Mempertingkatkan Pengelibatan Rakyat
Enhancing Public Engagement

MOSTI
Kementerian Sains, Teknologi dan Inovasi Malaysia
Ministry of Science, Technology and Innovation Malaysia

AELB
ATOMIC ENERGY LICENSING BOARD

Laporan Tahunan **2012** *Annual Report*

Menarik Penglibatan Rakyat

Usaha mempertingkatkan penglibatan orang awam membuahkan hasil dengan tercapainya pemahaman lebih mendalam mengenai pelbagai isu bersabit dengan keselamatan nuklear, sekuriti dan kawalgunaan. Oleh itu, AELB menumpukan perhatian terhadap peningkatan penglibatan rakyat pada 2012. Dengan berbuat demikian, ketelusan kami menjadi lebih ketara serta peranan kami lebih difahami dan dihargai.

Dorongan Kami

"Membantu dalam melindungi keselamatan rakyat Malaysia dan menjamin keselamatan, sekuriti dan pengawalan negara Malaysia" – komitmen ini mendorong kami untuk terus memenuhi mandat yang telah dipertanggungjawabkan ke atas kami, iaitu:

- Memastikan teknologi nuklear dan sinaran dilaksanakan untuk kesejahteraan masyarakat dan negara tanpa memberi kesan negatif kepada masyarakat awam, alam sekitar dan pekerja.
- Memperolehi, menyebar dan menjana pengetahuan untuk meningkat keselamatan nuklear dan sinaran, sekuriti serta kawalgunaan.
- Menghasilkan kemakmuran melalui penyediaan persekitaran yang kondusif dan diyakini masyarakat antarabangsa dengan satu kerangka perundangan negara yang berwibawa dan kompeten selaku pemudah bagi industri tempatan untuk memperolehi teknologi-teknologi sensitif termoden untuk negara.

Kami juga didorongi oleh Visi dan Misi kami:

Kenyataan Visi

Sentiasa relevan sebagai sebuah badan perundangan yang berwibawa dalam keselamatan sinaran dan nuklear, sekuriti dan kawalgunaan untuk kegunaan secara aman bagi pembangunan mampan.

Kenyataan Misi

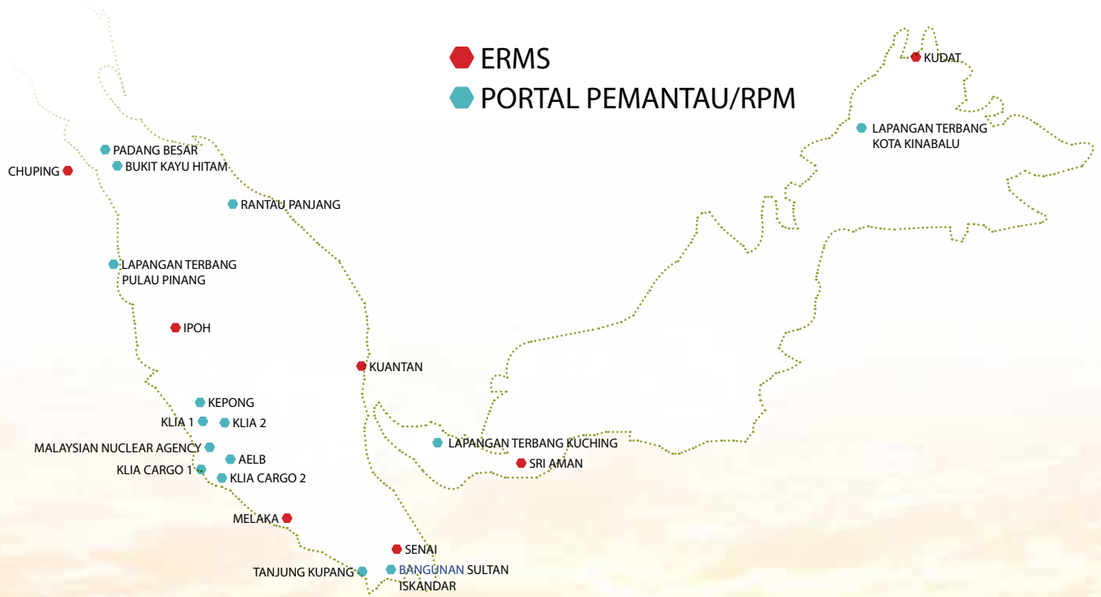
Menggalakan budaya inovasi bagi memastikan penggunaan teknologi nuklear dan sinaran dengan aman dan selamat.

Keutamaan Kami

- Kesihatan rakyat Malaysia.
- Keselamatan dan sekuriti Malaysia.
- Pelindungan alam sekitar negara.

Lokasi Kami

Lokasi-lokasi cawangan AELB yang berada di seluruh negara membantu peranan kami dalam memastikan SEKURITI dan KESELAMATAN nuklear negara. Ibu Pejabat AELB terletak di Dengkil, Selangor dan disokong empat Cawangan serta tujuh stesen pemantauan yang diletakkan di lokasi strategik di seluruh Malaysia. Keradioaktifan di dalam persekitaran dipantau dengan menggunakan Sistem Pemantauan Radiologi Persekitaran (ERMS). Untuk tujuan sekuriti nuklear negara, Portal Pemantauan Sinaran (RPM) dipasang dan diletakkan di pintu-pintu masuk negara untuk tujuan mengesan sinaran.



Ibu Pejabat

LEMBAGA PERLESENAN TENAGA ATOM (AELB)
Kementerian Sains, Teknologi dan Inovasi
Batu 24, Jalan Dengkil, 43800 Dengkil, Selangor
MALAYSIA
Tel: 603-8922 5888
Faks: 603-8922 3685
Laman web: www.aelb.gov.my

Pejabat Cawangan dan Stesen Pemantaun

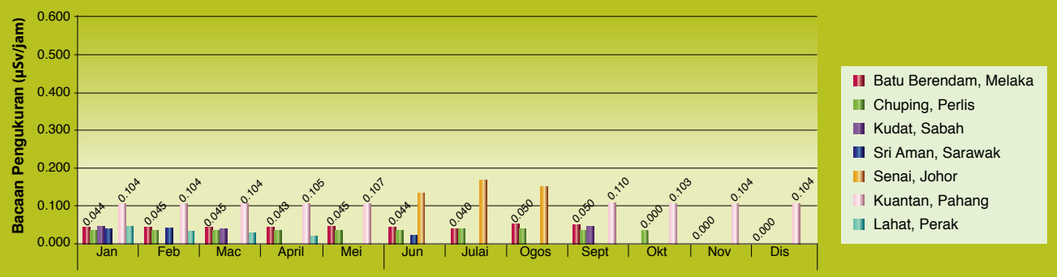
CAWANGAN ZON UTARA (PULAU PINANG)
Lembaga Perlesenan Tenaga Atom
Kementerian Sains, Teknologi dan Inovasi
No. 29, Lorong Perda Selatan 1
Bandar Perda, 14000 Bukit Mertajam
Pulau Pinang
Tel: 04-539 8391/539 0486
Faks: 04-537 6380

CAWANGAN SELATAN (JOHOR)
Lembaga Perlesenan Tenaga Atom
Kementerian Sains, Teknologi dan Inovasi
Cawangan Zon Selatan (Johor)
No. 26, Jalan Sri Putra 1
Bandar Putra, 81000 Kulai
Johor
Tel: 07-663 2431/663 4300
Faks: 07-663 2409

CAWANGAN TIMUR (TERENGGANU)
Lembaga Perlesenan Tenaga Atom
Kementerian Sains, Teknologi dan Inovasi
Cawangan Zon Pantai Timur (Terengganu)
Pt 6980, Bukit Kuang Business Centre
24000 Kemaman, Terengganu
Tel: 09-850 3362/60
Faks: 09-850 3361

CAWANGAN SABAH & SARAWAK
Lembaga Perlesenan Tenaga Atom
Kementerian Sains, Teknologi dan Inovasi
Cawangan Zon Malaysia Timur
Sub Lot 13, Lots 2370 & 2371
Block 32, Kawasan Perindustrian Sibiyu
97000 Bintulu, Sarawak
Tel: 086-330 469/315 469/339 469
(Talian Terus ke Ketua Cawangan)
Faks: 086-332 469

Purata Bacaan Bulanan ERMS di 7 Stesen bagi Tahun 2012



Kandungan

PENERAJU AELB

Ahli Lembaga AELB

Pengerusi Lembaga
Y. Bhg. Prof. Datuk Dr. Sukiman Sarmani
Pensyarah
Fakulti Sains dan Teknologi
Universiti Kebangsaan Malaysia

Ahli-ahli Lembaga

1 **Y. Bhg. Prof. Datin Paduka Dr. Khatijah bt. Mohd Yusoff**
Timbalan Ketua Setiausaha - Sains
Kementerian Sains, Teknologi dan Inovasi

2 **Y. Bhg. Datuk Dr. Noor Hisham b. Abdullah**
Ketua Pengarah Kesihatan (Perubatan)
Kementerian Kesihatan Malaysia

3 **Y. Bhg. Prof. Madya Dr. Nahrul Khair Alang Md Rashid**
Pensyarah
Jabatan Kejuruteraan Mekatronik
Universiti Islam Antarabangsa, Malaysia

4 **Y. Bhg. Datuk Ir. Ahmad Fauzi b. Hasan**
Ketua Pegawai Eksekutif
Suruhanjaya Tenaga

Setiausaha Eksekutif
Y.M. Raja Dato' Abdul Aziz b. Raja Adnan
Ketua Pengarah
Lembaga Perlesenan Tenaga Atom
Kementerian Sains, Teknologi dan Inovasi

Pengurusan Tertinggi AELB

Pejabat Ketua Pengarah

Y.M. Raja Dato' Abdul Aziz b. Raja Adnan
Ketua Pengarah
Dr. Noor Hasnah bt. Mohamed Khairullah
Penasihat Khas
Saidatul Akmar bt. Suberi
Penasihat Undang-undang

Bahagian Khidmat Pengurusan

Danny Al Jeffery b. Abdullah
Pengarah

Bahagian Dasar, Kod & Standard
Pengarah - Kosong (Ditanggung oleh: Monalija bt. Kostor)

Bahagian Penguatkuasaan

Hamrah b. Mohd Ali
Pengarah

Bahagian Perlesenan

Hasmadi b. Hassan
Pengarah

Bahagian Sokongan Teknikal

Mohd Yasin b. Hj. Sudin
Pengarah

Bahagian Installasi Nuklear

Mohd Pauzi b. Mohd Sobari
Pengarah

Komunikasi & Multimedia

Ghazali b. Ismail
Ketua Bahagian

Jutaan Terima Kasih

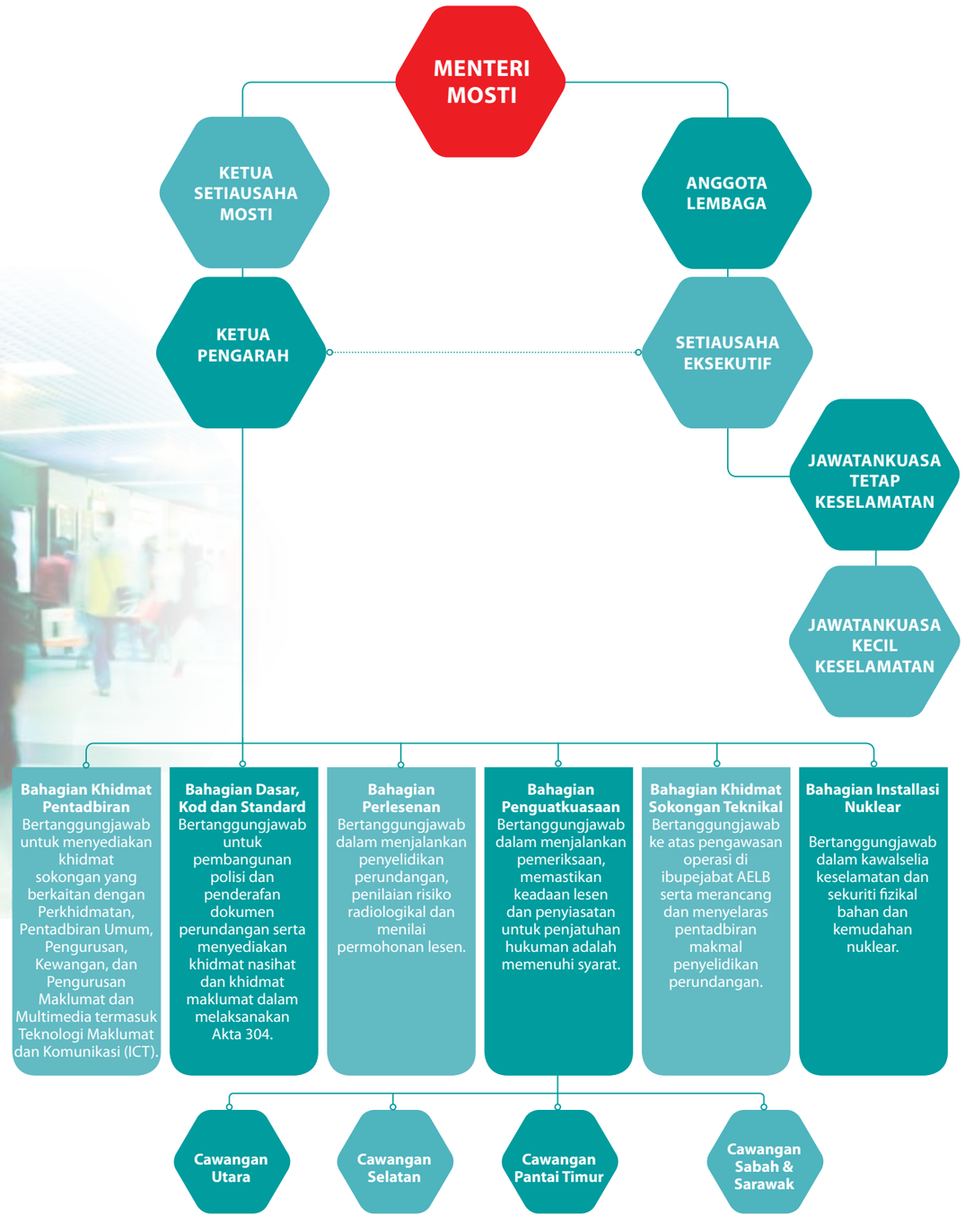
Pihak Lembaga dan pengurusan tertinggi AELB ingin mengambil kesempatan ini bagi mengucapkan ribuan terima kasih kepada Kerajaan Malaysia, Kementerian Sains, Teknologi dan Inovasi (MOSTI), lain-lain Kementerian, jabatan dan agensi Kerajaan, serta rakan-rakan sejawat di peringkat antarabangsa di atas sokongan dan kerjasama yang diberikan. Kami juga ingin merakamkan penghargaan kepada semua kakitangan AELB di atas komitmen dan dedikasi mereka dalam melaksanakan tugas dan tanggungjawab yang diberi serta membantu AELB mencapai matlamat yang membolehkan jabatan ini terus memikul tanggungjawab dan kekal sebagai satu badan penguatkuasa yang relevan, berkesan dan berwibawa.

Pentadbiran AELB

AELB adalah sebuah jabatan di bawah naungan Kementerian Sains, Teknologi dan Inovasi (MOSTI). Lembaga AELB sebagai Pihak Berkuasa Berkaitan di bawah Akta 304 bertanggungjawab memberi nasihat kepada Menteri Sains, Teknologi dan Inovasi (MOSTI) dan Kerajaan Malaysia mengenai perkara berkaitan dengan Akta 304, mengawal penggunaan tenaga atom, menubuhkan kerjasama saintifik berkaitan tenaga atom, dan melaksanakan obligasi yang timbul daripada perjanjian, konvensyen atau triti antarabangsa yang berkaitan dengan penggunaan tenaga atom secara aman. Keputusan berkaitan polisi, pengurusan kewangan dan strategi dibuat oleh Lembaga AELB dan diluluskan oleh Menteri MOSTI yang seterusnya memberi arahan kepada Ketua Setiausaha untuk tindakan di peringkat Kementerian.

Diterajui oleh Ketua Pengarah, AELB menjalankan operasinya menerusi pelbagai bahagian dan cawangan yang mempunyai tanggungjawab khusus di dalam perlesenan, pemeriksaan serta penguatkuasaan. Ketua Pengarah AELB melaksanakan program dan aktiviti yang berkaitan dengan perundangan jabatan dan melaporkan kepada Ketua Setiausaha MOSTI.

Carta Organisasi



PROFIL AELB

Penubuhan

Ditubuhkan pada 1 Februari 1985, AELB membolehkan Kerajaan Malaysia mengawal, memeriksa dan menguatkuasa aktiviti tenaga atom negara secara berkesan. Aktiviti tersebut meningkat dengan pesat pada tahun-tahun selepas 1968 apabila Kerajaan meluluskan Akta Bahan-bahan Radioaktif 1968 untuk mengawal penggunaan bahan radioaktif terutamanya di dalam bidang perubatan. Pada bulan April 1984, Parlimen Malaysia telah meluluskan Akta Perlesenan Tenaga Atom 1984 (Akta 304). Pada peringkat awal, Jabatan ini diletakkan di bawah Jabatan Perdana Menteri, dan dipertanggungjawabkan untuk melaksanakan fungsi mengikut Seksyen 3 Akta 304. Pada 27 Oktober 1990, AELB telah dipindahkan daripada Jabatan Perdana Menteri dan ditempatkan di bawah Kementerian Sains, Teknologi dan Inovasi (MOSTI). Kini, Akta 304 telah dinilai semula bagi memastikan kerelevanan dan keberkesanannya berterusan dalam memenuhi keperluan semasa.

