various honours and awards. He was appointed as the Foundation Fellow of the Academy of Sciences Malaysia in 1995 under the Medical and Health Sciences discipline.

Al-Fatihah.

05 LOOKING AHEAD

Knowing what lies ahead is a progressive step towards attaining ASM's aspiration to maintain as strong voice representing the scientific community. It takes a dynamic execution of play. Thus, it is a matter of well-thought planning, efficient coordination of delegated tasks and finally, a nod of satisfaction from all. With this, ASM presents some of our anticipated works in progress for the upcoming years.



2014

14th Science Council Asia Conference

18 - 19 June 2014

The Conference is an interdisciplinary platform for scientists to report on progress of scientific research on global sustainability and poverty alleviation in Asia.

The theme for the conference is "Future Earth: Research for Global Sustainability and a Holistic Understanding of Sustainable Development in Asia".
They get to discuss on how Malaysian scientists, NGOs and authorities can consolidate local knowledge and technology advancement in building resilient societies, sound ecosystem services and green industries through tangible examples of successes and failures from around the world.

Global R&D Leaders and CEOs Forum 2014 "Injecting Soul into R&D"

29 - 30 September 2014

This is an initiative to engage global R&D players to develop and find solutions for complex global issues such as food security, healthcare, environmental degradation and poverty faced by the bottom billion. This calls for a commitment to alleviate R&D beyond profit and publications.

The five action areas of the Forum are:

- Sustainable Financing & Impact Investing
- Finding the Soul in R&D
- Co-producing Values-based Solutions
- Technology Sharing
- Leveraging Social Innovation & Enterprise

Science Outlook

The Science Outlook Report aims to inform stakeholders and policy-makers on recent development and trends in the STI landscape. The first Science Outlook Report is expected to be published in 2014.

Mega Science Framework Study 3.0

The third phase of the Mega Science Framework study will focus on following sectors:

- Automotive Industry
- Tourism Industry
- Plastic & Composites Industry
- Furniture Industry
- Food Industry

Water Futures and Solutions

The upcoming advisory reports are:

- National Key Economic Area (NKEA) for Water
- Strategic Plan for addressing the impacts of Climate Change on Water-related Issues in Malaysia
- Strategies for Water Demand Management in Malaysia
- Current Status and Needs Assessment of Water Resources Research in Malaysia
- Current Issues and Needs for Water Supply and Wastewater Management in Malaysia
- Current Status and Issues on Integrated River Basin Management in Malaysia

Emerging Technologies

The upcoming blueprints are:

- Rare Earths Industries in Malaysia
- Fuel Cell Industries in Malaysia
- Carbon Free Energy in Malaysia

Science for Peace International Conference

This conference, themed, "More for Science, Less for War", aims at providing an effective platform for policy makers, academics, researchers, industrialists, corporate, financial and STI professionals to identify and discuss issues, challenges and gaps facing peace and humanity. This conference will be held from 8-9 September 2015.

Mega Science Framework Study 4.0

The 4th phase of the Mega Science Framework study will focus on the following sectors:

- Green Technology: Fuel Cell
- Marine Ecosystem Services
- Natural Hazards
- Communications
- Space Industries

Science and Media Centre

ASM is pursuing a formation of Science Media Centre to be recognized as a national source of STI information to provide information for local and international science reporting.

The center aims to improve coverage of science and technology through journalism that is informed, accurate and incisive to the benefit of the public, the science and media communities and the policy makers.

Water Futures and Solutions

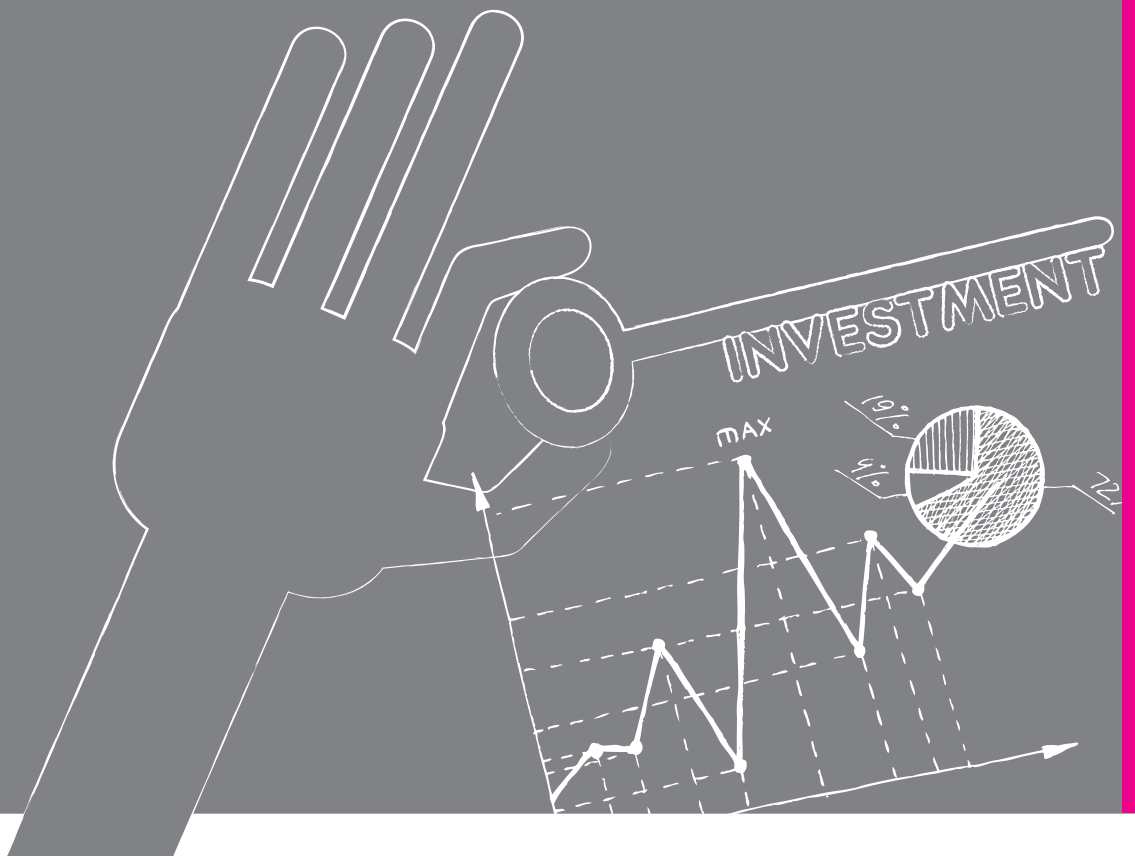
The upcoming studies are:

- Value of Water
- Water Quality Management focusing on STI
- Integrated Urban Water Management

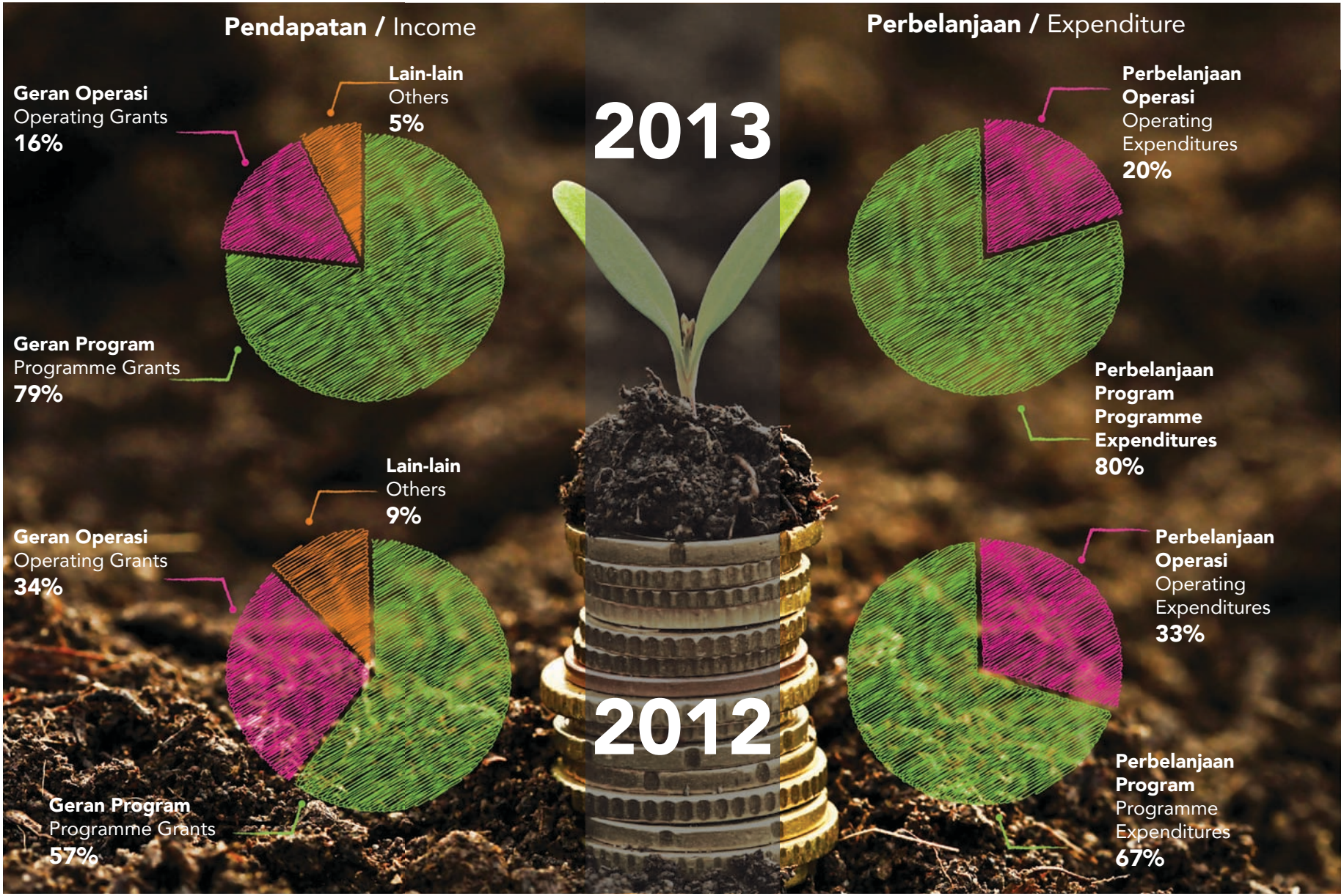
Water and Agriculture

An Advisory Report addressing strategies for Water and Agriculture will be published.

2015


INVESTMENT
MAX
19%
41%

Income & Expenditure



LAPORAN KETUA AUDIT NEGARA
MENGENAI PENYATA KEWANGAN
AKADEMI SAINS MALAYSIA
BAGI TAHUN BERAKHIR 31 DISEMBER 2013

Laporan Mengenai Penyata Kewangan

Penyata Kewangan Akademi Sains Malaysia bagi tahun berakhir 31 Disember 2013 telah diaudit oleh wakil saya yang merangkumi Lembaran Imbangan Pada 31 Disember 2013 dan Penyata Pendapatan, Penyata Perubahan Ekuiti serta Penyata Aliran Tunai bagi tahun berakhir pada tarikh tersebut, ringkasan polisi perakaunan yang signifikan dan nota penjelasan lain.

Tanggungjawab Majlis Akademi Terhadap Penyata Kewangan

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

Tanggungjawab Juruaudit

Tanggungjawab saya adalah memberi pendapat terhadap penyata kewangan tersebut berdasarkan pengauditan yang dijalankan. Pengauditan telah dilaksanakan mengikut Akta Audit 1957 dan piawaian pengauditan yang diluluskan di Malaysia. Piawaian tersebut menghendaki saya mematuhi keperluan etika serta merancang dan melaksanakan pengauditan untuk memperoleh jaminan yang munasabah sama ada penyata kewangan tersebut bebas daripada salah nyata yang ketara.

Pengauditan meliputi pelaksanaan prosedur untuk memperoleh bukti audit mengenai amaun dan pendedahan dalam penyata kewangan. Prosedur yang dipilih bergantung kepada pertimbangan juruaudit, termasuk penilaian risiko salah nyata yang ketara pada penyata kewangan sama ada disebabkan oleh fraud atau kesilapan. Dalam membuat penilaian risiko tersebut, juruaudit mempertimbangkan kawalan dalaman yang bersesuaian dengan entiti dalam penyediaan dan persembahan penyata kewangan yang memberi gambaran yang benar dan saksama bagi tujuan merangka prosedur pengauditan yang bersesuaian tetapi bukan untuk menyatakan pendapat mengenai keberkesanan kawalan dalaman entiti tersebut. Pengauditan juga termasuk menilai kesesuaian polisi perakaunan yang diguna pakai dan kemunasabahan anggaran perakaunan yang dibuat oleh pengurusan serta persembahan penyata kewangan secara menyeluruh.

Saya percaya bahawa bukti audit yang saya peroleh adalah mencukupi dan bersesuaian untuk dijadikan asas bagi pendapat audit saya.

Pendapat

Pada pendapat saya, penyata kewangan ini memberikan gambaran yang benar dan saksama mengenai kedudukan kewangan Akademi Sains Malaysia pada 31 Disember 2013 dan prestasi kewangan serta aliran tunainya bagi tahun berakhir pada tarikh tersebut selaras dengan piawaian pelaporan kewangan yang diluluskan di Malaysia.

