Suruhanjaya Tenaga
Energy Commission

ULANG TAHUN 20
2001 - 2021
BERPADU TENAGA KE PERSADA DUNIA

LAPORAN TAHUNAN
ANNUAL REPORT
2021

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LAPORAN TAHUNAN SURUHANJAYA TENAGA 2021 ini dikemukakan kepada Menteri Tenaga dan Sumber Asli selaras dengan peruntukan seksyen 33(3) Akta Suruhanjaya Tenaga 2001 iaitu "Suruhanjaya Tenaga hendaklah mengemukakan satu salinan penyata akaun yang diperakui oleh juruaudit dan satu salinan laporan juruaudit kepada Menteri Tenaga dan Sumber Asli untuk dibentangkan di Parlimen berserta dengan laporan aktiviti Suruhanjaya Tenaga bagi tahun kewangan sebelumnya".

THE ENERGY COMMISSION ANNUAL REPORT 2021 *is submitted to the Minister of Energy and Natural Resources in accordance with section 33(3) of the Energy Commission Act 2001 which stipulates that "the Energy Commission must present a copy of the audited account statement and a copy of the auditor's report to the Minister of Energy and Natural Resources to be tabled in Parliament along with a copy of the Energy Commission's activity report for the previous financial year".*

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ASSALAMUALAIKUM W.B.T DAN SALAM SEJAHTERA

Pada 2021, Suruhanjaya Tenaga (ST) mencapai genap usia 20 tahun penubuhannya. Setelah dua (2) dekad beroperasi, pelbagai pengalaman dan kejayaan telah dilalui yang mencorakkan kredibiliti ST di persada negara dan antarabangsa. Namun, masih banyak usaha dan inisiatif baharu yang perlu terus menerus dilaksanakan oleh ST agar kekal relevan dengan arus perubahan global.

2021 marked the 20th year of the establishment of the Energy Commission (the Commission). Over the course of two (2) decades, the Commission has undergone various experiences and successes that has helped shape its credibility both locally and internationally. However, the Commission still needs to continuously carry out many efforts and initiatives in order to remain relevant with current global changes.

Perkara yang diberikan fokus utama oleh ST adalah memastikan keberterusan dan keselamatan dalam pembekalan tenaga, serta memastikan tahap pematuhan yang tinggi oleh penggiat industri. Hal ini kerana pada 2021, negara berdepan dengan cabaran ketersediaan bekalan bahan api bagi sektor penjanaan, pengurusan permintaan tenaga dan aktiviti kecurian elektrik secara perlombongan mata wang kripto.

Sempena ulang tahun ke-20 ST, Mesyuarat Suruhanjaya telah bersetuju dengan visi baharu ST ke arah badan kawal selia bertaraf dunia menjelang 2026. Sasaran tahun 2026 dipilih kerana tempoh lima (5) tahun merupakan jangka masa yang bersesuaian untuk ST merealisasikan matlamatnya sebagai badan kawal selia yang setanding dengan negara-negara maju yang lain.

The main focus of the Commission is ensuring continuity and security in energy supply, as well as ensuring a high level of compliance by industry players. This is because in 2021, the country faces the challenge of ensuring the availability of fuel supply for the generation sector, demand side management and electricity theft activities through cryptocurrency mining.

In conjunction with our 20th anniversary, the Energy Commission meeting has agreed to commit to a new vision for the Commission which is being a world-class regulatory body by 2026. 2026 is the target year as a five (5) year period was deemed as a suitable time frame for the Commission to accelerate its goals of becoming a regulatory body on par with other advanced countries.

Saya juga dengan penuh hormat menerima kepercayaan Kerajaan atas pelanjutan tempoh perkhidmatan saya sebagai Pengerusi ST pada 8 Mei 2022 yang lepas, untuk terus menerajui ST ke tahap yang lebih cemerlang dan berwibawa. Sehubungan dengan itu, bagi pihak ST, saya dengan sukacitanya membentangkan Laporan Tahunan ST bagi tahun 2021, agar keberkesanan pelaksanaan aktiviti di bawah fungsi dan peranan ST dapat diukur dan ditambah baik demi memperkasakan lagi industri tenaga negara pada tahun-tahun akan datang.

Pada 2021, negara mengambil langkah positif terhadap hala tuju kemampanan tenaga dan ke arah sasaran neutral karbon. Rancangan Malaysia Kedua Belas (2021-2025) [RMK-12] telah menggariskan dua (2) agenda utama untuk tempoh lima (5) tahun ini iaitu pengenalan terhadap Dasar Tenaga Negara yang komprehensif dan meningkatkan sasaran Tenaga Boleh Baharu (TBB). ST menyahut cabaran ini dan telah terlibat secara aktif dengan berkongsi input dalam Dasar Tenaga Negara, pewujudan pelan komunikasi yang lebih sistematik dan berkesan serta inisiatif-inisiatif lain bagi memperkukuhkan sub-sektor elektrik.

Perkembangan situasi perancangan kapasiti dapat dilihat pada 2021 di mana Kerajaan telah mengekalkan sasaran kapasiti TBB di Malaysia sebanyak 31% menjelang 2025, dan seterusnya menyasarkan 40% menjelang 2040. **Kapasiti terpasang bagi TBB di Semenanjung dijangkakan akan bertambah daripada 17% pada 2021 kepada 26% pada 2025, dan seterusnya 32% menjelang 2040. Bagi mencapai sasaran 26% kapasiti TBB di Semenanjung menjelang 2025, 420 MW kapasiti TBB perlu dibangunkan bermula 2022.**

Salah satu kriteria perancangan Pelan Pembangunan Penjanaan Semenanjung Malaysia (2021-2040) yang diluluskan oleh Jawatankuasa Perancangan dan Pelaksanaan Pembekalan Elektrik dan Tariff (JPPPET) adalah menetapkan kadar kemasukan solar bagi memastikan kestabilan grid. **Kestabilan sistem grid dijangka kekal terkawal dengan kemasukan tenaga solar yang akan berada pada paras antara 30% ke 45% daripada jumlah kehendak maksimum.**

I am also honoured to accept the Government's trust in extending my term as the Commission's Chairman effective 8 May 2022 and to continue to lead the Commission to achieve a higher level of excellence and authority. On behalf of the Commission, I am pleased to present the Commission's Annual Report for 2021, so that the effectiveness of activities implemented as part of its functions and roles can be measured and improved on, in order to further strengthen the energy industry in the years to come.

In 2021, the country took positive steps in the direction of achieving energy sustainability and neutral carbon targets. The Twelfth Malaysia Plan (2021-2025) [RMK-12] outlined two (2) main agendas for this five-year period, which are the introduction of a more comprehensive National Energy Policy and increasing the Renewable Energy (RE). The Commission took on the challenge to actively share input into the National Energy Policy and to create a more systematic and effective communications plan and initiatives which will strengthen the electricity sub-sector.

The capacity planning development shows progress in 2021 where the Government maintained the RE capacity target at 31% for 2025, and aiming at 40% by 2040. ***The Peninsula's installed RE capacity is expected to increase 17% in 2021 to 26% by 2025 and 32% by 2040. To achieve this target of 26% RE capacity in the Peninsula by 2025, 420 MW of RE capacity has to be developed starting from 2022.***

One criterion under the Peninsular Malaysia Generation Development Plan (2021 – 2040), which was approved by The Planning and Implementation Committee for Electricity Supply and Tariff (JPPPET) was to set the solar inclusion rate to ensure grid stability. ***Grid system stability is expected to remain controlled with solar energy inclusion which will be at a level between 30% to 45% of total peak demand.***

Selaras dengan pengumuman RMK-12, pelan itu menekankan cita-cita Kerajaan untuk menjadi negara sifar karbon bersih menjelang 2050, termasuk keputusan untuk menghapuskan kemudahan tenaga arang batu baharu secara berperingkat. Mengikut pelan pembangunan yang diluluskan, kapasiti arang batu Semenanjung akan turun daripada 12,054 MW pada 2021 kepada 6,410 MW pada 2040.

Strategi itu juga menekankan keperluan untuk lebih banyak penyelidikan ke dalam landskap tenaga masa depan, yang merangkumi teknologi *Battery Energy Storage System* (BESS) dan teknologi baharu seperti *hydrogen* dan *pumped storage hydroelectric*.

ST selaku badan kawal selia dengan fungsi memastikan daya harap dan keberterusan bekalan tenaga semestinya bertanggungjawab memantau segala aspek pembekalan tenaga termasuk bekalan bahan api penjanaan, kapasiti penjanaan dan kestabilan grid bagi memenuhi keperluan untuk pemulihan ekonomi. **Walaupun permintaan elektrik di Semenanjung merekodkan penurunan sebanyak 1.2% iaitu pada tahap 18,585 MW pada 13 Oktober 2021, ketersediaan bekalan bahan api dan penjanaan yang stabil masih perlu diteruskan. Bagi tujuan tersebut, ST telah melaksanakan beberapa inisiatif dalam menghadapi keadaan semasa ini, termasuk mewujudkan beberapa jawatankuasa yang berfokus memantau kestabilan grid elektrik serta prestasi pembekalan dan penggunaan arang batu serta gas.**

Dari segi penggunaan tenaga elektrik pula, terdapat peningkatan sebanyak 1.19% di Semenanjung bagi 2021 iaitu 112,194.34 GWj berbanding 110,879.26 GWj pada 2020. Peningkatan penggunaan tenaga elektrik juga direkodkan sebanyak 0.48% di Sabah iaitu 5,356.81 GWj bagi 2021 berbanding 5,331.28 GWj pada 2020. Walaupun mencatatkan peningkatan secara keseluruhannya, penggunaan elektrik bagi sektor perdagangan, perlombongan dan perindustrian mencatatkan penurunan kesan daripada penutupan sektor ekonomi dan sosial serta Perintah Kawalan Pergerakan (PKP) di seluruh negara yang berlarutan sehingga 2021.

In keeping with the RMK-12 announcement, this plan emphasises the Government's ambition of being a net zero carbon country by 2050, including the decision to phase out new coal-fired power facilities. According to the approved development plan, the Peninsula's coal capacity will fall from 12,054 MW in 2021 to 6,410 MW in 2040.

This strategy also emphasises the need for more research into the future energy landscape, which includes Battery Energy Storage System (BESS) technology and new technologies such as hydrogen and pumped storage hydroelectric.

The Commission, being the regulatory body with the duty of ensuring reliability and continuity of energy supply, must be responsible for monitoring all aspects of energy supply including fuel generation supply, capacity generation and grid stability to fulfil the needs of economic recovery. ***Even though the electricity demand in the Peninsula recorded a reduction of 1.2% to 18,585 MW as of 13 October 2021, we need to continuously ensure the availability of fuel supply and generation stability. For this reason, the Commission carried out several initiatives to deal with this current situation, including creating a number of committees focused on monitoring electricity grid stability as well as the supply and use of coal and gas.***

In terms of electricity consumption, there was an increase by 1.19% in the Peninsula in 2021, or 112,194.34 GWh compared to 110,879.26 GWh in 2020. An increase in electricity usage in Sabah was also recorded, at 0.48% or 5,356.81 GWh in 2021 compared to 5,331.28 GWh in 2020. Although there was an overall increase, electricity consumption in the trading, mining and industrial sectors dropped as a result of the shutdown of the economic and social sectors as well as the Movement Control Order (MCO) throughout the country in 2021.

Dari sudut prestasi daya harap sistem bagi Sabah, *System Average Interruption Duration Index* (SAIDI) pada 2021 merekodkan SAIDI terkumpul sebanyak 332.14 minit/pelanggan/tahun berbanding 189.44 minit/pelanggan/tahun pada 2020. Bagi menangani cabaran ini, sasaran SAIDI baharu yang lebih rendah telah ditetapkan di Mesyuarat JPPPET Bilangan 1 Tahun 2021. **Pasukan Petugas Khas Penurunan SAIDI 150 juga telah ditubuhkan pada 2021 bagi mencapai sasaran baharu di bawah 150 minit/pelanggan/tahun, dengan memantau dan menyelesaikan isu-isu penyumbang bacaan SAIDI SESB yang tinggi, termasuk prestasi kerja senggaraan di Bahagian Pembahagian yang merupakan punca peningkatan SAIDI di negeri tersebut. Di bawah inisiatif Pasukan Petugas Khas Penurunan SAIDI 150 ini juga, Bahagian Pembahagian dan Penjanaan telah menunjukkan penurunan purata sebanyak 17% dan 42% berbanding 2020.**

Bagi memastikan perundangan pembekalan dan keselamatan tenaga di bawah bidang kuasa ST sentiasa relevan dengan peredaran masa dan perkembangan industri, beberapa sesi kajian semula dan semakan terhadap Akta dan Peraturan telah dijalankan untuk menilai skop dan keperluan untuk pindaan-pindaan yang sewajarnya. Kajian menyeluruh ini akan dilaksanakan selaras dengan langkah-langkah untuk meningkatkan ketelusan dan kecekapan dalam industri pembekalan elektrik negara.

Penekanan juga harus diberikan terhadap usaha menepis gangguan teknologi yang berupaya menjejaskan transformasi industri seperti regresi kemajuan, penggunaan, pengetahuan dan penerimaan terhadap bateri simpanan tenaga untuk solar, grid dan meter pintar serta penggunaan Internet Pelbagai Benda dalam pembangunan industri sektor tenaga.

In 2021, in terms of system reliability performance in Sabah, the System Average Interruption Duration Index (SAIDI) recorded a cumulative SAIDI of 332.14 minutes/customer/year compared to 189.44 minutes/customer/year in 2020. To address this challenge, the 1st JPPPET Meeting of 2021 set a new, lower SAIDI target. ***The SAIDI 150 Reduction Special Task Force was also established to achieve the new target of below 150 minutes/customer/year by monitoring and solving issues that contribute to a high SAIDI for SESB, including the performance of maintenance work in the Distribution Division which is the cause of increased SAIDI in the state. Under the SAIDI 150 Reduction Special Task Force, the Distribution and Generation Divisions showed an average reduction of 17% and 42% compared to 2020.***

To ensure that legislation on energy supply and security under the Commission's jurisdiction remains relevant over time and in line with industry development, several sessions to review Acts and Regulations were carried out to assess the scope and the needs for amendments. *These studies were in accordance with measures to increase transparency and efficiency of the nation's electricity supply industry.*

Emphasis should also be placed on efforts to deflect technological disruptions that are capable of affecting industry transformation such as the regression of progress, use, knowledge and acceptance of energy storage batteries for solar, grids and smart meters as well as the use of the Internet of Things in the development of the energy sector industry.

Dalam usaha mempertingkatkan tahap keselamatan elektrik dan gas berpaip, pada 2021, sebanyak 107 Kertas Siasatan telah dibuka di mana bilangan ini merupakan peningkatan sebanyak 49% berbanding 2020, menunjukkan komitmen ST dalam menangani isu-isu keselamatan. Penyumbang terbesar bagi kenaikan jumlah Kertas Siasatan adalah daripada kategori Kes Lesen di mana terdapat 46 kes lesen yang disiasat pada tahun ini. Pada masa yang sama juga, sebanyak 58 kompaun telah dikeluarkan kepada pelbagai pihak yang telah melakukan kesalahan di bawah Akta Bekalan Elektrik 1990 dan Peraturan-Peraturan Elektrik 1994 melibatkan jumlah kompaun sebanyak RM111,500.00.

Kutipan hasil bagi penggunaan elektrik pemegang lesen memainkan peranan yang penting dalam penetapan tarif elektrik. Aktiviti penggunaan elektrik secara curang boleh menjejaskan kutipan hasil oleh pemegang lesen untuk tujuan menampung kos penjanaan. Pada 2021, ST telah melaksanakan operasi penguatkuasaan penggunaan elektrik secara curang di 12 premis. Daripada jumlah tersebut, sebanyak sembilan (9) Kertas Siasatan telah dibuka di samping sedang disiasat oleh pegawai penyiasat ST.

Kadar peningkatan jumlah kecurian elektrik akibat perlombongan mata wang kripto adalah semakin membimbangkan. Faktor utama peningkatan aktiviti ini boleh dikaitkan dengan peningkatan nilai Bitcoin, yang melonjak daripada sekitar USD 7,000 pada akhir 2019 kepada hampir USD 69,000 pada November 2021. Dari 2018 hingga ke 2021, terdapat lebih 7,000 kes kecurian elektrik melibatkan perlombongan mata wang kripto dilaporkan di negara ini, mengakibatkan kerugian sekitar RM2.3 bilion. Oleh itu, pengguna haruslah diberikan kesedaran mengenai implikasi perlombongan mata wang kripto yang menggunakan jumlah tenaga elekrik yang terlalu tinggi, bagi mengelakkan kenaikan terhadap jumlah permintaan tenaga.

As part of efforts to improve electricity and piped gas safety in 2021, 107 Investigation Papers were opened, which was an increase of 49% compared to 2020, thus demonstrating the Commission's commitment in addressing the safety issues. The Licence Case category was the biggest contributor to the increase in Investigation Papers wherein 46 licence cases were investigated that year. At the same time, 58 compounds amounting to RM111,500.00 were issued to various parties for offences under the Electricity Supply Act 1990 and Electricity Regulations 1994.

Revenue collection from licensees plays an important role in setting the electricity tariff. Dishonest use of electricity may affect revenue collection, which is used by the licensees to cover generation costs. In 2021, the Commission carried out enforcement operations against 12 premises found to be using electricity dishonestly. From that number, the Commission opened and investigated nine (9) Investigation Papers.