Fungsi

- Memberi nasihat kepada Menteri dan Kerajaan Malaysia atas perkara berkenaan dengan Akta Perlesenan Tenaga Atom 1984 dan perkembangan berkaitan terutamanya mengenai implikasi perkembangan tersebut bagi Malaysia.
- Mengawal dan mengawasi pengeluaran dan penggunaan tenaga atom dan perkara yang berkaitan dengannya.
- Menubuh, menyenggara dan membangunkan kerjasama saintifik dan teknikal dengan mana-mana badan, institusi atau organisasi lain berhubungan dengan perkara bersangkutan dengan nuklear atau tenaga atom sebagaimana difikirkan sesuai oleh Lembaga bagi maksud-maksud yang terkandung dalam Akta Perlesenan Tenaga Atom 1984.
- Melaksana sepertimana diarahkan sedemikian oleh Kerajaan Malaysia, bagi memenuhi obligasi yang timbul daripada perjanjian, konvensyen atau triti berhubungan dengan perkara-perkara nuklear atau tenaga atom yang mana Malaysia menjadi satu pihak jika perjanjian, konvensyen atau triti itu ada hubungan dengan maksud-maksud yang terkandung dalam Akta Perlesenan Tenaga Atom 1984.
- Mengerjakan perkara lain yang timbul atau berbangkit daripada fungsi-fungsi Lembaga AELB di bawah Akta Perlesenan Tenaga Atom 1984 yang tidak berlawanan dengan maksud-maksud yang terkandung dalam Akta ini, sama ada diarahkan oleh Menteri atau tidak.

Peranan

- Memastikan keberkesanan fungsi penguatkuasaan AELB.
- Mencapai tahap keberkesanan dan ketelusan yang tinggi dalam operasi AELB.
- Menarik dan mengekalkan kakitangan cemerlang yang mempunyai pengetahuan, kemahiran dan kecekapan yang diperlukan.
- Melaksanakan aktiviti AELB dengan tekun, termasuk seperti berikut:
  - Menyediakan peraturan, kod amali, standard, panduan dan nasihat.
  - Melesenkan penggunaan tenaga atom.
  - Melakukan pemeriksaan serta penguatkuasaan.
  - Menjalankan penyelidikan perundangan.
  - Melaksanakan kerjasama saintifik dan memenuhi obligasi di peringkat antarabangsa.
  - Menangani kecemasan nuklear dan radiologi.
  - Membangunkan budaya keselamatan.

Komitmen

- **Melindungi Sekuriti dan Keselamatan untuk Kesihatan dan Alam Sekitar**

  Dengan terbentuknya langkah-langkah dan keperluan peraturan SEKURITI berkaitan dengan bahan dan kemudahan nuklear, AELB dapat memastikan secara berkesan bahawa semua pemegang lesen beroperasi secara selamat setiap masa agar dapat melindungi KESELAMATAN orang awam serta persekitaran. AELB juga memastikan peralatan sinaran bagi tujuan perubatan dan KESIHATAN sentiasa digunakan dalam keadaan yang selamat, dan dalam masa yang sama membantu melindungi ALAM SEKITAR melalui perundangan yang relevan berkaitan dengan bahan dan kemudahan nuklear.

- **Kawalgunaan Aktiviti Nuklear untuk Tujuan Aman**

  Dalam mengawalselia penggunaan tenaga dan teknologi nuklear untuk memastikan ianya hanya digunakan untuk tujuan aman semata-mata, sebarang rancangan jangka masa panjang negara yang berkaitan dengan penggunaan tenaga nuklear dalam aktiviti aman yang lain akan sentiasa dipantau. AELB sentiasa memastikan komitmen dan sokongan negara terhadap Triti Ketidakcambahan (NPT) untuk Senjata Nuklear dan Perjanjian Kawalgunaan Agensi Tenaga Atom Antarabangsa (IAEA), termasuk kawalan eksport bahan dan teknologi nuklear. Malaysia, melalui AELB juga merupakan ahli kepada kawalan import/eksport bagi bahan dan kemudahan nuklear melalui perundangan negara.

LAPORAN OPERASI

Langkah perlu telah diambil bagi membina keyakinan lebih tinggi di kalangan rakyat Malaysia mengenai keupayaan AELB mengurus dan mengawal bahan, kemudahan dan aktiviti berkaitan dengan nuklear. Dalam soal ini, jabatan telah melipatgandakan usaha pada 2012 untuk merapatkan hubungan dengan orang awam melalui penyampaian maklumat terkini bagi menangani perkara-perkara yang menjadi perhatian rakyat. Isu utama yang terus mendapat perhatian nasional ialah pembinaan loji Lynas Rare Earths di Kawasan Perindustrian Gebeng berhampiran bandar Kuantan di Pahang. Banyak sesi taklimat yang melibatkan orang awam diadakan di Kuantan. Melalui sesi-sesi tersebut, AELB bukan sahaja memberikan penerangan mendalam malah menyampaikan maklumat profesional dan neutral mengenai aspek teknikal dan saintifik yang memberi keyakinan terhadap langkah-langkah perundangan sedia ada untuk aktiviti berkaitan bagi menangani khabar angin dan tuduhan berkenaan risiko sinaran dan kesan terhadap alam sekitar dan kesihatan, sepertimana yang digembar-gemburkan oleh pihak yang membantah projek Lynas.

Sikap telus yang tidak berpihak kepada Lynas menunjukkan komitmen kami yang tidak akan bertolak ansur dalam hal keselamatan orang awam dan alam sekitar. Kami telah memberi Lynas syarat-syarat ketat merangkumi perundangan nasional, standard serta amalan terbaik antarabangsa yang mesti dipatuhi.

Salah satu hasil positif dari inisiatif membabitkan penglibatan awam adalah liputan meluas yang kami terima daripada pihak media. Usaha melibatkan orang awam turut membuahkan hasil dengan terlibatnya pihak media yang mana melalui media, kami juga turut dapat meluaskan hubungan dengan orang awam, termasuk badan-badan bukan kerajaan yang merupakan kumpulan berkepentingan.

Kami juga mengukuhkan hubungan yang melibatkan penyertaan pihak Kerajaan terdiri daripada jabatan dan agensi Kerajaan yang relevan serta lain-lain pihak berkepentingan yang mentadbir negara terutamanya mereka yang bertanggungjawab terhadap aspek perundangan – Jawatankuasa Terpilih Badan Parlimen, Jawatankuasa Perundangan dan badan Eksekutif, iaitu Kerajaan.

Di samping itu, Lembaga AELB juga telah mengadakan mesyuarat terbanyak pada 2012, berjumlah tujuh kesemuanya berbanding hanya empat pada tahun-tahun sebelumnya. Sesi perbincangan mingguan juga turut diadakan. Sesi sama turut diadakan pada tahap Kementerian dan juga di peringkat bawahan.

Usaha melipat-gandakan penglibatan rakyat juga dapat dibuat dengan memperkenalkan makmal bergerak di kawasan-kawasan strategik dalam negara. Kehadiran makmal bergerak tersebut berjaya memberi persepsi bahawa AELB sentiasa turun padang untuk berkhidmat memenuhi keperluan orang awam dan memastikan keselamatan dan sekuriti rakyat terjamin. Makmal bergerak AELB dilengkapkan dengan peralatan saintifik yang memudahkan kerja menganalisa kualiti udara setempat. Pada masa lampau, sampel udara yang diambil daripada pelbagai tempat dihantar ke ibupejabat AELB untuk dianalisa.

Lain-lain inisiatif termasuk penglibatan aktif dalam penganjuran acara-acara yang membantu usaha mempertingkatkan kesedaran orang awam. Usaha ini merangkumi aktiviti AELB di sekolah-sekolah seperti Karnival Sains dan Pelajaran, program Science on Wheels dan pelbagai sesi penerangan serta lawatan. Aktiviti untuk orang awam turut diadakan, termasuk Karnival Sains dan Inovasi serta pelbagai pameran dan sesi penerangan.

Lain-Lain Perkara Penting dalam Tahun 2012

Sistem Perlesenan dan Penguatkuasaan (eLesen) Mempertingkatkan Kecekapan

Kejayaan melaksanakan eLesen merupakan pencapaian besar pada tahun 2012. Pencapaian 100 peratus dalam mengendalikan interaksi melalui talian telah menyumbang kepada peningkatan kecekapan operasi secara keseluruhan. eLesen telah menerima pensijilan kualiti ISO 9002 serta diterima dengan baik oleh pemegang lesen yang boleh membuat semua urusan melalui talian, termasuk urusan memohon, memperbaharui dan menerima kelulusan dan maklumat terkini mengenai permohonan lesen. Sistem ini bukan sahaja mentransformasi dan memudahkan proses perlesenan malah turut memudahkan AELB dalam menjalankan aktivti penguatkuasaan. Sistem ini mempunyai mekanisma untuk mengesan, menilai dan mempertingkatkan arahan dan kawalan bersabit bahan radioaktif yang juga membantu mempertingkatkan sekuriti, keselamtan dan kawalgunaan.

eLesen merupaan salah satu sistem yang dibangunkan di bawah Sistem Aplikasi Utama Jabatan. Lain-lain sistem ialah Sistem Pemantauan Sinaran dan Nuklear, Sistem Maklumat Pakar dan Pekerja Radiologi serta Sistem Aplikasi Sokongan Jabatan yang terdiri daripada Sistem Pengurusan Dokumentasi dan Perkhidmatan Elektronik dan Sistem Pengurusan Hubungan Pelanggan. Semua sistem tersebut menyumbang kepada pencapaian matlamat Piagam Pelanggan AELB.

Sumbangan Penting terhadap Akta Perdagangan Strategik 2010 (Akta 708)

AELB bertindak sebagai pihak berkuasa yang mengeluarkan permit untuk barangan di bawah Ketegori O dalam Senarai Perdagangan Strategik, iaitu bahan-bahan, kemudahan dan peralatan nuklear. Jabatan juga telah diberi mandat untuk menguatkuasa Akta Perdagangan Strategik (STA) seperti yang digariskan di bawah Arahan Barangan Strategik 2010. Mandat tersebut telah diberi memandangkan keupayaan AELB dalam soal sekuriti nuklear serta prestasi kami sebagai agensi peneraju teknikal untuk Direktori 18 bersabit dengan Penggunaan Merbahaya Bahan-bahan Kimia, Biologi, Radiologi, Bahan Letupan Tinggi Nuklear (CBRNE) serta Direktori 15 bersabit dengan Pemantauan Sempadan.
Matlamat STA adalah seperti berikut:

- Melindungi negara Malaysia dan para pengeksport negara daripada dipergunakan oleh mereka-mereka yang menyebar serta memperolehi keuntungan daripada aktiviti nuklear. Walaubagaimanapun, tindakan ini diambil tanpa mengorbankan perdagangan barangan strategik yang dibenarkan dari segi undang-undang.
- Menyediakan rejim pusat yang kompehensif bagi membolehkan negara Malaysia menyumbang kepada pemeliharaan keamanan dan sekuriti antarabangsa dengan memerangi penghantaran senjata pemusnah massal.
- Memperuntukkan kawalan ke atas eksport, pemindahan ke kapal, transit, pembrokeran barangan strategik termasuk senjata dan bahan-bahan berkenaan dan lain-lain aktiviti yang akan atau mungkin membantu pengeluaran dan penghantaran senjata pemusnah massal.
- Meyakinkan komuniti perdagangan antarabangsa yang Malaysia adalah merupakan rakan perdagangan yang baik dan selamat.
- Menyekat puak pengganas daripada mendapat akses menggunakan logistik dan keupayaan eksport negara.

- Menyediakan lain-lain perkhidmatan berkaitan yang konsisten dengan obligasi Malaysia dalam hal sekuriti nasional dan antarabangsa.

Berikut adalah manfaat utama STA:
- Memudahkan perdagangan.
- Membina keyakinan pelabur.
- Mempertingkatkan imej nasional.
- Memenuhi obligasi antarabangsa.
- Melindungi para pengeksport dari eksploitasi.
- Menyumbang kepada keamanan dan sekuriti antarabangsa.

Pelaksanaan STA menjadi lebih pesat dengan pembangunan Permit Elektonik untuk STA (e-Permit-STA) yang merupakan sebahagian daripada Sistem STA yang lebih besar, merangkumi e-Kastam (memproses permit Kastam di atas talian) yang dibangunkan di bawah Kementerian Perdagangan dan Perindustrian (MITI). MITI adalah agensi peneraju STA. MITI telah mengubahsuai sistem e-Permit AELB untuk memudahkan pelaksanaan STA. e-Permit membolehkan semua urusan permohonan, kelulusan, pemindaan dan pembaharuan lesen di buat di atas talian, sekali gus mempercepatkan proses pelesenan. Manfaat utama sistem ini adalah peningkatan ketelusan (pengesanan segera status permohonan); pengurangan masa dan kos memproses permohonan; penghapusan permohonan menggunakan kertas dan peningkatan produktiviti; peningkatan kecekapan dan ketepatan (maklumat statistik boleh diperolehi daripada pengkalan data); pengambilan maklumat dengan pantas (mempertingkatkan kecekapan dan ketepatan statistik) dan penggunaan cekap sistem berasaskan web yang boleh dibuat pada bila-bila masa dan di mana-mana sahaja.

AELB Diiktiraf oleh IAEA sebagai Pusat Sokongan Sekuriti Nuklear Nasional di Asia

Keupayaan AELB sekali lagi telah diiktiraf dengan pengeluaran surat rasmi oleh IAEA yang mengiktirafkan AELB sebagai Pusat Sokongan Sekuriti Nuklear Nasional yang memainkan peranan di Asia. Pengiktirafan ini diberi berasaskan faktor utama yang merupakan peranan kami dalam memperkenalkan sistem pengawasan dan pemantauan sempadan kepada pelbagai agensi penguatkuasa di negara-negara lain termasuk Indonesia, Saudi Arabia dan Pakistan. Di samping itu, kami juga telah berjaya mengintegrasikan beberapa sistem terawal kami yang dibangunkan untuk mengawal dan memantau sempadan menjadi cuma satu sistem yang berkesan.

Kami juga telah dapat menggunakan sistem sekuriti kami untuk mengesan pengedaran haram bahan-bahan radioaktif serta besi buruk yang tercemar dengan bahan radioaktif di pintu-pintu masuk negara. Kami telah mengesahkan pencemaran tersebut dan memaklumkan kepada pihak Kastam untuk memulangkan bahan-bahan tercemar ke pelabuhan asal. Kejadian ini mengesahkan bahawa sistem pengesanan kami berfungsi dengan baik dan telah dapat membantu mengawasi aktiviti import dan eksport dengan lebih berkesan. Faktor lain yang menyumbang kepada pengiktirafan IAEA ini adalah kejayaan kami membendung insiden berkaitan radioaktiviti yang sehingga kini tidak mengancam nyawa rakyat Malaysia. Kejayaan ini juga membuktikan bahawa sistem pengawasan dan pemantauan AELB sentiasa berjalan dengan baik.

Memperkukuhkan Kapasiti dan Keupayaan

Pembangunan kapasiti dan keupayaan jabatan diteruskan pada 2012 melalui pelbagai kolaborasi, program latihan, kursus, seminar, bengkel, taklimat, perbincangan, lawatan pakar dan mesyuarat yang dijalankan di dalam dan luar negara. Aktiviti-aktiviti tersebut termasuklah yang berikut:

Seminar Penggunaan Kuasa Nuklear Secara Aman dan Ketidakcambahan Nuklear

Dianjurkan bersama oleh AELB dan Integrated Support Centre for Nuclear Non-Proliferation and Nuclear Security (ISCN), Japanese Atomic Energy Agency (JAEA), seminar ini bertujuan memperkembangkan sistem ketidakcambahan nuklear dan sekuriti nuklear nasional yang berpatutan dan berkesan untuk memudahkan penggunaan teknologi nuklear secara aman. Seminar yang berlangsung dari 8 hingga 10 Februari, 2012 di Ibupejabat AELB telah menarik penyertaan 40 orang dari pelbagai agensi dan institusi tempatan. Para peserta berpeluang untuk menemui dan berbincang dengan 10 orang pakar dari JAEA, AELB dan IAEA.