(NORLIZA BINTI NORDIN)
b.p. KETUA AUDIT NEGARA
MALAYSIA

PUTRAJAYA
18 APRIL 2014

Academy of Sciences Malaysia

PENYATA PRESIDEN DAN BENDAHARI KEHORMAT
AKADEMI SAINS MALAYSIA

Kami, **TAN SRI DR. AHMAD TAJUDDIN BIN ALI F.A.Sc** dan **PROFESSOR EMERITUS DATO' DR. MOHAMMED MAHYUDDIN MOHD DAHAN F.A.Sc,** yang merupakan Presiden dan Bendahari Kehormat AKADEMI SAINS MALAYSIA dan juga Ahli-Ahli Majlis, dengan ini menyatakan bahawa, pada pendapat Majlis Akademi, Penyata Kewangan yang dikemukakan berserta dengan nota-nota didalamnya adalah disediakan untuk merujuk pandangan yang benar dan saksama berkenaan :-

(a) Lembaran Imbangan pada 31 Disember 2013 dan Akaun Pendapatan dan Perbelanjaan untuk tahun berakhir itu dan

(b) Penyata Aliran Tunai untuk tahun berakhir pada 31 Disember 2013

(c) Penyata Perubahan Dana

(d) Nota – Nota Akaun

Bagi pihak Majlis

Tan Sri Dr. Ahmad Tajuddin Bin Ali
F.A.Sc

Presiden
Akademi Sains Malaysia

Bagi pihak Majlis

Professor Emeritus Dato' Dr.
Mohammed Mahyuddin Mohd
Dahan F.A.Sc
Bendahari Kehormat
Akademi Sains Malaysia

KUALA LUMPUR, MALAYSIA

Tarikh : 21 MAR 2014

Tingkat 20, Sayap Barat
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+6 03 6203 0634 F

www.akademisains.gov.my

SAINS DAN INOVASI PEMACU TRANSFORMASI

Academy of Sciences Malaysia

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

Saya, **DR AHMAD BIN IBRAHIM F.A.Sc**, Pegawai Utama yang bertanggungjawab ke atas pengurusan kewangan AKADEMI SAINS MALAYSIA, dengan ikhlasnya mengakui bahawa Penyata Kewangan yang dikemukakan berserta dengan nota-nota didalamnya, mengikut sebaik-baik pengetahuan dan kepercayaan saya, adalah betul, dan saya membuat ikrar ini dengan sebenarnya mempercayai bahawa ianya adalah benar dan atas kehendak-kehendak Akta Akuan Berkanun 1960.

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

Dr Ahmad Bin Ibrahim F.A.Sc

Pada : 21 MAR 2014

Di hadapan saya,

PESURUHJAYA SUMPAH
NO. W465
KAPT. (B) JASNI BIN YUSOFF
MALAYSIA

Lot 1.08, Tingkat 1,
Bangunan KWSP, Jln Raja Laut
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SAINS DAN INOVASI PEMACU TRANSFORMASI

AKADEMI SAINS MALAYSIA

LEMBARAN IMBANGAN PADA 31 DISEMBER 2013

	Nota	2013 RM	2012 RM
HARTANAH DAN PERALATAN	3	1,021,683	1,067,157
ASET SEMASA			
Lain-lain Penghutang	4	937,828	1,704,214
Simpanan Tetap	5	136,813,013	34,848,291
Wang Tunai Dan Baki Di Bank	6	6,375,999	7,490,321
		144,126,840	44,042,826
LIABILITI SEMASA			
Lain-lain Pemiutang	7	943,170	1,430,469
		943,170	1,430,469
ASET SEMASA BERSIH		143,183,670	42,612,357
		144,205,353	43,679,514
DIBIAYAI OLEH:			
Kumpulan Wang:			
Kumpulan Wang Pengurusan	8	11,172,298	11,043,321
Kumpulan Wang Amanah	9	50,000	50,000
Kumpulan Wang Pembangunan	10	118,203	236,406
Kumpulan Wang Projek	11	4,509,904	3,296,931
Kumpulan Wang Rezab Modal	12	59,740	60,770
Liabiliti Bukan Semasa:			
Pendapatan Belum Iktiraf	13	128,295,208	28,992,086
		144,205,353	43,679,514

Nota di muka surat 7 hingga 15 merupakan sebahagian asas Penyata Kewangan ini.

AKADEMI SAINS MALAYSIA

PENYATA PENDAPATAN
BAGI TAHUN BERAKHIR 31 DISEMBER 2013

	Nota	2013 RM	2012 RM
PENDAPATAN			
Sumbangan (Geran Program)	14	43,081,980	16,474,133
Sumbangan (Geran Operasi)		8,815,400	9,884,303
Geran Pembangunan dilunaskan	10	118,203	118,203
Pelunasan Pajakan	12	1,030	1,030
Pendapatan faedah	15	1,981,197	1,286,891
Kutipan majlis makan malam		35,506	40,000
Pelbagai penerimaan	16	833,942	1,052,926
		54,867,258	28,857,486
PERBELANJAAN			
Emolumen		917,795	973,747
Perkhidmatan & bekalan		4,971,384	3,658,796
Penyelenggaraan dan alat kelengkapan pejabat		-	12,628
Pemberian dan kenaan bayaran tetap		3,811,392	4,352,661
Perbelanjaan-perbelanjaan lain		102,889	69,358
Susutnilai hartanah dan peralatan	3	404,881	398,960
Hutang lapuk		249,360	-
Peruntukan hutang ragu		77,600	-
Majlis makan malam		223,845	210,158
Perbelanjaan program sains	14	43,979,135	19,235,449
		54,738,281	28,911,757
Lebihan / (Kurangan) pendapatan		128,977	(54,271)

Nota di muka surat 7 hingga 15 merupakan sebahagian asas Penyata Kewangan ini.

AKADEMI SAINS MALAYSIA

PENYATA ALIRAN TUNAI
BAGI TAHUN BERAKHIR 31 DISEMBER 2013

	2013 RM	2012 RM
ALIRAN TUNAI DARI AKTIVITI OPERASI		
Lebihan / (Kurangan) Pendapatan Atas Perbelanjaan	128,977	(54,271)
Pelarasan:		
Susutnilai	404,881	398,960
Peruntukan hutang ragu	77,600	-
Faedah dari Deposit Jangka Pendek, Simpanan Tetap & Pelaburan	(1,981,197)	(1,286,891)
Hartanah dan Peralatan Dihapuskira	-	342
(Kurangan) pendapatan dari operasi sebelum perubahan modal kerja	(1,369,739)	(941,860)
Kurangan / (Lebihan) Penghutang	688,786	(508,467)
(Kurangan) / Lebihan Pemiutang	(487,299)	389,600
Tunai bersih digunakan untuk Aktiviti Operasi	**(1,168,252)**	**(1,060,727)**
ALIRAN TUNAI DARI AKTIVITI PELABURAN		
Pembelian Hartanah dan Peralatan	(359,407)	(251,207)
Pelaburan	-	-
Faedah Diterima	1,981,197	1,286,891
Terimaan daripada Pelupusan	-	-
Tunai bersih dari Aktiviti Pelaburan	**1,621,790**	**1,035,684**
ALIRAN TUNAI DARI AKTIVITI PEMBIAYAAN		
Kumpulan Wang Projek	1,212,973	(478,250)
Kumpulan Wang Pembangunan	(118,203)	(118,203)
Kumpulan Wang Rezab Modal	(1,030)	60,770
Pendapatan Belum Iktiraf	99,303,122	21,613,910
Tunai bersih dari Aktiviti Pembiayaan	**100,396,862**	**21,078,227**
PENAMBAHAN BAKI TUNAI DAN KESETARAAN TUNAI	**100,850,400**	**21,053,184**
TUNAI DAN KESETARAAN TUNAI PADA AWAL TAHUN KEWANGAN	**42,338,612**	**21,285,428**
TUNAI DAN KESETARAAN TUNAI PADA AKHIR TAHUN KEWANGAN	**143,189,012**	**42,338,612**
TUNAI DAN KESETARAAN TUNAI		
Simpanan Tetap	136,813,013	34,848,291
Wang Tunai dan Baki di Bank	6,375,999	7,490,321
	143,189,012	**42,338,612**

Nota di muka surat 7 hingga 15 merupakan sebahagian asas Penyata Kewangan ini.

AKADEMI SAINS MALAYSIA

PENYATA PERUBAHAN EKUITI
BAGI TAHUN BERAKHIR 31 DISEMBER 2013

	Kumpulan Wang Pengurusan RM	Kumpulan Wang Amanah RM	Kumpulan Wang Pembangunan RM	Kumpulan Wang Projek RM	Kumpulan Wang Rezab Modal RM	Jumlah RM
Baki pada 01 Januari 2012	11,097,592	50,000	354,609	3,775,181	-	15,277,382
Terimaan dalam tahun 2012	-	-	-	45,000	-	45,000
Pajakan Tanah					61,800	61,800
Geran Pembangunan dilunaskan	-	-	(118,203)	-	-	(118,203)
Pelunasan pajakan					(1,030)	(1,030)
Lebihan pendapatan atas perbelanjaan	(54,271)	-	-	-	-	(54,271)
Perbelanjaan bagi tahun 2012	-	-	-	(523,250)	-	(523,250)
Baki pada 31 Disember 2012 seperti yang dilaporkan	11,043,321	50,000	236,406	3,296,931	60,770	14,687,428
Terimaan dalam tahun 2013	-	-	-	3,260,857	-	3,260,857
Geran Pembangunan dilunaskan	-	-	(118,203)	-	-	(118,203)
Pelunasan pajakan	-	-	-	-	(1,030)	(1,030)
Lebihan pendapatan atas perbelanjaan	128,977	-	-	-	-	128,977
Perbelanjaan bagi tahun 2013	-	-	-	(2,271,402)	-	(2,271,402)
Pelarasan	-	-	-	223,518	-	223,518
Baki pada 31 Disember 2013	11,172,298	50,000	118,203	4,509,904	59,740	15,910,145

Nota di muka surat 7 hingga 15 merupakan sebahagian asas Penyata Kewangan ini.

AKADEMI SAINS MALAYSIA

NOTA KEPADA PENYATA KEWANGAN BAGI TAHUN BERAKHIR 31 DISEMBER 2013

1 a) AKTIVITI UTAMA

Objektif utama Akademi Sains Malaysia (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) PEMBENTANGAN PENYATA KEWANGAN

Penyata kewangan Akademi bagi tahun kewangan berakhir 31 Disember 2013 diluluskan oleh Majlis Akademi pada 21 Mac 2014.

2 DASAR-DASAR PERAKAUNAN

a) Asas Perakaunan

Penyata kewangan telah disediakan mengikut kelaziman kos sejarah dan mengikut piawaian perakaunan yang di luluskan oleh Lembaga Piawaian Perakaunan Malaysia (MASB).

b) Hartanah Dan Peralatan

Hartanah dan peralatan dinyatakan pada kos setelah ditolak susut nilai terkumpul.

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:-

Tanah (milik pajakan)	Mengikut tempoh pajakan
Pengubahsuaian Pejabat	10%
Kenderaan	20%
Peralatan dan kelengkapan pejabat	20%
Komputer	20%

Tanah milik pajakan bernilai RM 61,800.00 diperolehi pada 21 Jun 2012 dengan tempoh pajakan selama 60 tahun dan bayaran sebanyak RM 1,030.00 setahun dan perlu dibayar sebelum 7hb Januari setiap tahun.

Hartanah Dan Peralatan didefinasikan sebagai barang-barang tak luak yang bernilai RM1,000.00 atau lebih setiap unit.

Susut nilai penuh dikenakan dalam tahun pembelian bagi hartanah dan peralatan. Baki bersih setiap hartanah dan peralatan hendaklah tidak kurang daripada RM1.00.

c) Penjejasan Nilai Hartanah Dan Peralatan

Nilai buku bersih hartanah dan peralatan ASM telah dianalisis pada tarikh imbangan disediakan untuk menentukan sama ada terdapat tanda-tanda berlakunya penjejasan nilai hartanah dan peralatan. Sekiranya wujud tanda-tanda kerosakan nilai hartanah dan peralatan yang boleh diperoleh semula didapati kurang daripada nilai buku bersih, maka nilai buku bersih hartanah dan peralatan tersebut akan diturunkan nilainya kepada nilai jumlah hartanah dan peralatan yang boleh diperoleh semula.

Amaun tersebut (yang dikenali sebagai penjejasan nilai hartanah dan peralatan) akan dicatatkan sebagai perbelanjaan dan direkodkan di dalam penyata pendapatan dan perbelanjaan tahun berkenaan.

d) Pengiktirafan Pendapatan Dan Pendapatan Tertunda

i) Pendapatan Faedah Dan Pendapatan Dari Pelaburan

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

ii) Pengiktirafan Geran/Sumbangan

Peruntukan atau Geran daripada badan-badan kerajaan dan bukan kerajaan diiktiraf berasaskan asas akruan.

Peruntukan yang diterima bagi program/projek yang merangkumi tempoh kurang daripada setahun diiktiraf sebagai hasil dalam tahun berkenaan. Bagi penerimaan untuk mengendalikan program/projek yang melebihi satu tahun, terimaan akan dimasukkan ke dalam Kumpulan Wang Projek berkenaan dan lebihan penerimaan atas perbelanjaan akan diiktiraf sebagai pendapatan bagi tahun penutupan program/projek apabila habis tempoh atau hayat program/projek tersebut. Sebaliknya jika terdapat lebihan perbelanjaan atas penerimaan ianya akan diiktiraf sebagai perbelanjaan ASM.