The increasing rate of electricity theft due to cryptocurrency mining is increasingly alarming. The main factor can be attributed to the increase in the value of Bitcoin, which jumped from around USD 7,000 at the end of 2019 to almost USD 69,000 in November 2021. From 2018 to 2021, there were more than 7,000 cases of electricity theft involving cryptocurrency mining reported in the country, resulting in losses of around RM2.3 billion. Therefore, consumers should be made aware of the implications of cryptocurrency mining that consumes too much electricity, to avoid an increase in energy demand.

Sepanjang 2021, intensiti tenaga elektrik tahunan di Semenanjung direkodkan pada 0.0958 GWj/RM juta berbanding 0.0980 GWj/RM juta pada 2020, iaitu pengurangan sebanyak 2.26%. Di Sabah pula, intensiti tenaga elektrik direkodkan pada 0.0608 GWj/RM juta iaitu pengurangan sebanyak 2.95% berbanding 0.0627 GWj/RM juta pada tahun sebelumnya. Pengurangan intensiti tenaga elektrik ini dapat dilihat secara jelas dengan penurunan pada setiap suku tahunan berbanding tahun sebelumnya, menggambarkan inisiatif kecekapan tenaga yang dijalankan ST telah mencapai sasarannya.

Sebagai usaha seterusnya untuk mengurangkan impak penularan pandemik COVID-19 kepada pengguna dan sektor ekonomi, Kerajaan dengan saranan ST, telah memperkenalkan pakej pemberian diskaun bil elektrik susulan bagi merangsang pertumbuhan ekonomi pada 2021. PERMAI 2021 yang diumumkan pada 18 Januari 2021 merupakan pemberian diskaun sebanyak 10% bagi penggunaan elektrik untuk tempoh 1 Januari sehingga 31 Mac 2021 kepada enam (6) sektor terpilih iaitu pengendali hotel, agensi pelancongan, pejabat syarikat penerbangan tempatan, kompleks membeli belah, pusat konvensyen dan taman tema. Pada 17 Mac 2021, Kerajaan sekali lagi mengumumkan pemberian diskaun bil elektrik sebanyak 10% melalui PEMERKASA yang juga melibatkan enam (6) sektor terpilih tersebut.

Tidak setakat itu, Kerajaan pada 31 Mei 2021 turut mengumumkan pelanjutan pemberian diskaun bil elektrik 10% kepada pengguna di dalam enam (6) sektor perniagaan terpilih berkaitan pelancongan di bawah PEMERKASA+ bermula 1 Julai sehingga 30 September 2021. Pada 28 Jun 2021, pakej PEMULIH dilaksanakan di mana diskaun bil elektrik akan diberikan secara bersasar kepada pengguna domestik dan bukan domestik bagi jumlah penggunaan elektrik bulanan untuk tempoh tiga (3) bulan dari 1 Julai hingga 30 September 2021 untuk pengguna kediaman (Tarif A - Domestik) sehingga 900 kWj sebulan serta perusahaan kecil dan sederhana (PKS) voltan rendah. Manakala, bagi pengguna komersial dari enam (6) sektor perniagaan terpilih, diskaun PEMULIH adalah bermula dari 1 Oktober 2021 sehingga 31 Disember 2021. Untuk penggunaan dari 1 Julai 2021 sehingga 30 September 2021, diskaun adalah di bawah pakej PEMERKASA+.

Throughout 2021, the annual electricity intensity in the Peninsula was recorded at 0.0958 GWh/RM million compared to 0.0980 GWh/RM million in 2020, which was a reduction of about 2.26%. In Sabah, electricity intensity was recorded at 0.0608 GWh/RM million which was a reduction of 2.95% compared to 0.0627 GWh/RM million the year before. The reduction in electricity intensity can be clearly seen with a decrease in each quarter compared to the previous year, illustrating that the energy efficiency initiatives carried out by the Commission met the target.

As an effort to further reduce the impact of the COVID-19 pandemic on consumers and the economic sector, the Government, on the recommendation of the Commission, introduced a discount package on electricity bills to stimulate economic growth in 2021. *PERMAI 2021, which was announced on 18 January 2021, gave a 10% discount on electricity consumed from 1 January to 31 March 2021 to six (6) selected sectors which are hotels, travel agencies, local airline offices, shopping complexes, convention centres and theme parks. On 17 March 2021, the Government once again announced another 10% discount on electricity bills for the six (6) selected sectors through PEMERKASA.*

Not only that, on 31 May 2021, the Government announced the extension of the 10% electricity bill discount to users in six (6) selected business sectors related to tourism under PEMERKASA+, effective from 1 July to 30 September 2021. On 28 June 2021, the PEMULIH package was implemented in which domestic and non-domestic users, namely residential users (Tariff A - Domestic) whose electricity consumption was up to 900 kWh per month and low-voltage small and medium enterprises (SMEs) were given a discount on their electricity bills for a period of three (3) months from 1 July to 30 September 2021. In addition, the PEMULIH discount for commercial users from six (6) selected business sectors started from 1 October 2021 to 31 December 2021. For usage from 1 July 2021 to 30 September 2021, the discount was under the PEMERKASA+ package.

Melangkah ke hadapan, dalam landskap industri yang semakin menitikberatkan mutu yang tinggi di kalangan pemegang-pemegang taruh dan orang awam, Pelan Strategik Suruhanjaya Tenaga 2022 - 2026 akan terus memacu ST sebagai badan kawal selia yang berkesan, berwibawa serta berintegriti dalam bidang tenaga.

ST juga berhasrat untuk terus memainkan peranan dalam usaha menyahkarbonkan sektor tenaga di Malaysia. Antara bidang yang menjadi tumpuan negara adalah penggunaan hidrogen sebagai bahan api penjanaan sektor tenaga, seperti yang dicadangkan dalam pelan tindakan hala tuju teknologi dan ekonomi hidrogen. Pengadaptasian teknologi ini memerlukan pengubahsuaian stesen jana kuasa gas sedia ada untuk beroperasi menggunakan sel bahan api hidrogen yang mengeluarkan jumlah karbon yang lebih rendah, seterusnya merealisasikan sasaran ke arah neutral karbon.

Bagi pihak ST dan pengurusan, saya ingin mengucapkan terima kasih kepada YB Datuk Seri Takiyuddin Hassan, Menteri Tenaga dan Sumber Asli dan YB Datuk Ali Biju, Timbalan Menteri Tenaga dan Sumber Asli serta pihak KeTSA atas panduan dan kerjasama bagi menambah baik kualiti kawal selia kami. Saya juga mengalu-alukan kedatangan Anggota Suruhanjaya Tenaga yang baharu iaitu Puan Zaeidah Mohamed Esa, Dato' Dr. Halim Man dan YB Senator Ir. Ts. Khairil Nizam Khirudin. Saya amat yakin perlantikan mereka dalam barisan Anggota Suruhanjaya Tenaga dapat memberikan input objektif dalam mencapai visi dan misi ST.

Akhir kata, saya mengucapkan terima kasih kepada semua Anggota Suruhanjaya Tenaga atas input penambahbaikan yang amat berharga dalam memajukan ST dan industri tenaga negara. Kepada pihak pengurusan dan seluruh warga kerja ST, teruskan usaha gigih dalam memastikan ST melaksanakan fungsi dan peranan seperti yang termaktub di bawah Akta Suruhanjaya Tenaga 2001 dengan cemerlang.

DATO' AZIAN OSMAN
Pengerusi Suruhanjaya Tenaga
Chairman of Energy Commission

Moving forward, the Commission's Strategic Plan 2022 – 2026 will keep driving the Commission as an effective regulatory body, that is authoritative and has integrity in the energy sector, in order to bring about an industry landscape that emphasises the highest quality among stakeholders and the public.

The Commission also aims to continue to play a role in the efforts to decarbonise the energy sector in Malaysia. Among the area which the country is pursuing is the use of hydrogen as fuel for power generation sector, as envisioned in the hydrogen technology and economy roadmap. This will require converting existing gas-fired power plants to run on hydrogen fuel-cells that emit less carbon and will help the country go a long way in realising its carbon neutral targets.

On behalf of the Commission and the management, I would like to thank YB Datuk Seri Takiyuddin Hassan, Minister of Energy and Natural Resources and YB Datuk Ali Biju, Deputy Minister of Energy and Natural Resources as well as KeTSA for their guidance and cooperation in improving our regulatory quality. I also welcome new Commission Members - Puan Zaeidah Mohamed Esa, Dato' Dr Halim Man and YB Senator Ir. Ts. Khairil Nizam Khirudin. I am confident that their appointment as Members of the Commission will provide an opportunity of objective inputs in achieving the Commission's vision and mission.

Finally, I would like to thank all Members of the Commission for their invaluable input in improving the Commission and the country's energy industry. To all the management and employees of the Commission, continue to work diligently to ensure the Commission performs its functions and roles as stipulated in the Energy Commission Act 2001.

LAPORAN KETUA PEGAWAI EKSEKUTIF
CHIEF EXECUTIVE OFFICER'S REPORT

ASSALAMUALAIKUM W.B.T. DAN SALAM SEJAHTERA

Terlebih dahulu, bagi pihak pengurusan dan warga kerja Suruhanjaya Tenaga (ST), saya mengucapkan tahniah kepada YBhg. Dato' Azian Bin Osman atas pelanjutan tempoh perkhidmatan sebagai Pengerusi Suruhanjaya Tenaga berkuat kuasa 8 Mei 2022. Kami yakin ST akan kekal berkesan dan berwibawa di bawah kepimpinan YBhg. Dato'.

On behalf of the management and employees of the Energy Commission (the Commission), I would like to congratulate YBhg. Dato' Azian bin Osman on the extension of his tenure as the Commission's Chairman effective from 8 May 2022. We are confident that the Commission would remain effective and authoritative under his leadership.

Sepanjang 2021, Malaysia bersama negara-negara lain berada dalam peringkat pemulihan dari impak pandemik COVID-19 dan bangkit kembali dengan pelan dan strategi yang lebih objektif. Ini dapat dilihat dengan Pelan Pemulihan Negara yang telah digubal dengan hasrat murni Kerajaan untuk mengeluarkan rakyat dan perniagaan di Malaysia daripada kemelut pandemik COVID-19 dengan selamat.

Berdasarkan statistik yang dikeluarkan oleh Kementerian Kesihatan Malaysia (KKM) juga, sehingga penghujung Disember 2021, Malaysia berada dalam landasan yang tepat dalam jumlah pemberian vaksin iaitu 97.6% populasi dewasa negara ini lengkap menerima suntikan vaksin. Pelan dan perangkaan ini telah memberikan keyakinan kepada industri, perniagaan dan orang awam berhubung ketentuan pembukaan semula ekonomi Malaysia.

Throughout 2021, Malaysia and other countries were recovering from the impact of the COVID-19 pandemic and rose again with a more objective plan and strategy. This is evident from the National Recovery Plan which was enacted as part of the Government's intention to help the people and businesses of Malaysia recover safely from the COVID-19 crisis.

Based on the statistics released by the Ministry of Health Malaysia (MOH), as of the end of December 2021, Malaysia was on the right track in terms of number of vaccinations, wherein 97.6% of the country's adult population had completed their vaccinations. These plans and statistics have raised the confidence of industries, businesses, and the general public about reopening the Malaysian economy.

Kejayaan usaha ini dapat dilihat melalui pertumbuhan ekonomi sebanyak 3.1% pada 2021, berbanding dengan -5.5% pada 2020, walaupun pelbagai langkah penutupan termasuk Perintah Kawalan Pergerakan (PKP) yang berkuat kuasa pada Jun tahun lepas. Pemulihan ini didorong terutamanya oleh sektor perkilangan dan sektor pembuatan yang masing-masing meningkat sebanyak 9.5% dan 1.9%.

Kenaikan kos bahan api, terutamanya arang batu dan gas asli cecair (LNG), merupakan salah satu cabaran yang dihadapi oleh sektor tenaga di peringkat global pada 2021 berikutan peningkatan permintaan tenaga elektrik. Hasil sokongan dan komitmen semua pihak dalam memperkukuhkan keberterusan bekalan tenaga, ST berjaya menjalankan tanggungjawab bagi melindungi kepentingan pengguna dan pembekal tenaga daripada impak krisis tersebut.

Di bawah inisiatif Rancangan Malaysia Kedua Belas (2021-2025) [RMK-12], Dasar Tenaga Negara yang komprehensif sedang di dalam peringkat akhir pembangunannya dan disasarkan untuk diperkenalkan pada 2022 bagi menyediakan hala tuju strategik jangka panjang bagi menyokong aspirasi Malaysia sebagai sebuah negara neutral karbon. Antara initipati penting dalam kerangka Dasar Tenaga Negara tersebut termasuklah perincian terhadap pelaksanaan penjanaan elektrik yang lebih bersih melalui pengoperasian loji jana kuasa gas di Semenanjung bagi menggantikan loji jana kuasa arang batu. Selain itu juga, di bawah Dasar ini, Akta berkaitan kecekapan dan konservasi tenaga akan diperkenalkan bagi mengawal selia penggunaan tenaga oleh pengguna berintensiti tinggi dalam sektor industri dan komersial. Penjanaan tenaga boleh baharu (TBB) daripada solar, biojisim dan biogas disasarkan meningkat kepada 31% daripada jumlah kapasiti terpasang pada 2025. Sehubungan dengan hala tuju ini, ST dengan penuh iltizam akan menyokong usaha-usaha Kerajaan dalam mencapai segala objektif yang telah digariskan dalam RMK-12 dan Dasar Tenaga Negara, agar hasrat Malaysia untuk mempromosikan ekonomi dan gaya hidup hijau dan mampan menjelang 2050 tercapai.

The success of these efforts can be seen in the economy growing by 3.1% in 2021, compared to -5.5% in 2020, despite the imposition of various lockdown measures including the Movement Control Order (MCO) which came into effect in June last year. This recovery was driven mainly by the manufacturing and services sector which went up by 9.5% and 1.9% respectively.

The rising cost of fuel, particularly coal and liquefied natural gas (LNG), was one of the challenges the energy sector faced globally in 2021 owing to the increasing demand of electricity. As a result of the support and commitment of all parties in strengthening the continuity of energy supply, the Commission successfully carried out its responsibility to protect the interests of consumers and energy suppliers from the impact of the crisis.

Under the Twelfth Malaysia Plan (2021 – 2025) [RMK-12], the comprehensive National Energy Policy is in its final stage of development and is targeted to be introduced in 2022. This will provide a long-term strategic direction to support Malaysia's aspirations to be a carbon neutral country. Some of the important initiatives in the National Energy Policy framework include details about cleaner electricity generation in the Peninsula through replacing coal-fired power plants with gas-fired power plants. Apart from that, under this Policy, an Act relating to energy conservation and efficiency will be introduced to regulate the use of energy by high intensity consumers in the industrial and commercial sectors. Renewable Energy (RE) generation from solar, biomass and biogas are targeted to increase to 31% of total installed capacity in 2025. In line with this, the Commission is fully committed to support the Government's initiative in achieving all objectives outlined in the RMK-12 and the National Energy Policy so that Malaysia's desire to promote green and sustainable economy and lifestyle by 2025 will be realised.

"ST DENGAN PENUH ILTIZAM AKAN MENYOKONG USAHA-USAHA KERAJAAN DALAM MENCAPAI SEGALA OBJEKTIF YANG TELAH DIGARISKAN DALAM RMK-12 DAN DASAR TENAGA NEGARA, AGAR HASRAT MALAYSIA UNTUK MEMPROMOSIKAN EKONOMI DAN GAYA HIDUP HIJAU DAN MAMPAN MENJELANG 2050 TERCAPAI.

THE COMMISSION IS FULLY COMMITTED TO SUPPORT THE GOVERNMENT'S INITIATIVE IN ACHIEVING ALL OBJECTIVES OUTLINED IN THE RMK-12 AND THE NATIONAL ENERGY POLICY SO THAT MALAYSIA'S DESIRE TO PROMOTE GREEN AND SUSTAINABLE ECONOMY AND LIFESTYLE BY 2025 WILL BE REALISED."

Memastikan Daya Harap Bekalan Tenaga dan Kualiti Perkhidmatan Industri

Pada 2021, permintaan elektrik kian menurun dengan penguatkuasaan Perintah Kawalan Pergerakan (PKP) 3.0 pada 11 Jun 2021. Permintaan puncak pada 2021 adalah 18,585 MW seperti yang direkodkan pada 13 Oktober 2021, iaitu penurunan sebanyak 1.2% berbanding tahun sebelumnya. Walau bagaimanapun, jumlah penjanaan tenaga elektrik di Semenanjung menunjukkan sedikit peningkatan kepada 125,503 GWj berbanding 125,032 GWj pada 2020.

Secara keseluruhannya, jumlah kapasiti terpasang telah meningkat pada 2021 melalui penambahan kapasiti di sistem grid, lanjutan permulaan operasi dua (2) blok Loji Jana Kuasa *Southern Power Generation Sdn. Bhd.* (1,440 MW) pada Januari dan Februari 2021, satu (1) blok Loji Jana Kuasa *Edra Energy Sdn. Bhd.* (747.3 MW) pada Disember 2021 dan projek Solar Berskala Besar (LSS) *Halpro Engineering Sdn. Bhd.* (30 MW) pada Jun 2021. Namun pada masa yang sama, sistem grid telah mengalami sedikit penurunan kapasiti hasil penamatan operasi loji *YTL Power Generation Sdn. Bhd.*, Paka (585 MW) pada Jun 2021.

Kapasiti bekalan sambungtara penghantaran daripada Lao PDR melalui grid sambungtara Lao PDR-Thailand-Malaysia (LTM) juga kekal pada 300 MW seperti tahun sebelumnya. Ini menyumbang kepada jumlah keseluruhan kapasiti terpasang di Semenanjung pada 2021 yang mencatatkan peningkatan kepada 26,890 MW berbanding 25,257 MW pada 2020. Secara tidak langsung, margin rizab sedia ada pada tahap 32% juga meningkat kepada 42% pada 2021. Penjanaan berasaskan arang batu dan gas asli masing-masing mencatatkan 59.1% dan 34.2%, dengan hidro dan lain-lain masing-masing sebanyak 5.5% dan 1.2%.