Pembinaan Kapasiti Penilaian Keselamatan Loji Kuasa Nuklear (NPP)

Memandangkan Malaysia berpotensi untuk membangunkan program kuasa nuklear, negara telah terpilih di antara lain-lain negara Asia Tenggara untuk melaksanakan projek percubaan bersabit dengan Pembinaan Kapasiti Penilaian Keselamatan NPP. Projek ini dibiayai di bawah Program Bajet Tambahan IAEA-Norway untuk membangunkan kepakaran dalam menilai keselamatan NPP. Bengkel mengandungi dua komponen iaitu Penilaian Kemungkinan Keselamatan dan Penilaian Penentuan Keselamatan telah diadakan. Para peserta dari Malaysia dan Vietnam yang hadir pada bengkel peringkat antarabangsa ini dapat mempertingkat kepakaran mereka dalam menilai keselamatan nuklear.

Latihan untuk Pasukan Sokongan Pakar Bergerak (MEST)

Latihan MEST mengenai Tindakbalas terhadap Bahan Nuklear dan Pengesanan Lain-lain Bahan Radioaktif di Sempadan Nasional telah diadakan dari 29 Februari hingga 2 Mac, 2012. Program ini merupakan kursus "Train the Trainer" bagi Mengesan Pengedaran Haram Bahan-bahan Nuklear dan Lain-lain Bahan Radioaktif di Sempadan Nasional. Kursus ini

bertujuan membangunkan sebuah pasukan terdiri daripada pakar-pakar yang mampu memberi tindakbalas dengan segera terhadap sebarang permintaan pertolongan yang diterima daripada para Pegawai Barisan Hadapan dalam keadaan yang dicetus oleh pengesanan yang dibuat melalui Monitor Portal Sinaran (RPM).

Para peserta kursus terdiri daripada wakil-wakil AELB dan Kastam Di-Raja Malaysia manakala wakil-wakil dari Polis Di-Raja Malaysia dan Majlis Sekuriti Kebangsaan Malaysia hadir sebagai pemerhati. Latihan praktikal telah dijalankan di Pelabuhan Kelang di mana terletaknya stesen kecil pemeriksaan untuk mengenalpasti bahan radionuklid yang dikesan oleh RPM.

Bengkel Pelan Sekuriti

Kelulusan baru telah diperolehi untuk menjalankan lebih banyak bengkel Pelan Sekuriti yang sudahpun dijalankan sejak 2011. Bengkel tersebut bertujuan untuk mempertingkatkan kefahaman di antara pihak berkepentingan terhadap undang-undang berkaitan dengan nuklear. Perkara sebegini tidak boleh dibiarkan mengikut kefahaman masing-masing. Oleh itu, rancangan mengadakan bengkel ini telah pun dilaksanakan dengan sepenuhnya pada 2012. Antara perkara yang menjadi tumpuan bengkel ialah keperluan mengurangi tahap dos pendedahan radiasi daripada50msV ke 20msV setahun.

Latihan Penyediaan Menghadapi Kecemasan (Ex-STORM)

Tumpuan latihan Ex-STORM adalah kesediaan menghadapi kecemasan dan memberi tindakbalas yang menekankan pendekatan "Selamatkan Nyawa Terlebih Dahulu". Latihan yang dijalankan oleh AELB pada tahun lepas menyaksikan penyertaan aktif Jabatan Penyelamat, Polis Di-Raja Malaysia dan Kementerian Kesihatan. Latihan yang lebih meluas telah dibuat untuk Jabatan Penyelamat, merangkumi beberapa zon termasuk Selatan (Melaka), Timur (Terengganu) dan Utara (Perak).

Lawatan Wakil Initiatif Pengurangan Ancaman Global (GTRI) ke Malaysia

Kerjasama AELB-GTRI yang bermula pada 2009 mempunyai tujuan asal untuk memperbaiki pengawalan sekuriti di pelbagai kemudahan yang melibatkan bahan-bahan radioaktif yang melebihi 1000 Ci. Wakil-wakil GTRI telah melawat Malaysia dari 20 hingga 25 Februari, 2012. Lawatan tersebut merupakan sebahagian daripada usaha untuk memperkukuhkan kerjasama. Semasa lawatan tersebut, wakil-wakil GTRI telah menilai bantuan yang diberikan kepada pelatih-pelatih perintis dan membincang skop bantuan yang diperlukan pada masa hadapan. Para perwakilan juga dibawa melawat ke beberapa kemudahan yang mempunyai punca sinaran di beberapa lokasi berlainan dalam negeri.

Kursus Lanjutan mengenai Pencarian dan Pengawalan Sumber Asing

AELB dan GTRI juga menganjurkan kursus tersebut di atas untuk mempertingkatkan lagi keupayaan Malaysia dalam menangani kejadian timbulnya sumber asing. Kursus yang berlangsung dari 5 hingga 9 Mac, 2012 dihadiri oleh wakil-wakil beberapa agensi termasuk Polis Di-Raja Malaysia, Kastam Di-Raja Malaysia dan Agensi Nuklear Malaysia. Latihan praktikal telah dijalankan di dua tapak mengumpul besi buruk di mana sumber sinaran sebenar telah dapat dikesan di lokasi yang kedua. Kedua-dua pihak AELB dan GTRI akan mengambil tindakan untuk membendung perbuatan jahat yang melibatkan penggunaan bahan-bahan radioaktif.

Draf Akhir Peraturan Kuasa Atom mengenai Installasi Nuklear – Penilaian Semula oleh Pakar

Penilaian semula draf akhir Peraturan Kuasa Atom mengenai Installasi Nuklear Malaysia telah dibuat oleh Misi Pakar IAEA pada Mac 2012. Beberapa saranan telah dibuat oleh pakar misi tersebut dengan tujuan memberi kefahaman lebih tinggi dan membina keupayaan kakitangan AELB menyediakan dokumentasi mengenai peraturan undang-undang terutamanya untuk perlesenan installasi nuklear di Malaysia.

Latihan dan Peningkatan ReDICS

ReDICS yang bermaksud Instrumen dan Pengawalan Reaktor Digital akan dinaikkan tarafnya oleh Agensi Nuklear Malaysia (ANM) melalui penukaran instrumen sistem reaktor analog dan pengawalan (instrumentation & control – I&C) sedia ada kepada sistem digital I&C yang moden. Kontrak penukaran sistem tersebut telah diberikan kepada Korean Atomic Energy Research Institute (KAERI).

Pada 21 September, 2012, AELB menerima permohonan daripada ANM untuk menaik taraf sistem I&C Reaktor Penyelidikan (RTP) TRIGA Mk. II PUSPATI. Bagi memastikan proses penyemakan semula peraturan dan penilaian dapat dibuat dengan berkesan, AELB telah meminta bantuan Korea Institute of Nuclear Safety (KINS) yang merupakan organisasi pakar untuk badan penguatkuasa peraturan Korea.

Bengkel mengenai Penyemakan Semula Laporan Analisa Keselamatan (SAR) untuk Pembinaan ReDICS telah berlangsung dari 24 hingga 29 Disember, 2012 di AELB. Para pakar KINS yang hadir turut berkongsi pengalaman dalam bidang berkaitan.

Pensijilan Pengendali Reaktor Penyelidikan TRIGA Mk. II PUSPATI

AELB telah mengambil inisiatif mengiktiraf calon-calon Pengendali Reaktor Penyelidikan TRIGA Mk. II PUSPATI dari ANM dengan menjalankan tiga peperiksaan iaitu Pepriksaan Bertulis Komprehensif (Bahagian I), Lawatan Tempat Kemudahan (Bahagian II) dan Ujian Operasi (Bahagian III). Peperiksaan Bahagian I telah diadakan dari 10 hingga 11 Julai manakala peperiksaan kedua-dua bahagian seterusnya akan dijalankan pada tahun-tahun berikut setelah latihan praktikal dan formal yang mengambil masa sehingga enam bulan, telah dibuat. Peraturan ini bertepatan dengan Standard Keselamatan IAEA untuk memastikan bahawa calon-calon mencapai dan mampu mengekalkan keupayaan minima yang ditetapkan. Syarat ini juga memenuhi peraturan undang-undang Malaysia yang berkenaan.

Bengkel mengenai Pembangunan Sistem Pengurusan untuk Organisasi Utama yang Terlibat

Dijalankan di bawah kerangka Program Kerjasama Teknikal IAEA 2012, bengkel tersebut di atas telah berlangsung dari 2 hingga 5 Oktober, 2012. Bengkel ini dikendalikan oleh dua pakar dari Slovenian Nuclear Safety Administration and Gennessys Corp, Kanada. Pegawai Teknikal IAEA mengiringi kedatangan kedua-dua pakar tersebut. Para peserta terdiri daripada wakil-wakil AELB, ANM, Suruhanjaya Tenaga dan Jabatan Alam Sekitar.

Bengkel ini bertujuan untuk mengambil pakai elemen penting Sistem Integrasi Pengurusan (IMS) dan dimuatkan dalam proses perlesenan dan pemerhatian loji kuasa nuklear. AELB menganggap usaha membangunkan IMS yang komprehensif berasaskan standard IAEA serta mengenalpasti organisasi utama yang terlibat dalam pelaksanaan IMS sebagai amat signifikan.

Mesyuarat Pelan Projek COMPAS-M

Dalam mesyuarat yang diadakan oleh AELB yang merupakan sebahagian daripada persediaan untuk membantu Kerajaan mengambil keputusan mengenai pembangunan NPP negara, Pelan Projek "Competence for Probabilistic Assessment of Safety in Malaysia atau COMPAS-M" telah dibincangkan. Mesyuarat tersebut yang dianjurkan bersama IAEA bertujuan untuk membantu mereka yang bertanggungjawab membangunkan dan melaksanakan program kuasa nuklear mendapat pengetahuan dan kemahiran yang diperlukan untuk menyediakan infrastruktur keselamatan. Pasukan COMPAS-M terdiri daripada wakil-wakil daripada AELB, ANM, Universiti Kebangsaan Malaysia (UKM) dan Tenaga Nasional Berhad (TNB).

Bengkel "Berjalan" di NPP Zwentendorf, Austria

Lima pegawai AELB menyertai delegasi dari lain-lain negara dalam Bengkel "Berjalan" di NPP Zwentendorf (ZNPP), Austria. Bengkel yang berlansung dari 28 Mei hingga 1 Jun, 2012 dianjurkan oleh IAEA di bawah Program Bajet Tambahan Amerika Syarikat. Tapak ZNPP merupakan NPP Austria yang pertama tetapi kini tapak ini berfungsi hanya sebagai lokasi untuk latihan dan demonstrasi.

Instruktor dari United States Nuclear Regulatory Commission (USNRC) mengepalai Bengkel "Berjalan" tersebut di mana rujukan Standard Keselamatan IAEA turut diperkenalkan. Penerangan dan demonstrasi kaedah "Berjalan" dalam loji, amalan pemeriksaan, peraturan dan panduan juga telah dimuatkan dalam bengkel tersebut.

Lawatan Delegasi Mongolia

Sepuluh ahli delegasi dari Mongolia melawat AELB pada 6 November, 2012 dengan tujuan menjalin kolaborasi serta berkongsi ilmu dan maklumat. Program delegasi tersebut termasuk lawatan ke Pusat Kendalian Respons Radiologi Kebangsaan (PKRRK).

LANGKAH KE HADAPAN

Sejajar dengan perkara yang ditekankan dalam Rancangan Malaysia Ke-10 (2011-2015), AELB akan terus memperbaiki keupayaan dan mempertingkatkan visibiliti dan ketelusan dengan melebarkan penglibatan orang awam dan pelbagai pihak berkepentingan terutamanya tiga cabang pentadbiran negara iaitu badan-badan penghakiman, perundangan dan eksekutif.

Dalam menangani isu nasional yang mendapat perhatian meluas seperti isu Lynas, AELB telah diletakkan di barisan hadapan sebagai jurucakap teknikal bagi pihak Kerajaan. Peranan yang mencabar ini adalah baru bagi kami, oleh itu kami berlajar dan menimba ilmu dari pengalaman tersebut. Ini juga turut merupakan persediaan bagi kami sekiranya diperlukan untuk memainkan peranan yang serupa di masa hadapan.

Kami perlu menyebarkan maklumat mengenai keupayaan kami mengawal dan memantau aktiviti dan kemudahan nuklear dan yang berkaitan dengan nuklear kepada orang awam dengan lebih meluas lagi.

Maklumat yang akan disebarkan boleh diperkuatkan dengan contoh-contoh kes sebenar seperti pengambilan dua orang pegawai AELB sebagai Pegawai Teknikal IAEA. Kejayaan memenuhi keperluan badan berkuasa antarabangsa menunjukkan bahawa AELB amat mampu menyediakan kakitangan yang berkeupayaan. "Kehilangan fisikal" sumber insan kami perlu dilihat dari segi manfaat yang tidak ternilainya yang diperolehi melalui pendedahan baru, ilmu yang dipelajari dan jaringan yang terbina, kesemuanya membantu meningkatkan imej AELB. Kehadiran pegawai-pegawai kami dalam IAEA juga menyumbang kepada pengiktirafan AELB sebagai Pusat Sokongan Sekuriti Nuklear Nasional di Asia.

Sementara Kerajaan masih mengkaji setiap aspek membangunkan NPP negara untuk menjana tenaga memandangkan kehakisan sumber tenaga konvensyenal, AELB akan terus menyediakan perkhidmatan pakar untuk memastikan keselamatan, sekuriti dan kawalgunaan. Ketelusan yang lebih tinggi diperlukan bagi menangani isu NPP untuk memastikan keselamatan negara akan terus terjamin. Perlindungan keselamatan seluruh negara perlu mengambil kira sistem perlindungan yang menyeluruh di samping pelaksanaan Akta Perdagangan Strategik bagi mentadbir penggunaan bahan-bahan nuklear.

Pelan Strategik Untuk Tahun 2011 – 2015

Di bawah Rancangan Malaysia ke-10, lima Bidang Hasil Utama (KRA) telah dikenalpasti untuk dipenuhi oleh AELB. Bidang-bidang tersebut adalah:

- Infrastruktur pentadbiran dan perundangan untuk sinaran dan keselamatan, sekuriti dan kawalguna nuklear.
- Kawalan dan penyeliaan.
- Kerjasama nasional dan antarabangsa.
- Modal insan.
- Pengurusan pengetahuan.

Plan Strategik AELB berasaskan KRA yang tersebut di atas merangkumi Teras Strategik (ST) seperti berikut:

ST1: Pengukuhan terhadap rangka kerja kawalan perundangan yang berkesan untuk sinaran dan keselamatan, sekuriti dan kawalguna nuklear, termasuk sebuah

badan penguatkuasa yang bebas dan berkecuali.
Pelan Tindakan: Kerangka pentadbiran perundangan telah pun disiapkan termasuk pelaksanaan penilaian dan penyemakan semula untuk memastikan keberkesannya. AELB akan terus menyediakan khidmat kepakaran serta memberi pandangan profesional dan berkecuali serta membuat saranan agar kekal sebagai badan penguatkuasa yang berkesan dan kredibel.

ST2: Kerjasama yang berkesan dan penyertaan cergas di peringkat nasional dan antarabangsa dalam isu teknikal dan polisi sinaran dan keselamatan, sekuriti dan kawalguna nuklear.
Pelan Tindakan:

- Pelan Seksyen Komunikasi dan Multimedia termasuk:
- Memperbanyakkan program kesedaran awam.
- Memperbaiki kandungan Galeri Kesedaran Awam.
- Mengumpul dan meneliti maklumat yang tersebar melalui media siber.
- Pelan Bahagian Sokongan Teknikal termasuk:
- Menyelaras pelaksanaan aktiviti penyelidikan peraturan perundangan.
- Memantau pembangunan penyelidikan peraturan perundangan.

ST3: Pengukuhan mekanisme penyeliaan terhadap pematuhan pemegang lesen kepada syarat-syarat kawalseliaan dan kepuasan pelanggan.
Pelan Tindakan:

- Pelan Bahagian Sokongan Teknikal termasuk:
- Mengenalpasti dan mengurus pembelian peralatan saintifik.
- Mempertingkatkan pengetahuan kakitangan mengenai analisa sampel.
- Menganalisa dan mengesahkan sampel alam sekitar di makmal AELB.
- Pelan Bahagian Perlesenan termasuk:
- Memperkukuhkan dan memperbaiki sistem eLesen dan mempermudahkan proses permohonan dan penguatkuasaan lesen atas talian serta menyemak semula dokumen sokongan berkaitan yang dihantar oleh pemohon.
- Membangunkan dokumen panduan baharu, seperti Penilaian Kesan Radiologi (RIA) dan Pelan Pengurusan Bahan Buangan Radioaktif.
- Mengkaji penyemakan semula Piagam Pelanggan berkenaan proses perlesenan.
- Pelan Bahagian Penguatkuasaan termasuk:
- Menyediakan kemudahan penyimpanan di tiga cawangan AELB agar pengurusan bahan pameran dapat dibuat dengan berkesan.
- Memudahkan dan memastikan keberkesanan proses penguatkuasaan.