Pendapatan belum diiktiraf adalah lebihan pendapatan/peruntukan yang diterima dari perbelanjaan yang dibuat pada tahun semasa di bawa kehadapan bagi menanggung perbelanjaan bagi tahun berikutnya (program/projek yang meliputi tempoh masa melebihi satu tempoh perakaunan).

Geran yang diterima dari Kerajaan Malaysia untuk belanja mengurus diambil kira dalam Penyata Pendapatan Kumpulan Wang Pengurusan.

Bagi geran pemberian kerajaan untuk projek pembangunan ianya diiktiraf sebagai geran modal tertunda dan akan dilunaskan mengikut belanja susut nilai projek yang telah disiapkan.

e) Instrumen Kewangan

Instrumen kewangan dinyatakan dalam lembaran imbangan termasuk simpanan tetap, baki tunai dan bank, belum terima dan belum bayar. Kaedah pengiktirafan instrumen kewangan yang diterima pakai telah didedahkan dalam polisi perakaunan penyata kewangan secara berasingan.

i) Penghutang

Penghutang dinyatakan pada nilai yang dijangka boleh direalisasi. Hutang lapuk dilupuskan apabila ia dikenal pasti. Anggaran dibuat bagi hutang ragu berasaskan kajian semula semua jumlah tunggakan pada tarikh lembaran imbangan.

ii) Pemiutang

Pemiutang dinyatakan pada kos iaitu nilai saksama bayaran dan perkhidmatan yang telah diterima.

f) Pelaburan

Pelaburan telah ditunjukkan mengikut kos selepas peruntukan rosot nilai pelaburan diambil kira.

g) Peruntukan Hutang Ragu

Hutang ragu diperuntukkan bagi hutang yang tidak terbayar melebihi tempoh tiga tahun.

h) **Tunai Dan Kesetaraan Tunai**

Tunai dan kesetaraan tunai merangkumi tunai di tangan, baki di bank dan simpanan tetap.

3 HARTANAH DAN PERALATAN

	Pengubah - suaian Pejabat	Kenderaan	Peralatan Dan Kelengkapan Pejabat	Komputer	Tanah Pajakan	2013	2012
	RM	RM	RM	RM	RM	RM	RM
KOS							
Pada 1 Januari 2013	3,638,914	428,492	582,505	372,379	61,800	5,084,090	4,835,343
Tambahan	-	-	330,399	29,008	-	359,407	251,207
Pelupusan/Pengkelasan	-	-	-	-	-	-	(2,460)
Pada 31 Januari 2013	3,638,914	428,492	912,904	401,387	61,800	5,443,497	5,084,090
SUSUTNILAI TERKUMPUL							
Pada 1 Januari 2013	2,971,021	386,276	416,325	242,281	1,030	4,016,933	3,620,091
Tambahan	256,568	31,000	82,353	33,930	1,030	404,881	398,960
Pelupusan/Pengkelasan	-	-	-	-	-	-	(2,118)
Pada 31 Januari 2013	3,227,589	417,276	498,678	276,211	2,060	4,421,814	4,016,933
NILAI BUKU							
Pada 31 Disember 2013	411,325	11,216	414,226	125,176	59,740	1,021,683	-
Pada 31 Disember 2012	667,893	42,216	166,180	130,098	60,770	-	1,067,157
Susutnilai pada tahun berakhir 31 Disember 2012	253,644	41,855	66,719	35,712	1,030	-	398,960

4 LAIN-LAIN PENGHUTANG

	2013 RM	2012 RM
Pendahuluan	-	82,511
Penghutang	1,015,428	1,483,265
Pendahuluan ASM kepada Program	-	138,438
Tolak: Peruntukan Hutang Ragu	(77,600)	-
	937,828	1,704,214

5 SIMPANAN TETAP

Deposit simpanan dalam institusi kewangan berlesen terdiri daripada:-

	2013 RM	2012 RM
Simpanan Tetap	8,832,671	10,844,936
Simpanan Tetap – Antartika	188,220	215,692
Simpanan Tetap – *Nobel Laureate*	220,110	565,961
Simpanan Tetap – *BGM*	2,040,687	2,311,052
Simpanan Tetap – *Inno Fund*	-	103,376
Simpanan Tetap – *Science Fund*	-	104,533
Simpanan Tetap – *Science Education*	563,208	547,091
Simpanan Tetap – *Scientific Expedition*	-	161,769
Simpanan Tetap – *Ranking Programme*	-	214,969
Simpanan Tetap – *Mega Science*	1,017,327	-
Simpanan Tetap – *ICSU*	254,235	250,000
Simpanan Tetap – *ISTIC*	790,482	750,000
	13,906,940	16,069,379
Simpanan Tetap – R,D&C Fund	122,906,073	18,778,912
	136,813,013	34,848,291

6 WANG TUNAI DAN BAKI DI BANK

	2013 RM	2012 RM
BIMB – Operasi ASM	4,732,802	2,856,255
BIMB – *Nobel Laureate/SAGA*	13,474	222,608
BIMB – NSTRC	56,871	56,789
BIMB – ICSU	157,115	387,577
BIMB – ISTIC	183,260	223,920
MBB – Antartika	175,674	158,176
Tunai Dalam Tangan	3,000	3,000
	5,322,196	3,908,325
BIMB – R,D&C Fund	1,053,803	3,581,996
	6,375,999	7,490,321

7 LAIN-LAIN PEMIUTANG

	2013 RM	2012 RM
Pemiutang Am	895,466	1,382,765
Cek belum ditunaikan	40,916	40,916
Peruntukan Perkhidmatan Audit & Akaun	6,788	6,788
	943,170	1,430,469

8 KUMPULAN WANG PENGURUSAN

Kumpulan Wang Pengurusan adalah seperti berikut:-

	2013 RM	2012 RM
Baki pada 1 Januari	11,043,321	11,097,592
Kurangan / Lebihan pendapatan atas perbelanjaan	128,977	(54,271)
Baki pada 31 Disember	11,172,298	11,043,321

Kumpulan Wang Pengurusan ini terdiri daripada peruntukan mengurus bagi Akademi Sains Malysia (ASM), ICSU ROAP dan ISTIC. Termasuk dalam Kumpulan Wang Pengurusan ini juga adalah peruntukan untuk tabung-tabung yang diwujudkan dan diluluskan oleh pihak Majlis Akademi bagi memastikan pengurusan dan program-program yang dirancang dibawah Fungsi Akademi sepertimana yang termaktub dalam Akta Akademi Sains Malaysia (Akta 524) dapat berjalan dengan lancar. Tabung-tabung yang diwujudkan adalah:-

Tabung	RM
Tabung Program Pembangunan Sains	1,500,000
Tabung Program Sains untuk Pembangunan	1,500,000
Tabung Penerbitan ASM	1,000,000
Tabung Bangunan ASM	800,000
Tabung "HCD"	700,000
Tabung Felo dan Kakitangan Akademi Sains Malaysia	500,000
Jumlah	6,000,000

9 KUMPULAN WANG AMANAH

Kumpulan Wang Amanah adalah seperti berikut:-

	2013 RM	2012 RM
Baki pada 1 Januari	50,000	50,000
Penerimaan tahun semasa	-	-
Perbelanjaan tahun semasa	-	-
Baki pada 31 Disember	50,000	50,000

Kumpulan Wang ini diwujudkan bagi sumbangan yang diterima dari Felo bagi menjalankan aktiviti ASM.

10 KUMPULAN WANG PEMBANGUNAN

Kumpulan Wang Pembangunan adalah seperti berikut:-

	RM	RM
Baki pada 1 Januari	236,406	354,609
Penerimaan tahun semasa	-	-
	236,406	354,609
Tolak :		
Geran Pembangunan dilunaskan :		
Susutnilai	118,203	118,203
Baki pada 31 Disember	118,203	236,406

Kumpulan Wang Pembangunan ini mewakili kos pengubahsuaian bangunan. Peruntukan ini diperoleh daripada Kementerian Sains, Teknologi dan Inovasi (MOSTI). Geran Pembagunan dilunaskan setiap tahun pada kadar susutnilai 10% dari kos aset yang terlibat iaitu RM118,203.

11 KUMPULAN WANG PROJEK

Kumpulan Wang Projek adalah seperti berikut:-

	2013 RM	2012 RM
Baki pada 1 Januari	3,296,931	3,775,181
Penerimaan tahun semasa	3,260,857	45,000
Perbelanjaan tahun semasa	(2,271,402)	(523,250)
Pelarasan	223,518	-
Baki pada 31 Disember	4,509,904	3,296,931

Projek yang termasuk dalam Kumpulan Wang Projek adalah Projek-projek Rancangan Malaysia Ke Sepuluh (RMK-10), Ke Sembilan (RMK-9) dan Projek Rancangan Malaysia Ke Lapan (RMK-8) –SAGA

KUMPULAN WANG PROJEK (Sambungan)

	2013 RM	2012 RM
Program Penyelidikan Antartika Kebangsaan dan Program Antarabangsa	83,690	84,127
Ekspedisi Saintifik	137,811	144,574
Program *Nobel Laureate* Kebangsaan dan *Scientific Advancement Grant Allocation (SAGA)*	324,345	888,391
Laporan Kajian Strategik dan Pandangan Pakar Dalam Isu-Isu STI dan Program Penilaian Pemeringkatan Penyelidikan	35,140	207,589
Penerbitan Saintifik	166,543	462,113
Program Pendidikan Sains & Kuiz Sains National	1,012,936	1,300,806
Program Latihan Pengurusan S&T	209,330	209,331
Mega *Science Framework*	2,540,109	-
Baki pada 31 Disember	4,509,904	3,296,931

12 KUMPULAN WANG REZAB MODAL

Kumpulan Wang Rezab Modal adalah seperti berikut:-

	2013 RM	2012 RM
Baki pada 1 Januari	60,770	-
Pajakan Tanah	-	61,800
	60,770	61,800
Tolak :		
Pelunasan Pajakan	1,030	1,030
Baki pada 31 Disember	59,740	60,770

Kumpulan Wang Rezab Modal ini mewakili kos tanah milik pajakan yang diperolehi pada 21 Jun 2012 dengan tempoh pajakan selama 60 tahun. Pelunasan pajakan dibuat setiap tahun pada kadar RM1,030.00.

13 PENDAPATAN BELUM IKTIRAF

Program dalam pelaksanaan adalah seperti berikut:-

	2013 RM	2012 RM
Pameran Islam	1,455,000	1,455,000
Brain Gain	3,260,114	3,326,085
Program Angkasawan	421	421
Inno Fund	527	527
Science Fund	2,899	2,899
Angkasa (HCD)	135,338	137,138
Ranjeet Bhagwan Singh	21,261	21,261
Pelan Tindakan MOSTI	74,890	74,890
Rare Earth	502,397	1,148,218
Asean Journal	70,393	55,083
Science Act	37,727	37,727
Mega Science Scoping	-	223,543
World Innovation Forum (WIF)	70,000	70,000
Program Tahun Sains	254,063	438,968
Program i-INNOVA	9,310	-
	5,894,340	6,991,760
R,D&C Fund	122,400,868	22,000,326
	128,295,208	28,992,086

Pendapatan belum diiktiraf adalah peruntukan bagi *'special program'* yang dipertanggungjawabkan kepada ASM oleh MOSTI yang meliputi tempoh masa melebihi satu tempoh perakaunan.

14 SUMBANGAN DAN PERBELANJAAN PROGRAM SAINS

Pendapatan	2013 RM	2012 RM
Program Kecemerlangan Sains	79,060	167,260
Program Antarabangsa	200,000	200,000
Jalinan Sains	331,000	327,000
Program MOSTI	1,522,791	1,456,974
Program-program Lain	1,024,519	1,069,814
R,D&C Fund	3,157,370	3,221,048
	39,924,610	13,253,085
	43,081,980	16,474,133

Perbelanjaan	2013 RM	2012 RM
Program Kecemerlangan Sains	189,387	167,260
Program Antarabangsa	539,307	662,535
Dasar Sains	309,603	412,945
Jalinan Sains	742,597	1,324,236
Perancangan Strategik	26,431	519,832
Penerbitan	52,841	-
Program MOSTI	1,522,766	1,549,112
Program-program Lain	671,593	1,346,444
	4,054,525	5,982,364
R,D&C Fund	39,924,610	13,253,085
	43,979,135	19,235,449

15 PENDAPATAN FAEDAH

	2013 RM	2012 RM
Faedah Deposit Jangka Pendek	36,633	19,544
Faedah Simpanan Tetap	1,944,564	1,267,347
	1,981,197	1,286,891

16 PELBAGAI PENERIMAAN

	2013 RM	2012 RM
Pelbagai Penerimaan – Jualan CD, buku dan lain-lain	375,540	106,868
Yuran Latihan & Seminar	350,402	420,744
Caj Pengurusan Program	108,000	150,000
Pelarasan	-	375,314
	833,942	1,052,926

17 KOMITMEN MODAL

	2013 RM	2012 RM
Baki pada 31 Disember	-	8,700
	-	8,700

Komitmen modal adalah jumlah yang belum dituntut oleh kontraktor bagi pembinaan "slope protection"pada tahun 2006 dan telah dibayar pada Disember 2013.