Ensuring Reliability of Energy Supply and Industry Service Quality

In 2021, the enforcement of the MCO 3.0 on 11 June 2021 resulted in a decrease in Malaysia's electricity demand. Peak demand in 2021 was measured at 18,585 MW on 13 October 2021, which was a drop of 1.2% compared to the year before. However, total electricity generation in the Peninsula went up to 125,503 GWh compared to 125,032 GWh in 2020.

Overall, the total installed capacity increased in 2021 owing to the addition of capacity in the extended grid system. This was the result of two (2) blocks of the Southern Power Generation Sdn. Bhd. Power Plant (1,440 MW) commencing operations in January and February 2021, as well as one (1) block of Edra Energy Sdn. Bhd. Power Plant (747.3 MW) in December 2021 and Halpro Engineering Sdn. Bhd's Large Scale Solar (LSS) project (30 MW) in June 2021. However, at the same time, the grid system experienced some reduction in capacity as a result of the termination of YTL Power Generation Sdn. Bhd.'s Paka power plant (585 MW) in June 2021.

The supply capacity of the transmission from Lao PDR through the Lao PDR-Thailand-Malaysia (LTM) interconnection also remained at 300 MW, the same as last year. This contributed to the Peninsula's total overall installed capacity in 2021 increasing to 26,890 MW compared to 25,257 MW in 2020. The reserve margin also increased to 42% in 2021 from 32%. Coal and natural gas generation accounted for 59.1% and 34.2% respectively, with hydro and others at 5.5% and 1.2%.

Di Sabah, sejumlah 6,654.5 GWj tenaga elektrik telah dijana, iaitu peningkatan sebanyak 4.1% berbanding 2020. Permintaan puncak juga meningkat sebanyak 1.6% berbanding 2020, daripada 987 MW kepada 1,002.8 MW pada 2021. Jumlah kapasiti boleh harap di Sabah adalah sebanyak 1,176.34 MW berbanding 1,171 MW pada 2020. Berdasarkan kapasiti boleh harap ini, margin rizab yang telah direkodkan adalah pada tahap 19% yang masih di bawah paras optimum 30%. Beberapa loji jana kuasa juga telah mula beroperasi iaitu Hidro One River dan loji Tawau DE3B pada 2021. Trend campuran penjanaan di Sabah tidak banyak berubah di mana gas asli dan diesel masing-masing pada paras 85% dan 6%, manakala campuran hidro dan lain-lain kekal pada 6% dan 3%.

Dari segi prestasi daya harap sistem, *System Average Interruption Duration Index* (SAIDI) bagi sistem pembekalan elektrik di Semenanjung telah menunjukkan peningkatan sebanyak 0.7% dengan catatan SAIDI sebanyak 45.25 minit/pelanggan/ tahun pada 2021 berbanding 44.95 minit/pelanggan/tahun pada 2020, masing-masing berada di bawah paras sasaran 55 minit/pelanggan/tahun. Bagi Sabah, SAIDI terkumpul pada 2021 merekodkan bacaan 332.14 minit/pelanggan/tahun berbanding 189.44 minit/ pelanggan/tahun pada 2020. Walaupun meningkat, bacaan ini masih berada di bawah sasaran 350 minit/ pelanggan/tahun.

Dari aspek kualiti kuasa di Semenanjung, sebanyak 673 kejadian junaman voltan direkodkan pada 2021 oleh *Power Quality Management System* (PQMS) Tenaga Nasional Berhad (TNB). Dari segi kualiti perkhidmatan pemegang lesen, pemantauan ST mendapati bahawa pematuhan terhadap Tahap Perkhidmatan yang Dijamin (GSL) pada 2021 adalah lebih rendah iaitu 98.92%, manakala Tahap Perkhidmatan Minimum (MSL) meningkat kepada 96.79%. Pada 2021, skor Kajian Indeks Kepuasan Pelanggan TNB telah mencatatkan 8.7 mata dengan penambahan segmen baharu iaitu Tips Keselamatan Elektrik.

Bagi gas asli pula, jumlah penggunaan gas asli di Semenanjung oleh Petronas Energy and Gas Trading Sdn. Bhd. adalah sebanyak 673,432,396.64 MMBtu, manakala jumlah penggunaan gas yang dibekalkan oleh Gas Malaysia Energy and Services Sdn. Bhd. adalah sebanyak 203,179,562.38 MMBtu. Penggunaan gas asli di Sabah dan Wilayah Persekutuan Labuan merekodkan bacaan sebanyak 856,201.91 MMBtu yang dibekalkan oleh Sabah Energy Corporation Sdn. Bhd.

In Sabah, a total of 6,654.5 GWh of electricity was generated, which was an increase of 4.1% compared to 2020. Peak demand also increased by 1.6% compared to 2020, from 987 MW to 1,002.8 MW in 2021. Total dependable capacity in Sabah was 1,176.34 MW compared to 1,171 MW in 2020. Based on this dependable capacity, the reserve margin in 2021 is 19% which is still below the optimum level of 30%. The Hydro One River and Tawau DE3B power plants are among the power plants commencing operations in 2021. The generation mix in Sabah did not change much with natural gas and diesel at 85% and 6% respectively, while hydropower and others remained at 6% and 3%.

In terms of system reliability, the System Average Interruption Duration Index (SAIDI) for the electricity supply system in the Peninsula recorded an increase of 0.7% with a SAIDI of 45.25 minutes/customer/year in 2021 compared to 44.95 minutes/ customer/year in 2020, both below the target level of 55 minutes/customer/year. In Sabah, the accumulated SAIDI in 2021 was 332.14 minutes/customer/year compared to 189.44 minutes/customer/year in 2020. Despite the increase, this reading is still below the target of 350 minutes/customer/year.

For the Peninsula's power quality, Tenaga Nasional Berhad's (TNB) Power Quality Management System (PQMS) recorded 673 incidents of voltage sags in 2021. As for the service quality of licensees, the Commission found that Guaranteed Service Level (GSL) compliance in 2021 went down to 98.92% while compliance with the Minimum Service Level (MSL) increased to 96.79%. TNB's Customer Satisfaction Index Study score stood at 8.7 points as a result of the addition of a new segment on Electrical Safety Tips.

The total consumption of natural gas in the Peninsula supplied by Petronas Energy and Gas Trading Sdn. Bhd. was 673,432,396.64 MMBtu, while the total consumption of gas supplied by Gas Malaysia Energy and Services Sdn. Bhd. was 203,179,562.38 MMBtu. Natural gas consumption in Sabah and Federal Territory of Labuan stood at 856,201.91 MMBtu which was supplied by Sabah Energy Corporation Sdn. Bhd.

Pencapaian SAIDI bagi bekalan gas berpaip untuk sektor bukan tenaga di Semenanjung oleh *Gas Malaysia Distribution* (GMD) berada di bawah sasaran yang ditetapkan iaitu 3.4505 minit/ pelanggan/tahun dengan rekod 1.4393 minit/pelanggan/tahun, disebabkan satu (1) gangguan terancang bagi penghantaran gas ke empat (4) *offtakers* di Taman Industri Integrasi Rawang yang dilaksanakan pada 26 hingga 27 Julai 2021.

Mengutamakan Keselamatan dan Penguatkuasaan

Trend penurunan kes kemalangan elektrik direkodkan dalam perbandingan kitaran lima (5) tahun sejak 2007. Bagi tempoh semasa iaitu 2017 hingga 2021, jumlah kes adalah sebanyak 273 berbanding dengan tempoh kitaran 2007 hingga 2011 iaitu sebanyak 332 kes.

Namun begitu, jumlah kemalangan elektrik pada 2021 telah meningkat kepada 67 kes, 37 daripadanya adalah kes maut, berbanding 45 jumlah kes keseluruhan pada 2020. Kawasan kediaman menunjukkan lonjakan dalam rekod lokasi utama kes kemalangan, diikuti pepasangan dan pencawang elektrik masing-masing menunjukkan peningkatan ketara berbanding 2020. Sebanyak 33 kes kemalangan elektrik yang berpunca daripada pemasangan dan senggaraan yang tidak sempurna, manakala kes-kes lain merupakan ketidakpatuhan terhadap prosedur kerja selamat dan aktiviti kerja orang awam berhampiran dengan pepasangan elektrik. Hanya satu (1) kes kemalangan gas sahaja direkodkan pada tahun ini, melibatkan premis dobi, juga berpunca daripada ketidakpatuhan terhadap prosedur.

Notis-notis pematuhan telah dikeluarkan kepada pemilik pepasangan yang didapati melanggar peruntukan undang-undang. Beserta dengan notis tersebut, pada 2021, **satu format baharu telah diperkenalkan melalui prosedur melampirkan Akuan Pematuhan *(Statement of Compliance)* serta pemberian tempoh selama 14 hari supaya pelanggaran undang-undang dipatuhi.** Selanjutnya, pemeriksaan-pemeriksaan lain juga telah dijalankan akibat daripada kegagalan pemilik-pemilik pepasangan mematuhi notis yang diberi.

The SAIDI of piped gas supply for the non-energy sector in the Peninsula by Gas Malaysia Distribution (GMD) was 1.4393 minutes/customer/year, which was below the target of 3.4505 minutes/customer/year, with one (1) planned interruption which took place on 26 – 27 July 2021 owing to gas transmission to four (4) offtakers in Taman Industri Integrasi Rawang.

Prioritising Safety and Enforcement

A downward trend in electrical accident cases was recorded in a five (5) year cycle comparison since 2007. During the current period from 2017 to 2021, the number of electrical accident cases was 273 compared to 332 cases during the previous cycle of 2007 to 2011.

However, the number of electrical accidents in 2021 increased to 67 cases, 37 of which were fatal, compared to 45 total cases in 2020. Residential areas were the main locations of accidents, followed by electrical installations and substations, with each showing a significant increase compared to 2020. 33 electrical accident cases were caused by faulty installation and maintenance, while the remaining cases were due to non-compliance to safe work procedures and public activities near electrical installations. Only one (1) gas accident case was recorded this year, involving a laundry premise and was also caused by non-compliance with procedures.

*Compliance notices were issued to owners of installations who violated the provisions of the law. Along with the notice, **a new format was introduced in 2021 in which a Statement of Compliance was attached to the notice and owners given a 14-day period to comply with the law.** The failure of installation owners to comply with the notices also resulted in other inspections being carried out.*

Memperkukuhkan Keberterusan Bekalan dan Kemampanan Tenaga

Secara amnya, penjanaan tenaga melalui TBB di Semenanjung menunjukkan peningkatan di samping penjanaan tenaga daripada sumber bahan api arang batu dan gas sepanjang 2021. Tahun 2021 juga menyaksikan pertambahan kapasiti LSS di Sabah ke dalam sistem sebanyak 52.79 MW, menjadikan keseluruhan LSS yang telah beroperasi sejak 2017 adalah sebanyak 910 MW.

Selain itu, bagi meningkatkan lagi sumbangan TBB dalam campuran bahan api, **melalui skim Pemeteran Tenaga Bersih (NEM 3.0), tiga (3) inisiatif iaitu NEM Rakyat, NEM GoMEn *(Government Ministries and Entities)* dan NOVA *(Net Offset Virtual Aggregation)* telah diperkenalkan**, di mana atas sebab sambutan positif dari pengguna bukan domestik tersebut, Kerajaan telah membuat keputusan untuk menambah kuota sejumlah 300 MW untuk NOVA.

Perancangan pembangunan kapasiti juga meneliti projek-projek pembangunan pembekalan tenaga berimpak tinggi seperti mengeluarkan dua (2) sijil kelulusan untuk memulakan operasi komersial bagi Southern Power Generation Sdn. Bhd. dan Edra Energy Sdn. Bhd., pelaksanaan penilaian ke atas cadangan tarif loji jana kuasa hidroelektrik, serta pembinaan dan menaik taraf talian penghantaran bagi memenuhi keperluan bekalan elektrik di Semenanjung dan Sabah.

Tahun 2021 mencatatkan kemajuan seterusnya dalam perlaksanaan akses pihak ketiga (TPA) apabila satu (1) pemegang lesen pengiriman gas *(shipper)* ketiga berjaya membekalkan gas kepada pengguna akhir secara pengimportan LNG melalui terminal penggasan semula di Sungai Udang, Melaka.

Dari segi kemampanan tenaga, penggunaan elektrik di Semenanjung bagi 2021 merekodkan bacaan 112,194.34 GWj dan 5,356.81 GWj di Sabah. Namun, bacaan intensiti tenaga elektrik menunjukkan penurunan kepada 0.0958 GWj/RM juta untuk Semenanjung dan 0.0608 GWj/RM juta di Sabah. **Penjimatan tenaga elektrik tahunan sehingga Disember 2021 adalah sebanyak 6,089 GWj, bersamaan dengan RM1.67 billion.**

Strengthening Energy Security and Sustainability

In general, there was an increase in electricity generated from RE in the Peninsula as well as from coal and gas in 2021. Additional LSS capacity on 52.79 MW was also added in Sabah, resulting in total LSS capacity of 910 MW.

*Apart from that, **three (3) initiatives were introduced under Net Energy Metering (NEM 3.0), namely NEM Rakyat, NEM GoMEn (Government Ministries and Entities) and NOVA (Net Offset Virtual Aggregation).** Due to positive responses from non-domestic users, the Government decided to increase the quota of NOVA to 300 MW.*

Capacity development planning also examined high impact development supply projects such as the issuance of two (2) approval certificates for Southern Power Generation Sdn. Bhd. and Edra Energy Sdn. Bhd. to start commercial operations, the implementation of the proposed hydroelectric power plant tariff as well as the construction and upgrade of transmission lines to meet the electricity supply needs in the Peninsula and Sabah.

The implementation of third party access (TPA) also saw progress in 2021, when one (1) third-party gas shipping licence holder successfully supplied gas to end users by importing LNG through the regasification terminal in Sungai Udang, Melaka.

*In terms of energy sustainability, electricity usage in the Peninsula for 2021 was recorded at 112,194.34 GWh and at 5,356.81 GWh in Sabah. However, the electricity intensity reading showed a decrease to 0.0958 GWh/RM million in the Peninsula and 0.0608 GWh/RM million in Sabah. **Annual electricity savings up to December 2021 was 6,089 GWh, which is equivalent to RM1.67 billion.***

Usaha ke arah amalan pengurusan tenaga yang baik diteruskan dengan penguatkuasaan pematuhan Peraturan Pengurusan Tenaga Elektrik Dengan Cekap (PPTEC) 2008 terhadap 21 pepasangan yang menyumbang kepada peningkatan kadar pematuhan kepada 74% di 1,439 pepasangan, **manakala pelaksanaan Pelan Tindakan Kecekapan Tenaga Nasional (NEEAP) juga telah mencapai penjimatan tenaga elektrik sebanyak 4.37% berbanding jangkaan sasaran 3.9%, menyumbang kepada pengurangan pelepasan gas rumah hijau sebanyak 3,562 ktCO$_2$, selaras dengan sasaran Kerajaan untuk mengurangkan kadar pelepasan gas rumah hijau sebanyak 45% pada 2030 berbanding aras pelepasan gas rumah hijau pada 2005.**

Meningkatkan Kecekapan Ekonomi dan Kemampuan

Di Semenanjung, ketidaktentuan penurunan permintaan tenaga elektrik adalah disebabkan oleh pelaksanaan PKP, ditambah pula dengan jangkaan tempoh masa pemulihan ekonomi yang tidak dapat dipastikan dan ketidakstabilan harga bahan api sebagai data-data utama dalam semakan kadar tarif asas TNB melalui mekanisme Kawal Selia Berasaskan Insentif (IBR).

Kerajaan telah memutuskan untuk melanjutkan tempoh kawal selia kedua (IBR RP2: 2018 - 2020) selama setahun lagi iaitu bermula daripada 1 Januari 2021 hingga 31 Disember 2021. Selain itu, Kerajaan turut memutuskan untuk melanjutkan tempoh kawal selia pertama (IBR RP1: 2018 - 2020) selama setahun untuk NUR di KHTP iaitu bermula daripada 1 Januari 2021 hingga 31 Disember 2021. Keputusan ini bertujuan memastikan senario permintaan tenaga elektrik semasa termasuklah asas penetapan harga bahan api dan ketidaktentuan ekonomi global dalam tempoh PKP dan COVID-19 ini diambil kira. Setelah keadaan ekonomi negara lebih stabil, unjuran permintaan tenaga elektrik akan dapat dimuktamadkan dengan lebih tepat.

Sehubungan dengan pelanjutan tersebut, itu, pelaksanaan IBR TNB bagi tempoh RP3 telah disasarkan bermula daripada 1 Januari 2022 hingga 31 Disember 2024. Oleh itu, kadar purata tarif asas elektrik di Semenanjung dikekalkan pada kadar 39.45 sen/kWj pada Januari 2022. Tempoh RP2 untuk pelaksanaan mekanisme IBR bagi NUR di KHTP pula adalah dari 2022 hingga 2024. Kadar purata tarif asas elektrik di KHTP turut dikekalkan pada kadar 35.70 sen/kWj sehingga ke tarikh yang akan diputuskan oleh Kerajaan kelak.