ST4: Pengukuhan perancangan yang berkesan berkenaan persediaan dan tindakan kecemasan untuk sinaran dan peristiwa dan kemalangan nuklear.
Pelan Tindakan:

- Pelan Bahagian Sokongan Teknikal termasuk:
- Memastikan semua peralatan siap dikalibrasi dan berada dalam keadaan baik.
- Memastikan bahan-bahan yang diperlukan oleh makmal sentiasa ada.
- Memasang dan memulihara Sistem Pemantauan Penyinaran Alam Sekitar (ERMS) dalam setiap negeri.
- Pelan Bahagian Penguatkuasaan termasuk:
- Menyediakan prosedur untuk menangani insiden melibatkan radiologi.
- Memastikan penyeragaman tindakan pada peringkat nasional.
- Membangun dan menyediakan dokumen prosedur/panduan berkaitan dengan Kesediaan Memberi Tindakbalas Kecemasan (ERP).
- Mendapatkan dan mempertingkatkan infrastruktur, kemudahan, peralatan dan sistem menghadapi kecemasan.

ST5: Membangunkan keupayaan dan kebolehan infrastruktur kawalselia sinaran dan nuklear dan modal insan.
Pelan Tindakan:

- Pelan Bahagian Komunikasi dan Multimedia termasuk:
- Menyemak semula Pelan Strategik Teknologi Maklumat dan Komunikasi (ICT) mengikut Pelan Strategik AELB.
- Memastikan polisi keselamatan ICT AELB selaras dengan polisi MAMPU dan MOSTI.
- Menyediakan kemudahan persidangan melalui video untuk kegunaan kakitangan.
- Menyediakan infrastruktur Internet dan sokongan teknikal untuk ERMS dan RPM.
- Pelan Bahagian Perlesenan termasuk:
- Menyediakan unit baharu untuk mengesahkan dan meluluskan permit di bawah sistem e-Permit-STA.
- Mengadakan peraturan sistematik untuk pembangunan sumber manusia yang merangkumi sekuriti dan kawalgunaan; NORM dan proses mineral; perlesenan NPP; dan penilaian keselamatan.
- Pelan Bahagian Penguatkuasaan termasuk:
- Menjalankan program latihan untuk memastikan semua aktiviti pemeriksan adalah relevan dan mematuhi amalan antarabangsa.
- Pelan Bahagian Sokongan Teknikal termasuk:
- Mengintegrasikan sistem perisian baharu dengan sistem sedia ada untuk mengesan pencemaran dan pengedaran haram bahan-bahan nuklear dan radioaktif bagi memastikan keselamatan dan sekuriti nasional.

ST6: Melindungi dan menjamin hak untuk membangunkan keselamatan teknologi nuklear bagi tujuan aman di Malaysia dan memupuk keyakinan awam dalam penggunaan secara aman

Pelan Tindakan:

- Pelan Tindakan Keseluruhan AELB termasuk:
- Meneruskan penilaian keupayaan teknikal.
- Membantu agensi penguatkuasaan lain dalam usaha mengesan tahap pencemaran dan pengedaran haram bahan-bahan nuklear dan radioaktif demi keselamatan nasional.
- Meneruskan pembaikan protokol tambahan bagi perjanjian kawalgunaan yang komprehensif dengan IAEA.

Kemajuan pelaksanaan pelbagai pelan tindakan berada pada tahap yang berbeza. Banyak yang telah dijalankan dengan baik, namun ada juga yang perlu diperbaiki agar kita dapat mencapai kemajuan yang lebih baik lagi. Dengan menurut langkah negara merealisasikan Visi 2020, AELB akan terus mengukuhkan integrasi dalaman dan juga luaran, serta menjalinkan hubungan lebih luas dengan rakan-rakan professional dalam kedua-dua sektor awam dan swasta di dalam negeri dan di peringkat antarabangsa. Dalam proses tersebut, kami akan meneruskan penilaian dan semakan semula kesemua pelan, strategi, kekuatan organisasi, penyelesaian masalah operasi dan pematuhan standard untuk memastikan keberkesanan tindakan kami dalam menangani tuntutan dan cabaran masa kini dan masa hadapan.

Dikeluarkan oleh Pejabat Setiausaha Eksekutif AELB

www.aelb.gov.my

MOSTI
Kementerian Sains, Teknologi dan Inovasi Malaysia
Ministry of Science, Technology and Innovation Malaysia

AELB
ATOMIC ENERGY LICENSING BOARD

Enhancing Public Engagement

2012 *Annual Report*

Reaching Out

The greater the degree of engagement with the public, the deeper the understanding of the people on issues affecting nuclear safety, security and safeguards. Enhancing public engagement thus became AELB's focus in 2012. In extending our public reach, our transparency became more evident and our roles better understood and appreciated.

What Drives Us?

"To help protect the lives of Malaysians and keep Malaysia safe, secured and safeguarded" – this commitment drives us to continuously deliver on our mandate:

- To ensure radiation and nuclear technology does not affect national and societal well-being by not significantly affecting the public, environment and workers negatively.
- To acquire, disseminate and generate knowledge so as to enhance radiation and nuclear safety, security and, where appropriate, safeguards.
- To create wealth by providing a conducive environment and international confidence through a credible and competent national regulatory framework to facilitate the introduction of modern industries and acquisition of sensitive state-of-the-art technologies to the nation.

We are also driven by our Vision and Mission:

Vision Statement

Remaining a relevant regulatory authority with credibility in radiation and nuclear safety, security and safeguarding its peaceful uses for national sustainable development.

Mission Statement

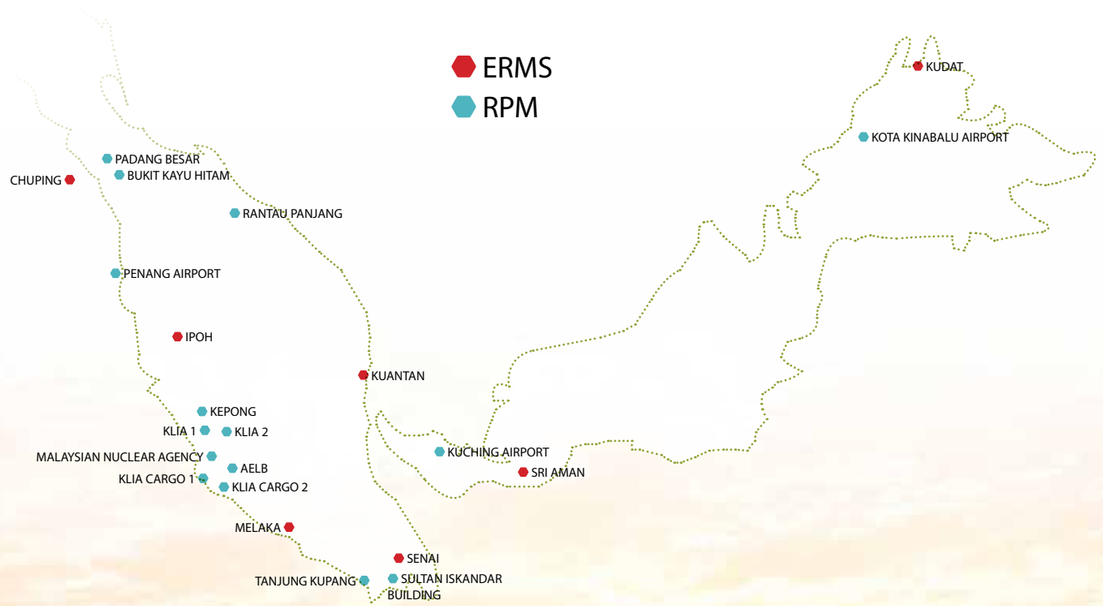
Encouraging innovation culture to ensure the safe and peaceful uses of radiation and nuclear technology.

Our Priorities

- The health of Malaysians.
- The safety and security of Malaysia.
- The protection of the country's environment.

Our Locations

AELB's nationwide locations facilitate our role in ensuring NUCLEAR SECURITY and SAFETY for the country. The operations of our Headquarters in Dengkil, Selangor are supported by four Branches and seven monitoring stations situated in strategic locations all over Malaysia. Radioactivity in the environment is being monitored by the Environmental Radiological Monitoring System (ERMS). For purposes of nuclear security, Radiation Portal Monitors (RPM) are installed at stations located at entry points to the country to detect radiation.



Headquarters

ATOMIC ENERGY LICENSING BOARD (AELB)
Ministry of Science, Technology and Innovation
Batu 24, Jalan Dengkil, 43800 Dengkil, Selangor
MALAYSIA
Tel: 603-8922 5888
Fax: 603-8922 3685
Website: www.aelb.gov.my

Branch Offices and Monitoring Stations

AELB Branch Offices

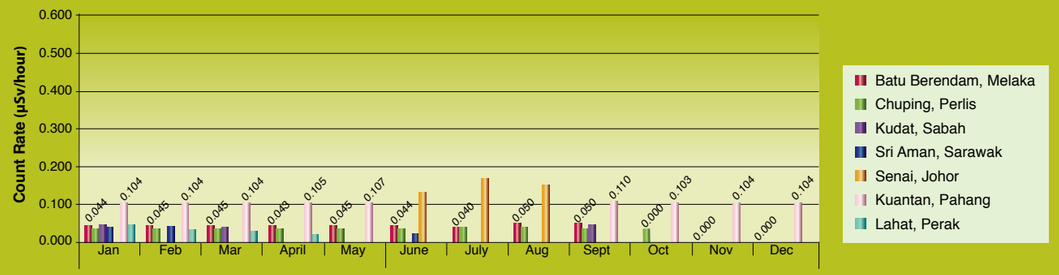
NORTHERN BRANCH (PENANG)
Atomic Energy Licensing Board
Ministry of Science, Technology and Innovation
Northern Zone Branch
No. 29, Lorong Perda Selatan 1
Bandar Perda, 14000 Bukit Mertajam
Pulau Pinang
Tel: 04-539 8391/539 0486
Fax: 04-537 6380

SOUTHERN BRANCH (JOHOR)
Atomic Energy Licensing Board
Ministry of Science, Technology and Innovation
Southern Zone Branch
No. 26, Jalan Sri Putra 1
Bandar Putra, 81000 Kulai
Johor
Tel: 07-663 2431/663 4300
Fax: 07-663 2409

EAST COAST BRANCH (TERENGGANU)
Atomic Energy Licensing Board
Ministry of Science, Technology and Innovation
Eastern Zone Branch
Pt 6980, Bukit Kuang Business Centre
24000 Kemaman, Terengganu
Tel: 09-850 3362/60
Fax: 09-850 3361

SABAH & SARAWAK BRANCH
Atomic Energy Licensing Board
Ministry of Science, Technology and Innovation
Sabah & Sarawak Branch
Sub Lot 13, Lots 2370 & 2371
Block 32, Kawasan Perindustrian Sibiyu
97000 Bintulu, Sarawak
Tel: 086-330 469/315 469/339 469
(Direct Line to Branch Chief)
Fax: 086-332 469

The Average Monthly Reading for ERMS at 7 Stations for 2012



Contents

WHO'S WHO AT AELB

Board Members of AELB

Chairman of the Board
Y. Bhg. Prof. Datuk Dr. Sukiman Sarmani
Lecturer
Faculty of Science and Technology
Universiti Kebangsaan Malaysia

Board Members

1 Y. Bhg. Prof. Datin Paduka Dr. Khatijah bt. Mohd Yusoff
Deputy Secretary General - Science
Ministry of Science, Technology and Innovation

2 Y. Bhg. Datuk Dr. Noor Hisham b. Abdullah
Director General of Health (Medical)
Ministry of Health Malaysia

3 Y. Bhg. Prof. Madya Dr. Nahrul Khair Alang Md Rashid
Lecturer
Department of Mechatronics Engineering
International Islamic University Malaysia

4 Y. Bhg. Datuk Ir. Ahmad Fauzi b. Hasan
Chief Executive Officer
Energy Commission

Executive Secretary
Y.M. Raja Dato' Abdul Aziz b. Raja Adnan
Director General
Atomic Energy Licensing Board
Ministry of Science, Technology and Innovation

Top Management of AELB

Office of the Director General
Y.M. Raja Dato' Abdul Aziz b. Raja Adnan
Director General
Dr. Noor Hasnah bt. Mohamed Khairullah
Special Adviser
Saidatul Akmar bt. Suberi
Legal Adviser

Administration Services Division
Danny Al Jeffery b. Abdullah
Director

Policy, Code & Standard Division
Vacant (Acting Director: Monalija bt. Kostor)

Enforcement Division
Hamrah b. Mohd Ali
Director

Licensing Division
Hasmadi b. Hassan
Director

Technical Support Division
Mohd Yasin b. Hj. Sudin
Director

Nuclear Installation Division
Mohd Pauzi b. Mohd Sobari
Director

Communication & Multimedia Section
Ghazali b. Ismail
Head of Section

A Million Thanks

The Board of AELB and the Department's top management would like to take this opportunity to thank the Government of Malaysia, MOSTI and other relevant Ministries, Government departments and agencies as well as the Department's international counterparts for their support and co-operation. We would also like to extend our appreciation to the Department's staff members for their commitment and dedication in performing their duties in order to achieve organisational goals which ensure that AELB will remain as an effective, credible and relevant regulatory body.

Governance of AELB

AELB is a department under the Ministry of Science, Technology and Innovation (MOSTI). The Board of the AELB as the Relevant Authority under Act 304 is responsible for advising the Minister of Science, Technology and Innovation who is in charge of the Act and the Government of Malaysia on matters relating to the same Act, controlling the use of atomic energy, forging scientific co-operation to fulfil the obligations arising from legal agreements, conventions or international treaties that relate to the purpose of the peaceful uses of atomic energy. The Board of AELB's decisions regarding policies, financial management and strategies are endorsed by the Minister of MOSTI who then guides the Secretary General at the level of the Ministry.

Led by the Director General, AELB operates through various divisions and branches with specific responsibilities in licensing, inspection and enforcement. The Director General of AELB implements the Department's regulatory programmes and activities and reports to the Secretary General of MOSTI.

Organisation Chart

PROFILE OF AELB

Establishment

The establishment of AELB since February 1, 1985 enables the Malaysian Government to effectively control, inspect and enforce atomic energy activities in Malaysia. There was a rapid rise in such activities after 1968 when the Government passed the Radioactive Substances Act 1968 to control the use of radioactive substance, primarily in the medical field. In April 1984, the Malaysian Parliament passed the Atomic Energy Licensing Act 1984 (Act 304). AELB was placed initially under the Prime Minister's Department with the responsibility to implement the functions stipulated under Section 3 of Act 304. In October 27, 1990, AELB was moved from the Prime Minister's Department to the Ministry of Science, Technology and Innovation (MOSTI). Act 304 has been reviewed so as to ensure its continued relevance and effectiveness to meet current requirements.

Functions

- Advising the Minister of Science, Technology and Innovation and the Government of Malaysia on matters relating to the Atomic Energy Licensing Act 1984 and developments pertaining thereto with particular reference to the implications of such developments for Malaysia.
- Exercising and supervising over the production, application and use of atomic energy and matters incidental thereto.
- Establishing, maintaining and developing scientific and technical co-operation with such other bodies, institutions or organisations in relation to nuclear matters or atomic energy as the Board thinks fit for the purposes of the Atomic Energy Licensing Act 1984.
- Performing as and when directed by the Government of Malaysia to fulfil the obligations arising from agreements, conventions or treaties relating to nuclear matters or atomic energy to which Malaysia is a party where such agreements, conventions or treaties relate to the purposes of the Atomic Energy Licensing Act 1984.
- Undertaking such other things arising out of or consequential to the functions of the AELB Board under the Atomic Energy Licensing Act 1984, which are not inconsistent with the purposes of this Act, whether or not directed by the Minister.

Roles

- Ensuring the effectiveness of AELB's regulatory function.
- Achieving a high level of efficiency and transparency in AELB's operations.
- Attracting and retaining excellent staff with the required knowledge, skill and competency.
- Diligently carrying out AELB's activities, which include the following:

  - Providing the regulations, codes of practice, standards, guidelines and advice.
  - Licensing the usage of atomic energy.
  - Conducting inspection and enforcement.
  - Carrying out regulatory research.
  - Carrying out scientific co-operation and complying with international obligations.
  - Dealing with nuclear and radiological emergencies.
  - Developing a safety culture.

Commitments

- **Ensuring Security and Safety for the Protection of Health and the Environment**

  By establishing regulatory requirements and security measures pertaining to nuclear materials and facilities, AELB effectively ensures that licensees will be able to operate their facilities safely at all times, thus ensuring the SAFETY of everyone and protecting the environment. AELB also ensures the safe use of radiation equipment for medical and HEALTH purposes as well as helps protect the ENVIRONMENT through the use of relevant legislations on nuclear materials and facilities.

- **Safeguarding of Nuclear Activities for Peaceful Purposes**

  In safeguarding the use of nuclear energy and technology to ensure that they are strictly for peaceful purposes, the country's long-term objectives on embarking onto other peaceful nuclear energy applications will be facilitated. AELB ensures that Malaysia's political commitment and support for the Non-Proliferation Treaty (NPT) of Nuclear Weapons and the International Atomic Energy Agency (IAEA) Safeguards Agreement are in operation. Malaysia, through AELB, is also a party to international laws regarding import/export control of nuclear materials and facilities through national legislation.