18 PERCUKAIAN

ASM dikecualikan daripada cukai pendapatan di bawah Seksyen 44 (6) Akta Cukai Pendapatan 1967, selaras dengan surat pengecualian cukai bertarikh 2 Mac 1996 yang bernombor rujukan JHDN. 01/35/42/51/179-6.4357 yang diperolehi daripada Ketua Pengarah Hasil Dalam Negeri.

19 INSTRUMEN KEWANGAN

a. Objektif Dan Polisi Pengurusan Risiko Kewangan

Polisi pengurusan risiko kewangan ASM adalah untuk memastikan sumber-sumber kewangan yang mencukupi bagi pembangunan operasi ASM sementara menguruskan risiko-risiko kewangannya, termasuk risiko kredit, risiko kadar faedah, risiko pinjaman tidak berbayar, risiko kecairan dan aliran tunai.

b. Risiko Kredit

Risiko kredit ASM adalah daripada akaun-akaun belum terima. Akaun-akaun ini dipantau dari semasa ke semasa melalui prosedur dalaman yang sedia ada dan tindakan akan diambil terhadap hutang-hutang tertunggak.

c. Risiko Kadar Faedah

ASM menyelenggarakan satu had tunai dan simpanan tetap untuk memenuhi keperluan modal kerja. Risiko ini wujud akibat kadar turun naik kadar faedah di pasaran.

d. Risiko Kecairan Dan Aliran Tunai

ASM menguruskan dengan teliti urusan keluar masuk tunai dan juga urusan pengutipan semula hutang-hutang pelanggan yang mencapai tempoh matang bagi menjaga kecairan dan aliran tunainya.

20 MANFAAT KAKITANGAN ASM

a. Manfaat jangka pendek

Upah, gaji, elaun dan sumbangan keselamatan sosial diiktiraf sebagai perbelanjaan pada tahun di mana perkhidmatan yang diberikan oleh kakitangan ASM. Pampasan ketidakhadiran terkumpul jangka pendek seperti cuti tahunan berbayar diiktiraf bila perkhidmatan yang diberi oleh kakitangan ASM akan menambahkan hak pampasan ketidakhadiran akan datang dan pampasan ketidakhadiran tidak terkumpul jangka pendek seperti cuti sakit diiktiraf bila ketidakhadiran berlaku.

b. Pelan caruman wajib

ASM mencarum kepada Kumpulan Wang Simpanan Pekerja dan Kumpulan Wang Pencen Kerajaan bagi kakitangannya mengikut skim yang dipilih mereka. Caruman tersebut diiktiraf sebagai perbelanjaan dalam penyata pendapatan apabila ia berlaku.

21 MAKLUMAT KAKITANGAN

Jumlah kakitangan ASM pada 31 Disember 2013 adalah seramai 60 orang (31.12.2012: 52 orang).

22 ANGKA PERBANDINGAN

Angka-angka perbandingan bagi tahun lepas telah disusun semula di mana perlu supaya selaras dengan angka yang dibentangkan tahun ini.

LAMPIRAN | *APPENDIXES*

AHLI MAJLIS ASM 2013 - 2014
COUNCIL MEMBERS 2013 - 2014

Tan Sri Datuk Dr Ahmad Tajuddin Ali FASc
President
2010 - 2016
Mathematics, Physics and Earth Sciences

Professor Dato' Dr Asma Ismail FASc
Vice President
2012 - 2014
Medical and Health Sciences

Dato' Dr Samsudin Tugiman FASc
Secretary General
2013 - 2015
Science & Technology Development and Industry

Professor Emeritus Dato' Dr Mohamed Mahyuddin Mohd Dahan FASc
Honorary Treasurer
2013 - 2015
Biological, Agricultural and Environmental Sciences

Academician Professor Datuk Ir (Dr) Hj Ahmad Zaidee Laidin FASc
Council Member
2012 - 2014
Engineering and Computer Sciences

Dato' Dr Hashim Abdul Wahab FASc
Council Member
2012 - 2014
Biological, Agricultural and Environmental Sciences

Professor Dato' Dr Khairul Anuar Abdullah FASc
Council Member
2012 - 2014
Medical and Health Sciences

Academician Dr Ho Chee Cheong FASc
Council Member
2012 - 2014
Chemical Sciences

Professor Ir Dr Ahmad Faizal Mohd Zain FASc
Council Member
2013 - 2015
Engineering and Computer Sciences

Professor Datin Paduka Dr Aini Ideris FASc
Council Member
2013 - 2015
Biological, Agricultural and Environmental Sciences

Academician Professor Emeritus Dato' Dr C.P. Ramachandran FASc
Council Member
2013 - 2015
Medical and Health Sciences

Professor Dato' Dr Khalid Yusoff FASc
Council Member
2013 - 2015
Medical and Health Sciences

Professor Dato' Dr Roslan Abd Shukor FASc
Council Member
2013 - 2015
Mathematics, Physics and Earth Sciences

Academician Tan Sri Dr Salleh Mohd Nor FASc
Council Member
2013 - 2015
Biological, Agricultural and Environmental Sciences

Professor Datuk Dr Sukiman Sarmani FASc
Council Member
2013 - 2015
Chemical Sciences

Dato' Ir (Dr) Andy Seo Kian Haw FASc
Council Member
2013 - 2014
Science & Technology Development and Industry

JAWATANKUASA KERJA DAN BADAN BERTINDAK
WORKING COMMITTEES AND TASK FORCES

Kumpulan Disiplin ASM
ASM Discipline Groups

Sains Perubatan dan Kesihatan
Medical and Health Sciences
Professor Dato' Dr. Khalid Yusoff FASc

Kejuruteraan dan Sains Komputer
Engineering and Computer Sciences
Professor Ir Dr Ahmad Faizal Mohd Zain FASc

Sains Biologi, Pertanian dan Alam Sekitar
Biological, Agricultural and Environmental Sciences
Dato' Dr Hashim Abdul Wahab FASc

Matematik, Fizik dan Sains Bumi
Mathematics, Physics and Earth Sciences
Emeritus Professor Dato' Dr Muhammad Yahaya FASc

Sains Kimia
Chemical Sciences
Professor Datuk Dr Halimaton Hamdan FASc

Pembangunan Sains & Teknologi dan Industri
Science & Technology Development and Industry
Datuk Dr Mohd Basri Wahid FASc

Jawatankuasa Kerja Pengurusan dan Perkhidmatan ASM
ASM Management and Services of Working Committees

Jawatankuasa Kewangan dan Pelaburan
Finance and Investment Committee
Emeritus Professor Dato' Dr Mohamed Mahyuddin Mohd Dahan FASc
(Bendahari Kehormat / *Honorary Treasurer*)

Jawatankuasa Audit
Audit Committee
Academician Emeritus Professor Dato' Dr CP Ramachandran FASc

Jawatankuasa Keahliaan
Membership Committee
Professor Dato' Dr Asma Ismail FASc

Lembaga Editorial Jurnal Sains ASM
ASM Science Journal Editorial Board
Emeritus Professor Dato' Dr Md Ikram Mohd Said FASc

Jawatankuasa ASM- Young Scientists Network (YSN)
Young Scientists Network (YSN)-ASM Committee
Professor Dr Mohd Basyaruddin Abdul Rahman

Kajian ASM
ASM Studies

Jawatankuasa Penasihat Dasar Sains, Teknologi dan Inovasi
Science, Technology and Innovation Policy Advisory Committee
Tan Sri Datuk Dr Ahmad Tajuddin Ali FASc

Jawatankuasa Air
Committee on Water
Academician Datuk Fateh Chand FASc

Badan Bertindak Pengurusan Bekalan Air dan Pengurusan Sisa
Task Force on Water Supply and Wastewater Management
Dato' Seri Ir Dr Zaini Ujang FASc
Professor Dr Zulkifli Yusop FASc
(Pengerusi Bersama/*Co-Chair*)

Badan Bertindak Penyelidikan dan Pembangunan (Air)
Task Force on R & D (Water)
Professor Dr Ahmad Fauzi Ismail FASc

Badan Bertindak Pengurusan Permintaan Air
Task Force on Water Demand Management
Dato' Ir Syed Muhammad Shahabudin FASc

Badan Bertindak Kesedaran, Sokongan dan Pembangunan Modal dalam Pengurusan Air
Task Force on Awareness, Advocacy and Capital Building in Water Resources Management
Professor Ir. Dr Ruslan Hassan FASc
Dr Low Kwai Sim FASc
(Pengerusi Bersama/*Co-Chair*)

Badan Bertindak Pengurusan Lembangan Sungai Bersepadu
Task Force on Integrated River Basin Management
Dato' Ir Hj Ahmad Husaini Sulaiman
Dato' Ir Lim Chow Hock
(Pengerusi Bersama/*Co-Chair*)

Badan Bertindak Air dan Pertanian
Task Force on Water and Agriculture
Ir. Mohd Adnan Mohd Nor FASc

Badan Bertindak Berkenaan Polisi dan Undang-undang Air
Task Force on Water-Related Policies and Legislation
Professor Dr Joy Jacqueline Pereira FASc

Jawatankuasa Science Outlook
Science Outlook Committee
Professor Datuk Dr Halimaton Hamdan FASc

Jawatankuasa Nadir Bumi
Rare Earth Committee
Academician Datuk Ir (Dr) Hj Ahmad Zaidee Laidin FASc

Jawatankuasa Program ASM
ASM Programme Committees

Panel Pemilihan Mahathir Science Award
Mahathir Science Award Selection Panel
Dato' Dr Samsudin Tugiman FASc

Jawatankuasa Penilaian TechnoFund
TechnoFund Evaluation Committee
Academician Professor Dr Ho Chee Cheong FASc

Jawatankuasa Penilaian Community Innovation Fund (CIF)
Community Innovation Fund (CIF) Evaluation Committee
Academician Datuk Ir (Dr) Hj Ahmad Zaidee Laidin FASc

Jawatankuasa Penilaian ScienceFund
ScienceFund Evaluation Committee
Academician Datuk Fateh Chand FASc

Pasukan Pengurusan Projek ScienceFund and InnoFund
ScienceFund and InnoFund Project Management Team
Emeritus Professor Dato' Dr Md Ikram Mohd Said FASc

Panel Penyaringan Anugerah Penyelidikan Kanser MAKNA
MAKNA Cancer Research Award Vetting Panel
Emeritus Professor Dr Cheong Soon-Keng FASc

Panel Pemilih Program Lindau
Lindau Program Selection Panel
Professor Dato' Dr Asma Ismail FASc

Badan Bertindak Khas untuk mengkaji Proses Pemilihan Program Lindau
Special Task Force to review Lindau Program Selection Exercise
Professor Dato' Dr Asma Ismail FASc

Panel Pemilihan Top Research Scientist Malaysia (TRSM)
Top Research Scientist Malaysia (TRSM) Selection Panel
Academician Emeritus Professor Tan Sri Dr Omar Abdul Rahman FASc

Panel Pemilihan Student Summer Programme European Organization for Nuclear Research (CERN)
European Organization for Nuclear Research (CERN) Student Summer Programme Selection Panel
Professor Dr Wan Ahmad Tajuddin Wan Abdullah FASc

Panel Pemilihan Keahlian YSN-ASM
YSN-ASM Membership Selection Panel
Professor Dato' Dr Asma Ismail FASc

Panel Pemilihan IAMP
IAMP Selection Panel
Academician Professor Datuk Dr Looi Lai Meng FASc

Panel Pemilihan IIASA
IIASA Selection Panel
Professor Dato' Dr Rosihan Mohamed Ali FASc

Jawatankuasa Pemandu Program Tabung Penyelidikan Perubatan Dr Ranjeet Bhagwan Singh
Dr Ranjeet Bhagwan Singh Medical Research Trust Fund Programme Steering Committee
Academician Professor Datuk Dr Looi Lai Meng FASc

Lembaga Editorial Jurnal Sains dan Teknologi untuk Pembangunan ASEAN (ASEAN J. Sc. Technol. Dev.)
ASEAN Journal on Science & Technology for Development (ASEAN J. Sc. Technol. Dev.) Editorial Board
Emeritus Professor Dato' Dr Md Ikram Mohd Said FASc

Jawatankuasa Penganjuran Global R&D CEO Forum
Global R&D CEO Forum Organizing Committee
Professor Dato' Dr Asma Ismail FASc

Jawatankuasa Pembangunan Modal Insan
Human Capital Development Committee
Professor Dato' Dr Mohamed Shariff Mohamed Din FASc

Jawatankuasa Hubungan Sains & Teknologi dan Industri
Science & Technology and Industry Linkage Committee
Datuk Ir Hong Lee Pee FASc

Jawatankuasa Kecil Model Hubungan S&T - Industri
S&T -Industry Linkage Model sub-committee
Professor Dr Lee Sze Wei

Jawatankuasa Kecil Penyebaran Maklumat S&T
S&T Information Dissemination sub-committee
Academician Professor Dr Ho Chee Cheong FASc

Jawatankuasa Kecil Penasihat Program Strategik S&T
Strategic S&T Advisory Program sub-committee
Dato' Dr Ir. Andy Seo Kian Haw FASc

Jawatankuasa Kecil Pakatan S&T dan Industri
Science & Technology and Industry Alliance sub-committee
Ir Choo Kok Beng FASc