Efforts towards exemplary energy management continued as the Efficient Management of Electrical Energy Regulations (EMEER) 2008 was enforced on 21 installations. This contributed to the compliance rate in 1,439 installations increased to 74%. ***The implementation of the National Energy Efficiency Action Plan (NEEAP) also resulted in electricity savings of 4.37% compared to the expected target of 3.9%, leading to greenhouse gas emissions being reduced by 3,562 ktCO$_2$ in line with the Government's target to reduce greenhouse gas emissions by 45% in 2030 against 2005 emission levels.***

Increasing Economic Efficiency and Affordability

In the Peninsula, uncertainty of electricity demand was caused by the MCO, coupled with the unclear economic recovery period and the instability of fuel prices which make up the main component of TNB's basic tariff rate under the Incentive-Based Regulation (IBR) mechanism.

As a result, the Government decided to extend the second regulatory period (IBR RP2: 2018 – 2020) for another year from 1 January 2021 to 31 December 2021. Apart from that, the Government also decided to extend the first regulatory period (IBR RP1: 2018 – 2020) for one year for NUR in KHTP starting from 1 January to 31 December 2021. This decision was made to ensure that the scenario of current electricity supply including the basis for setting fuel price and global economic uncertainty as a result of the MCO and COVID-19 are accounted for. Once the country's economy has been stabilised, then the electricity demand forecast can be finalised more accurately.

In relation to the said extension, the implementation of TNB's IBR for the RP3 period is targeted to start from 1 January 2022 to 31 December 2024. Therefore, the average base tariff rate for electricity has been maintained at the rate of 39.45 sen/kWh for January 2022. Meanwhile, the RP2 period for the implementation of IBR mechanism for NUR in KHTP remains at 35.70 sen/kWh until a later date which will be decided by the Government.

Bagi Sabah, Kerajaan pada 22 Disember 2021 telah bersetuju untuk melaksanakan tempoh sebenar mekanisme IBR SESB bagi tempoh RP1 bermula 1 Januari 2022 hingga 31 Disember 2024 iaitu dengan mengekalkan kadar purata tarif asas dan struktur tarif elektrik semasa yang sedia ada di Sabah dan Wilayah Persekutuan Labuan, iaitu dengan kadar purata tarif asas pada 34.52 sen/kWj.

Bagi melancarkan proses liberalisasi industri pembekalan gas asli, kadar purata tarif asas bagi penggunaan kemudahan-kemudahan gas dalam tempoh RP1 yang ditetapkan di bawah rangka kerja IBR telah mula dikuatkuasakan pada 1 Januari 2020 dan akan berakhir pada 31 Disember 2022. Untuk 2021, tiada pemberian ganjaran atau penalti dalam tempoh RP1 memandangkan tempoh tersebut merupakan tempoh pemantauan bagi mengenal pasti kesesuaian penunjuk prestasi sebelum dilaksanakan sepenuhnya dalam tempoh RP2.

Di bawah pemantauan Jawatankuasa Pemantauan Kos dan Harga Arang Batu yang dipengerusikan oleh ST, *Applicable Coal Price* (ACP) bagi 2021 menunjukkan peningkatan mendadak terutamanya selepas suku tahunan kedua berikutan permintaan global yang melebihi pembekalan dan akhirnya meningkatkan harga pasaran arang batu.

Jumlah penyertaan *New Enhanced Dispatched Arrangement* (NEDA) telah meningkat bagi 2021 dengan penyertaan dua (2) loji *cogeneration* iaitu *PETRONAS Centralised Utility Facility* Gebeng dan Kertih dengan jumlah kapasiti sebanyak 59.8 MW. Namun, permohonan-permohonan baharu oleh pihak industri untuk menyertai NEDA melalui loji jana kuasa solar telah ditangguhkan lanjutan keperluan untuk pertimbangan kuota pepasangan solar oleh KeTSA. Keputusan ini adalah berdasarkan kajian penetrasi TBB oleh Pengendali Sistem Grid (GSO) berhubung had kemasukan TBB berasaskan tenaga solar fotovoltaik (PV), iaitu untuk menilai keupayaan sistem grid sedia ada serta penerimaan kemasukan TBB berasaskan tenaga solar PV pada masa hadapan.

For Sabah, the Government, on 22 December 2021 has agreed to implement the actual period of SESB's IBR mechanism for the RP1 period starting from 1 January 2022 to 31 December 2024 by maintaining the average base tariff rate and current electricity tariff structure in Sabah and Federal Territory of Labuan, which is based on the average base tariff rate of 34.52 sen/kWh.

To refine the natural gas supply industry liberalisation process, the average base tariff rate for the use of gas facilities in the RP1 period set under the IBR framework was enforced on 1 January 2020 and will end on 31 December 2022. *No rewards or penalties were given in the RP1 period in 2021 as it was a monitoring period to ensure the suitability of performance indicators before full implementation in the RP2 period.*

Under the supervision of the Coal Price and Cost Monitoring Committee chaired by the Commission, the Applicable Coal Price (ACP) for 2021 showed a significant increase particularly after the second quarter due to global demand outpacing supply resulting in an increase in the market price of coal.

New Enhanced Dispatched Arrangement (NEDA) participation increased in 2021 with the addition of two (2) cogeneration plants, namely Petronas Centralised Utility Facility Gebeng and Kertih with a total capacity of 59.8 MW. *However, there was a delay in approving new applications by solar power plants to participate in NEDA due to the KeTSA having to consider the solar installation quota. This decision was based on a study on RE penetration by the Grid System Operator (GSO) in relation to the entry limit of RE based on solar photovoltaic (PV) energy, which assesses the capability of the existing grid system and acceptance of RE entry based on solar PV energy in the future.*

Kajian *Development of Network Charges Framework for Peninsular Malaysia* diteruskan setelah mengambil kira kepentingan pemakaian caj rangkaian dalam isu-isu semasa yang melibatkan rangkaian pembekalan elektrik. Ianya mencerminkan kos sebenar penggunaan rangkaian elektrik oleh pengguna dan dijangka dapat mengurangkan subsidi silang antara pengguna yang berbeza tahap voltan penggunaannya. Selain itu, caj rangkaian ini adalah selaras dengan salah satu objektif utama penetapan harga rangkaian elektrik iaitu pengawalseliaan yang efisien bagi mendorong utiliti elektrik untuk beroperasi dengan cekap.

Menambah Baik Kualiti Kawal Selia dan Pelaksanaan Perkhidmatan

ST terus giat melaksanakan pelbagai aktiviti bagi memperbaiki kualiti kawal selia dan memastikan perkhidmatan yang disediakan adalah mencapai satu tahap yang memuaskan. Pada 2021, ST telah menerima sebanyak 1,523 aduan berbanding 5,427 aduan pada 2020. Pengurangan drastik ini adalah lanjutan inisiatif ST dalam membuka akses sistem Aduan ST kepada TNB bagi membolehkan aduan berkaitan dengan perkhidmatan pemegang lesen dapat diambil tindakan dan diselesaikan dengan lebih cepat dan efisien.

Pada tahun ini juga, ST telah menjalankan kajian semula dan semakan terhadap Akta dan Peraturan untuk menilai keperluan untuk pindaan. Inisiatif yang telah dijalankan pada 2021 termasuk kajian semula dan pindaan kepada Akta Bekalan Elektrik 1990 [*Akta 447*], pindaan kepada Peraturan-Peraturan Elektrik 1994, Peraturan-Peraturan Bekalan Pemegang Lesen 1990 dan Peraturan-Peraturan Bekalan Gas 1997. Hasil kajian dan bengkel diharapkan dapat memperhalusi penilaian dan penetapan parameter untuk keperluan pindaan dan isu-isu lain yang melibatkan permasalahan dalam pemakaian Akta dan Peraturan.

Peranan ST sebagai pusat rujukan data tenaga negara terus cemerlang pada 2021 dengan pelbagai inisiatif termasuk penambahbaikan tarhadap portal Hab Maklumat Tenaga Malaysia (MEIH), agar selaras dengan perkembangan teknologi terkini serta lebih mesra pengguna. Sesi latihan kepada pemberi data juga dijalankan sehingga 2022 bagi tujuan pendedahan tentang keperluan data dan pelaporan yang tepat. Pengunjung portal pada 2021 mencatatkan bilangan

The Development of Network Charges Framework for Peninsular Malaysia study continued by taking into account the importance of the application of network charges in current issues involving the electricity supply network. This reflects the actual cost on consumers and is expected to reduce cross subsidy between users of different voltage levels. Apart from that, network charges are in line with one of the main objectives of electricity network charges which to encourage electric utilities to operate efficiently through effective regulation.

Improvement of Regulatory Quality and Service Delivery

The Commission continues to actively implement various activities to improve the regulatory quality and ensure that services provided reach a satisfactory level. In 2021, the Commission received a total of 1,523 complaints compared 5,427 complaints in 2020. This drastic reduction was due to the Commission's initiative in allowing TNB to access the Aduan ST complaint system to ensure swift and efficient actions against complaints on their services.

This year, the Commission carried out a review of Acts and Regulations to assess the need for amendments. These included review and amendment to the Electricity Supply Act 1990 [Act 447], amendments to Electricity Regulation 1994, the Licensee Supply Regulations 1990 and the Gas Supply Regulations 1997. The result of the study and workshop is hoped to refine the assessment and setting of parameter for amendment requirements and other issues involving problems in the application of Acts and Regulations.

The Commission continues to excel in its role as the country's energy data reference centre with various initiatives such as improving the Malaysia Energy Information Hub (MEIH) portal to be user-friendly and in line with the latest technological advancements. In 2021, 92,268 visitors from Asia, Europe and America visited the MEIH portal. Training sessions for data providers were also carried out until 2022 to expose them to the need for accurate data and reporting. Apart from that,

92,268 pengunjung dari negara-negara Asia, Eropah dan Amerika. Selain itu, **sesi taklimat kepada media berhubung laporan Imbangan Tenaga Nasional (NEB) 2019 juga telah diadakan pada 13 Disember 2021 sebagai langkah ke hadapan dalam mempromosi laporan tersebut bagi menyokong aspirasi global dalam menangani isu perubahan iklim dunia.**

Secara keseluruhannya, Kajian Kepuasan Pelanggan (CSI) ST yang dijalankan setiap tahun bagi mengukur tahap kepuasan pelanggan terhadap perkhidmatan yang disediakan oleh ST mencatatkan rekod kepuasan pelanggan sebanyak 91.82% pada 2021.

Pembangunan Kapasiti dan Keupayaan

Menjelang akhir 2021, ST mempunyai kekuatan seramai 371 warga kerja di seluruh Ibu Pejabat dan Pejabat-Pejabat Kawasan di Semenanjung dan Sabah, dari pelbagai latar belakang jurusan pendidikan dan pengalaman. **Pada 2021, sebanyak 201 program latihan telah dilaksanakan meliputi modul fokus utama dalam bidang kawal selia teknikal dan ekonomi, undang-undang dan pembangunan kepimpinan.**

Akhir sekali, saya berterima kasih kepada semua warga kerja ST kerana telah melaksanakan tugas dengan penuh professional, berintegriti dan kekal cemerlang dalam memberikan perkhidmatan yang tulus dan saksama kepada semua pemegang taruh ST. Saya dengan sepenuh kepercayaan berharap tuan-tuan dan puan-puan kekal bermotivasi untuk lebih berprestasi tinggi bagi mencapai visi ST ke arah sebuah badan kawal selia tenaga yang bertaraf dunia menjelang 2026 kelak.

Terima kasih dan salam hormat.

DATO' IR. TS. ABDUL RAZIB DAWOOD
Ketua Pegawai Eksekutif Suruhanjaya Tenaga
Chief Executive Officer of the Energy Commission

the media were briefed about the National Energy Balance (NEB) 2019 on 13 December 2021 in an effort to promote the report and support global aspirations of dealing with climate change.

Overall, the Commission's annual Customer Satisfaction Index (CSI) survey, which measures the level of customer satisfaction with the services provided by the Commission, was scored at 91.82% in 2021.

Capacity and Capability Development

Towards the end of 2021, the Commission employed 371 staff in its Headquarters and Regional Offices in the Peninsula and Sabah, comprising people of various education backgrounds and experiences. ***201 training programmes were implemented in 2021, with main modules focused on the fields of technical and economic regulation, legal and leadership development.***

Finally, I would like to thank the Commission's employees for carrying out their duties professionally, with integrity and remaining excellent in providing sincere and fair service to all stakeholders of the Commission. I sincerely hope that you will remain motivated to perform on a higher level in order to achieve the Commission's vision in becoming a world-class energy regulator by 2026.

Thank you and best regards.

MAKLUMAT UTAMA
KEY INFORMATION

DAYA HARAP BEKALAN TENAGA DAN KUALITI PERKHIDMATAN INDUSTRI
ENERGY SUPPLY RELIABILITY AND SERVICE QUALITY OF THE INDUSTRY

Permintaan Dan Pembekalan
Demand And Supply

Semenanjung
The Peninsula

Jumlah Tenaga
Energy Total
125,503 GWj/*GWh*

Permintaan Puncak
Peak Demand
18,585 MW [13 Oktober / *13 October 2021*]

Kapasiti Terpasang
Installed Capacity
26,890 MW

Margin Rizab
Reserve Margin
42%

Sabah

Jumlah Tenaga
Energy Total
6,654.5 GWj/*GWh*

Permintaan Puncak
Peak Demand
1,002.8 MW [28 Mei / *28 May 2021*]

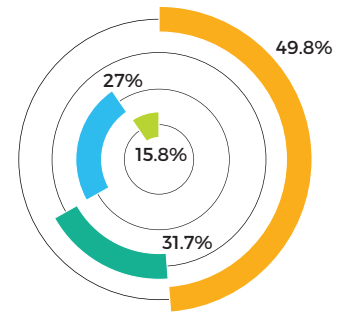
Kapasiti Boleh Harap
Dependable Capacity
1,176.34 MW

Margin Rizab
Reserve Margin
19%

Campuran Penjanaan
Generation Mix

Semenanjung *The Peninsula*		Sabah	
59.1%	Arang Batu *Coal*	85%	Gas
34.2%	Gas	6%	Diesel
5.5%	Hidro *Hydro*	6%	Hidro *Hydro*
0.9%	Solar	3%	Lain-lain *Others*
0.3%	Lain-lain *Others*		

Kapasiti Elektrik TBB
RE Electricity Capacity



Penggunaan Gas Asli
Natural Gas Consumption

SEC
856,201.91 MMBtu

GMES
203,179,562.38 MMBtu

PEGT
673,432,396.64 MMBtu

SAIDI Elektrik
Electricity SAIDI

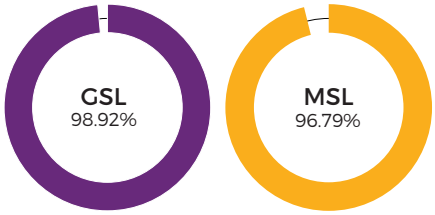
Semenanjung
The Peninsula
45.25
minit/pelanggan/tahun
minutes/customer/year

Sabah
332.14
minit/pelanggan/tahun
minutes/customer/year

SAIDI Gas Berpaip
Piped Gas SAIDI

Semenanjung
The Peninsula
1.4393
minit/pelanggan/tahun
minutes/customer/year

Pematuhan GSL dan MSL
GSL and MSL Compliance



KESELAMATAN DAN PENGUATKUASAAN
SAFETY AND ENFORCEMENT

67 Kes *Case*

Kemalangan Elektrik
Electrical Accidents

1 Kes *Case*

Kemalangan Gas Berpaip
Piped Gas Accidents

Lokasi Utama Kemalangan
Accidents Main Locations

Elektrik *Electrical*

- Kawasan Kediaman *Residential Areas*
- Talian Atas Voltan Tinggi *High Voltage Overhead Lines*
- Talian Atas Voltan Rendah *Low Voltage Overhead Lines*

Gas Berpaip *Piped Gas*

- Dobi *Launderette*

Punca Utama Kemalangan
Main Causes of Accidents

Elektrik *Electrical*

- Pemasangan / Senggaraan Tidak Sempurna *Improper Installation / Maintenance*
- Prosedur Kerja Selamat Tidak Dipatuhi *Non-Compliance With Safe Work Procedures*
- Aktiviti Kerja Orang Awam Berhampiran Pepasangan Elektrik *Public Work Activities Near Electrical Intallations*

Gas Berpaip *Piped Gas*

- Prosedur Kerja Selamat Tidak Dipatuhi *Non-Compliance With Safe Work Procedures*

Pelesenan
Licensing

Lesen Elektrik *Electricity Licences*
1,923 Lesen *1,923 Licences*

Lesen Berkaitan Akses Pihak Ketiga *TPA Related Licences*
44 Lesen *44 Licences*

Lesen Gas Persendirian *Gas Private Licences*
2,773 Lesen *2,773 Licences*

Lesen Gas Peruncitan *Gas Retail Licences*
708 Lesen *708 Licences*

Perakuan Kekompetenan Dan Kontraktor
Competency Certification And Contractors

Perakuan Kekompetenan Elektrik *Electrical Certificates of Competency*
150,399 Perakuan *150,399 Certificates*

Pendaftaran Kontraktor Elektrik *Registration of Electrical Contractors*
3,887 Kontraktor *3,887 Contractors*

Institusi Ditauliahkan untuk Mengendali Peperiksaan Kekompetenan Gas *Accredited Institutions Conducting Gas Competency Examinations*
2 Institusi *2 Institutions*

Institusi Ditauliahkan untuk Mengendali Peperiksaan Kekompetenan Elektrik *Accredited Institutions Conducting Electrical Competency Examinations*
139 Institusi *139 Institutions*

Perakuan Kekompetenan Gas *Gas Certificates of Competency*
1,165 Perakuan *1,165 Certificates*

Pendaftaran Kontraktor Gas *Registration of Gas Contractors*
115 Kontraktor *115 Contractors*

Perakuan Kelulusan / Pendaftaran Kelengkapan
Equipment Certificate Of Approval / Registration

Perakuan Kelulusan Kelengkapan Elektrik *Electrical Equipment COA*
9,965 Baharu & 6,103 Pembaharuan
9,965 New & 6,103 Renewals

Perakuan Pendaftaran Pengilang dan Pengimport Kelengkapan Elektrik *Certificate of Registration For Manufacturers and Importers*
Pengilang (39 Baharu & 133 Pembaharuan) dan Pengimport (248 Baharu & 491 Pembaharuan)
Manufacturers (39 New & 133 Renewals) and Importers (248 New & 491 Renewals)

Perakuan Kelulusan Gegasan, Perkakas dan Kelengkapan Gas *Gas Fittings, Appliances and Equipment COA*
1,291 Perakuan Kelulusan
1,291 COA

Perakuan Kelulusan Pengilang, Pemasang dan Pengimport Kelengkapan Gas *Gas COA for Manufacturers, Assemblers and Importers*
151 Perakuan Kelulusan
151 COA

ATI dan ATO *ATI and ATO*
1,355 ATI dan 1,352 ATO
1,355 ATI and 1,352 ATO

Kertas Siasatan
Investigation Papers

Kertas Siasatan Yang Dibuka
Investigation Papers Opened

107 Kertas Siasatan
107 Investigation Papers

Kompaun
Compounds

58 Kompaun
58 Compounds

Kompaun Yang Telah Dibayar
Compound Paid

RM111,500.00

KEBERTERUSAN DAN KEMAMPANAN TENAGA
ENERGY SECURITY AND SUSTAINABILITY

Loji Jana Kuasa Yang Dimula Tugas
Power Plants Commencement Of Operation

Southern Power Generation Sdn. Bhd.