OPERATIONAL REPORT

In undertaking the necessary measures to help build greater confidence among Malaysians in the AELB's ability to manage and control nuclear-related materials, facilities and activities, the Department intensified efforts in 2012 to engage with the public by providing them timely information to address their concerns. The primary issue of national interest continued to be the construction of the Lynas Rare Earths Plant in the Gebeng Industrial Site near Kuantan in Pahang. Through numerous public engagement sessions in Kuantan, AELB provided not only in-depth explanation but also professional and neutral technical and scientific information regarding the regulatory measures in place for such activities in order to address rumours and allegations regarding radiation risks and environmental and health impacts spread by the opponents of the Lynas project.

Our transparency and unbiased stand on the Lynas issue underscored our commitment in making no compromises on the safety of the public and the environment whereby we strictly spelt out the requirement for Lynas to comply with the national law as well as international standards and best practices.

A positive outcome of our public engagement initiatives was the extensive coverage by the Press. In engaging the public, we were also engaging the Press. Through the Press, we in turn were able to further reach out to the public, including non-governmental organisations which form an important group of stakeholders. We also strengthened our engagement with Government stakeholders, comprising of relevant Government departments and agencies as well as the stakeholders governing the country particularly those pertaining to legislation – the Parliamentary Select Committee, the Judicial Committee and the Executive i.e. the Government.

In addition, the Board of AELB held the most number of meetings in 2012 (totalling more than seven – please reconfirm, as compared to how many in the previous year). Weekly engagement sessions were also held. Such sessions also took place at the Ministerial level downwards.

The introduction of our mobile laboratories at strategic areas in the country was also part of the measures to intensify public engagement. The mobile laboratories help to establish our presence and create the perception that AELB is always on the ground to serve the public and ensure that the people's safety and security are safeguarded. Equipped with scientific equipment, the mobile laboratories facilitate onsite air quality analysis. In the past, air samples were collected from various sites and sent to the AELB Headquarters for analysis.

Other initiatives included active involvement in organising events that helped increase public awareness. These encompassed AELB activities for schools, such as Science and Education Carnival, Science-On-Wheels programme and various talks and visits as well as activities for the general public, including Science and Innovation Carnival and various exhibitions and talks.

The year 2012 was therefore all about enhancing engagement with the various stakeholders – the public, the Press, the Board of AELB as well as the country's governing and legislative bodies and committees. Implemented within permissible law, the engagement initiatives succeeded in enhancing the transparency of AELB as a credible enforcement body and creating greater awareness of the Department's roles and functions.

Other Highlights of 2012

Licensing and Enforcement System (eLesen) Improved Efficiency

A tremendous achievement for the year was the successful implementation of eLesen which met the goals of conducting online interactions 100 per cent thus contributing towards improving operational efficiency. eLesen has received ISO 9002 quality certification and has also been well received by licensees as all submissions for licence applications, approvals, amendments and renewals could be made online. It does not only transform and facilitate the licensing process but also enables AELB to facilitate enforcement activities. The system has the mechanism to detect, assess and improve command and control of radioactive materials. This helps to enhance security, safety and safeguards.

eLesen is one of the systems developed under the Department's Main Application System. The others are Radiology and Nuclear Monitoring System, Radiology Experts and Workers Information System as well as the Department's Support Application System which comprises of Documentation Management & Electronic Services System and Customer Relations Management System. All these systems contributed towards meeting the goals of AELB's Client Charter.

Essential Contribution to Strategic Trade Act 2010 (Act 708)

AELB serves as the authority for the issuance of permits for goods under Category 0 of the Strategic Trade List, namely nuclear materials, facilities and equipment. The Department has also been given the authority to enforce the Strategic Trade Act (STA) as stipulated under the Strategic Goods Order 2010. The mandate was given in view of AELB's competency in nuclear security and our performance as the lead technical agency for Directory 18 – Dangerous Use of Chemical, Biological, Radiological, Nuclear and High-yield Explosives (CBRNE) and Directory 15 – Border Monitoring.
STA is aimed at:

- Protecting Malaysia and Malaysian exporters from being exploited by proliferators and those who profit from the activities without compromising legitimate trade in the strategic items concerned.
- Putting in place centralised and comprehensive regime to enable Malaysia to contribute to the maintenance of international peace and security by combating the proliferation of weapons of mass destruction.
- Providing control over the export, trans-shipment, transit and brokering of strategic items, including goods, arms, materials and related technologies, and other activities that will or may facilitate the production and delivery of weapons of mass destruction.
- Assuring the international trading community that Malaysia is a secured and desirable trading partner.
- Denying terrorists' access to the country's advanced export logistics and capabilities.
- Providing for other related matters consistent with Malaysia's national security and international obligations.

STA's key benefits are:

- Facilitate trade.
- Build investors confidence.
- Enhance national image.

- Fulfil international obligations.
- Protect exporters from being exploited.
- Contribute towards international peace and security.

The implementation of STA was further boosted with the development of the Electronic Permit for STA (e-Permit-STA) that has become a part of the larger STA System, which also includes e-Kastam (online process for Customs permits) developed under the Ministry of International Trade and Industry (MITI) which is the lead agency for STA. MITI modified the AELB's e-Permit system to further facilitate the implementation of STA. e-Permit allows all submissions for licence applications, approvals, amendments and renewals to be made online thus expediting the licensing process. Its key benefits are increase in transparency (real-time tracking of application status); reduction of application processing time and cost; elimination of paper-based applications and improvement in productivity; improvement in efficiency and accuracy (statistics information obtainable from database); fast information retrieval (improves efficiency and accuracy of statistics) and efficient web-based system that can be used "anywhere and anytime".

AELB Recognised by IAEA as National Nuclear Security Support Centre in Asia

AELB's competency has yet again been recognised with the issuance of a formal letter of recognition by IAEA which endorsed AELB as the National Nuclear Security Support Centre with a regional role in Asia. The primary factors for the recognition were the roles we have played in introducing our border control and monitoring system to various enforcement agencies in other countries, including Indonesia, Saudi Arabia and Pakistan. In addition, we have successfully integrated our earlier multiple systems to control and monitor borders into one effective system.

We have also managed to use our security system to detect illicit trafficking of radioactive materials as well as radioactive contaminated scrap metals at points of entry. We verified the contamination and advised Customs to return the contaminated materials to the ports of origin. This confirmed that our detection system is in place and that it helps make import and export control more effective. Another contributory factor was the fact that there were yet again no life-threatening incidents connected with radioactivity in Malaysia which also confirmed that the AELB's control and monitoring system are in order.

Strengthening Capacity and Competency

In 2012, AELB continued to develop the Department's capacity and competency through various collaborations, training programmes, courses, seminars, workshops, briefings, talks, experts' visits and meetings locally and internationally. These included the following:

Seminar on Peaceful Use of Nuclear Energy and Nuclear Non-Proliferation

The seminar, which was jointly organised by AELB and the Integrated Support Centre for Nuclear Non-Proliferation and Nuclear Security (ISCN) of the Japanese Atomic Energy Agency (JAEA), was aimed at propagating appropriate and effective national systems for nuclear non-proliferation and nuclear security that are vital in facilitating the peaceful use of nuclear technology. Held from February 8 to 10, 2012 at the AELB's Headquarters, the seminar attracted 40 participants from various local agencies and institutions. Participants had the opportunity to engage with 10 experts from JAEA, AELB and IAEA.

Capacity Building in Safety Assessment of Nuclear Power Plant (NPP)

In view of Malaysia's potential to develop a nuclear energy programme, the country was chosen among the other Southeast-Asian countries to implement the pilot project pertaining to Capacity Building in Safety Assessment of NPP. The project was funded under the IAEA-Norwegian Extra-Budgetary Programme for the development of expertise in assessing the safety of NPP. A workshop with two components, namely Probabilistic Safety Assessment and the Deterministic Safety Assessment, was held and attended by participants from Malaysia and Vietnam. Participants benefited from this international-level activity that was aimed at enhancing their expertise in nuclear safety assessment.

Training for Mobile Expert Support Team (MEST)

MEST training on the Response to Nuclear and Other Radioactive Material Detection at National Borders was held from February 29 to March 2, 2012. It was a "Train the Trainer" course for the Detection of Illicit Trafficking of Nuclear and Other Radioactive Materials at National Borders. Its aim was to develop a team of experts that can respond promptly to any request for assistance from Frontline Officers in the event of any detection triggered by the Radiation Portal Monitor (RPM). Participants comprised of those from AELB and Royal Malaysian Customs while representatives from the Royal Malaysian Police and the Malaysian National Security Council were present as observers. Practical training was held in Port Klang where the secondary inspection station for verification of the radionuclide detected by RPM is located.

Workshops on Security Plan

New approval was obtained to conduct more Security Plan workshops which started in 2011. The workshops aimed to raise the understanding of the law in relation to nuclear among the stakeholders rather than leaving it to their own devices. The plan to hold the workshops was fully implemented in 2012. Among the key focus was the reduction of the level of radiation dose exposure, which has been reduced from 50msV to 20msV per year.

Emergency Preparedness Drills (Ex-STORM)

Ex-STORM focuses on emergency preparedness and response with emphasis on Safe Life First approach. Drills conducted by AELB last year saw the active participation by the Fire Department, the Royal Malaysian Police and the Ministry of Health. More extensive drills were organised for the Fire Department, covering various zones including in the South (Melaka), East (Terengganu) and North (Perak).

Global Threat Reduction Initiatives (GTRI) Visit to Malaysia

The AELB-GTRI co-operation mooted in 2009 was initially aimed at improving security control at facilities which deal with radioactive materials in excess of 1000 Ci. GTRI representatives visited Malaysia from February 20 to 25, 2012 as part of efforts to strengthen the co-operation. During the visit, the GTRI representatives assessed the assistance given to the pioneer trainees and discussed the scope of future assistance. The representatives were also taken on visits to various radiation source facilities at different locations in the country.

Advance Course on Search and Secure Orphan Sources

AELB and GTRI also jointly organised the above-mentioned course to further enhance Malaysia's capability in addressing the occurrence of orphan sources. Held from March 5 to 9, 2012, the course was attended by representatives of several agencies, including the Royal Malaysian Police, Royal Malaysian Customs and Malaysian Nuclear Agency. Practical exercises were held at two scrap metal collection sites, resulting in the discovery of actual radiation sources at the second location. Prevention of malicious acts involving radioactive materials will be further pursued by both AELB and GTRI.

Expert Review – Final Draft of Atomic Energy Regulations on Nuclear Installation

An IAEA Expert Mission to review the final draft of Malaysia's Atomic Energy Regulation on Licensing of Nuclear Installation was conducted in March 2012. The review resulted in several recommendations made in order to develop a better understanding and build competence in AELB staff in preparing documentation on regulatory requirements particularly for the licensing of nuclear installation in Malaysia.

Upgrading and Training on ReDICS

ReDICS, which stands for Reactor Digital Instrumentation and Control, will be upgraded by Malaysian Nuclear Agency (MNA) through the conversion of the current analogue reactor instrumentation and control (I&C) system to a modern, state-of-the-art digital I&C system. The conversion has been contracted to Korean Atomic Energy Research Institute (KAERI). On September 21, 2012, AELB received the application from MNA to upgrade the I&C system TRIGA Mk. II PUSPATI Research Reactor (RTP). To ensure effective regulatory review and assessment process, AELB sought the assistance of Korea Institute of Nuclear Safety (KINS), which is Korea's nuclear regulatory body's expert organisation.

A workshop on Safety Review of Safety Analysis Report (SAR) for Construction of ReDICS was held from December 24 to 29, 2012 at AELB with the involvement of KINS' experts who shared their experiences in the relevant areas.

Certification of TRIGA Mk. II PUSPATI Research Reactor Operators

AELB took the initiative to certify TRIGA Mk. II PUSPATI Research Reactor Operator candidates from MNA by holding examinations consisting of Comprehensive Written Examination (Part I), Facility Walkthrough (Part II) and Operating Test (Part III). Part I examination was held from July 10 to 11 while the remaining two parts will be conducted in subsequent years after practical and formal training that could take up to six months is carried out. These requirements comply with the IAEA Safety Standards as well as to ensure that the candidates have achieved and maintained the minimum required competency and to fulfil applicable Malaysian legislative requirements.

Workshop on Development of Management System for Key Involved Organisations

The workshop under the framework of IAEA Technical Co-Operation Programme 2012 was held at AELB from October 2 to 5, 2012 and conducted by two experts from Slovenian Nuclear Safety Administration and Gennessys Corp, Canada. The experts were accompanied by a Technical Officer of the IAEA. Participants included those from AELB, MNA, Energy Commission (EC) and Department of Environment (DOE).

The main aim of the workshop was to adopt the important elements of Integrated Management System (IMS) into the licensing and oversight process of a nuclear power plant. It was significant to AELB in developing a comprehensive IMS based on IAEA standards and in identifying key organisations involved in IMS implementation.

COMPAS-M Project Plan Meeting

As part of the preparations to assist the Government in deciding on the development of the country's NPP, AELB held a meeting from December 4 to 7, 2012 to discuss the Project Plan of Competence for Probabilistic Assessment of Safety in Malaysia (COMPAS-M). Jointly organised with the IAEA, the meeting aimed to help those responsible for developing and implementing the nuclear power programme by equipping them with the knowledge and skills needed for establishing the safety infrastructure. COMPAS-M team comprises of representatives from AELB, MNA, Universiti Kebangsaan Malaysia (UKM) and Tenaga Nasional Berhad (TNB).

Walkdown Workshop in Zwentendorf NPP, Austria

Five AELB officers joined delegates from other countries to attend a Walkdown Workshop in Zwentendorf NPP (ZNPP), Austria. Held from May 28 to June 1, 2012, the workshop was organised by IAEA under the United States Extra Budgetary Programme. The ZNPP site was Austria's first NPP but today it functions as a location for training and demonstration purposes.

Instructors from the United States Nuclear Regulatory Commission (USNRC) led the Walkdown during which the IAEA Safety Standards referencing was introduced. Plant Walkdown methods, inspection practices, requirements and guidance were also explained and demonstrated.

Visit by Mongolian Delegation

Ten delegates from Mongolia visited AELB on November 6, 2012 to establish collaborations as well as knowledge and information sharing. The delegates' programme also included a visit to the National Radiological Response Centre (NRRC).

THE WAY FORWARD

In line with the thrusts of the 10th Malaysia Plan (2011-2015), AELB will continue to improve competency and enhance visibility and transparency through greater engagement with the public and various other stakeholders, particularly the three arms of the country's governing machinery, namely the judiciary, and legislative and executive bodies.

In addressing issues of national interest, such as the Lynas issue, AELB is propelled upfront as the technical spokesperson for the Government. It is a challenging role that is new to us therefore we learn and gain knowledge from the experience. This should also prepare us better in the event that we are required to assume similar role in the future.

Information on our competency in controlling and monitoring nuclear and nuclear-related activities and facilities must be disseminated to the public more extensively. The information can be supported by real-case examples such as that two of AELB Officers have been engaged by IAEA as its Technical Officers. Meeting the needs of the international authority shows that AELB is very capable of producing competent personnel. The 'physical lost' of our own human capital results in the valuable gain of new exposure, knowledge and networking that enhance AELB's image. Our officers' presence in the IAEA also contributed to the recognition gained by AELB as the National Nuclear Security Support Centre in Asia.

With the Government still studying every aspect of developing the country's own NPP for power generation in light of the expected depletion of conventional energy sources, AELB will continue to provide its expertise in ensuring safety, security and safeguards. Greater transparency is required in dealing with the NPP issue so as to ensure that the country will remain safe. A total protection system along with the Strategic Trade Act governing nuclear materials must be made part and parcel of the safety cover for the entire nation.

Strategic Action Plan (2011-2015)

Under the 10th Malaysia Plan, five Key Result Areas (KRAs) have been identified as deliverables expected from AELB. These are:

- Legal and governmental infrastructure for radiation and nuclear safety, security and safeguards.
- Control and supervision.
- National and international co-operation.
- Human capital development.
- Knowledge management.

Based on the above, the Strategic Plan of AELB includes Strategic Thrusts (ST) as detailed below.

ST1: Enhancement of an effective legal governmental framework for radiation and nuclear safety, security and safeguards, including an independent regulatory body.

Plan of Action:
The legal governmental framework has already been established with periodic assessment and review taking place to ensure its effectiveness. AELB will continue to provide its expertise as well as professional and impartial views and recommendations so as to remain an effective and credible enforcement body.

ST2: Effective co-operation and active participation at national and international levels in technical and policy issues of radiation and nuclear safety, security and safeguards.

Plan of Action:

- Communication and Multimedia Section's plans include:
- To intensify public awareness programmes.
- To improve the contents of the Public Awareness Gallery.
- To collate and study information disseminated through cyber media.
- Technical Support Division's plans include:
- To co-ordinate the implementation of regulatory research activity.
- To monitor the development of regulatory research.

ST3: Enhancement of supervision mechanism towards licensees' compliance to the regulatory requirements and customer satisfaction.