Jawatankuasa Pendidikan Sains ASM
ASM Science Education Committee
Academician Datuk Dr Abdul Aziz S.A. Kadir FASc

Badan Bertindak Kerjasama Penyelidikan bersama European Organization for Nuclear Research (CERN)
Task Force on Research Collaboration with the European Organization for Nuclear Research (CERN)
Professor Dr Wan Ahmad Tajuddin Wan Abdullah FASc

Wakil ASM dalam Mesyuarat dan Jawatankuasa Nasional
ASM Representatives in National Meetings and Committees

Global Science and Innovation Advisory Council (GSIAC)
Tan Sri Datuk Dr Ahmad Tajuddin Ali FASc

National Megatrends Committee
Tan Sri Datuk Dr Ahmad Tajuddin Ali FASc

National Innovation Council (NIC)
Tan Sri Datuk Dr Ahmad Tajuddin Ali FASc

National Science and Research Council (NSRC)
Tan Sri Datuk Dr Ahmad Tajuddin Ali FASc

Wakil Asm Dalam Mesyuarat dan Jawatankuasa Antarabangsa
ASM Representatives in International Meetings and Committees

Antarctic Treaty Consultative Meeting (ATCM)
Academician Tan Sri Dr Salleh Mohd Nor FASc

Asian Forum on Polar Science (AFoPS)
Professor Dr Ewe Hong Tat

Association of Academies and Societies in Asia (AASSA)- Merging of FASAS & AASA
Tan Sri Datuk Dr Ahmad Tajuddin Ali FASc

Inter Academy Medical Panel (IAMP)
Academician Professor Datuk Dr Looi Lai Meng FASc

Inter Academy Panel (IAP)
Tan Sri Datuk Dr Ahmad Tajuddin Ali FASc

International Council for Science (ICSU)
Professor Datuk Dr Sukiman Sarmani FASc

International Institute for Applied Systems Analysis (IIASA)
Tan Sri Datuk Dr Ahmad Tajuddin Ali FASc

ISTIC Board
Professor Dato' Dr Asma Ismail FASc

Network of Academies of Sciences in the Islamic Countries (NASIC)
Tan Sri Datuk Dr Ahmad Tajuddin Ali FASc

Science Council of Asia (SCA)
Emeritus Professor Dr. Mohd Nordin Hj Hasan FASc

Scientific Committee on Antarctic Research (SCAR)
Professor Dato' Dr Azizan Abu Samah FASc

MESYUARAT ANTARABANGSA
INTERNATIONAL MEETINGS

Meeting on Water Futures and Solutions:
World Water Scenarios Initiative (WFaS)
4-5 February 2013
IIASA, Laxemburg, Austria

Inter Academy Panel (IAP) Conference & 7th General Assembly
24-27 February 2013
Rio de Janeiro, Brazil

G-Science Meeting
7-9 March 2013
INSA, New Delhi, India

IAMP EC Meeting & DCP3 Advisory Board Meeting
10-15 March 2013
Washington D.C

World Health Summit Regional Meeting
8-10 April 2013
Singapore

13th SCA Conference
7-9 May 2013
Bangkok, Thailand

IIASA Council Meeting
3-4 June 2013
Vienna, Austria

IAMP-IAP-IAC meeting
24 June 2013
Amsterdam, Netherlands

IAMP General Assembly & Election
13-16 August 2013
Johannesburg, South Africa

ICSU meeting
3 September 2013
Singapore

IAMP international conference
11-13 September 2013
Paris, France

TWAS General Assembly
1-4 October 2013
Sao Paola, Brazil

AASSA Executive Board Meeting 2013
22-23 October 2013
Manila, Philippines

IAP EC meeting 2013
31 October - 1 November 2013
Canberra, Australia

IIASA Council Meeting
11-12 November 2013
Vienna, Austria

16th ICSU Regional Committee for ASia and the Pacific &
5th ICSU Regional COnsultation in Asia and The Pacific
24-30 November 2013
Seoul, Korea

MEMORANDUM PERSEFAHAMAN
MEMORANDUM OF UNDERSTANDING

Memorandum Persefahaman / Perjanjian bertujuan untuk meningkatkan dan mengeratkan kerjasama dua hala di antara Malaysia dengan negara-negara lain melalui akademi-akademi sains yang lain serta organisasi sains, teknologi dan inovasi (STI) antarabangsa. MoU / perjanjian yang telah ditandatangani oleh ASM memberi peluang kepada penyelidik Malaysia untuk bekerjasama dengan rakan-rakan asing, untuk berkongsi pengetahuan, untuk membina kepakaran dan juga untuk mengukuhkan keupayaan sains dan teknologi untuk membolehkan negara bersaing seiring dengan pembangunan kemajuan sains dan teknologi global.

The Memorandum of Understandings (MoU)/Agreements aim at promoting and strengthening bilateral cooperation between Malaysia and other countries through sister academies or science, technology and innovation (STI) international organizations. These MoUs/agreements signed by ASM provide opportunities for Malaysian researchers to collaborate with foreign colleagues, to share knowledge, to build expertise as well as to strengthen scientific and technological capabilities in order for the nation to remain competent in the context of global science and technology advancement.

United Kingdom
Royal Society UK
MOU between ASM and Royal Society UK

Philippines
National Academy of Science and Technology Philippines
MOU between ASM and National Academy of Science and Technology Philippines

Australia
Australian Academy of Sciences
Cooperation Agreement between the Australian Academy of Science, Australian Academy of Technological Science and Engineering and ASM

Kyrgyz Republic
National Academy of Sciences of the Kyrgyz Republic
MOU between ASM and National Academy of Sciences of the Kyrgyz Republic

Korea
Korean Academy of Science
MOU between Korean Academy of Science & Technology and ASM

China
Chinese Academy of Science
Memorandum of SET corporation agreement between ASM and Chinese Academy of Science

China
Chinese Academy of Engineering
Memorandum of SET corporation agreement between ASM and Chinese Academy of Engineering

Korea
Korea Polar Research Institute
MOU between ASM and Korea Polar Research Institute

Egypt
Academy of Scientific Research & Technology of Arab Republic of Egypt
MOU between ASM and Academy of Scientific Research & Technology of Arab Republic of Egypt

China
China Yangtze Three Gorges Project Development Corporation (GTGPC)
MOU between ASM and China Yangtze Three Gorges Project Development Corporation

German
Berlin-Branderburg Academy of Science
MOU between ASM and Berlin-Branderburg Academy of Sciences and Humanities

Kyrgyz Republic
National Academy of Sciences of the Kyrgyz Republic
MOU between ASM and National Academy of Sciences of the Kyrgyz Republic

Russia
Russian Academy of Science
MOU between Russian Academy of Science and ASM on Cooperation in S&T

Australia
Australian Antartic Division
MOU between Australian Antartic Division and ASM

Perancis
Academies Des Sciences of Institute De France
Letter of Intention on Scientific and Technological Cooperation Between Academies Des Sciences of Institute De France

Chile
Instituto Antartico Chileno
MOU between ASM and Instituto Antartica Chileno

United Kingdom
Royal Society of Edinburgh
MOU on academic and Research Corporation between The Royal Society of Edinburgh (RSE) and ASM

Morocco
The Hassan II Academy of Science and Technology
Cooperation Agreement between The Hassan II Academy of Science and Technology and the Academy of Sciences of Malaysia

Vietnam
Vietnam Academy of Science & Technology (VAST)
Cooperation Agreement between Vietnam Academy of Science & Technology Vietnam and The Academy of Sciences Malaysia

Switzerland
Australian Antartic Division
MOU between Australian Antartic Division and ASM

Perancis
European Organization for Nuclear Research (CERN)
Expression of Interest in the participation of Scientist and Students from Universities and Research Institute in Malaysia in the CMS Experiment at the CERN LHC Accelerator

Belarus
National Academy of Sciences of Belarus
MOU between ASM and National Academy of Sciences of Belarus

PROGRAM ASM
ASM PROGRAMME

January
7 January 2013
Technical Training on Meltwater

8 January 2013
Technical Training on TRSM

16 January 2013
Mesyuarat bersama antara
YB Menteri MITI, YB Menteri MOSTI,
YB Menteri MOH dan YB Menteri NRE
bagi membincangkan mengenai
status terkini isu projek Lynas

18 January 2013
IdeaXchange

31 January 2013
ASM Fellows' Lecture on Challenges
for Malaysian Botany
by Datuk Seri Lim Chong Keat FASc

February
5 – 7 February 2013
ASM-UM-NM School of Nuclear
and Particle Physics

7 February 2013
Technical Training on the
Organisation for Economic
Cooperation and Development (OECD)

28 February 2013
Seminar on International Rare Earth

March
13 March 2013
Informal Discourse on Science for Peace

15 March 2013
IdeaXchange

26 March 2013
Strategic Consultation 1 on Water R&D

27 – 29 March 2013
National Workshop and Talks for
CERN Collaboration

29 March 2013
Professorial and Fellows' Lecture
by Professor Dato' Dr Khalid Yusof FASc
entitled Medicine at the cross-roads in
the Tropics: Defining Moments,
Refining Thoughts and Definitive
Actions

April
3 Apr 2013
National Science Challenge 2013 –
Preliminary Level

9 – 11 April 2013
ASM Training Workshop on "Technical
Writing for Research and Publications"

11 April 2013
Malaysian Research University (MRU)
Data Verification Workshop with Deputy
Vice Chancellors (Research)

13 April 2013
Soft Launch of i3C Portal and S&T
and Industrial Workshop

13 April 2013
Stakeholders Workshop:
Brainstorming for interdisciplinary
research areas (Mathematics, Physics
& Earth Sciences)

16 April 2013
Korean-ASEAN R&D forum (MYKOR)

18 April 2013
Colloquium on Increasing Worldwide
Impact for Malaysian Research

18 April 2013
Thomson Reuters Forum -
Internationalisation of Malaysian R&D

22 – 25 April 2013
National Workshop and Talks for
KTH Royal Institute of Technology
Collaboration

27 April 2013
3rd General Assembly on "Science and
the Economy: Challenges for Malaysia"

27 April 2013
18th Annual General Meeting

27 April 2013
Launching of coffee table book –
Lakes of Malaysia

May
9 – 10 May 2013
International Invention, Innovation &
Technology Exhibition 2013

14 – 16 May 2013
ASM Training Workshop on "How to
Write a Winning Research Proposal?"

15 May 2013
Selection Meeting of 'Anugerah Harta
Intelek Negara 2013'

22 – 23 May 2013
Conference on ASEAN ROK - ASEAN
STI Strategic Roadmapping,Tagaytay
City

23 May 2013
Pre-Strategic Consultation 4 on Water
Demand Management Workshop

27 May 2013
Seminar On The Potential Economic
Return of Rare Earth Industries In
Malaysia - A New Source of Green
Economic Growth

29 May 2013
IKIM Colloquium Islam di Serantau
ASEAN

June
8 June 2013
Induction Session for ASM New Fellows

11 – 13 June 2013
ASM Training Workshop on "Technical
Writing for Research and Publications"

12 June 2013
Strategic Consultation 1 on Water
Supply and Wastewater Management
(SC1 WSWM) Workshop

13 June 2013
Media Announcement on Young
Malaysian Scientists to join Lindau
Nobel Laureate Meeting and
International Scholar in Solving
Challenges and Lindau Orientation
Session

13 June 2013
Lakes of Malaysia Coffee-table Book
Publicity and Appreciation Programme

13 June – 31 July 2013
National Science Challenge 2013 –
State Level

17 June 2013
Victoria State Government Research
and Commercialization Forum

17 – 18 June 2013
ASM Short Course on "Carbon Markets"

19 June 2013
ASM Senior Fellows' Gathering and Appreciation Dinner

21 June 2013
IdeaXchange

24 June 2013
Impact Assessment of Malaysian Research Universities Workshop

24 – 25 June 2013
Workshop on ASM Restructuring Proposal

25 – 27 June 2013
ASM Training Workshop on "How to Write a Winning Research Proposal?"