1 Januari dan 16 Februari
1 January and 16 February

Edra Energy Sdn. Bhd.

16 Disember 2021
16 December 2021

Loji Jana Kuasa
Power Plants

38 Loji Solar Berskala Besar
LSS

17 Gas

8 Arang Batu
Coal

7 Hidro
Hydro

Pembida Disenarai Pendek LSS@MEnTARI
LSS@MEnTARI Shortlisted Bidders

30

Pembida (823.06 MW)
Bidders (823.06 MW)

Inisiatif NEM 3.0
NEM 3.0 Initiatives

NEM Rakyat

NEM GoMEN

NOVA

Total: 366.74 MW

Penggunaan Tenaga Elektrik
Electricity Consumption

Semenanjung
The Peninsula

112,194.34
GWj/*GWh*

Sabah

5,356.81
GWj/*GWh*

Intensiti Tenaga Elektrik
Electricity Intensity

Semenanjung
The Peninsula

0.0958
GWj/RM juta
GWh/RM million

Sabah

0.0608
GWj/RM juta
GWh/RM million

Pematuhan PPTEC
PPTEC Compliance

74%

(1,439 Pepasangan)
(1,439 Installation)

Penjimatan Elektrik NEEAP
NEEAP Electricity Savings

4.73%

(6,089 GWj)
(6,089 GWh)
(RM1.67 bilion)
(RM1.67 billion)

Penjimatan Program SAVE 2.0
SAVE 2.0 Programme Savings

55.17 GWj
GWh

(RM21.76 juta)
(RM21.76 million)

KECEKAPAN EKONOMI DAN KEMAMPUAN
ECONOMIC EFFICIENCY AND AFFORDABILITY

Kadar Purata Tarif Asas
Average Base Tariff Rate

Semenanjung
The Peninsula

TNB
39.45 sen/kWj
39.45 sen/kWh

KHTP NUR
35.70 sen/kWj
35.70 sen/kWh

Sabah dan Labuan
Sabah and Labuan

SESB
34.52 sen/kWj
34.52 sen/kWh

Purata Jualan Harga Gas Asli GMES
Average GMES Natural Gas Sales Price

Q1 RM22.14/MMBtu

Q2 RM26.85/MMBtu

Q3 RM30.03/MMBtu

Q4 RM36.42/MMBtu

Loji Jana Kuasa Yang Menyertai NEDA
Power Plants Participating NEDA

5
(101.3 MW)

Pakej Pemberian Diskaun Bil Elektrik
Electricity Bill Discounts Package

PEMERKASA
Program Strategik Memperkasa Rakyat dan Ekonomi

PEMERKASA+

pemulih

KUALITI KAWAL SELIA DAN PELAKSANAAN PERKHIDMATAN
REGULATORY QUALITY AND SERVICE DELIVERY

Pengurusan Aduan
Complaints Management

Diterima
Received

1,524
Aduan
Complaints

Diselesaikan
Resolved

1,524
Aduan
Complaints

Tahap Kepuasan Pelanggan ST
The Commission's CSI

91.82%

Pengunjung Portal MEIH
MEIH Portal Visitors

92,268

Pelaksanaan Program Touchpoint
Touchpoint Programme Implementation

116
Premis
Premises

MAKLUMAT KORPORAT
CORPORATE INFORMATION

VISI
VISION

Suruhanjaya Tenaga adalah badan kawal selia sektor tenaga bertaraf dunia yang berkesan serta berwibawa.

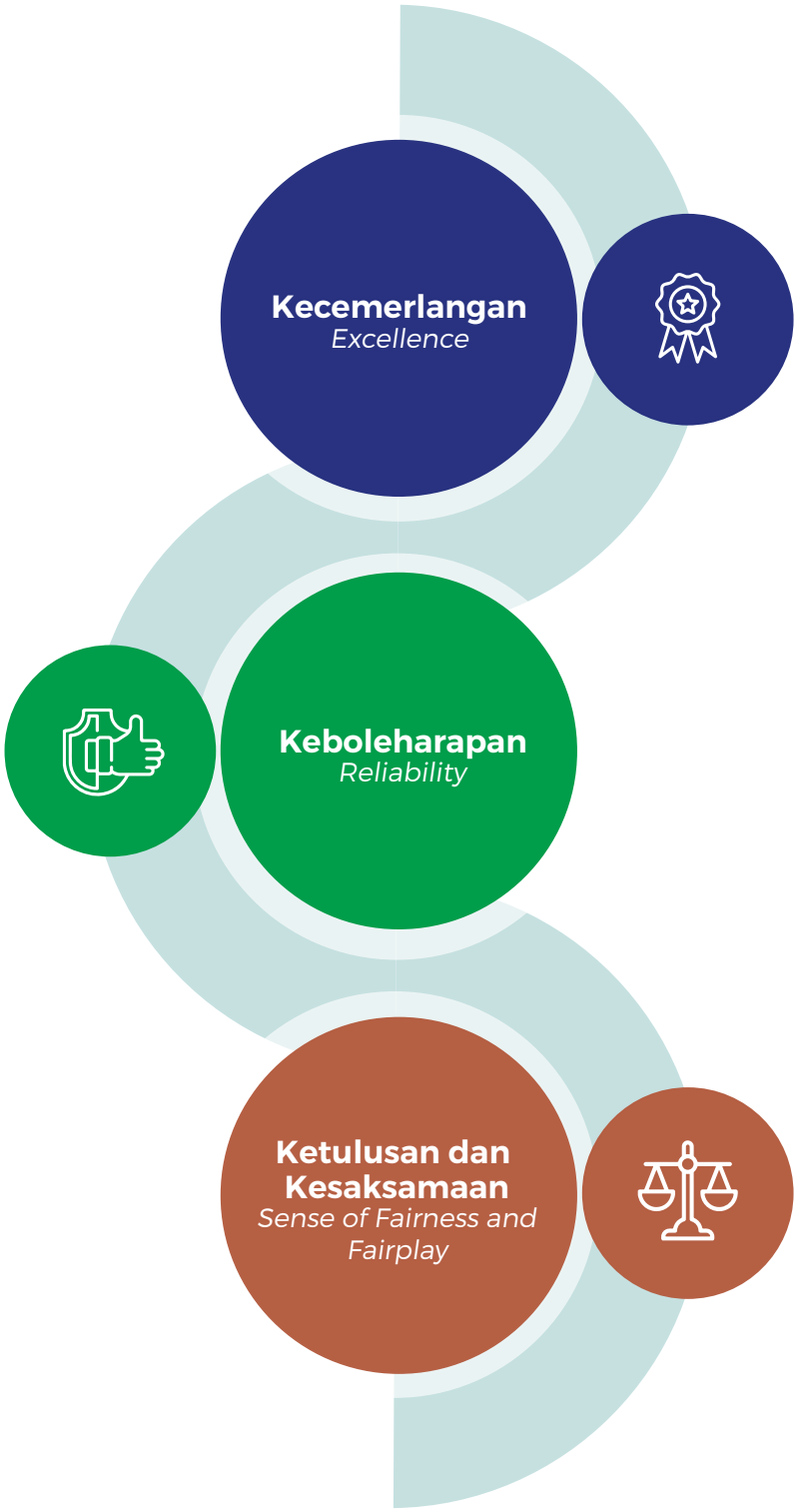
The Energy Commission is a world-class energy regulator that is effective and authoritative.

MISI
MISSION

Suruhanjaya Tenaga berazam untuk mengimbangi keperluan pengguna dan pembekal tenaga bagi memastikan pembekalan yang selamat dan berdaya harap pada harga yang berpatutan, melindungi kepentingan awam, dan menggalakkan pembangunan ekonomi dan pasaran yang kompetitif dalam persekitaran yang lestari.

The Energy Commission aims to balance the needs of consumers and providers of energy to ensure safe and reliable supply at reasonable prices, protect public interest, and foster economic development and competitive markets in an environmentally sustainable manner.

NILAI TERAS
CORE VALUES



MENGENAI SURUHANJAYA TENAGA
ABOUT THE ENERGY COMMISSION

Ditubuhkan di bawah Akta Suruhanjaya Tenaga 2001, Suruhanjaya Tenaga (ST) bertanggungjawab mengawal selia sektor tenaga, khususnya industri pembekalan elektrik dan gas berpaip di Semenanjung Malaysia dan Sabah.

Mengambil alih peranan Jabatan Bekalan Elektrik dan Gas, ST mula beroperasi sepenuhnya pada 1 Januari 2002. Fokus utama ST adalah bekalan elektrik dan gas yang berdaya harap, kos yang munasabah dan selamat digunakan.

Peranan ST terbahagi kepada tiga (3) iaitu Kawal Selia Ekonomi, Kawal Selia Teknikal dan Peraturan Keselamatan.

A statutory body established under the Energy Commission Act 2001, the Energy Commission is responsible for regulating the energy sector, specifically the electricity and piped gas supply industries in Peninsular Malaysia and Sabah.

Taking over the role of the Department of Electricity and Gas Supply, the Energy Commission started its operations on 1 January 2002. The main focus of the Commission is the reliability of electricity and gas supply, reasonable costs and safety.

The roles of the Energy Commission are divided into three (3), namely Economic Regulation, Technical Regulation and Safety Regulation.

Kawal Selia Ekonomi
Economic Regulation

Untuk menggalakkan keekonomian dalam penjanaan, penghantaran, pengagihan, pembekalan dan penggunaan elektrik dan dalam retikulasi dan penggunaan gas; menggalakkan persaingan; membolehkan pengendalian pasaran yang adil dan cekap dan mencegah penyalahgunaan monopoli atau kuasa pasaran dalam industri elektrik dan gas berpaip.
To promote economy in the generation, transmission, distribution, supply and use of electricity and in the reticulation and use of gas; promote competition; enable fair and efficient market conduct and prevent the misuse of monopoly or market power in the electricity and piped gas industries.

Kawal Selia Teknikal
Technical Regulation

Untuk memastikan keselamatan, daya harap, kecekapan dan kualiti bekalan dan perkhidmatan dalam industri elektrik dan bekalan gas berpaip.
To ensure security, reliability, efficiency and quality of supply and services in the electricity and piped gas supply industries.

Peraturan Keselamatan
Safety Regulation

Untuk melindungi industri, pengguna dan orang awam dari bahaya yang timbul dari penjanaan, penghantaran, pengagihan, pembekalan dan penggunaan elektrik, serta pengagihan, pembekalan dan penggunaan gas berpaip.
To protect the industry, consumers and public from dangers arising from the generation, transmission, distribution, supply and use of electricity and the distribution, supply and use of piped gas.

FUNGSI DAN KUASA SURUHANJAYA TENAGA
FUNCTIONS AND POWERS OF THE ENERGY COMMISSION

Suruhanjaya Tenaga hendaklah mempunyai segala fungsi yang dipertanggungkan ke atasnya di bawah undang-undang pembekalan tenaga dan hendaklah juga mempunyai fungsi-fungsi yang berikut:

- Menasihati Menteri tentang segala perkara yang berkenaan dengan objektif dasar kebangsaan bagi aktiviti pembekalan tenaga, pembekalan dan penggunaan elektrik, pembekalan gas melalui talian paip dan penggunaan gas.
- Mengawal selia tarif elektrik dan gas berpaip dan kualiti perkhidmatan pembekalan, serta menggalakkan persaingan dan mencegah penyalahgunaan monopoli atau kuasa pasaran.
- Menggalakkan amalan baik, serta penyelidikan, pembangunan dan inovasi dalam industri pembekalan elektrik dan gas berpaip.
- Merancang dan membangunkan undang-undang, peraturan, kod, garis panduan dan program bagi memastikan keselamatan, pembangunan dan fungsi yang teratur dalam industri pembekalan elektrik dan gas berpaip.
- Meluluskan lesen dan perakuan bagi pembekal elektrik dan gas berpaip, Orang Kompeten elektrik dan gas, pelatih, kontraktor, kelengkapan dan pemasangan, syarikat yang memberikan perkhidmatan tenaga dan pengurus tenaga.
- Memantau dan mengaudit prestasi dan pematuhan pembekal yang berlesen dan bertauliah, pembekal perkhidmatan, pemasangan, pengimport kelengkapan, pengeluar dan penjual.
- Menyiasat aduan, kemalangan, kesalahan dan isu industri; dan menguatkuasa pematuhan.

The Energy Commission shall have all the functions imposed on it under the energy supply laws and shall also have the following functions:

- *Advises Ministers on all matters concerning the national policy objectives for energy supply activities, the supply and use of electricity, the supply of gas through pipelines and the use of gas.*
- *Regulates electricity and piped gas tariffs and the quality of supply services, as well as promotes competition and prevents the misuse of monopoly or market power.*
- *Promotes good practices, as well as research, development and innovation in the electricity and piped gas industries.*
- *Plans and develops laws, regulations, rules, codes, guidelines and programmes for the safety, orderly development and functioning of the electricity and piped gas industries.*
- *Licenses and certifies electricity and piped gas suppliers, electrical and gas Competent Person, training providers, contractors, equipment and installations, energy service companies and energy managers.*
- *Monitors and audits performance and compliance of licensed and certified suppliers, service providers, installations, equipment importers, manufacturers and retailers.*
- *Investigates complaints, accidents, offences and industry issues; and enforces compliance.*

ANGGOTA SURUHANJAYA TENAGA
ENERGY COMMISSION MEMBERS

DATO' AHMAD NAZIM ABD RAHMAN

YB SENATOR IR. TS. KHAIRIL NIZAM KHIRUDIN
Dilantik pada
1 November 2021
Appointed on
1 November 2021

DATO' DR. HALIM MAN
Dilantik pada
1 Oktober 2021
Appointed on
1 October 2021

DATO' IR. TS. ABDUL RAZIB DAWOOD
Ketua Pegawai Eksekutif
Chief Executive Officer

DATO' AZIAN OSMAN
Pengerusi
Chairman

PUAN ANIS RIZANA MOHD ZAINUDIN @ MOHD ZAINUDDIN

DATO' IR. DR. SHAIK HUSSEIN MYDIN

DATUK ADNAN SEMAN @ ABDULLAH

DATO' DR. ROSLI MOHAMED
Tamat Perkhidmatan pada 31 Ogos 2021
Concluded Service on 31 August 2021

PUAN NOOR AFIFAH ABDUL RAZAK

PUAN ZAEIDAH MOHAMED ESA
Dilantik pada 1 Mac 2021
Appointed on 1 March 2021

MESYUARAT SURUHANJAYA TENAGA 2021
ENERGY COMMISSION MEETINGS 2021

Anggota Suruhanjaya Tenaga telah bermesyuarat sebanyak 14 kali sepanjang 2021 untuk memastikan tugas dan fungsi kawal selia aktiviti pembekalan tenaga dilaksanakan mengikut kehendak undang-undang. Mesyuarat Khas Suruhanjaya Tenaga juga telah diadakan sebanyak enam (6) kali pada 2021. Suruhanjaya Tenaga mempunyai enam (6) Jawatankuasa, iaitu Jawatankuasa Bersama Pelesenan (Pengurusan dan Suruhanjaya Tenaga), Jawatankuasa Kewangan dan Tender, Jawatankuasa Nominasi, Remunerasi dan Prestasi, Jawatankuasa Audit dan Integriti, Jawatankuasa Teknikal dan Jawatankuasa Ekonomi.

The Commission Members convened for a total of 14 meetings in 2021 to ensure the implementation of roles and functions of regulating energy supply activities are carried out in accordance with the requirement of the law. The Energy Commission Special Meetings were also carried out six (6) times in 2021. The Commission has six (6) Committees which include the Licensing Committee (Management and the Commission), the Financial Committee and Tender, the Nomination, Remuneration and Performance Committee, the Audit and Integrity Committee, the Technical Committee and the Economic Committee.