Plan of Action:

- Technical Support Division's plans include:
- To identify and manage the purchase of scientific equipment.
- To enhance staff's knowledge on sample analysis.
- To analyse and verify environmental samples at AELB laboratories.
- Licensing Division's plans include:
- To upgrade and improve eLesen system and facilitate the process for online license and authorisation application and reviewing related supporting document submitted by applicants.
- To develop new guidance documents, such as Radiological Impact Assessment (RIA) document and Radioactive Waste Management Plan document.
- To study the revision of Client Charter on licensing process.
- Enforcement Division's plans include:
- To establish storage facility at three AELB branches for effective management of exhibits.
- To simplify and ensure the effectiveness of enforcement process.

ST4: Enhancement of effective arrangements for emergency preparedness and response for nuclear and radiation incidents.

Plan of Action:

- Technical Support Division's plans include:
- To ensure all equipment are calibrated and remain in good condition.
- To ensure the availability of laboratory supplies at all times.
- To install and maintain Environmental Radiation Monitoring System (ERMS) in each state.
- Enforcement Division's plans include:
- To establish procedures that will serve as reference for handling radiological incidents.
- To ensure standardisation of actions at national level.
- To develop and establish related procedures/guidance documents on Emergency Response and Preparedness (ERP).
- To procure and upgrade emergency infrastructures, facilities, equipment and system.

ST5: Building the capacity and capability of AELB's infrastructure and human capital.

Plan of Action:

- Communication and Multimedia Section's plans include:
- To review the Information and Communication Technology (ICT) Strategic Plan according to AELB's Strategic Plan.
- To ensure that AELB's ICT safety policy is in line with those of MAMPU and MOSTI.
- To provide video conferencing facility for staff.
- To provide Internet infrastructure and technical assistance for ERMS and RPM.
- Licensing Division's plans include:
- To establish a new unit to verify and approve permits under e-Permit-STA system.
- To have systematic arrangements for human resource development, which encompasses security and safeguards; NORM and mineral processing; NPP licensing; and safety assessment.
- Enforcement Division's plans include:
- To conduct training programmes to ensure that all inspection activities are relevant and in compliance with international practices.
- Technical Support Division's plans include:
- To integrate new system software with existing system for the detection of contamination and illicit trafficking of nuclear and radioactive material for national safety and security.

ST6: Protection and assurance of the inalienable rights to develop nuclear technology safely and securely for peaceful purposes in Malaysia and to foster public confidence in peaceful uses of radiation and nuclear technology.

Plan of Action:

- AELB's overall plans include:
- To continue with technical competency evaluation.
- To assist other enforcement agencies to detect pollution level and illicit trafficking of nuclear and radioactive materials for national safety.
- To continue with the ratification of the protocol additional to the comprehensive safeguards agreement with IAEA.

The implementation of the various action plans is at different stages of progress. While many have been well carried through, there are areas where improvements can be made to achieve better progress. As the country marches towards realising Vision 2020, AELB will strengthen integration within the organisation and across our professional partners in both the public and private sectors locally and internationally. In the process, the assessment and review of our plans, strategies, strengths, operational solutions and standards will continue to ensure that we will be able to effectively address both current and future demands as well as challenges.

Issued by the Office of the Executive Secretary of AELB

Petunjuk Prestasi Utama (KPI) 2012

Key Performance Indicators (KPIs)

Petunjuk Prestasi Utama (KPI) 2012
Key Performance Indicators (KPIs) 2012

Banyak program yang dilaksanakan pada 2012 betepatan dengan objektif MOSTI, seperti berikut:

(1) penjanaan ilmu untuk membangunkan modal insan dalam ST&I dengan penekanan terhadap meningkatkan budaya kesedaran keselamatan;
(2) peningkatan tahap kesihatan negara dan masyarakat untuk meninggikan mutu kehidupan rakyat Malaysia dan menjaga alam sekitar; dan
(3) penghasilan kekayaan melalui peningkatan kemudahan dan mekanisme dan perdagangan, yang menyumbang kepada perkembangan pesat industri yang berkaitan dengan penggunaan teknologi nuklear dan sinaran dalam berbagai bidang.

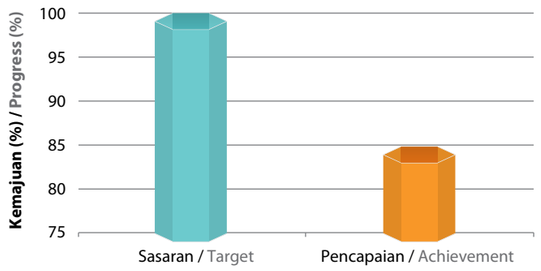
Pencapaian pada 2012 telah dinilai berasaskan KRA dan teras strategik kesemua bahagian di bawah AELB.

Many programmes implemented in 2012 complied with MOSTI's objectives, as follows:

(1) knowledge generation to develop human capital in ST&I with emphasis on enhancing a culture of safety awareness;
(2) enhancement of national and societal well-being to improve the quality of life enjoyed by Malaysians and protect the environment; and
(3) wealth creation through trade facilitation and mechanism. Achieving the objectives will contribute towards the rapid development of industries related to the use of radiation and nuclear technologies in various fields.

Progress achieved in 2012 was assessed based on the KRAs and strategic thrusts of the different divisions of AELB.

RAJAH 1 Kemajuan Keseluruhan AELB
FIGURE 1 Overall Progress of AELB



Keseluruhan / Overall	Kemajuan / Progress (%)
Sasaran / Target	100.00
Pencapaian Achievement	83.30

RAJAH 2 Kemajuan yang Dicapai oleh Bahagian-bahagian AELB
FIGURE 2 Progress Achieved by the Divisions of AELB

Butir-butir / Details	Kemajuan Bahagian Dasar, Kod dan Standard Progress of Policy, Code and Standard Division (%)	Kemajuan Bahagian Perlesenan Progress of Licensing Division (%)	Kemajuan Bahagian Penguatkuasaan Progress of Enforcement Division (%)	Kemajuan Bahagian Installasi Nuklear Progress of Nuclear Installation Division (%)	Kemajuan Bahagian Khidmat Sokongan Teknikal Progress of Technical Support Division (%)	Kemajuan Bahagian Khidmat Pengurusan Progress of Administration Service Division (%)	Kemajuan Bahagian Komunikasi dan Multimedia Progress of Communication and Multimedia Division (%)
Teras Strategik 1 / Strategic Thrust 1 Peningkatan rangka kerja pengendalian perundangan yang berkesan untuk keselamatan nuklear dan sinaran termasuk penubuhan badan penguatkuasa bebas Enhancement of an effective legal governmental framework for radiation and nuclear safety, security and safeguards including an independent regulatory body	100	N/A	N/A	68.5	N/A	100	N/A
Teras Strategik 2 / Strategic Thrust 2 Kerjasama berkesan dan penglibatan aktif di peringkat kebangsaan dan antarabangsa dalam isu-isu polisi dan teknikal bersabit dengan keselamatan, sekuriti dan kawalgunaan nuklear dan sinaran Effective cooperation and active participation at national and international levels in technical and policy issues of radiation and nuclear safety, security and safeguards	100	N/A	N/A	100	70	96	100
Teras Strategik 3 / Strategic Thrust 3 Peningkatan mekanisma untuk menentukan pematuhan pemegang-pemegang lesen terhadap keperluan peraturan dan kepuasan pelanggan Enhancement of supervision mechanism towards licensees' compliance to the regulatory requirements and customer satisfaction	95		55	77.08			

RAJAH 2 Kemajuan yang Dicapai oleh Bahagian-bahagian AELB (sambungan)
FIGURE 2 Progress Achieved by the Divisions of AELB (continued)

Butir-butir Details	Kemajuan Bahagian Dasar, Kod dan Standard Progress of Policy, Code and Standard Division (%)	Kemajuan Bahagian Perlesenan Progress of Licensing Division (%)	Kemajuan Bahagian Penguatkuasaan Progress of Enforcement Division (%)	Kemajuan Bahagian Installasi Nuklear Progress of Nuclear Installation Division (%)	Kemajuan Bahagian Khidmat Sokongan Teknikal Progress of Technical Support Division (%)	Kemajuan Bahagian Khidmat Pengurusan Progress of Administration Service Division (%)	Kemajuan Bahagian Komunikasi dan Multimedia Progress of Communication and Multimedia Division (%)
Teras Strategik 4 / Strategic Thrust 4 Peningkatan penyusunan berkesan untuk persediaan dan tindakan menghadapi kecemasan kemalangan dan insiden nuklear dan sinaran Enhancement of effective arrangements for emergency preparedness and response for radiation and nuclear incidents	N/A	N/A	95	N/A	47	N/A	82
Teras Strategik 5 / Strategic Thrust 5 Membina kemampuan dan kebolehan sinaran dan infrastruktur peraturan nuklear dan modal insan Building capacity and capability of radiation and nuclear regulatory infrastructure and human capital	90	N/A	40	85.71	N/A	N/A	N/A
Teras Strategik 6 / Strategic Thrust 6 Melindungi dan menjamin hak untuk membangunkan keselamatan teknologi nuklear bagi tujuan aman di Malaysia dan memupuk keyakinan awam dalam penggunaan teknologi nuklear dan sinaran dengan aman Protection and assurance of the inalienable rights to develop nuclear technology safely and securely for peaceful purposes in Malaysia and to foster public confidence in peaceful uses of radiation and nuclear technology	100	N/A	N/A	100	48	N/A	100

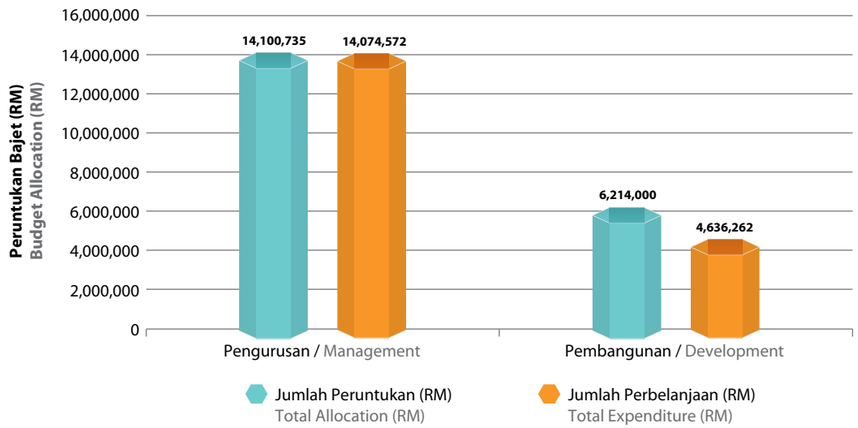
RAJAH 3 Petunjuk Prestasi Utama (KPI) 2012
FIGURE 3 Key Performance Indicators (KPI) 2012

OBJEKTIF MOSTI MOSTI'S OBJECTIVES	PROGRAM PROGRAMMES	KPI 2012 KPI 2012	PENCAPAIAN ACHIEVEMENTS
Objektif 1 **Objective 1** Penghasilan Kekayaan Wealth Creation	Lesen, pengiktirafan (PPS, penyelia dan pengendali industri radiografi) dan Import/Eksport License, certification (RPOs, supervisors and radiography industry workers) and Import/Export	**RM1,100,000.00**	**RM1,149,411.84**
Objektif 2 **Objective 2** Penjanaan Ilmu Pengetahuan Knowledge Generation	Peperiksaan Persijilan PPS Examination to certify RPOs	**500 calon** **500 candidates**	**500 calon** **500 candidates**
	Pelaksanaan program latihan kebangsaan/serantau dan antarabangsa bagi tujuan meningkatkan keselamatan sinaran Implementation of national/regional and international training programmes for enhancing radiation security	**21 program latihan** **21 training programmes**	**16 program latihan** **16 training programmes**
	Mewujudkan kesedaran awam dalam bidang sains, teknologi dan inovasi To create public awareness in the fields of science, technology and innovation	**12 program kesedaran awam** **12 public awareness programmes**	**20 program kesedaran awam** **20 public awareness programmes**
Objektif 3 **Objective 3** Kesejahteraan Rakyat Well-being of the People	Pemeriksaan/ Inspection	**530**	**733**
	Insiden/Kemalangan Radiologi Incidents/Radiological Accidents	-	**14**
	Tindakan Perundangan / Legal Action	-	**197**
	Purata Dedahan Dos Pekerja Sinaran (mSv/orang) Average Exposure Dose of Radiation Workers (mSv/person)	**<20 mSv**	**0.61 mSv**
	Pembangunan Dokumen Development of Documents	**10 dokumen** **10 documents**	**13 dokumen** **13 documents**

Pencapaian dalam memenuhi tiga objektif utama MOSTI dalam tahun 2012 ditunjukkan dalam rajah di atas.

Achievements in meeting the three key objectives of MOSTI in 2012 are shown in the figure above.

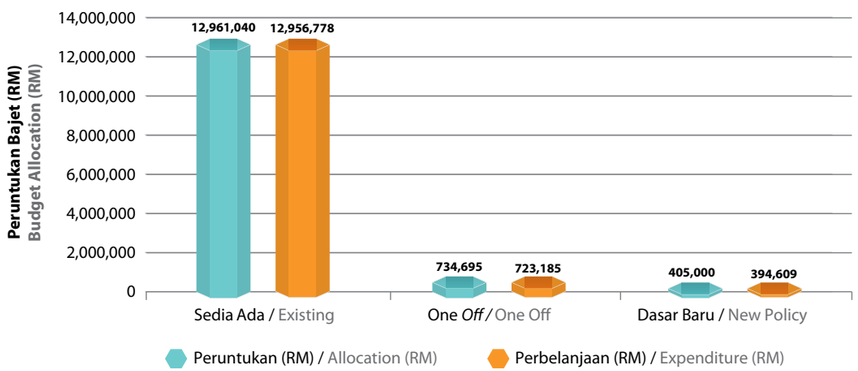
RAJAH 4 FIGURE Prestasi Kewangan 2012 Financial Performance 2012



Jumlah peruntukan untuk perbelanjaan operasi pada 2012 adalah sebanyak RM20,314,735, di mana sebanyak 92% atau RM18,710,834 telah dibelanjakan.

Total allocation for operating expenses in 2012 was RM20,314,735, of which 92% or RM18,710,834 was spent.

RAJAH 5 FIGURE Bajet Mengurus 2012 Management Budget 2012



Pada 2012, AELB menerima peruntukan bajet sebanyak RM 14,100,735 di mana 99.81% telah dibelanjakan untuk aktiviti pengurusan dan pembangunan.

In 2012, AELB received a budget allocation of RM 14,100,735, of which 99.81% was used for management and development activities.

RAJAH 6 FIGURE Bajet Pembangunan Development Budget

Projek / Project	Peruntukan 2012 Allocation 2012 (RM)	Perbelanjaan Expenditure (RM)	Peratusan Percentage (%)
Kajian Penggubalan Perundangan dan Kawalseliaan Ke Arah Aplikasi Tenaga Nuklear Studies of Formulation of Legislation and Regulatory Towards Nuclear Energy Applications	2,000,000	428,115	21.41%
Perolehan Makmal Bergerak Bagi Pasukan Bertindak Kecemasan Radiologi Kebangsaan Acquisition of Mobile Laboratory for the National Radiological Emergency Response Team	2,000,000	500,000	25%
Perolehan Peralatan Sekuriti Bahan Nuklear dan Radioaktif Kebangsaan Acquisition of Equipment for Nuclear and Radioactive Materials National Security	4,000,000	3,995,000	99.88%
Pembangunan Pusat Pengurusan Maklumat dan Multimedia serta bayaran pampasan tanah Development of Information and Multimedia Management Centre plus land acquisition compensation payment	214,000	213,148	99.60%
Jumlah / Total	**8,214,000**	**5,136,263**	**62.53%**

Pada 2012, AELB menerima peruntukan sebanyak RM8,214,000 untuk membiayai projek di bawah RMK10. Dari jumlah tersebut, 62.53% telah dibelanjakan.

In 2012, AELB received an allocation of RM8,214,000 to finance projects under the 10MP, of which 62.53% was spent.

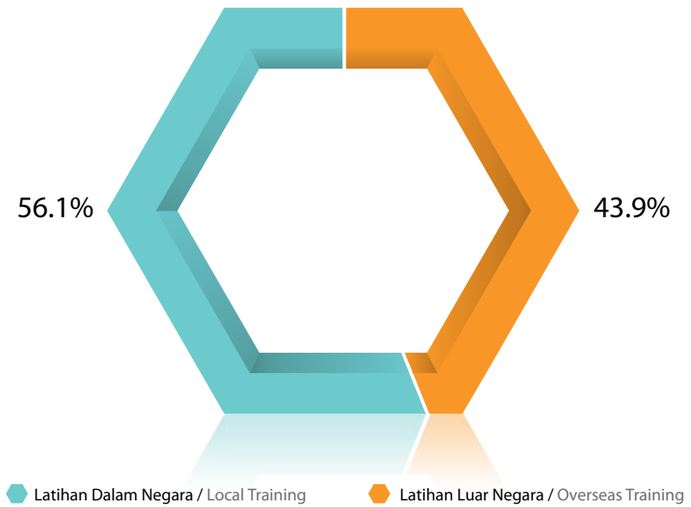
RAJAH 7 FIGURE Hasil Revenue

Sumber / Sources	Hasil / Revenue	%
Lesen, Pendaftaran dan Permit Licence, Registration and Permit	2,263,951.30	95
Pembelian daripada Jualan Produk Procurement from Sales of Products	35,564.75	1.5
Sewaan Rental	2,850.00	0.4
Bayaran balik tahun-tahun lepas Payment from Previous Years	73,841.76	3.1
Jumlah / Total	**2,376,207.81**	**100**

Jumlah hasil pada 2012 adalah sebanyak RM2,376,207.81, di mana RM2,263,951.30 atau 95% diperolehi daripada Yuran Lesen, Pendaftaran dan Permit, dan lain-lain sumber.