25 – 27 June 2013
Visit by Delegation from the Compact Muon Solenoid (CMS) at the CERN

26 June 2013
National Symposium on Collaboration with CMS, CERN

29 June – 5 July 2013
63rd Meeting of Nobel Prize Winner with Young Scientist in Lindau (Chemistry Discipline)

1 – 2 June 2013
Dialogue Strategic Consultation 4 on Inter-Sector Water Demand Management

July

1 July 2013
ASEAN Policy Partnership in Science, Technology and Innovation, Medan Indonesia

2 July 2013
ASM Fellows' Lecture on 'Evolution of Public Healthcare in Malaysia' by Professor Dr Awg Bulgiba Awg Mahmud FASc

3 – 5 July 2013
Technical visit to CERN

4 July 2013
Courtesy Visit to the Secretariat of Parliament

6 – 12 July 2013
Visit to Centres of Excellence in Scientific Research in Germany & Republic of Belarus

8 July 2013
Media Announcement and Cheque Presentation Ceremony for 2013 National Science Challenge (NSC) by ExxonMobil

11 July 2013
Workshop on ASM EXCO members and Sectoral Study Leaders

12 July 2013
Data Analysis Workshop on Impact Assessment of Malaysian Research University (MRU)

18 July 2013
ASEAN Leadership Forum

19 July 2013
Data Analysis Workshop on Impact Assessment of Malaysian Research University (MRU)

22 July 2013
Data Analysis Workshop on Impact Assessment of Malaysian Research University (MRU)

23 July 2013
ASM Road show in UMS, Sabah

29 July 2013
Data Analysis Workshop on Impact Assessment of Malaysian Research University (MRU)

August

19 August 2013
Data Analysis Workshop on Impact Assessment of Malaysian Research University (MRU)

19 – 24 August 2013
National Science Challenge 2013 – Semi Final

16 – 22 August 2013
International Education Workshop on "Educational Institute on Responsible Science"

26 August 2013
Writing Science for Easy Communication (in-house – Jabatan Kimia Malaysia)

27 August 2013
ASM Raya Gathering "Think Science, Celebrate Syawal, Inspiring Moments"

27 August 2013
Launching of ASM New Office

27 August 2013
Signing Ceremony of Memorandum of Understanding (MOU) for Academic Cooperation between ASM & UM on National Centre for Particle Physics (NCPP)

28 August 2013
Public Lecture on Discovery of The Higgs At The Large Hadron Collider

30 August 2013
ASM Road show in UNIMAS, Sarawak

September

3 – 5 September 2013
China-ASEAN Technology Transfer and STI Cooperation Forum, Nanning China

12 September 2013
IdeaXchange

13 September 2013
Bengkel Kajian Impak Universiti Penyelidikan Kali ke-6

18 September 2013
Conference on Ecobuild Southeast Asia 2013

20 September 2013
Courtesy Visit to the Department of Statistics, Putrajaya

23 September 2013
Public Lecture on Environmental Science and Energy by the Japan Ministry of Education, Culture, Sports, Science and Technology (MEXT)

27 September 2013
Bengkel Kajian Impak Universiti Penyelidikan (Research Prominence)

October

3 October 2013
Strategic Consultation 2 on Water Supply and Wastewater Management

7 October 2013
Vetting and Selection Meeting for 'Anugerah Saintis Muda Negara 2013'

7 October 2013
Vetting and Selection Meeting for 'Anugerah Juruteknologi Negara 2013'

8 October 2013
6th Malaysian International Seminar on Antarctica 2013 (MISA 6)

10 October 2013
Launching of Sustainable Development Solutions Network (SDSN) Malaysian Chapter

11 October 2013
ASM Fellows' Lecture on Climate Change: Old News New Threats! IPCC Fifth Assessment Report (AR5) "Climate Change 2013: The Physical Basis" by Professor Dr Fredolin Tangang FASc

17 October 2013
ASM Fellows' Lecture on Prospecting the Self-Assembly Science: Back to Basics by Professor Dr Rauzah Hashim FASc

24 October 2013
ASM Fellows' Lecture on Disaster Risk Reduction in a Changing Climate by Professor Dr Joy Jacqueline Pereira FASc

25 – 27 October 2013
Cabaran Inovasi 2013 (i-INOVA'13)

28 – 29 October 2013
3rd PERPUN International Conference 2013

30 October 2013
ASM Fellows' Lecture on Looking for Green Solutions to our Energy Need by Professor Dr Hamdani Saidi FASc

ASM Fellows' Lecture on Renewable Energy Technology: Sustainable Path for a Carbon Free Future by Professor Dato' Dr Kamaruzzaman Sopian FASc

November

10 – 16 November 2013
9th Science, Technology and Innovation (STI) Management Training Course for Researchers in OIC Countries

12 November 2013
2013 National Science Challenge Grand Final

12 November 2013
Launching of World Innovation Forum (WIF)

12 – 14 November 2013
World Innovation Forum (WIF) 2013, Kuala Lumpur

14 November 2013
Science Communication Workshop in Conjunction of WIF KL 2013

14 November 2013
Vetting and Selection Meeting for The 2013 MAKNA Cancer Research Award

18 November 2013
Workshop on Blueprint for the Establishment of Rare Earth Industries in Malaysia

18 November 2013
Science and Politics on Nuclear Energy Dialogue Session

21 November 2013
ASM Fellows' Lecture on The Fruit Fly - Orchid Association: Sex Pheromones, Allomones and Synomones in Pollination and Biodiversity by Dr Tan Ken Hong FASc

21 November 2013
ASM Fellows' Lecture on The Fruit Fly - Orchid Association: Sex Pheromones, Allomones and Synomones in Pollination and Biodiversity by Dr Tan Ken Hong FASc

23 November 2013
4th General Assembly: "Future of Science in nation-Building: How Can Youths Contribute?

26 – 27 November 2013
Expert Dialogue on Water and Agriculture

28 November 2013
KL International Trade Forum (KLIFT), Intrade

28 – 29 November 2013
Workshop on ASM Process Flow

December

3 December 2013
2013 MAKNA Cancer Research Award Presentation Ceremony

4 – 11 December 2013
NSC study visit to Stockholm

5 December 2013
Strategic Consultation on Integrated River Basin Management (IRBM)

11 December 2013
Launch Ceremony of Sketches of Science Exhibition

9 – 11 December 2013
ASM-YSN Training Workshop on "Science Journalism"

11 December 2013
Launching of Sketches of Science and Faces of Science Exhibition

12 December 2013 – 31 January 2014
Sketches of Science Exhibition

12 December 2013
2013 Mahathir Science Award Presentation Ceremony

12 – 14 December 2013
Young Scientists Network–Academy of Sciences Malaysia Strategic Workshop

17 December 2013
2013 Conferment of Fellowship of the Academy of Sciences Malaysia & the announcement of the 2013 Top Research Scientists Malaysian (TRSM)

PENERBITAN
PUBLICATIONS

Sustainable Energy Options for Electric Power Generation ASM Adv. Report 1/2013

Enhancing Research and Development in Health Sciences - ASM Adv. Report 2/2013

Increasing Broadband Penetration and Quality for National Transformation

Motorcycle Safety Programme in Malaysia: Are We on the Right Track?

ASM Advisory Report 3/2013: Stem Cells Ageing and Regenerative Medicine

ASM Advisory Report 4/2013: Prioritizing Food Policy Options to Reduce Obesity in Malaysia

ASMIC Report and Proceedings 2012 – Science, Technology and Innovation for Socio Economic Transportation – Strategic Drivers for High Income Economy

Delivering Economic Transformation Through STI

Organometallics for all Seasons

ASM Annual Report 2012

Jour. Sc. & Tech Tropics 9 No.1

ASM Lindau Programme 2012

The Essentials of Science. Technology and Innovation Policy

Revitalising the Rare Earth Mineral Programme

Lakes of Malaysia

ASM Sc. Journal Vol.7 (1)

ASM Sc. Journal Vol.7(2)

Jour. Sc. & Tech Tropics 9 No.2

Sketches of Science

Faces of Science

FELO KEHORMAT
HONORARY FELLOWS

1995
Tun Dr Mahathir Mohamad
Mantan Perdana Menteri Malaysia
Former Prime Minister of Malaysia

2005
Tun Abdullah Ahmad Badawi
Mantan Perdana Menteri Malaysia
Former Prime Minister of Malaysia

2006
Nobel Laureate Prof Ahmed H. Zewail
Pemenang Hadiah Nobel 1999 (Kimia)
Nobel Laureate 1999 (Chemistry)

2009
Tun Ahmad Sarji Abdul Hamid
Mantan Ketua Setiausaha Negara
Former Chief Secretary to the Government

2010
Nobel Laureate Professor Lee Yuan Tseh
Pemenang Hadiah Nobel 1986 (Kimia)
Nobel Laureate 1986 (Chemistry)

2011
Tan Sri Dato' Seri Law Hieng Ding
Mantan Menteri, Kementerian Sains,
Teknologi dan Alam Sekitar Malaysia
Former Minister of the Ministry of Science,
Technology and Environment Malaysia

FELO KANAN
SENIOR FELLOWS

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

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

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

2004
Academician Tan Sri Dr Salleh Mohd Nor FASc

2005
Academician Professor Datuk Dr Looi Lai Meng FASc

2006
Academician Tan Sri Dr M Jegathesan FASc

2007
Academician Datuk Dr Abdul Aziz SA Kadir FASc

2008
Academician Tan Sri Ir Hj Shahrizaila Abdullah FASc

2009
Academician Tan Sri Dr Ahmad Mustaffa Babjee FASc

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

2011
Academician Datuk Ir. (Dr) Hj Ahmad Zaidee Laidin FASc
Academician Emeritus Professor Dato' Dr C.P. Ramachandran FASc
Academician Professor Dato' Ir. Dr. Chuah Hean Teik FASc

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

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

FELO
FELLOWS

SAINS PERUBATAN DAN KESIHATAN
MEDICAL AND HEALTH SCIENCES

*Academician Professor Datuk Dr Looi Lai Meng FASc
*Academician Tan Sri Datuk Dr M. Jegathesan FASc
Academician Emeritus Professor Dato' Dr C.P. Ramachandran FASc
*Professor Dr Mak Joon Wah FASc
*Dato' Dr Lim Kee Jin FASc
*Datuk Dr Hussein Awang FASc
*Emeritus Professor Dato' Dr Khalid Abdul Kadir FASc
*Tan Sri Dato' Dr Yahya Awang FASc
Tan Sri Dato' Dr Abu Bakar Dato' Suleiman FASc
Emeritus Professor Dato' Dr Lam Sai Kit FASc
Tan Sri Dato' Seri Hj Musa Mohamad FASc
Emeritus Professor Dato' Paduka Dr Mustaffa Embong FASc
Emeritus Professor Puan Sri Datin Dr Wan Nafisah Hj. Nik Mohd Adeeb FASc
Kept Professor Dato' Dr Hashim Yaacob FASc
Professor Dr Yap Sook Fan FASc
Emeritus Professor Dr Cheong Soon-Keng FASc
Professor Dato' Dr Khairul Anuar Abdullah FASc
Professor Dato' Dr Asma Ismail FASc
Professor Dato' Dr Anuar Zaini Md Zain FASc
Professor Dr Victor Lim Kok Eow @ Azman Lim FASc
Professor Dato' Dr Khalid Yusoff FASc
Tan Sri Dato' Wira Dr Sharifah Hapsah Syed Hasan Shahabudin FASc
Professor Dr Mohd Ismail Mohd Noor FASc
Tan Sri Datuk Dr Mohd Ismail Merican FASc
Professor Dr Cheah Phaik Leng FASc
Professor Dr Mary Jane Cardosa FASc
Professor Dr Boo Nem Yun FASc
Dato' Dr Khoo Kah Lin FASc
Professor Dr Subramaniam Krishnan FASc
Professor Dr Jafri Malin Abdullah FASc
Professor Dato' Dr Goh Khean Lee FASc
Professor Dr Adeeba Kamarulzaman FASc
Professor Dr Rosnah Mohd Zain FASc
Professor Dr Rahmah Nordin FASc
Professor Dato' Dr Ikram Shah Ismail FASc
Emeritus Professor Dato' Dr Lian Chin Boon FASc
Professor Dato' Dr Mohd Amin Jalaludin FASc
Professor Dato' Dr Tan Chong Tin FASc
Professor Dr Norazmi Mohd Nor FASc
Professor Dr Salmaan Hussain Inayat Hussain FASc
Professor Dr Awg Bulgiba Awg Mahmud FASc
Professor Dr Khor Geok Lin FASc
Professor Dr Mustafa Ali Mohd FASc

Nota: Nama yang bertanda '*' adalah Felo Yayasan
Note: Names marked '*' are Foundation Fellows

KEJURUTERAAN DAN SAINS KOMPUTER
ENGINEERING AND COMPUTER SCIENCES

*Academician Dato' Ir Lee Yee Cheong FASc
*Academician Tan Sri Dato' Seri Ir Shamsuddin Abdul Kadir FASc
*Academician Tan Sri Dato' Ir Shahrizaila Abdullah FASc
Academician Datuk Ir (Dr) Ahmad Zaidee Laidin FASc
*Tan Sri Dato' Ir Abu Zarim Omar FASc
*Dato' Dr Muhammad Ridzuan Haji Salleh FASc
*YM Tengku Datuk Dr Mohd Azzman Shariffadeen Tengku Ibrahim FASc
*Dato' Ir Dr Mohd Zawawi Ismail FASc
Datuk Ir Hong Lee Pee FASc
Emeritus Professor Dato' Dr Tan Wang Seng FASc
Ar. Hijjas Kasturi FASc
Datuk Dr Mohamed Arif Nun FASc
Dr Mohamed Awang Lah FASc
Dr Mohamad Zahran Dato' Sheikh Abdul Halim FASc
Professor Dr Zaharin Yusoff FASc
Dato' Dr Mohd Ariffin Aton FASc
Ir Dr Ting Wen Hui FASc
Dato' Professor Ir Dr Zainul Abidin Md Shariff FASc
Dato' Ir Dr A. Bakar Jaafar FASc
Professor Dato' Ir Dr Mashkuri Yaacob FASc
Emeritus Professor Dato' Wira Ir Dr Mohammad Noor Salleh FASc
Professor Dato' Ir Dr Abang Abdullah Abang Ali FASc
Professor Dato' Ir Dr Sahol Hamid Abu Bakar FASc
Professor Dr Mohd Ali Hashim FASc
Ir Dr Ma Ah Ngan FASc
Professor Dato' Dr Goh Sing Yau FASc
H.E. Datuk Seri Dr Jamaludin Mohd Jarjis FASc
Tan Sri Professor Ir Dr Mohd Zulkifli Mohd Ghazali FASc
Professor Dr Tan Hong Siang FASc
Professor Datuk Ir Dr Ow Chee Sheng FASc
Dato' Ir Dr Gue See Sew FASc
Dr Salmah Zakaria FASc
Professor Dr Zahari Taha FASc
Professor Dr Tengku Mohd Tengku Sembok FASc
Datuk Dr A. Rahman Abdullah FASc
Dato' Ar. Esa Mohamed FASc
Professor Dato' Seri Ir Dr Zaini Ujang FASc
Professor Dr Shah Nor Basri FASc
Professor Dato' Dr Halimah Badioze Zaman FASc
Professor Dr Nasrudin Abd Rahim FASc
Dato' Ir Syed Muhammad Shahabudin FASc
Tan Sri Ir Omar Ibrahim FASc
Professor Ir Dr Ahmad Faizal Mohd Zain FASc
Professor Ir Dr Ahmad Fadzil Mohamad Hani FASc
Professor Dr Ahmad Fauzi Ismail FASc
Dato' Sri Ir Dr Judin Abdul Karim FASc
Professor Ir Dr Wan Abu Bakar Wan Abas FASc