MESYUARAT SURUHANJAYA TENAGA
ENERGY COMMISSION MEETINGS

Februari *February*	18	25	Ogos *August*	26	
Mac *March*	18		September *September*	23	
April *April*	8	27	Oktober *October*	26	
Mei *May*	6	27	November *November*	25	
Jun *June*	29		Disember *December*	23	
Julai *July*	29				

MESYUARAT JAWATANKUASA KEWANGAN DAN TENDER SURUHANJAYA TENAGA (JKKT)
ENERGY COMMISSION FINANCIAL COMMITTEE AND TENDER MEETINGS

Februari *February*	15	23	Ogos *August*	24	
April *April*	6	21	September *September*	21	
Jun *June*	18		Oktober *October*	22	
Julai *July*	27		November *November*	21	

MESYUARAT KHAS SURUHANJAYA TENAGA
ENERGY COMMISSION SPECIAL MEETINGS

Mac *March*	2	11	November *November*	18	
Julai *July*	15		Disember *December*	9	
Oktober *October*	14				

MESYUARAT JAWATANKUASA NOMINASI, REMUNERASI DAN PRESTASI SURUHANJAYA TENAGA (JKNR&P)
ENERGY COMMISSION NOMINATION, REMUNERATION AND PERFORMANCE COMMITTEE MEETINGS

Februari *February*	23		Julai *July*	27	
April *April*	21		Ogos *August*	24	

MESYUARAT JAWATANKUASA TEKNIKAL SURUHANJAYA TENAGA (JKBT)
ENERGY COMMISSION TECHNICAL COMMITTEE MEETINGS

Januari *January*	25		Jun *June*	24	
Mac *March*	23		Disember *December*	20	

MESYUARAT JAWATANKUASA BERSAMA PELESENAN (PENGURUSAN DAN SURUHANJAYA TENAGA) (JKBP)
LICENSING COMMITTEE MEETINGS (MANAGEMENT AND THE ENERGY COMMISSION)

Februari *February*	15	23	Julai *July*	27	
Mac *March*	15		Ogos *August*	24	
April *April*	7	20	September *September*	21	
Mei *May*	25		Oktober *October*	21	
Jun *June*	24		Disember *December*	16	21

MESYUARAT JAWATANKUASA AUDIT DAN INTEGRITI SURUHANJAYA TENAGA (JKAI)
ENERGY COMMISSION AUDIT AND INTEGRITY COMMITTEE MEETINGS

April *April*	19	Oktober *October*	15

MESYUARAT JAWATANKUASA EKONOMI SURUHANJAYA TENAGA (JKE)
ENERGY COMMISSION ECONOMIC COMMITTEE MEETINGS

Februari *February*	25	April *April*	26	Jun *June*	25

CORPORATE HOUSE SURUHANJAYA TENAGA

CORPORATE HOUSE OF THE ENERGY COMMISSION

Visi *Vision*

Suruhanjaya Tenaga adalah badan kawal selia sektor tenaga bertaraf dunia yang berkesan dan berwibawa.

The Energy Commission is a world-class energy regulator that is effective and authoritative.

Misi *Mission*

Suruhanjaya Tenaga berazam untuk mengimbangi keperluan pengguna dan pembekal tenaga bagi memastikan pembekalan yang selamat dan berdaya harap pada harga yang berpatutan, melindungi kepentingan awam, dan menggalakkan pembangunan ekonomi dan pasaran yang kompetitif dalam persekitaran yang lestari.

The Energy Commission aims to balance the needs of consumers and providers of energy to ensure safe and reliable supply at reasonable prices, protect public interest, while encouraging economic development and competitive markets in an environmentally sustainable manner.

4 Teras Strategik *4 Strategic Pillars*

1 Daya harap dan kualiti perkhidmatan
Reliability and service quality

Bagi memastikan pembekalan yang berdaya harap dan kualiti perkhidmatan yang optimum bagi pengguna.
To ensure reliable supply and optimum service quality to consumers.

2 Keselamatan dalam pembekalan dan penggunaan infrastruktur
Safety in supply and utilisation of infrastructure

Bagi melindungi pengguna/industri dari musibah yang mungkin timbul di industri elektrik dan gas berpaip serta penggunaan infrastruktur.
To protect the public/ industry from dangers arising in the electricity and piped gas industry and the utilisation of infrastructure.

3 Keberterusan dan kemampanan tenaga
Energy security and sustainability

Bagi memastikan keberterusan dan kemampanan bekalan tenaga bagi memenuhi permintaan semasa dan masa hadapan.
To ensure security and sustainability of energy supply to meet current and future demand.

4 Kecekapan ekonomi dan kemampuan dalam industri pembekalan elektrik dan gas berpaip
Economic efficiency and affordability in electricity and piped gas supply industry

Memastikan pasaran elektrik dan gas berpaip yang berdaya saing dari segi kos.
To ensure electricity and piped gas markets that are competitive in terms of cost.

2 Penggerak *2 Enablers*

5 Kualiti kawal selia dan pelaksanaan perkhidmatan
Regulatory quality and service delivery

Bagi meningkatkan kepercayaan pemegang taruh dengan mengukuhkan rangka kerja kawal selia dan pelaksanaan perkhidmatan yang cekap.
To enhance stakeholders' trust by continuously strengthening regulatory framework and provide efficient service delivery.

6 Pembangunan kapasiti dan keupayaan
Capacity and capability building

Bagi mempunyai tenaga kerja yang berkepakaran, berkeupayaan, bermotivasi tinggi dan terlibat.
To have highly competent, capable, motivated and engaged staff.

PENGURUSAN TERTINGGI
MANAGEMENT TEAM

IR. MD ZAKUAN IBRAHIM
Pengarah
Kawal Selia Keselamatan
Director of Safety Regulation

IR. ROSLEE ESMAN
Pengarah
Operasi Industri
Director of Industry Operations

MOHD ELMI ANAS
Pengarah
Penguatkuasaan dan Operasi Kawasan
Director of Enforcement and Regional Operations

DATO' IR. TS. ABDUL RAZIB DAWOOD
Ketua
Pegawai Eksekutif
Chief Executive Officer

IR. ABDUL RAHIM IBRAHIM
Ketua
Pegawai Operasi
Chief Operating Officer

MARLINDA MOHD ROSLI
Pengarah Kawal Selia Ekonomi
Director of Economic Regulation

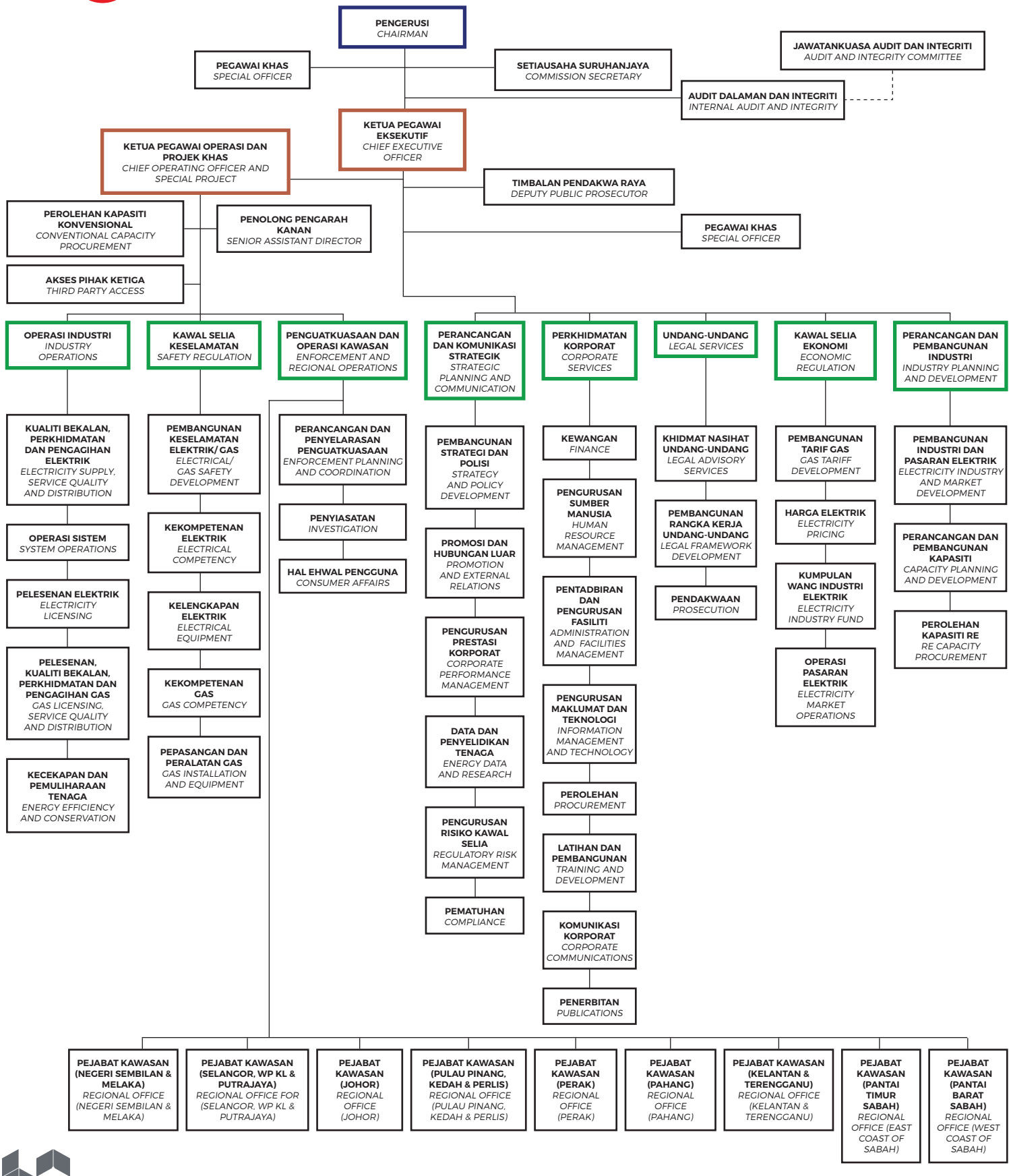
NURHAFIZA MOHAMED HASAN
Pengarah Perancangan dan Pembangunan Industri
Director of Industry Planning and Development

HILMI RAMLI
Pengarah Perancangan dan Komunikasi Strategik
Director of Strategic Planning and Communication

KAUTHAR MOHD YUSOF
Pengarah Perkhidmatan Korporat
Director of Corporate Services

MUNAWIZA JULIANA MOHD JASIN
Pengarah Undang-Undang dan Pengurusan Risiko
Director of Legal Services and Risk Management
Dilantik pada 1 Januari 2021
Appointed on 1 January 2021

STRUKTUR ORGANISASI
ORGANISATION STRUCTURE



SETAHUN YANG LALU 2021
A YEAR THAT WAS 2021

Januari - Mac
January - March

6 Januari *January*

Bengkel Pemuktamadan KPI
Bengkel ini bertujuan untuk memberi hala tuju kepada warga kerja ST dalam menetapkan sasaran strategik bagi hasil kerja yang berkualiti.

KPI Finalisation Workshop
This workshop aimed to provide direction to the Commission's employees in setting strategic targets that would result in quality work.

7 Januari *January*

Majlis Pelancaran Program *Sustainability Achieved Via Energy Efficiency* (SAVE) *2.0*
Majlis Pelancaran Program SAVE 2.0 telah disempurnakan oleh YB Datuk Seri Dr. Shamsul Anuar Hj. Nasarah, Menteri Tenaga dan Sumber Asli. Melalui program ini, orang ramai boleh menikmati penjimatan wang dan tenaga dengan pembelian kelengkapan elektrik penyaman udara atau peti sejuk cekap tenaga berlabel empat (4) atau lima (5) bintang.

Sustainability Achieved Via Energy Efficiency (SAVE) 2.0 Programme Launch Ceremony
The SAVE 2.0 programme was launched by YB Datuk Seri Dr. Shamsul Anuar Hj. Nasarah, Minister of Energy and Natural Resources. Through this programme, the public can enjoy savings and reduced energy usage by purchasing energy efficient air-conditioners and refrigerators with a 4-star or 5-star rating.

21 Januari *January*

Mesyuarat Khas Pegawai-Pegawai Kanan ASEAN Mengenai Tenaga *(Special SOME)*
Mesyuarat *Special SOME* dihadiri oleh KPE ST selaku Pengerusi *ASEAN Forum on Coal* (AFOC) bersama delegasi KeTSA yang diadakan secara dalam talian dari Hanoi, Vietnam. Sokongan negara anggota ASEAN berjaya diraih dalam merealisasikan *ASEAN Plan of Action for Energy Cooperation (APAEC), Phase 1 & 2.*

ASEAN Special Senior Officials Meeting on Energy
Held online from Hanoi, Vietnam, the Special SOME Meeting was attended by the Commission's CEO as the Chairman of the ASEAN Forum on Coal (AFOC). The meeting received support from ASEAN members in realising the ASEAN Plan of Action for Energy Cooperation (APAEC), Phase 1 & 2.

8 Mac March

Mesyuarat bersama Pihak Kementerian Perdagangan Dalam Negeri dan Hal Ehwal Pengguna (KPDNHEP), Kastam, Suruhanjaya Komunikasi dan Multimedia Malaysia (SKMM) dan *Malaysia Digital Association* (MDA)
Kaedah penambahbaikan terhadap kawal selia bagi kelengkapan elektrik yang dijual secara dalam talian dikenalpasti melalui kerjasama bersama badan-badan penguatkuasaan yang berkaitan. Pihak yang terlibat turut berkongsi sistem perundangan masing-masing untuk memastikan keselamatan pengguna kelengkapan elektrik yang dipasarkan melalui platform e-dagang adalah terjamin.

Meeting with the Ministry of Domestic Trade and Consumer Affairs (KPDNHEP), Customs, the Malaysian Communications and Multimedia Commission (MCMC) and Malaysia Digital Association (MDA)
Methods to improve the regulation of electrical equipment sold online were identified through collaboration with relevant enforcement bodies. The parties involved also share respective regulations on this matter in ensuring the safety and security of consumers purchasing electrical equipment through e-commerce platforms.

12 Mac March

Sesi Perkongsian Pengetahuan Pasaran Gas Asli Cecair (LNG)
Sesi ini melibatkan perkongsian pengetahuan mengenai pasaran LNG dengan objektif untuk mendidik dan mewujudkan kesedaran di kalangan penggiat industri terhadap pasaran LNG, termasuk bekalan, permintaan dan penetapan harga.

Roundtable on the Liquefied Natural Gas (LNG) Market
This event involves knowledge-sharing sessions on the LNG market with the objective to educate and create awareness among industry players on the LNG market, including supply, demand and price setting.

15 Mac March

Program *Touchpoint* 2020 di Semenanjung
ST menunjukkan cara pengujian Peranti Arus Baki (PAB) kepada YB Dato' Zulkurnain Kamisan, ADUN Seri Medan, Johor semasa Majlis Penutup *Touchpoint* di mana sebanyak 13 rumah telah ditambah baik sistem pendawaian elektrik dan ditukarkan kepada PAB yang baharu pada 2020.

Touchpoint Programme 2020 in the Peninsula
The Commission demonstrates how a Residual Current Device (RCD) is tested to YB Dato' Zulkurnain Kamisan, Seri Medan, Johor Assemblyman during the Touchpoint Closing Ceremony where the electrical wiring systems were repaired and RCD replaced at 13 houses in 2020.

22 Mac *March*

Majlis Pelancaran *Product Safety Award* (PSA) 2021
Majlis Pelancaran PSA 2021 mempromosi dan menggalakkan pengilang, pengimport, penjual dan penyedia tapak jualan bagi perniagaan kelengkapan elektrik untuk memberikan komitmen dalam membudayakan keselamatan elektrik di kalangan penggiat industri.

Product Safety Award (PSA) 2021 Launch Ceremony
The PSA 2021 Launch Ceremony promotes and encourages electrical equipment manufacturers, importers, sellers and sales site providers in inculcating electrical safety among industry players.

25 Mac *March*

Sesi Penerangan *Piped Gas Safety Management Plan & Programme*
Sesi ini diadakan bagi memberi kesedaran mengenai pengoperasian dan tatacara yang selamat dalam penggunaan sistem gas berpaip kepada pihak pengurusan pusat membeli belah di Cyberjaya, Selangor.

Discussion on the Piped Gas Safety Management Plan & Programme
The purpose of this session is to raise awareness on the safe operation and procedures with regards to the usage of piped gas systems to the management of shopping centres in Cyberjaya, Selangor.

30 Mac *March*

Program *Touchpoint* 2020 di Sabah
Majlis Penutup *Touchpoint* di Sipitang, Sabah berfokus untuk meningkatkan kesedaran penduduk setempat berhubung keselamatan elektrik dengan usaha yang telah dilaksanakan pada 2020.

Touchpoint Programme 2020 in Sabah
The focus of the Touchpoint Closing Ceremony in Sipitang, Sabah was to raise awareness on electrical safety efforts that were carried out in 2020 among local residents.

April *April* - **Jun** *June*

19 Mei *May*

Sesi Dialog ST bersama The Institution Of Engineers, Malaysia (IEM)
Sesi dialog memuktamadkan pelaporan status pelaksanaan inisiatif dan program kerjasama di antara ST dan IEM sebagai persediaan *ASEAN Engineering Inspectorate – Electrical Installation (AEI-EI) Progress Update.*

The Commision's Dialogue Session with The Institution Of Engineers, Malaysia (IEM)
This dialogue session aimed to finalise the implementation of initiatives and programmes between the Commission and IEM in preparation for the ASEAN Engineering Inspectorate - Electrical Installation (AEI-EI) Progress Update.

12 April *April*

Sesi Libat Urus bersama Wakil Kerajaan Negeri
Sesi libat urus ini membincangkan pengenaan fi dan caj oleh pihak berkuasa negeri ke atas penetapan tarif elektrik bagi memastikan bekalan, infrastruktur dan perkhidmatan bekalan elektrik yang diberikan kepada pengguna adalah optimum dan tiada kompromi.