Revenue for 2012 amounted to RM2,376,207.81, of which RM2,263,951.30 or 95% was derived from fees for Licence, Registration and Permit while the rest were from other sources.

RAJAH 8 Pembangunan Sumber Manusia
FIGURE 8 Human Resource Development



Pada 2012, seramai 262 kakitangan telah menghadiri pelbagai program latihan di mana 43.9% daripada program latihan tersebut dijalankan di dalam negara dan baki sebanyak 56.1% dijalankan di luar negara.

In 2012, a total of 262 employees attended various training programmes, of which 43.9% were held locally and the balance of 56.1% were held overseas.

RAJAH 9 Perjawatan
FIGURE 9 Staffing

Kategori / Category	Kakitangan / Staff	Diisi / Filled	Kosong / Vacant
P & P (Jusa C)* / M & P (Jusa C)**	1	1	-
P & P (Kump. A)* / M & P (Group A)**	51	43	8
Sokongan I (Kump. B) / Support I (Group B)	48	47	1
Sokongan II (Kump. C) / Support II (Group C)	39	34	5
Sokongan III (Kump. D) / Support III (Group D)	23	23	-
Jumlah / Total	**162**	**148**	**14**

*P & P = Pengurusan dan Profesional
**M & P = Management and Professional

Pada 2012, sejumlah 162 jawatan telah ditawarkan di AELB, di mana sebanyak 148 jawatan telah diisi manakala 14 lagi masih kosong.

In 2012, vacancies available in AELB were 162, of which 148 were filled while 14 remained vacant.

RAJAH 10 Ringkasan Prestasi
FIGURE 10 Performance Summary

Bil. No.	Petunjuk Prestasi / Performance Indicators	Pencapaian Achievements 2011	Pencapaian Achievements 2012	Perbezaan Difference %
1	Bilangan Permohonan Lesen: / Number of License Applications:			
	Bilangan Permohonan Diterima / Number Received	1,166	**1,640**	**40.7%**
	Bilangan Diproses / Number Processed	1,166	**1,640**	**40.7%**
2	Bilangan Pemeriksaan yang Dijalankan Number of Inspections Conducted	512	**733**	**43%**
3	Bilangan Kertas Kerja dan Kertas Maklumat untuk Mesyuarat Lembaga Number of Working Papers and Information Papers Presented at Board Meetings	30	**21**	**30%**
4	Bilangan Maklumat Teknikal yang Dikeluarkan Number of Technical Information Circulars Issued	17	**5**	**-70.5%**
5	Bilangan Calon yang Diiktiraf sebagai PPS Number of Candidates Accredited as RPOs	412	**537**	**30.3%**
6	Bilangan Calon yang Diiktiraf sebagai Penyelia Number of Candidates Accredited as Supervisors	275	**286**	**4%**
7	Bilangan Calon yang Menduduki Peperiksaan Perlindungan Sinaran Number of Candidates Sitting for Radiation Protection Examination	550	**591**	**7.5%**
8	Tindakan Penguatkuasaan: / Enforcement Actions:			
	Fail Penyiasatan Dibuka / Investigation Files Opened	31	**52**	**48.6%**
	Kes Dibawa Ke Mahkamah / Cases Brought To Court	0	**0**	**0**
	Penggantungan Pekerja Sinaran dan PPS Suspended Radiation Workers and RPOs	17	**12**	**-29.4%**
	Pembatalan Lesen / Licence Cancelled	0	**0**	**0**
	Penggantungan Lesen / Licence Suspended	0	**1**	**0**
	Amaran Bertulis Dikeluarkan / Written Warnings Issued	16	**15**	**-6.25%**
	Dalam Siasatan / Under Investigations	3	**14**	**367%**
9	Bilangan Permohonan Bahan Radioaktif, Radas Penyinaran dan Bahan Mineral Diproses: Number of Applications of Radioactive Materials, Irradiation Apparatus and Duly Processed Minerals:			
	Import /Import	1,643	**2,069**	**25.9%**
	Eksport / Export	626	**1,250**	**99.7%**
	Pergerakan / Removals	61	**380**	**522.9%**
10	Penguatkuasaan: / Enforcements:			
	Kecekapan Pegawai Penguatkuasaan Efficiency of Enforcement Officers	13.78	**25.3**	**83.6%**
	Keberkesanan Pemeriksaan / Effectiveness of Inspections	27.9	**26.9**	**-1%**
	= Bilangan tindakan perundangan diambil / Legal actions taken Bilangan Pemeriksaan / Inspection actions			
11	Pemprosesan Lesen: / License Processing:			
	Kecekapan Pegawai Penilai / Efficiency of Assessment Officers	90	**96.4**	**7.1%**

Rajah di atas menunjukkan ringkasan prestasi AELB berdasarkan pelbagai petunjuk prestasi daripada bilangan permohonan lesen yang diterima dan diproses hinggalah kepada pencapaian kecekapan para pegawai yang bertanggungjawab ke atas penguatkuasaan, pemeriksaan dan pemprosesan lesen.

The above figure summarises the performance of AELB according to the various indicators ranging from the number of licence applications received and processed to the efficiency of officers in charge of enforcement, inspection and licence processing.

RAJAH 11 Pembangunan Dokumen 2012
FIGURE 11 Development of Documents 2012

Bil. No.	Bil. Siri Dokumen Document Series No.	Tajuk Dokumen Perundangan / Title of Legal Documents
1.	KOD/EMT/119	Kawalan Perundangan Aktiviti Berurusan Dengan Mineral Mengandungi Bahan Radioaktif Semulajadi Di Kawasan Zon Bebas Di Malaysia Regulatory Control for Activities Dealing with Naturally Occuring Radioactive Material in Malaysia Free Zone
2.	KOD/EMT/120	Kawalan Perundangan Aktiviti Melibatkan Pengilangan Dan Pelupusan Bahan Mengandungi Bahan Radioaktif Semulajadi Regulatory Control for Manufacturing and Disposing Materials Containing Naturally Occuring Radioactive Material
3.	LEM/TEK/44 (Bahagian G)	Standard Pengiktirafan Baru dan Pengiktirafan Semula Berdasarkan Kaedah Program Pendidikan Berterusan (Continuous Education Programme – CEP) Standards for New Certification and Re-certification based on Continuous Education Programme (CEP)
4.	LEM/TEK/65	Panduan Pengelasan Kawasan Kerja Menurut Peraturan-Peraturan Perlesenan Tenaga Atom (Perlindungan Sinaran Keselamatan Asas) 2010 {P.U (A) 46} Guidelines on Classification of Working Area in accordance to Atomic Energy Licensing (Basic Safety Radiation Protection) Regulations 2010 {P.U. (A) 46}
5.	LEM/TEK/66	Panduan Penyediaan dan Pengujian Pelan Kecemasan Radiologikal dan Nuklear Guidelines on Preparing and Testing of Nuclear and Radiological Emergency Plan
6.	LEM/SPP/17	Proses Penilaian E-Permit Akta Perdagangan Strategik 2010 (Akta 708) (20 Januari 2012) Strategic Trade Act 2010 (Act 708) (20 January 2012) E-Permit Assessment Process
7.	LEM/SPP/18(a)	Prosedur Operasi Seragam Tindakbalas Terhadap Pengesahan Kehadiran Bahan Nuklear dan Radioaktif yang Diaktifkan oleh Portal Pengesanan Sinaran (RPM) (05 Januari 2012) Uniformed Response Operation Procedure for Nuclear and Radioactive Material Presence Confirmation which is Activated by Radiaoactive Portal Monitor (RPM)
8.	LEM/SPP/18(b)	Penilaian Fail Harian (Daily File) yang dihasilkan oleh RPM Bagi Tujuan Penilaian Data Pengesanan Oleh MEST (05 Januari 2012) Assessment of Daily File produced by RPM for the Purpose of Data Detection Evaluation by MEST (05 January 2012)
9.	LEM/SPP/18(c)	Penilaian Graf Profail Pengesanan yang dihasilkan oleh Portal Pengesanan Sinaran (RPM) (05 Januari 2012) Assessment of Detection Profile Graph produced by Radiaoactive Portal Monitor (RPM)
10.	LEM/SPP/19	Peranan dan Tanggungjawab Pasukan Kecemasan Nuklear(10 April 2012) Roles and Functions of Nuclear Emergency Team (10 April 2012)
11.	LEM/SPP/20	Panduan Pengurusan Mesyuarat AELB (15 Oktober 2012) Guidelines for AELB Administration Meetings (15 Oktober 2012)
12.	Notis Pemberitahuan Pelanggan	Penyediaan Dan Pengujian Pelan Kecemasan Radiologikal Dan Nuklear Preparation and Testing of Radiological and Nuclear Emergency Plan
13.	Notis Pemberitahuan Pelanggan	Keperluan Untuk Menghantar Penyata Pemilikan (LPTA/BM/3) Bagi Syarikat Penjual Apabila Menerima Dan Melupus Bahan Radioaktif, Bahan Nuklear Atau Radas Penyinaran Yang Bertujuan Untuk Dilupuskan Oleh Syarikat Pengguna Requirements for Submission of Possession Returns (LPTA/BM/3) by a Vendor Company when Receiving and Disposing Radioactive Material, Nuclear Material or Irradiating Apparatus for the Purpose of Disposal by a Consumer Company

Bagi mempertingkatkan kecekapan AELB dalam mengawalselia aktiviti tenaga atom di Malaysia, dokumen perundangan dan bukan perundangan telah dibangunkan dan digunapakai oleh AELB dan juga pemegang lesen yang menjalankan aktiviti tersebut. Beberapa dokumen yang disediakan sepanjang tahun 2012 ditunjukkan dalam rajah di atas.

In order to enhance the efficiency of AELB in safeguarding atomic energy activities in Malaysia, both legal and non-legal documents were developed and adopted by AELB and licence holders involved in such activities. Some documents developed in 2012 are as shown in the figure above.

RAJAH 12 Penguatkuasaan 2012
FIGURE 12 Enforcement 2012

Bil. No.	Tindakan / Actions	Jumlah Total
1	Fail Penyiasatan Dibuka / Investigation Files Opened	52
2	Kes Dibawa Ke Mahkamah /Cases Brought to Court	0
3	Pembatalan Lesen / Licences Cancelled	0
4	Penggantungan Lesen/ Licences Suspended	1
5	Amaran Bertulis Dikeluarkan / Written Warnings Issued	15
6	Dalam Siasatan / Under Investigation	14
	Jumlah / Total	**82**

Sejumlah 82 tindakan penguatkuasaan telah diambil oleh AELB dalam tahun 2012 mengikut undang-undang di bawah Akta 304.

A total of 82 enforcement actions were taken by AELB in 2012 in accordance with enforcement laws specified under Act 304.

RAJAH 13 Perlesenan, Kebenaran dan Pengiktirafan
FIGURE 13 Licensing, Approvals and Certification

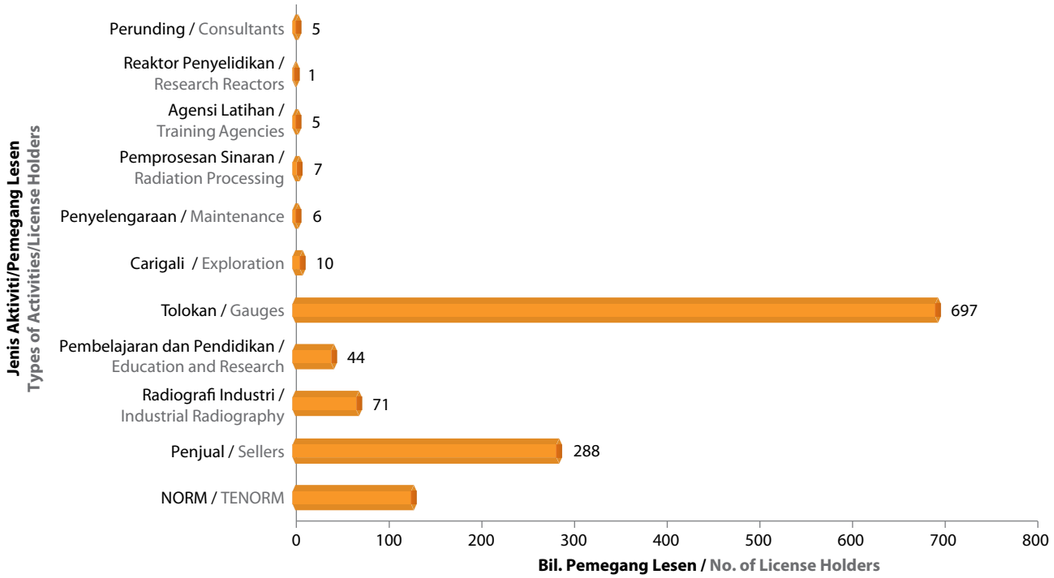
Bil. No.	Jenis Kelulusan Types of Approval	Bilangan Kelulusan Number of Approval
1	Permohonan Lesen / Licence Applications	1,640
2	Kebenaran Dikeluarkan / Approvals Issued	8,582
3	Pengiktirafan PPS / Certification of RPOs	537
4	Pendaftaran / Registration	49
	Jumlah / Total	**10,808**

Pada 2012, jumlah permohonan lesen, kelulusan dikeluarkan, pengiktirafan PPS dan pendaftaran mencapai 10,808. Kelulusan dikeluarkan mencatatkan jumlah tertinggi iaitu 8,582.

In 2012, the total of licence applications, approvals issued, certification of RPOs and registration reached 10,808. Approvals issued recorded the highest number at 8,582.

Aktiviti Bukan Perubatan | Non-Medical Activity

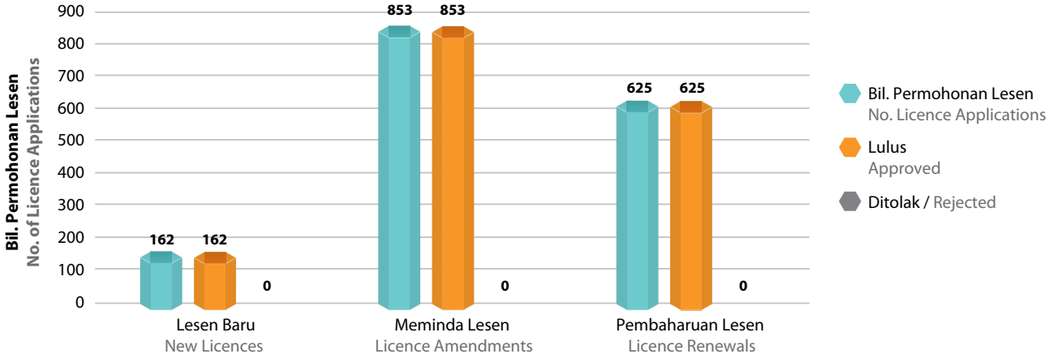
RAJAH 14 Pemegang Lesen
FIGURE 14 Licence Holders



Pada 2012, jumlah pemegang lesen mengikut jenis aktiviti berjumlah 1,157, di mana pemegang lesen tolokan mencatatkan jumlah terbanyak iaitu 697.

In 2012, the total of licence holders according to the types of activities stood at 1,157, of which licence holders for gauges recorded the highest number at 697.

RAJAH 15 Permohonan Lesen
FIGURE 15 Licence Applications

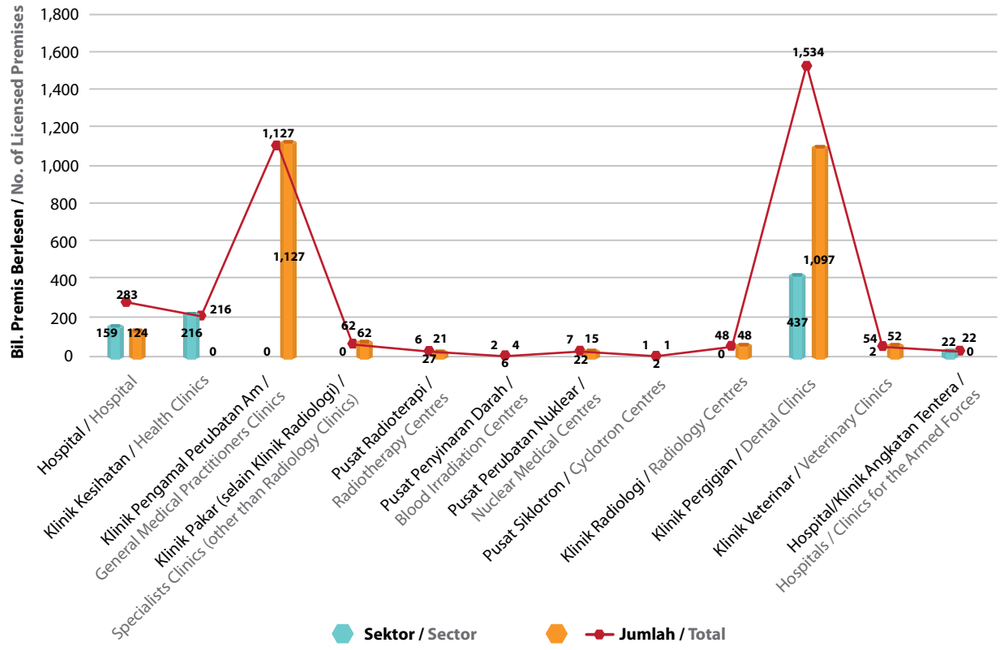


Pada 2012, jumlah permohonan lesen bagi permohonan pembaharuan lesen, meminda lesen dan permohonan lesen baru ialah 1,640 di mana ke semua permohonan telah diluluskan oleh AELB.