Dato' Ir Mohd Yusof Ibrahim FASc
Professor Ir Dr Ruslan Hassan FASc
Professor Dr Zulkifli Yusop FASc
Professor Dato' Ir Dr Wan Ramli Wan Daud FASc
Professor Ir Dr Mohd Jailani Mohd Nor FASc
Professor Dr Hanafi Ismail FASc
Professor Ir Dr Abd Halim Shamduddin FASc
Professor Dr Abdul Latif Ahmad FASc
Professor Dr Hamdani Saidi FASc
Professor Dato' Dr Kamaruzzaman Sopian FASc
Ir Mohd Adnan Mohd Nor FASc

SAINS BIOLOGI, PERTANIAN DAN ALAM SEKITAR
BIOLOGICAL, AGRICULTURAL AND ENVIRONMENTAL SCIENCES

*Academician Emeritus Professor Dr Yong Hoi Sen FASc
*Academician Tan Sri Dr Salleh Mohd Nor FASc
*Academician Tan Sri Dr Ahmad Mustaffa Babjee FASc
*Academician Emeritus Professor Tan Sri Dato' Dr Syed Jalaluddin Syed Salim FASc
Academician Dr C. Devendra FASc
*Emeritus Professor Datuk Dr Abdul Latif Ibrahim FASc
*Tan Sri Datuk Dr Ahmad Zaharudin Idrus FASc
*Emeritus Professor Dato' Sri Dr Zakri Abdul Hamid FASc
*Emeritus Professor Dr Chin Hoong Fong FASc
Dr Francis S.P. Ng FASc
Professor Dr Mak Chai @ Mak Lian Fong FASc
Professor Dr Ho Yin Wan FASc
Dr Koh Chong Lek FASc
Emeritus Professor Dr Mohd Nordin Hasan FASc
Dr Rajanaidu Nookiah FASc
Professor Dato' Dr Sheikh Omar Abdul Rahman FASc
Emeritus Professor Dr Muhamad Awang FASc
Emeritus Professor Dato' Dr Mohamed Mahyuddin Mohd Dahan FASc
Dato' Dr Yeang Hoong Yeet FASc
Emeritus Professor Dato' Dr Abdul Latiff Mohamad FASc
Dr Mohd Sanusi Jangi FASc
Professor Dr Low Pak Sum FASc
Dr Ghazally Ismail FASc
Emeritus Professor Dato' Dr Hj. Mohamed Abdul Majid FASc
Professor Dr Helen Nair FASc
Professor Dr Soh Aik Chin FASc
Professor Datin Paduka Dr Khatijah Mohd Yusoff FASc
Dr Lim Boo Liat FASc
Dr Tan Swee Lian FASc
Dr Yap Thoo Chai FASc
Professor Datin Paduka Dr Aini Ideris FASc
Dr Heong Kong Luen FASc
Professor Dr Phang Siew Moi FASc
Dr Ravigadevi Sambanthamurthi FASc
Dr Sim Soon Liang FASc
Professor Dato' Dr Azizan Abu Samah FASc
Dato' Dr Hashim Abd Wahab FASc
Dr Chan Ying Kwok FASc
Professor Dato' Dr Mohamed Shariff Mohamed Din FASc
Professor Datin Dr Faridah Hanum Ibrahim FASc
Dato' Dr Makhdzir Mardan FASc
Dr K. Harikrishna Dr K. Kulaveerasingam FASc
Professor Dr Wickneswari Ratnam FASc
Dr Tan Keng Hong FASc
Professor Dr Normah Mohd Noor FASc
Datuk Seri Lim Chong Keat FASc
Professor Dr Fatimah Md Yusoff FASc
Professor Dr Hj Ibrahim Che Omar FASc
Professor Dr Mohd Tajuddin Abdullah FASc
Professor Dr Ng Wing Keong FASc
Dr Saw Leng Guan FASc

MATEMATIK, FIZIK DAN SAINS BUMI
MATHEMATICS, PHYSICS AND EARTH SCIENCES

*Academician Datuk Fateh Chand FASc
Academician Professor Dato' Ir Dr Chuah Hean Teik FASc
Academician Dr Chia Swee Ping FASc
*Dato' Dr Chatar Singh FASc
*Tan Sri Datuk Dr Ahmad Tajuddin Ali FASc
*Emeritus Professor Dato' Dr Mohd Sham Mohd Sani FASc
*Dato' Dr R. Ratnalingam FASc
Dr Shaharir Mohamad Zain FASc
Professor Dato' Dr Hassan Said FASc
Professor Dato' Dr Ibrahim Komoo FASc
Professor Dr Bahrom Sanugi FASc
Professor Dr Harith Ahmad FASc
Professor Dr Kurunathan Ratnavelu FASc
Professor Dr Tou Teck Yong FASc
Emeritus Professor Dato' Dr Muhammad Yahaya FASc
Professor Dr Lim Ming Huat FASc
Professor Dr Wong Chiow San FASc
Professor Dato' Dr Roslan Abd-Shukor FASc
Professor Dato' Dr Muhamad Rasat Muhamad FASc
Professor Dato' Dr Rosihan Mohamed Ali, FASc
Emeritus Professor Dr Lim Koon Ong FASc
Emeritus Professor Dr Fun Hoong-Kun FASc
Professor Dr Ong Seng Huat FASc
Professor Dr Abdul Halim Shaari FASc
Professor Dr Felix Tongkul FASc
Professor Dr Fredolin Tangang FASc
Professor Dr Mohd Shafee'a Leman FASc
Professor Dr Joy Jacqueline Pereira FASc
Professor Dr Wan Ahmad Tajuddin Wan Abdullah FASc
Professor Dato' Dr Kamel Ariffin Mohd Atan FASc
Dr Low Kwai Sim FASc
Dr Mazlan Madon FASc
Professor Dr Norani Muti Mohamed FASc

SAINS KIMIA
CHEMICAL SCIENCES

*Academician Emeritus Professor Tan Sri Datuk Dr Augustine Ong Soon Hock FASc
*Academician Emeritus Professor Dato' Dr V.G. Kumar Das Govinda Panicker FASc

Nota: Nama yang bertanda '*' adalah Felo Yayasan
Note: Names marked '*' are Foundation Fellows

Academician Dr Ho Chee Cheong FASc
Emeritus Professor Dr Ng Soon FASc
Datuk Dr Mohinder Singh S. Sucha Singh FASc
Dr Goh Swee Hock FASc
Professor Datuk Dr Halimaton Hamdan FASc
Emeritus Professor Dato' Dr Md Ikram Mohd Said FASc
Dr Lee Chnoong Kheng FASc
Professor Datuk Dr Sukiman Sarman FASc
Datuk Dr Choo Yuen May FASc
Professor Dr Ibrahim Abdullah FASc
Professor Dato' Dr Muhammad Idiris Saleh FASc
Dr Lai Yoong Wong FASc
Professor Dr Lee Soo Ying FASc
Professor Datin Dr Zuriati Zakaria FASc
Professor Dr Loh Teck Peng FASc
Professor Dr Rauzah Hashim FASc
Professor Dato' Dr Mohd Jamil Maah FASc
Professor Dr Ng Seik Weng FASc
Professor Dato' Dr Laily Din FASc
Professor Dr Bohari Mohd Yamin FASc
Professor Dr Lee Hian Kee FASc
Professor Dr Yang Farina Abdul Aziz FASc

PEMBANGUNAN SAINS & TEKNOLOGI DAN INDUSTRI

SCIENCE & TECHNOLOGY DEVELOPMENT AND INDUSTRY

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

Nota: Nama yang bertanda '*' adalah Felo Yayasan
Note: Names marked '*' are Foundation Fellows

ASM ASSOCIATES

Professor Dr Mary Anne Tan Jin Ai
January 2010 – December 2011
January 2012 – December 2013

Professor Dr Mohd Basyaruddin Abdul Rahman
January 2010 – December 2011
January 2012 – December 2013

Professor Dr Rajah Rasiah
January 2010 – December 2011
January 2012 – December 2013

Dr Nather Khan Ibrahim
January 2010 – December 2011
January 2012 – December 2013

Associate Professor Dr Teh Geok Bee
January 2010 – December 2011
January 2012 – December 2013

Mr Bong Boon Fah
April 2010 – March 2012
April 2012 – March 2014

Assistant Professor Dr Chin Chiew Foan
April 2010 – March 2012
April 2012 – March 2014

Professor Dr Omar Yaakob
April 2010 – March 2012
April 2012 – March 2014

Professor Dr Nor Aieni Hj Mokhtar
April 2010 – March 2012
April 2012 – March 2014

Professor Dr Toh Chooi Gait
April 2010 – March 2012
April 2012 – March 2014

Professor Dr Zainal Ariffin Ahmad
April 2010 – March 2012
April 2012 – March 2014

Datuk Dr Abdul Rahim Nik
July 2010 – June 2012
January 2013 – December 2014

Dato' Dr Abdul Rashid Ab. Malik
July 2010 – June 2012
January 2013 – December 2014

Associate Professor Dr Che Aziz Ali
July 2010 – June 2012
January 2013 – December 2014

Associate Professor Dr Kamal Roslan Mohamed
July 2010 – June 2012
January 2013 – December 2014

Associate Professor Dr Norhayati Ahmad
July 2010 – June 2012
January 2013 – December 2014

Professor Dr Ewe Hong Tat
July 2010 – June 2012
January 2013 – December 2014

Ir Lalchand Gulabrai
July 2010 – June 2012
January 2013 – December 2014

Professor Dr Lee Sze Wei
July 2010 – June 2012
January 2013 – December 2014

Professor Dr Faidz Abd Rahman
September 2010 – August 2012
January 2013 – December 2014

Associate Professor Dr Vellayan Subramaniam
September 2010 – August 2012
January 2013 – December 2014

Associate Professor Dr Clemente Michael Wong Vui Ling
September 2010 – August 2012
January 2013 – December 2014

Professor Dr Mohd Marsin Sanagi
September 2010 – August 2012
January 2013 – December 2014

Professor Ir Dr Mohamad Nor Berhan
September 2010 – August 2012
January 2013 – December 2014

Dr Martin Abraham
September 2010 – August 2012
January 2013 – December 2014

Mr Mohammed Hatta Abd Karim
March 2011 – February 2013
April 2013 – March 2015

Associate Professor Dr Wong Tin Wui
March 2011 – February 2013
April 2013 – March 2015

Dr Chan Kok Gan
March 2011 – February 2013
April 2013 – March 2015

Associate Professor Dr Rokiah Omar
March 2011 – February 2013
April 2013 – March 2015