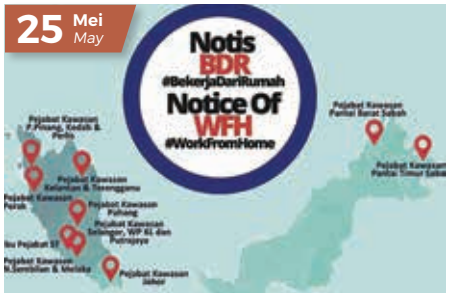
Engagement Session with State Representatives
In ensuring electricity supply, infrastructure and services to consumers are not compromised and remain at an optimum level, an engagement session was held to discuss the imposition of fee and charges to the electricity tariff by the State Authority.

7&8 April *April*

Kursus *Finance for Non-Finance*
Warga kerja yang bukan daripada latar belakang kewangan berpeluang memantapkan pemahaman dan memperluaskan pengetahuan di dalam bidang ini.

Finance for Non-Finance Course
This course served as a great opportunity for employees from non-financial backgrounds to strengthen their understanding and expand their knowledge in finance.

25 Mei *May*



Notis Bekerja dari Rumah ST
Sebagai pematuhan terhadap penguatkuasaan PKP dan PKPD, warga kerja Ibu Pejabat dan Pejabat-Pejabat Kawasan ST adalah berstatus Bekerja Dari Rumah (BDR) di mana semua urusan dijalankan secara dalam talian sahaja.

The Commission's Work from Home Notice
In compliance with the enforcement of the MCO and EMCO, staff at the Commission's Head Office and Regional Offices were under Work From Home (WFH) status where all matters were conducted online.

13 Julai *July*

Malaysia Low Carbon Cities Conference
ST dijemput sebagai ahli panel bagi sesi *Deep Dive Session 1: Sectoral Strategies for Transitioning to Low Carbon Cities.*

Malaysia Low Carbon Cities Conference
The Commission was invited as a panelist for the Deep Dive Session 1: Sectoral Strategies for Transitioning to Low Carbon Cities.

13 Julai *July*

***International Conference on Intelligent and Advanced System* (ICIAS)**
ICIAS yang ke-8 ini membincangkan topik *The Initiatives in Sustainable Energy Development and Managing Them.*

International Conference on Intelligent and Advanced System (ICIAS)
The 8th ICIAS discussed on the topic of The Initiatives in Sustainable Energy Development and Managing.

30 September *September*

Pelancaran *ASEAN Coal Centre of Excellence for Clean Coal Technology* (ASEAN COE CCT)
ASEAN COE CCT merupakan usaha untuk mengoptimumkan peranan teknologi arang batu yang bersih dalam peralihan ke arah pembangunan pelepasan karbon yang lebih rendah dan mampan. Platform ini merupakan medium utama dalam mendorong inovasi, penyelidikan dan perkembangan teknologi ini di ASEAN.

Launch of the ASEAN Coal Centre of Excellence for Clean Coal Technology (ASEAN COE CCT)
The ASEAN COE CCT is part of an effort to optimise the role of clean coal technology (CCT) in the transition towards lower carbon emission and sustainable development. This platform is the main medium in driving innovation, research and development of CCT in ASEAN.

16 September *September*

Sambutan Hari Malaysia ST
ST telah menganjurkan pertandingan menerusi aplikasi media sosial *#TeamST* yang bertemakan *Tell Us You're Malaysian, Without Telling Us You're Malaysian.*

The Commission's Malaysia Day Celebration
Aptly themed "Tell Us You're Malaysian, Without Telling Us You're Malaysian", the Commission organised a competition through the #TeamST social media application.

26 Ogos *August*

Mesyuarat bersama Kementerian Utiliti Sarawak (KUS) dan SIRIM Sarawak
Mesyuarat ini membincangkan pembangunan label keselamatan Kod QR dan aplikasi mudah alih khas untuk kelengkapan elektrik yang dikawal oleh ST.

Meeting with the Ministry of Utilities Sarawak (KUS) and SIRIM Sarawak
This meeting discussed on the development of the QR Code safety labels as well as the special mobile application for electrical equipment regulated by the Commission.

5 Ogos *August*

Webinar *Road to Recovery*
ST dijemput berkongsi kepakaran di Webinar *Road to Recovery, Series 2.0 Episode 6,* anjuran MIGHT berkenaan topik *Smart Grid and the Drive Towards a High-Tech Nation.*

Road to Recovery Webinar
The Commission was invited to share expertise in the Road to Recovery Webinar, Series 2.0 Episode 6, organised by MIGHT on the topic of Smart Grid and the Drive Towards a High-Tech Nation.

5 Ogos *August*

Webinar Kecekapan dan Konservasi Tenaga
ST bersama SEDA dan TNB menyokong program anjuran PUSPANITA Cawangan KeTSA untuk membincangkan topik Penggunaan Peralatan Cekap Tenaga.

Energy Efficiency and Conservation Webinar
The Commission together with SEDA and TNB supported this programme organised by PUSPANITA KeTSA branch to discuss on the topic of The Usage of Energy Efficient Appliances.

20 Ogos *August*

Majlis Perhimpunan Edisi Merdeka
Hari Kebangsaan diraikan meriah secara dalam talian walaupun negara sedang berada di dalam fasa PKP.

Merdeka Edition Townhall
The National Day was celebrated online despite the nationwide enforcement of the MCO.

25 Ogos *August*

Webinar Keselamatan Sistem Gas Berpaip (Sesi Pertama) ST
Tajuk-tajuk pembentangan termasuk Keperluan Perundangan dan Piawaian dari Aspek Keselamatan Sistem Gas Berpaip, *Guidelines on Gas Piping Systems at Launderettes and Similar Installations,* Keperluan Pelesenan Pepasangan Gas Komersial, Aktiviti Penguatkuasaan Sistem Gas Berpaip dan Keperluan Pendaftaran Peralatan Gas.

Piped Gas System Safety Webinar (First Session) ST
Presentation topics include Legal Requirements and Standards from the Safety Aspect of Piped Gas System, Guidelines on Gas Piping Systems at Launderettes and Similar Installations, , Licensing Requirements for Commercial Gas Installations, Enforcement Activities for Piped Gas Systems and Gas Equipment Registration Requirements.

Webinar Bertajuk *Strategic Energy Transition Towards Carbon Neutrality Under the Impact of COVID-19: Lessons from Japan*
Prof. Dr. Ken Koyama, selaku *Chair in Energy Economics* berkongsi strategi negara Jepun untuk mengurangkan pelepasan gas rumah hijau sehingga tahap 46% pada 2030, serta analisis terhadap kajian dan inisiatif yang telah dijalankan semasa pandemik COVID-19. Beliau berpandangan penularan pandemik COVID-19 dan pengenalan terhadap norma baharu telah mempengaruhi strategi peralihan tenaga ke arah neutraliti karbon dengan kepelbagaian usaha-usaha penyahkarbonan di seluruh dunia.

26 Ogos *August*

Webinar on Strategic Energy Transition Towards Carbon Neutrality Under the Impact of COVID-19: Lessons from Japan
Prof. Dr. Ken Koyama, Chair in Energy Economics shared Japan's national strategy to reduce greenhouse gas emissions by up to 46% in 2030, with analysis on studies and initiatives conducted during the COVID-19 pandemic. He believes that the COVID-19 pandemic and the introduction to the new norm have influenced the energy transition towards carbon neutrality through a variety of decarbonisation efforts around the world.

Oktober – Disember
October – December

3 Oktober *October*

Kursus *Corporate Governance Rules Post COVID-19*
Program kendalian ICDM ini merupakan inisiatif di bawah *Leadership Development Programme* khusus untuk barisan Pengurusan Tertinggi ST.

The Corporate Governance Rules Post COVID-19 Course
This programme is an initiative under the Leadership Development Programme specifically for the Top Management of the Commission, operated by ICDM.

12 Oktober *October*

Webinar Keselamatan Sistem Gas Berpaip (Sesi Kedua)
Webinar Keselamatan Sistem Gas Berpaip sesi kedua ini berfokus untuk negeri-negeri di bahagian selatan tanah air.

Piped Gas System Safety Webinar (Second Session)
This webinar on Piped Gas System Safety (second session) was focused on the southern states of the country.

14 Oktober *October*

Pelancaran Program *BeSTme*
Program BeSTme dilancarkan melalui sesi penimbangan pertama bagi memenuhi objektif program untuk menggalakkan cara hidup sihat dan BMI ideal di kalangan warga kerja ST.

BeSTme Programme Launch
The BeSTme programme was launched with a weighing session to fulfil the programme's objective in encouraging a healthy lifestyle as well as an ideal BMI among the employees of the Commission.

8&9 Disember *December*

8&9 Disember *December*

Bengkel *Digital Strategy Plan and ICT Roadmap Current State (As Is)*
Bengkel ini membentangkan hasil sesi temubual *as-is* dan kajian soal selidik yang dijalankan.

The Digital Strategy Plan and ICT Roadmap Current State (As Is)
This workshop outlined the as-is interview and questionnaire outputs.

1 Disember *December*

Seminar Keselamatan Elektrik bersama Kontraktor, Konsultan dan Industri di Perak

Electrical Safety Seminar with Contractors, Consultants and Industries in Perak

30 November *November*

Forum Antarabangsa ke-4 mengenai Landskap Tenaga Global (IFGE 2021)
Dalam memerangi perubahan iklim, Malaysia komited untuk mencapai pengurangan 45% dalam intensiti pelepasan gas rumah hijau dalam Keluaran Dalam Negara Kasar (KDNK) menjelang 2030.

4th International Forum on Global Energy Landscape
In battling climate change, Malaysia is committed to reach a 45% decrease in greenhouse gas emissions from the National Gross Domestic Product (GDP) by 2030.

27&28 Oktober *October*

Forum *Asia Pacific Energy Regulatory 2021*
KPE ST menyampaikan pembentangan bertajuk 'Enhancing System Integration of Renewable and Low-Carbon Technologies'.

The Asia Pacific Energy Regulatory Forum 2021
The Commission's CEO giving a presentation titled 'Enhancing System Integration of Renewable and Low-Carbon Technologies'.

2 November *November*

Webinar *Technical and Vocational Education and Training* (TVET) 2021
ST berkongsi kepentingan melantik Orang Kompeten dalam melaksanakan kerja-kerja elektrik.

Technical and Vocational Education and Training (TVET) Webinar 2021
The Commission shares on the importance of appointing Competent Persons in carrying out electrical works.

9 November *November*

Product Safety Award 2021
Majlis penganugerahan yang dirasmikan oleh YB Datuk Seri Takiyuddin Hassan, Menteri Tenaga dan Sumber Asli ini bertujuan menggalakkan pembudayaan amalan keselamatan elektrik di kalangan pengimport, pengilang dan penjual kelengkapan elektrik, institusi latihan serta penggiat industri.

Product Safety Award 2021
Officiated by YB Datuk Seri Takiyuddin Hassan, the Minister of Energy and Natural Resources, the ceremony aimed to promote safe electrical practice among importers, manufacturers and sellers of electrical equipment, training institutions and industry players.

30 November *November*

Majlis Penyampaian Hadiah Pertandingan *EE Challenge* 2021
Program kembali dengan format baharu dan menerima sambutan meriah dengan sejumlah 772 penyertaan. YB Datuk Seri Takiyuddin Hassan, Menteri Tenaga dan Sumber Asli berkata pengenalan mengenai kecekapan tenaga di peringkat awal diharapkan akan dibudayakan apabila para pelajar mencapai usia dewasa kelak.

EE Challenge 2021 Prize Giving Ceremony
YB Datuk Seri Takiyuddin Hassan, the Minister of Energy and Natural Resources hoped that an introduction on energy efficiency at an early age will bring about a good culture among school students well into their adult years. The programme returned with a new format and received a good response with a total of 772 entries.

17 November *November*

Webinar Keselamatan Elektrik dan Gas bersama Sekolah
Budaya keselamatan elektrik dan gas diterapkan di kalangan pelajar sekolah.

Electricity and Gas Safety Webinar with Schools
Electricity and gas safety culture was cultivated among school students.

16–18 November *November*

***International Conference on Learning & Development* (ICLAD) 2021**
Selaku penceramah utama ICLAD 2021, ST berkongsi pandangan Malaysia berkenaan cabaran dan peluang dalam landskap peralihan tenaga.

International Conference on Learning & Development (ICLAD) 2021
As the keynote speaker for ICLAD 2021, the Commission shares Malaysia's insights on the challenges and opportunities in the energy transition landscape.

KriSTalactive: Inter-Department Dragon Boat Race 2021
Program memupuk semangat berpasukan, mengeratkan ukhwah sesama *#TeamST* serta melahirkan warga kerja yang mengamalkan gaya hidup yang sihat dan aktif.

KriSTalactive: Inter-Department Dragon Boat Race 2021
This programme fosters team spirit, strengthens ukhwah among #TeamST and produces employees who practice a healthy and active lifestyle.

Program *Touchpoint* di Kedah
Program *Touchpoint* di Kedah dimulakan dengan ceramah keselamatan elektrik dan dihadiri YB Dato' Suraya Yaacob, ADUN Sungai Tiang.

Touchpoint Programme in Kedah
This programme commenced with an electrical safety talk and was attended by YB Dato' Suraya Yaacob, Sungai Tiang Assemblywoman.

***KriSTalCare:* Ops Misi Banjir**
Misi sukarelawan ini membantu meringankan beban warga kerja ST yang terkesan akibat bencana banjir.

KriSTalCare: Flood Mission Operations
This volunteer mission helps ease the burden of the Commission's employees affected by the flood disaster.

Program *Touchpoint* di Kelantan
Program *Touchpoint* melibatkan penambahbaikan sistem pendawaian elektrik di dua (2) pusat tahfiz di Kelantan.

Touchpoint Programme in Kelantan
Improvement to the electrical wiring system at two (2) tahfiz centres in Kelantan were conducted during this Touchpoint Programme.

Majlis Penyampaian Anugerah Lama Berkhidmat dan Penutupan Sambutan Ulang Tahun ke-20 Suruhanjaya Tenaga (SUTERA20)
Anugerah ini menzahirkan penghargaan kepada warga kerja ST yang telah lama berkhidmat serta mengimbas kembali program SUTERA20 yang telah dijalankan sepanjang 2021.

Long Service Award Giving Ceremony and Energy Commission's 20th Anniversary Celebration (SUTERA20) Closing Ceremony
This award is meant to express the Commission's appreciation to long serving employees as well as to glance through the SUTERA20 programme that was carried out throughout 2021.

SURUHANJAYA TENAGA DI MEDIA
ENERGY COMMISSION IN THE MEDIA

Dalam usaha meningkatkan kesedaran orang ramai mengenai ST dan peranannya sebagai badan kawal selia sektor tenaga negara serta isu-isu berkaitan sektor tenaga, ST meneruskan usaha promosi melalui pelbagai saluran media massa termasuk saluran TV, radio, media cetak dan media dalam talian.

In efforts to increase public awareness on the Commission and its role as the regulator for the national energy sector as well as issues related to the energy sector, the Commission continues its promotional efforts through various mass media channels including TV channels, radio, print and online media.

Kenyataan Media

Sepanjang 2021, lebih 15 kenyataan media telah dikeluarkan dengan topik tumpuan bagi meningkatkan kesedaran orang ramai mengenai langkah-langkah keselamatan elektrik di musim banjir, kepentingan untuk melantik Orang Kompeten bagi kerja-kerja elektrik, kesalahan dan implikasi kes-kes kecurian elektrik, keselamatan gas berpaip di premis dobi, objektif operasi-operasi penguatkuasaan serta program-program *Touchpoint*.

Di samping itu juga, kenyataan media juga dikeluarkan bagi menyampaikan maklumat mengenai tarif elektrik dan gas berpaip serta siasatan terhadap kes-kes kemalangan elektrik.

Media Statements

Throughout 2021, more than 15 media statements were issued focused on increasing public awareness on electricity safety measures during the flood season, the importance of appointing Competent Persons for electrical works, the offence and implications of electricity theft cases, piped gas safety at launderettes, the objectives of enforcement operations as well as Touchpoint programmes.

Media statements were also issued to convey information about electricity and piped gas tariffs as well as investigations into electrical accident cases.

Taklimat Media

Dalam usaha meningkatkan pemahaman pihak media berkenaan isu-isu semasa dalam sektor tenaga, dua (2) sesi taklimat media telah diadakan bagi mempromosikan *Report on Peninsular Malaysia Generation Development Plan 2020* (2021-2039) serta *National Energy Balance* (NEB) 2019.

Sesi taklimat media ini telah dihadiri oleh pelbagai media termasuk BERNAMA, Berita Harian, *Sin Chew Daily, The Malaysian Reserve*, Astro Awani, *The Edge* dan Sinar Harian.

Antara perkara yang diterangkan di dalam kedua-dua sesi taklimat media ini termasuklah sasaran dan inisiatif-inisiatif Kerajaan berkaitan penjanaan tenaga serta data-data berkaitan industri tenaga.

Media Briefings

In efforts to increase the understanding of the media with regards to current issues in the energy sector, two (2) media briefings were held to promote the Report on Peninsular Malaysia Generation Development Plan 2020 (2021-2039) as well as the National Energy Balance (NEB) 2019.

The media briefing sessions were attended by various media including BERNAMA, Berita Harian, Sin Chew Daily, The Malaysian Reserve, Astro Awani, The Edge and Sinar Harian.

Among the matters briefed in both media briefing sessions include the Government's targets and initiatives related to energy generation as well as data related to the energy industry.