In 2012, the total of licence applications for new licences, licence amendments and licence renewals were 1,640 which were all approved by AELB.

Aktiviti Perubatan | Medical Activity

RAJAH 16 Statistik Jumlah Premis Berlesen (Swasta) dan Premis Berdaftar (Kerajaan) sehingga 31 Disember 2012
FIGURE 16 Statistics on the Number of Licensed Premises (Private) and Registered Premises (Government) as at December 31, 2012

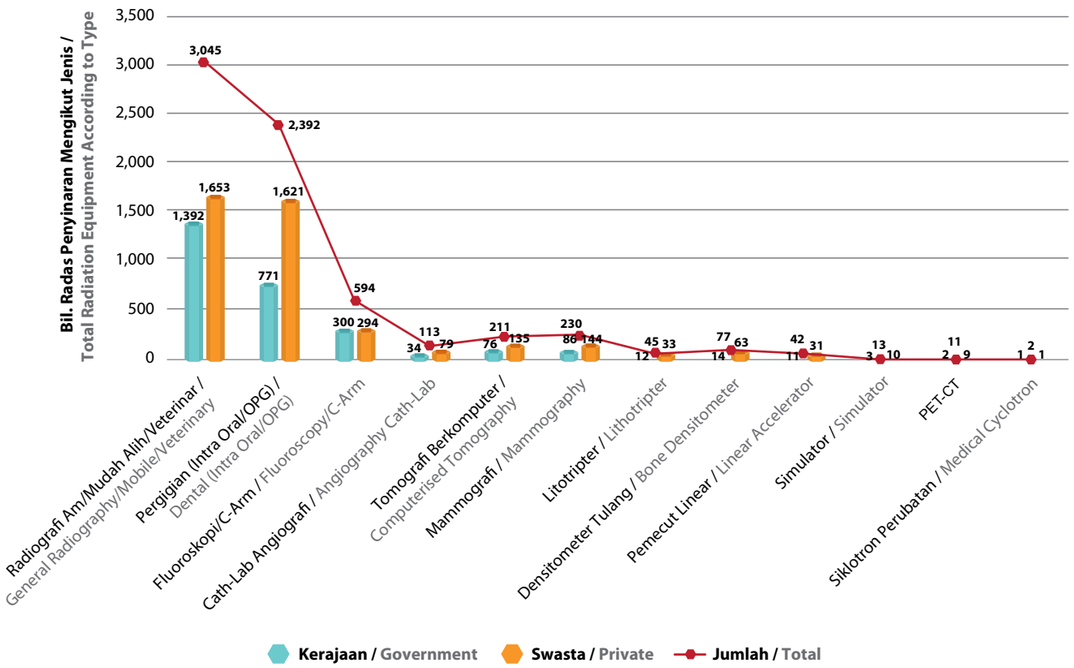


Sumber: Seksyen Keselamatan Sinaran, Kementerian Kesihatan Malaysia
Source: Radiation Safety Section, Ministry of Health, Malaysia.

Pada tahun 2012, terdapat sebanyak 852 premis kerajaan yang berdaftar berbanding 2,551 premis swasta yang berlesen menjadikan jumlah keseluruhan premis yang terlibat dalam penggunaan sinaran mengion bagi maksud perubatan adalah 3,403.

In 2012, a total of 852 Government premises were registered as compared with 2,551 private premises which were licensed, contributing to the total of 3,403 premises involved in the use of ion radiation for medical purposes.

RAJAH 17 Jumlah Radas Penyinaran Mengikut Jenis/Kategori Berlesen/Pendaftaran sehingga 31 Disember 2012
FIGURE 17 Total Radiation Equipment According to Type/Licence Category/Registration as at December 31, 2012



Sumber: Seksyen Keselamatan Sinaran, Kementerian Kesihatan Malaysia

Source: Radiation Safety Section, Ministry of Health, Malaysia.

Daripada 6,775 jumlah keseluruhan radas penyinaran yang direkodkan pada tahun 2012, sejumlah 2,702 radas penyinaran telah didaftarkan dalam sektor Kerajaan manakala 4,073 radas penyinaran telah dilesenkan dalam sektor swasta.

Out of the overall total of 6,775 radiation equipment recorded in 2012, 2,702 radiation equipment were registered in the Government sector while 4,073 radiation equipment were licensed in the private sector.

RAJAH 18 Kelulusan
FIGURE 18 Approvals

Bil. No.	Jenis Kelulusan yang Diproses Types of Approvals Processed	Bil. Permohonan No. of Applications
1	Bilangan Permohonan Import/Eksport Bahan Radioaktif, Radas Penyinaran dan Bahan Mineral Diproses: Number of Applications for Import/Export of Radioactive Materials, Irradiation Apparatus, Minerals Duly Processed:	
	Import / Import	2,069
	Eksport / Export	1250
	Pergerakan / Removals	380
2	Pengkelasan Kawasan / Area Classifications	67
3	Bilangan Pinjaman yang Diluluskan: / Number of Approvals for Loans:	
	Radas Penyinaran / Radiation Equipment	23
	Bahan Radioaktif / Radioactive Materials	18
4	Ubah Lokasi Peralatan Sinaran / Relocation of Radioactive Equipment	87
5	Bilangan Kebenaran Melibatkan Pekerja: / Number of Approvals Relating to Workers:	
	Peminjaman Pekerja Sinaran / Loan of Radiation Workers	76
	Pemberhentian Pekerja / Termination of Employment	3319
6	Pembinaan Kemudahan Penstoran (untuk Syarikat yang menjalankan Ujian Tanpa Musnah sahaja) Construction of Storage Facilities (for Non-Destructive Testing Companies only)	95
7	Transit Bahan Nuklear / Transit of Nuclear Substance	2
8	Pengurusan Bahan-bahan Buangan: PELUPUSAN Management of Discarded Materials: DISPOSABLE	
	Bahan Radioaktif / Radioactive Materials	561
	Radas Penyinaran / Radiation Equipment	120
	Penangkap Kilat Radioaktif / Radioactive Lightning Arrester	1
9	Pemasangan/Uji/Senggara Radas Penyinaran Installation/Testing/Maintenance of Radiation Equipment	3950
10	Melakukan Kerja-kerja Radiografi di Kawasan Awam Conducting Radioactive Works in Public Places	94
11	Kemudahan Bilik Dedahan / Exposure Room Facilities	14
12	Pameran/Demonstrasi Peralatan Radioaktif Exhibition/Demonstration of Radiation Equipment	127
13	Pertukaran Alamat Syarikat / Change of Addresses of Companies	25
14	Pertukaran Orang Bertanggungjawab Terhadap Lesen Change of Persons Responsible for Licensing	414
15	Bilangan Pembubaran Lesen / Number of Licences Dissolved	31
16	Designasi Inspektor Kawalgunaan IAEA / Designation of IAEA Safeguards Inspectors	13
17	Pembatalan Inspektor Kawalgunaan IAEA / Cancellation of IAEA Safeguards Inspectors	7
	Jumlah / Total	**12,743**

Pada 2012, AELB telah memproses sebanyak 12,743 jenis kelulusan seperti yang ditunjukkan dalam rajah di atas.

In 2012, AELB processed a total of 12,743 types of approvals as shown in the above figure.

RAJAH 19 Statistik Permohonan Kebenaran Pekerja 2012
FIGURE 19 Statistic on Applications for Approvals of Workers 2012

Bil. No.	Keputusan Permohonan Application Results	Lulus Passed	Gagal Failed
1.	Pemberhentian Pekerja Sinaran / Termination of Radiation Workers	1,743	216
2.	Pinjaman Pekerja / Loan of Workers	45	15
3.	Pengiktirafan Khidmat Juruperunding / Service Certification of Consultants	239	9
4.	Pengiktirafan Pembantu Pengendali Sinaran / Certification of RPOs	399	12
5.	Pengiktirafan Pengendali Pelatih / Certification of Trainee Operators	223	5
6.	Pengiktirafan Pengendali Senggaraan / Certification of Maintenance Operators	227	27
7.	Pengiktirafan Pengendali Sinaran / Certification of Radiation Operators	2,629	41
8.	Pengiktirafan Penyelia / Certification of Supervisors	259	11
9.	Pertukaran Orang Bertanggungjawab Terhadap Lesen Transfer of Persons Responsible for Licences	153	8
10.	Designasi Inspektor Kawalgunaan IAEA / Designation of IAEA Safeguards Inspectors	13	0
11.	Pembatalan Inspektor Kawalgunaan IAEA / Withdrawn of IAEA Safeguards Inspectors	7	0
12.	Pengiktirafan Pengendali Reaktor Penyelidikan / Certification of Research Reactor Operator	0	19
13.	Pengiktirafan semula Pengendali Reaktor Penyelidikan Re-certification of Research Reactor Operator	4	0
	Jumlah / Total	**8,568**	**737**

Pada 2012, keputusan permohonan seperti pembaharuan, pemberhentian, pinjaman, pensijilan dan pemindahan telah dibahagikan kepada kategori lulus dan gagal. Jumlah bagi setiap kategori adalah 8,568 (lulus) dan 737 (gagal).

In 2012, application results such as for renewals, termination, loan, certification and transfer were broken into the categories of passed and failed. The total for each category was 8,568 (passed) and 737 (failed).

RAJAH 20 Keputusan Peperiksaan PPS Mengikut Aktiviti bagi Tahun 2004-2012
FIGURE 20 Examination Results for RPOs According to Activities for the Period 2004-2012

Tahun / Year	Keputusan / Results	Jumlah / Total
2004	Lulus / Passed	**292**
	Gagal / Failed	**229**
2005	Lulus / Passed	**276**
	Gagal / Failed	**260**
2006	Lulus / Passed	**276**
	Gagal / Failed	**456**
2007	Lulus / Passed	**251**
	Gagal / Failed	**419**
2008	Lulus / Passed	**232**
	Gagal / Failed	**498**
2009	Lulus / Passed	**223**
	Gagal / Failed	**413**
2010	Lulus / Passed	**162**
	Gagal / Failed	**419**
2011	Lulus / Passed	**183**
	Gagal / Failed	**367**
2012	**Lulus / Passed**	**151**
	Gagal / Failed	**440**

Pada 2012, seramai 591 PPS telah menduduki peperiksaan, di mana seramai 151 telah lulus manakala 440 gagal. Rajah di atas menunjukkan keputusan peperiksaan PPS mengikut kategori dari tahun 2004 hingga 2012.

In 2012, a total of 591 RPOs sat for the examination, of whom 151 passed while 440 failed. The above figure shows the examination results of RPOs according to the various categories from 2004 to 2012.

Penguatkuasaan | Enforcement

RAJAH 21 Pemeriksaan
FIGURE 21 Inspections

Bil. / No.	Pemeriksaan/Serbuan / Inspection/Raid	Pencapaian / Achievements
1	Pemegang Lesen / Licence Holders	728
2	Agensi/Syarikat yang Dikecualikan daripada Perlesenan Agencies/Companies Exempted from Licensing	4
3	Bukan Pemegang Lesen / Non-Licence Holders	1
	Jumlah / Total	**733**

Pada 2012, sejumlah 733 pemeriksaan/serbuan telah dijalankan oleh AELB, di mana kebanyakkannya adalah pemeriksaan pemegang lesen.

In 2012, a total of 733 inspections/raids were carried out by AELB. Most of the actions were taken on licence holders.

RAJAH 22 Tindakan Perundangan
FIGURE 22 Regulatory Actions

Tindakan Bersabit Peraturan Regulatory Actions	2004	2005	2006	2007	2008	2009	2010	2011	2012
Arahan Henti Operasi Stop Work/Operation Order	25	97	89	57	49	64	97	75	68
Amaran Bertulis dan Peringatan Written Warnings & Reminders	8	43	71	14	23	26	35	40	64
Pendakwaan dan Penggantungan Lesen Prosecution & Suspension of Licence	2	0	3	3	0	2	3	0	1
Penggantungan Pengiktirafan Suspension of Certification	0	0	21	24	18	37	40	36	12
Siasatan / Investigations	17	23	47	13	31	47	46	31	52
Jumlah / Total	**52**	**163**	**231**	**111**	**121**	**176**	**221**	**182**	**197**

Pada 2012, sejumlah 197 tindakan perundangan telah diambil, di mana arahan henti operasi mencatatkan jumlah tertinggi iaitu 68. Rajah turut menunjukkan tindakan perundangan yang telah diambil dari 2004 hingga 2012.

In 2012, a total of 197 regulatory actions were taken, of which stop work/operation order recorded the highest number at 68. The figure also shows the total regulatory actions taken from 2004 to 2012.

RAJAH 23 Aduan Awam
FIGURE 23 Public Complaints

Aktiviti / Activities	Bil. Aduan Diterima No. of Complaints	Tindakan Pemeriksaan AELB Inspection Actions by AELB
Orang Awam / General Public	36	36
Kemalangan Sinaran / Radiation Accidents	14	14
Dalaman / In-house	0	0
Jumlah / Total	**50**	**50**

Pada 2012, sebanyak 50 aduan awam telah diterima daripada aktiviti yang dijalankan oleh orang awam dan kakitangan dalaman serta aduan mengenai kemalangan sinaran. AELB telah menyelesaikan kesemua aduan dengan mengambil tindakan pemeriksaan.

In 2012, public complaints received from activities carried out by the general public and in-house as well as those that involved radiation accidents reached a total of 50. AELB solved all these complaints by taking inspection actions.

RAJAH 24 Dos Tahunan Pekerja Sinaran
FIGURE 24 Radiation Workers Annual Dose

Dedahan Dos Tahunan (mSv) Annual Dose Exposure (mSv)		Radiografi Industri Industrial Radiography	Aktiviti-aktiviti Lain Other Activities	Jumlah Pekerja Sinaran (PS) Total of Radiation Workers (RW)
0.0		548	7,426	7,974
0.1 – 5.0		379	316	695
5.1 – 18.0		248	36	284
18.0 – 20.0		7	0	7
20.1 – 50.0		30	0	30
>50.1		7	0	7
Jumlah PS / Total of RW		**1,219**	**7,778**	**8,997**
Jumlah Dos / Total of Dose		**4,897.33**	**568.57**	**5,465.9**
Purata Dedahan Dos (mSv/orang) Average of Dose Exposure (mSv/person)	**Tahun / Year**			**Purata / Average**
	2004	4.31 mSv	0.28 mSv	0.52 mSv
	2005	4.19 mSv	0.24 mSv	0.68 mSv
	2006	4.38 mSv	0.13 mSv	0.69 mSv
	2007	4.99 mSv	0.59 mSv	1.09 mSv
	2008	6.04 mSv	0.07 mSv	0.84 mSv
	2009	6.73 mSv	0.23 mSv	0.66 mSv
	2010	4.24 mSv	0.15 mSv	0.68 mSv
	2011	2.98 mSv	0.06 mSv	0.53 mSv
	2012	**4.02 mSv**	**0.07 mSv**	**0.61 mSv**

Pada 2012, pekerja sinaran seramai 8,997, di mana 1,219 adalah PS dalam industri radiografi dan 7,778 dalam aktiviti-aktiviti lain. Purata dedahan dos (mSv/orang) adalah 0.61 mSv. Industri radiografi mencatatkan sebanyak 4.02 mSv manakala aktiviti-aktiviti lain mencatatkan 0.07 mSv.

In 2012, total of RWs were 8,997, of which 1,219 were RWs in the radiography industry and 7,778 were in other activities. Average of dose exposure (mSv/person) was 0.61 mSv. Industrial radiography recorded 4.02 mSv while other activities recorded 0.07 mSv.

Concept & Design by Masmode Sdn Bhd

www.aelb.gov.my

Kementerian Sains, Teknologi dan Inovasi Malaysia
Ministry of Science, Technology and Innovation Malaysia

ATOMIC ENERGY LICENSING BOARD

Lembaga Perlesenan Tenaga Atom
(Atomic Energy Licensing Board)
Kementerian Sains, Teknologi dan Inovasi
Batu 24, Jalan Dengkil, 43800 Dengkil, Selangor, Malaysia

Tel: 603-8922 5888 Faks: 603-8922 3685