Dr Rahimatsah Amat
January 2012 – December 2013

Dr Awang Noor Abd. Ghani
January 2012 – December 2013

Professor Dr Ahmad Ismail
January 2012 – December 2013

Professor Dr Seshadri Srini Vasan
January 2012 – December 2013

Dr Rusea Go
January 2012 – December 2013

Dr Waidi Sinun
January 2012 – December 2013

Associate Professor Dr Faizal Mustapha
January 2012 – December 2013

Dr Rohani Ahmad
January 2012 – December 2013

Dr Wan Nazaimoon Wan Mohamud
January 2012 – December 2013

Dr Nazni Wasi Ahmad
January 2012 – December 2013

Dr Mohd Khadri Shahar
January 2012 – December 2013

Professor Emeritus Datuk Dr Shad Saleem Faruqi
January 2012 – December 2013

Professor Dr Abu Hassan Ahmad
April 2012 – March 2014

Dato' Dr Sharifah Maimunah Syed Zin
April 2012 – March 2014

Professor Dr Andrew Alek Tuen
April 2012 – March 2014

Dr Shahrom Mahmud
April 2012 – March 2014

Professor Dr Rofina Yasmin Othman
April 2012 – March 2014

Professor Dr Ir. Sim Kok Swee
January 2013 – December 2014

Associate Professor Dr Noor Azuan Abu Osman
January 2013 – December 2014

Associate Professor Dr Ramesh T. Subramaniam
January 2013 – December 2014

Professor Dr Noor Hayaty Abu Kassim
January 2013 – December 2014

Professor Dr Chu Wan Loy
January 2013 – December 2014

Dr Ahmad Hezri Adnan
January 2013 – December 2014

Associate Professor Dr Monica Suleiman
January 2013 – December 2014

Associate Professor Dr Azmi Aris
January 2013 – December 2014

Associate Profesor Dr Ahmad Fariz Mohamed
January 2013 – December 2014

Professor Dr Mohd Razman Salim
January 2013 – December 2014

Professor Dr Cheong Sok Ching
April 2013 – March 2015

Associate Professor Dr Tilakavathi Karupaiah
April 2013 – March 2015

Associate Professor Dr Leong Chee Onn
April 2013 – March 2015

Professor Dr Manickam Ravichandran
April 2013 – March 2015

2013 TOP RESEARCH SCIENTISTS MALAYSIA

Dato' Dr Abd Latif Mohmod, *FRIM*
Professor Dato' Ir Dr Abdul Wahab Mohammad, *UKM*
Professor Datin Paduka Dr Aini Ideris FASc, *UPM*
Dr Chantara Thevy Ratnam, *NM*
Associate Professor Dr Cheong Kuan Yew, *USM*
Professor Dr Chong Shu Chien @Alexander, *USM*
Professor Dr Darah Ibrahim, *USM*
Professor Dr Fatimah Md Yusoff FASc, *UPM*
Emeritus Professor Dr Fun Hoong Kun FASc, *King Saud University*
Professor Dr Hairul Azhar Abdul Rashid, *MMU*
Professor Datuk Dr Halimaton Hamdan FASc, *UniMy*
Professor Dr Hamdani Saidi FASc, *UTM*
Professor Dr Ibrahim Che Omar FASc, *UMK*
Professor Dr Jafri Malin Abdullah FASc, *USM*
Professor Dr K Sudesh Kumar C Kanapathi Pillai, *USM*
Professor Dato' Dr Kamaruzzaman Sopian FASc, *UKM*
Professor Dr Luqman Chuah Abdullah @ Chuah Teong Guan, *UPM*
Associate Professor Dr M.Iqbal Saripan, *UPM*
Professor Dr Mahiran Basri, *UPM*
Dr Meor Yusoff Meor Sulaiman, *NM*
Professor Dr Mohd Ali Hassan, *UPM*
Mohd Mustafa Al Bakri Abdullah, *UMP*
Professor Dato' Dr Mohd Yusof Haji Othman, *UKM*
Professor Dr Ng Wing Keong FASc, *USM*
Professor Dr NorAishah Saidina Amin, *UTM*
Professor Dr Nor Azah Yusof, *UPM*
Professor Dr Paridah Md Tahir, *UPM*
Professor Dr Raja Noor Zaliha Raja Abd. Rahman, *UPM*
Professor Dr Ruzairi Abdul Rahim, *UTM*
Professor Dr Shamshuddin Jusop, *UPM*
Professor Ir Dr Sheikh Hussain Shaikh Salleh, *UTM*
Professor Dr Tan Chin Ping, *UPM*
Professor Dr Taufiq Yap Yun Hin, *UPM*
Professor Dr Zainuddin Abd Manan, *UTM*
Professor Dr Zainuriah Hassan, *USM*

YOUNG SCIENTIST NETWORK-ASM

December 2012 – 2015

Professor Dr Mohd Basyaruddin Abdul Rahman (Chairman)
Associate Professor Dr Abhimanyu Veerakumarasivam
Associate Professor Dr Ahmad Zaharin Aris
Associate Professor Dr Azwani Sofia bt Ahmad Khiar
Dr Chan Kok Meng
Dr Cheah Pike See
Dr Chen Soo Kien
Dr Chong Kok Keong
Dr Dasmawati Mohamad
Professor Dr Faisal Rafiq bin Mahamd Adikan
Dr Fazly Salleh Abas
Dr Hanafiah bin Yussof
Associate Professor Dr. Haw Su Cheng
Associate Professor Dr. Lee Keat Teong
Dr Lee Yeong Yeh
Associate Professor Dr. Leong Chee Onn
Dr Ling King Hwa
Associate Professor Dr. Liong Min Tze
Dr Mimi Haryani binti Hassim
Associate Professor Dr. Mohamed Azmi bin Ahmad Hassali
Dr Mohamed Ibrahim Mohamed Tahir
Professor Dr Mohd Adzir bin Mahdi
Professor Ir. Dr. Mohd Zainal Abidin Ab Kadir
Associate Professor Dr. Mohd Zul Helmi Rozaini
Dr Normi Mohd Yahaya
Associate Professor Dr. Rajkumar A/L Durairaj
Associate Professor Dr. Sharifah Rafidah binti Wan Alwi
Associate Professor Dr Syahrilnizam Abdullah
Dr Tan Kar Ban
Professor Ir. Dr. Wong Hin Yong
Associate Professor Dr. Zainovia Lockman
Associate Professor Dr. Zularisam b. Ab Wahid

December 2013 – 2016

Dr Ahmad Taufek Abdul Rahman
Associate Professor Dr Cheah Yoke Kqueen
Professor Dr Cheong Sok Ching
Associate Professor Ir. Dr Chin Nyuk Ling
Associate Professor Dr Goh Yong Meng
Professor Dr Hairul Azhar bin Abdul Rashid
Associate Professor Dr Haslenda Binti Hashim
Associate Professor Dr Hazandy Bin Abdul Hamid
Dr Huda binti Abdullah
Associate Professor Dr Leong Wai Yie
Associate Professor Dr M. Iqbal bin Saripan
Associate Professor Dr Mohd Azmier Bin Ahmad
Associate Professor Dr Mohd Fareq bin Abd Malek
Professor Dr Nor Azah Binti Yusof
Associate Professor Dr (Raymond) Ooi Chong Heng
Associate Professor Dr Rajesh Ramasamy
Professor Dr Raphael Phan Chung Wei
Professor Tan Chin Ping
Associate Professor Dr Widad Binti Ismail
Associate Professor Dr Yap Chee Kong

PENGURUSAN ASM
ASM MANAGEMENT

Dr Ahmad Ibrahim
Chief Executive Officer (CEO)
Norhafiza Awang Idris
Secretary to CEO

Hazami Habib
Chief Operating Officer (COO)
Norazirah Ramli
Secretary to COO

STI STRATEGIC STUDIES DIVISION

Science Policy Unit

P. Loganathan
Principal Analyst
Ahmad Fadhli Abd Razak
Analyst (Emerging Technology)
Intan Suliana Suhaimi
Analyst (Mega-Science)
Nur Zuriany Zaki
Analyst
Nurul Hidayah A. Razak
Analyst

Science Analysis Unit

Wan Nurul Hanani Wan Alkamar Shah
Senior Analyst
Esther Wong Kum Yeen
Senior Analyst
Nurfathehah Idris
Data Analyst
Mohamad Jawad Tajuddin
Analyst

Bussiness Development Unit

Siti Suzilah Faharuddin
Manager (Business Development)
Hazrul Liki
Executive (Training Development, Conference/ Workshop)
Natrah Rafiqah Mohd Jalil
Executive (STI Consultancy)

STI STRATEGIC PROGRAM DIVISION

Science Excellence Unit

Nitia Karunaharan Samuel
Manager (Science Excellence)
Khairul Akma Mahamad
Executive (Nobel Laureate Program)
Norazwa Musiran
Executive (TRSM)
Nur Dayana Razmi
Executive (Awards, Grants & R,DnC)
Asna Asyraf Saedon
Executive (NSC)

Science Network Unit

Noor Asmaliza Romlee
Senior Analyst

Siti Sarah Mohd Hilmi
Executive (Bilateral & Multilateral)

CORPORATE SERVICES DIVISION

Seetha Ramasamy
Manager, Corporate Services

Finance and Accounts Unit

Rosmaniza Abdul Rahman
Senior Accountant
Rosmaria Razak
Accountant
Mohamad Fadli J Nasrul
Executive (Accounts)
Nor Hayati Johan
Clerk (Accounts)
Nurhani Zawani Posari
Executive (Accounts)

Human Resources Unit

Sazarul Aini Sabot
Assistant Executive (Human Resource)
Noor Aainaa Ismail
Clerk (Human Resource)

Administration Unit

Nur Shafawaty Ahmad
Assistant Executive (Admin)
Asmah Amat
Senior Clerk (Admin)
Nor Hasnieza Abdullah
Clerk (Admin)
Khairul Nisak Alias
Receptionist
Rusli Othman
Assistant (Admin)
Muhammad Saiful Bahri Wan Din
Assistant (Admin)
Shareeza Shaari
Driver
Mohd Zuhairi Zakbar
Driver

Event and Logistics Unit

Norsuhada Adnan
Assistant Executive (Event Logistics)
Murni @ Zahani Ariffin
Assistant Coordinator (Event Logistics)
Mohd Zairi Mansor
Senior Assistant Coordinator (Event Logistics)
Mohd Zefri Mohd Zulkefli
Assistant (Event Logistics)

Publication Unit

Kanesan Solomalai
Chief Editor
Amirul Ikhzan Amin Zaki
Executive (Publication)
Mohd Zharif Fazaruddin
Assistant Executive (Marketing)

Information Centre

Nornajihah Mohd Nor
Executive (Information Center)
Norehan Kadir
Assistant Executive (Information Center)

Membership Affairs

Norlina Hussin
Executive (ASM Membership)

Coorporate Communication Unit

Hermayanti Hairoman
Executive (Corporate Communication)
Shamrina Rose Kader Ali Khan
Executive (Corporate Communication)
Dharshene Rajayah
Graphic Designer
Nur Syahirah Abdul Ghani
Executive (Science Buzz)

Information Technology Unit

Saiful Suhairi Suarni
Executive (Information Technology)
Ahmad Khudri Abd Razak
Assistant Executive (Information Technology)
Norhafiezah Mohd Asheri
Webmaster

ICSU

Emeritus Professor Dr Mohd Nordin Hasan FASc
Director

Tengku Sharizad Tengku Dahlan
Senior Science Officer

Mohd Hizamddin Jaafar
Admin Officer

ISTIC

Dato' Dr Samsudin Tugiman FASc
Director

Abdul A'dzim Abd Rashid
Science Officer

Zarmila Salmi Sabot
Admin Officer

Mohd Irza Pairuz Zamri
Science Officer

AKRONIM
ACRONYMS

ASM	Academy of Sciences Malaysia
ASM Sc J	ASM Science Journal
ASMIC	Academy of Sciences Malaysia International Conference
ATCM	Antarctic Treaty Consultative Meeting
CERN	European Organization for Nuclear Research
CIF	Community InnoFund
CRC	Clinical Research Centre
DID	Department of Irrigation and Drainage Malaysia
EPU	Economic Planning Unit
FASc	Fellow of the Academy of Sciences Malaysia
GDP	Gross Domestic Product
GERD	Gross Expenditure on R&D
GSIAC	Global Science and Innovation Advisory Council
GYA	Global Young Academy
IAMP	InterAcademy Medical Panel
IAP	InterAcademy Panel
IBSE	Inquiry-based Science Education
ICSU	International Council for Science
ICSU - ROAP	International Council for Science Regional Office for Asia and the Pacific
IHL	Institute of Higher Learning
IIASA	International Institute of Applied Systems Analysis
IRBM	Integrated River Basin Management
ISTIC	International STI Centre for South-South Cooperation
IWRM	Integrated Water Resources Management
JOSTT	Journal of Science and Technology in the Tropics
JPS	Jabatan Pengairan dan Saliran
MAKNA	National Cancer Council
MDTCC	Ministry of Domestic Trade, Co-operatives and Consumerisms
MITI	Ministry of International Trade and Industry
MKN	National Security Council
MOE	Ministry of Education
MOH	Ministry of Health
MOHE	Ministry of Higher Education
MOSTI	Ministry of Science, Technology and Innovation
MoU	Memorandum of Understanding
MPOC	Malaysian Palm Oil Council
MRU	Malaysian Research Universities
MSA	Mahathir Science Award
MSAF	Mahathir Science Award Foundation
MSAN	Majlis Sumber Air Negara
MSMA	Manual Saliran Mesra Alam
NASB	National Academy of Sciences of Belarus
NASIC	Network of Academies of Sciences in OIC Countries
NKEA	National Key Economic Areas
NRE	Ministry of Natural Resources and Environment
NSRC	National Science and Research Council
NWRP	National Water Resource Policy
OIC	Organization of Islamic Cooperation
P&P	Penyelidikan dan Pembangunan
PMT	Project Management Team
R&D	Research and Development
RECSAM	Regional Centre for Education in Science and Mathematics
RI	Research institutes
S&T	Science and Technology
SCA	Science Council of Asia
SCL	Strategic Consultative Labs
SME	Small and Medium Enterprise
SPAN	Suruhanjaya Perkhidmatan Air Negara
STI	Science, Technology and Innovation
STILC	Science and Technology Industry Linkage Committee
TRSM	Top Research Scientists Malaysia
TWAS	The World Academy of Sciences
UiTM	Universiti Teknologi MARA
UM	University of Malaya
UMT	Universiti Malaysia Terengganu
UN	United Nation
UNESCO	United Nations Educational, Scientific and Cultural Organization
UPM	Universiti Putra Malaysia
UTM	Universiti Teknologi Malaysia
WSP	Water Safety Plans
YPL	Young Physician Leaders
YSN	Young Scientists Network
YSSP	Young Scientists Summer Programme

AKADEMI SAINS MALAYSIA
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