Sinar PREMIUM

Khamis | 06 Januari 2022

565 kes maut akibat kemalangan elektrik sejak 2002

SIRIM, ST lancar kempen kesedaran keselamatan

能源效率行動達標

節省累計用電量4.3%

Energy Commission spells out guidelines for approval

BETWEEN 2015 and 2020, the Energy Commission received 633 applications from homeowners to instal electric fences at their property.

The trend changed every year but there has been a decline in application in 2019 and 2020.

There were 141 applications in 2019 and 109 last year, said an Energy Commission spokesperson.

Homeowners are allowed to instal electric fences by engaging only with contractors registered with the Energy Commission.

The spokesperson said home owners cannot do the installation themselves.

Homeowners must engage with the list of providers found on the commission website at https://ecos.st.gov.my/ms/senarai-kontraktor-elektrik-berdaftar.

The guidelines for the installation is available at https://ecos.st.gov.my.

Among the requirements is to complete Form G, which is a certificate of supervision and completion that has to be signed by a competent electrician.

Form H required tests to be carried out and signed by an electrical service engineer.

Homeowners must be responsible to adhere to the law such as the by-laws involving the local council for installing electric fences.

"Homeowners must obtain a letter of consent from their immediate or close neighbour, local council, and utilities company before

Sinar PREMIUM English Berita Suara Sinar Video Khas Lifestyle E-Paper

Khamis | 06 Januari 2022

Jumlah bekalan tenaga primer meningkat 2.8 peratus

30 firms bag LSS4 jobs

The Energy Commission announced the 30 shortlisted bidders of the Large Scale Solar @ MEnTARI (LSS4), totalling 823.06MW out of the offered 1,000MW. They include Solarvest Holdings Bhd, JAKS Resources Bhd, Kumpulan Powernet Bhd, Ranhill Utilities Bhd, Gopeng Bhd, Tenaga Nasional Bhd and Uzma Bhd.

English

Do not use floodwater submerged appliances

28 maut tahun lalu guna produk elektrik tanpa piawaian SIRIM *Muka 20*

28 maut guna alat elektrik tiada kelulusan SIRIM, ST

Penggunaan perkakasan tidak disahkan, punca kes direkod tahun lalu

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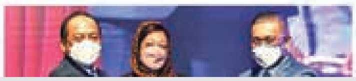
News

PSA 2021 encourages manufacturers, importers to promote electrical safety



Sistem pendawaian premis perlu ikut akta

Oleh Kennedy Corlinus

KOTA KINABALU: Sistem pendawaian bagi setiap premis perlu dipasang mengikut Akta Bekalan Elektrik 1990 (Akta 447) dan Peraturan-Peraturan Elektrik, serta mematuhi keperluan teknikal standard yang ditetapkan Suruhanjaya Tenaga (ST).

Pengarah Kawasan Suruhanjaya Tenaga Pantai Barat Sabah (STPBS) Jefrey Nuri berkata, hal demikian penting kerana risiko untuk kemalangan yang mampu meragut nyawa sangat tinggi sekiranya pemasangan yang dilakukan tidak mengikut spesifikasi yang ditetapkan.

"Kita hendak mengelakkan berlakunya sebarang kemalangan dan kecelakaan yang mampu meragut nyawa dan kerana itu sebarang pemasangan yang berkaitan dengan tenaga dan pendawaian, perlu mengikut spesifikasi dan undang-undang," katanya semasa hadir dalam Program Touchpoint ST di sini baru-baru ini.

Jelasnya, ST sentiasa berusaha untuk meningkatkan kesedaran masyarakat tentang bahayanya pemasangan sistem pendawaian secara haram.

"Selain itu, kita juga giat dalam usaha kita untuk memperbanyakkan program berbentuk Tanggungjawab Sosial Korporat (CSR), sepertimana yang kita lakukan hari ini di sini yang melibatkan dua dewan masyarakat dan sebuah masjid.

"Melalui program ini, kita menjalankan kerja-kerja penambahbaikan bagi sistem pendawaian sedia ada yang usang dan kita turut menjalankan kerja pemasangan sistem pendawaian baharu bagi premis yang belum mempunyai bekalan elektrik.

"Kita menjalankan kerja-kerja pemasangan sistem pendawaian dengan kakitangan dan kontraktor elektrik yang berdaftar dengan ST," katanya.

Beliau berkata, kerja-kerja penambahbaikan itu mula dilakukan sejak November lepas.

"Kita mula melakukan kerja penambahbaikan dengan Peranti Arus Baki (PAB) pada papan agihan (distribution board) yang kita dapati tidak menepati standard piawaian ST dan kita menggantikan dengan yang sewajarnya.

SAMPAIKAN: Jefrey menyampaikan cenderahati kepada Setiausaha Perhubungan Awam kepada Menteri Sains Teknologi dan Inovasi Romeo Ansow sempena majlis itu.

KURANG 1,100 MW

Permintaan puncak elektrik menurun kesan daripada Covid-19

Come GET some 'green electricity' next year

KUALA LUMPUR: Domestic and industrial electricity consumers in Peninsular Malaysia can opt for renewable energy (RE) sources generated from hydropower and solar plants starting from Jan 1 next year.

The Energy and Natural Resources Ministry is offering green and environmentally-friendly electricity supply through the Green Electricity Tariff (GET) that was launched yesterday, reported Bernama.

Its minister Datuk Seri Takiyuddin Hassan said GET is offering 4,500 gigawatt-hours (GWh) of electricity from RE sources annually.

"Electricity supply from RE sources can be increased based on demand. GET customers will incur an additional charge of 3.7 sen for each kilowatt-hour (kWh) of RE bought through this programme," he added.

Those who subscribe to GET will receive a certificate confirming that the power supply is from a RE source through the Malaysia Renewable Energy Certificate (mREC), which has been registered with an international certification body.

He said the GET certification will be offered in blocks, namely 100 kWh per block for residential premises and 1,000 kWh for non-residential premises.

According to Takiyuddin, proceeds from GET sales will be used to support the implementation of the country's RE agenda and initiatives.

He said applications to subscribe for electricity supply from RE sources under the GET programme would be open from Dec 1.

Consumers who are interested in subscribing to GET could apply on the Tenaga Nasional Bhd (TNB) website or contact the nearest TNB store, he added.

Takiyuddin said the GET offer was one of the goals set by the ministry under the 100-day target for the Cabinet announced by Prime Minister Datuk Seri Ismail Sabri Yaakob.

Diskaun bil elektrik 2.9 juta pengguna

Kuala Lumpur: Seramai 2.9 juta pengguna elektrik domestik di Semenanjung Malaysia yang menggunakan elektrik bulanan sebanyak 200 kilowatt jam (kWj) bakal menikmati diskaun sebanyak 40 peratus.

Menteri Tenaga dan Sumber Asli Datuk Seri Dr Shamsul Anuar Nasarah berkata, seramai 1.4 juta pengguna domestik yang menggunakan elektrik bulanan antara 201 hingga 300kWj pula akan mendapat diskaun sebanyak 15 peratus.

Selain itu katanya, seramai 2.4 juta pengguna domestik dengan penggunaan elektrik di antara 301 hingga 600kWj akan menerima diskaun sebanyak 10 peratus.

"Ia berdasarkan pengumuman dibuat oleh Perdana Menteri Tan Sri Muhyiddin Yassin menerusi Pakej Perlindungan Rakyat dan Pemulihan Ekonomi (Pemulih), semalam.

"Pengumuman itu memaklumkan tentang pemberian diskaun bil elektrik secara bersasar kepada pengguna domestik di bukan domestik di semenanjung dan Sabah," katanya dalam kenyataan di sini, semalam.

Mengulas lanjut, beliau berkata, bagi pengguna bukan domestik di Semenanjung pula, kerajaan bersetuju untuk memberikan diskaun sebanyak lima peratus kepada pengguna elektrik di bawah kategori tarif komersial, industri dan pertanian di bawah voltan rendah.

"Pemberian diskaun ini diharap dapat membantu pengusaha kecil dan sederhana (PKS) mengurangkan kos operasi mereka," katanya.

Shamsul Anuar berkata, pengguna elektrik dalam enam sektor perniagaan terpilih di bawah inisiatif Program Strategik Memperkasa Rakyat dan Ekonomi Tambahan (Pemerkasa+) pula akan terus menerima diskaun sebanyak 10 peratus dalam tempoh yang sama.

Jefrey (on stage, third left) together with the participants of the Touch Point programme.

Energy Commission conducts refurbishment works for Ranau village

RANAU: The Energy Commission (EC) conducted refurbishment works for 207 houses here in Kampung Lohan 1 as part of its corporate social responsibility (CSR) initiative.

The officers from ST had inspected and improved the electrical wiring system for the said houses through its Touch Point programme.

On top of that, the EC also fixed the switches, sockets and the Residual Current Device (RCD) for the houses.

The officers had also briefed the residents on the importance of inspecting the RCDs in their homes at least once a month.

EC West Coast director Jefrey Nuri said that any instalment of a wiring system must be made in accordance with wiring standards set by the EC.

"For that reason, the EC would like to advise the public to go for contractors that are registered with the EC for the good of their own safety," he said during the closing ceremony of EC and Sabah Electricity Sdn Bhd's (SESB) Touch Point programme, here on Monday.

The event also included a short briefing on electrical safety for the residents in the area.

Also present in the event was Pagimatan Community Development Leader (PPM) Mohd Hisyamuddin Harun.

The Touch Point programme is a yearly programme carried out by the EC to spread awareness on electrical safety and for them to help the less fortunate with their electrical issues.

ST, SIRIM bertindak

Sesi Temubual Media

ST juga menerima permintaan daripada pihak media seperti syarikat produksi, Sinar Harian dan RTM untuk sesi temubual bagi topik-topik berkenaan ciri-ciri mampan Bangunan Berlian, pembelian kelengkapan elektrik secara dalam talian, statistik kemalangan elektrik dan kelengkapan elektrik yang selamat.

Media Interviews

The Commission also received requests from media agencies such as production houses, Sinar Harian and RTM for interview sessions on topics related to the sustainable features of the Diamond Building, purchasing electrical equipment online, electrical accident statistics as well as safe electrical equipment.

Mac
March

12

Temubual oleh wartawan TV1 berkenaan topik kemalangan elektrik dan kelengkapan elektrik yang selamat sempena laporan khas Hari Pengguna.
Interview by TV1 reporter on the topic of electrical accidents and safe electrical equipment for a special report on Consumer Day.

Mac
March

17

Temubual oleh wartawan Sinar Harian berkenaan isu kelengkapan elektrik yang tidak diluluskan ST.
Interview by Sinar Harian reporter on issues relating to electrical equipment without approval of the Commission.

Mei
May

5

Sesi temubual dan penggambaran untuk penghasilan dokumentari tentang tenaga hijau yang ditayangkan di saluran RTM.
Interview sessions and filming to produce a documentary on green energy aired on the RTM channel.

Liputan Media

Selain itu, majlis-majlis yang dianjurkan oleh ST turut mendapat liputan meluas oleh media termasuk Majlis Pelancaran *Green Electricity Tariff* (GET), *Product Safety Award 2021, EE Challenge 2021* dan Majlis Pelancaran Kempen Kesedaran Keselamatan SIRIM-ST yang dianjurkan bersama SIRIM. Operasi penguatkuasaan yang telah dijalankan turut dihadiri oleh pihak media.

Media Coverage

Apart from that, events organised by the Commission also received wide coverage from the media including the Green Electricity Tariff (GET) Launch, Product Safety Award 2021, EE Challenge 2021 and the SIRIM-ST Safety Awareness Campaign Launch Ceremony organised together with SIRIM. Enforcement operations carried out were also covered by the media.

Mac
March

23

Penerangan kepada media selepas operasi penguatkuasaan bagi membanteras penjualan kelengkapan elektrik yang tidak diluluskan oleh ST.
Briefing to the media after enforcement operations to crack down the sale of electrical equipment without approval of the Commission.

01 MEMASTIKAN DAYA HARAP BEKALAN TENAGA DAN KUALITI PERKHIDMATAN INDUSTRI

ENSURING RELIABILITY OF ENERGY SUPPLY AND SERVICE QUALITY OF THE INDUSTRY

SOROTAN UTAMA
MAIN HIGHLIGHTS

PRESTASI PERMINTAAN DAN PEMBEKALAN ELEKTRIK
ELECTRICITY DEMAND AND SUPPLY PERFORMANCE

Permintaan Elektrik

Semenanjung

Pada 2021, permintaan puncak sistem grid di Semenanjung adalah 18,585 MW seperti yang direkodkan pada 13 Oktober 2021. Ini menunjukkan penurunan sebanyak 1.2% berbanding 18,808 MW yang telah dicatatkan pada tahun sebelumnya.

Permintaan puncak di sistem grid telah pun menunjukkan penurunan buat kali pertamanya pada 2021. Bacaan permintaan puncak didapati menurun dengan lebih rendah sehingga akhir Ogos 2021 setelah bermulanya Perintah Kawalan Pergerakan (PKP) 3.0 pada 11 Jun 2021.

Electricity Demand

The Peninsula

In 2021, peak demand in the Peninsula's grid system was 18,585 MW as recorded on 13 October 2021. This shows a decrease of 1.2% when compared to 18,808 MW that was recorded in the previous year.

Peak demand readings in the grid system were found to have decreased further until late August 2021 during the Movement Control Order (MCO) 3.0 period which commenced on 11 June 2021.

Permintaan Puncak di Semenanjung, 2019–2021
Peak Demand in the Peninsula, 2019–2021

2019	2020	2021
Permintaan Puncak *Peak Demand*	**Permintaan Puncak** *Peak Demand*	**Permintaan Puncak** *Peak Demand*
18,566 MW	**18,808 MW**	**18,585 MW**
18 April 2019 *18 April 2019*	10 Mac 2020 *10 March 2020*	13 Oktober 2021 *13 October 2021*

Jumlah penjanaan elektrik di Semenanjung telah mencatatkan peningkatan sebanyak 0.38% pada 2021 kepada 125,503 GWj berbanding 125,032 GWj pada 2020, disebabkan impak tamatnya PKP yang menyebabkan pengoperasian semula bagi kebanyakan pengguna industri dan juga komersial.

The total of electricity generation in the Peninsula recorded an increase of 0.38% in 2021 to 125,503 GWh in comparison to 125,032 GWh in 2020, due to the end of MCO which resulted in industrial and commercial consumers resuming their operations.

Sabah

Permintaan elektrik pula telah meningkat di Sabah, di mana permintaan puncak tahunan dicatatkan pada 1,002.8 MW bagi 2021, yang merupakan peningkatan sebanyak 1.6% berbanding pada 2020.

Jumlah pembekalan tahunan yang direkodkan pada 2021 pula adalah 6,654.5 GWj, iaitu peningkatan sebanyak 4.1% berbanding 2020. Ini adalah kesan daripada peningkatan aktiviti ekonomi dan sosial lanjutan kelonggaran pelaksanaan Perintah Kawalan Pergerakan Bersyarat (PKPB) di seluruh negeri.

Sabah

Electricity demand increased in Sabah, where the annual peak demand was recorded at 1,002.8 MW in 2021; an increase of 1.6% compared to 2020.

Meanwhile, total annual supply for the year 2021 was recorded at 6,654.5 GWh, which was an increase of 4.1% compared to 2020. This is due to an increase in economic and social activities following the ease of Conditional Movement Control Order (CMCO) throughout the state.

Permintaan Puncak Tahunan di Sabah, 2019–2021
Annual Peak Demand in Sabah, 2019–2021

2019	2020	2021
1,001 MW	**987 MW**	**1,002.8 MW**
15 Mei 2019	20 Ogos 2020	28 Mei 2021
15 May 2019	*20 August 2020*	*28 May 2021*

Kapasiti Penjanaan

Semenanjung

Pada 2021, jumlah kapasiti terpasang dari penjanaan stesen jana kuasa di Semenanjung adalah sebanyak 26,890 MW berbanding 25,257 MW pada tahun sebelumnya dengan campuran penjanaan yang terdiri daripada arang batu (59.1%), gas asli (34.2%), hidro (5.5%), solar (0.9%) dan lain-lain (0.3%).

Secara umumnya, tenaga elektrik yang dijana dibekalkan kepada pengguna industri (40%), pengguna komersial (33%) dan pengguna domestik (25%) di mana 2% yang selebihnya dibekalkan kepada aktiviti perlombongan, pertanian dan lampu awam.

Generation Capacity

The Peninsula

In 2021, the total installed capacity of power stations in the Peninsula amounted to 26,890 MW compared to 25,257 MW in the previous year with a generation mix of coal (59.1%), natural gas (34.2%), hydro (5.5%), solar (0.9%) and others (0.3%).

In general, the electricity generated was supplied to industrial (40%), commercial (33%) and domestic (25%) consumers, while the remaining 2% was supplied to mining and agricultural activities as well as public lighting.

Kapasiti Terpasang di Semenanjung, 2020 & 2021
Installed Capacity in the Peninsula, 2020 & 2021

	2020	2021
Kapasiti Terpasang (MW) *Installed Capacity (MW)*	Arang Batu / *Coal* (12,054)	Arang Batu / *Coal* (12,054)
	Gas / *Gas* (9,792)	Gas / *Gas* (11,395)
	Hidro / *Hydro* (2,237)	Hidro / *Hydro* (2,237)
	Mini Hidro / *Mini Hydro* (295)	Mini Hidro / *Mini Hydro* (295)
	Sambungtara / *Interconnection* (300)	Sambungtara / *Interconnection* (300)
	JUMLAH / *Total:* **25,257**	JUMLAH / *Total:* **26,890**
Margin Rizab *Reserve Margin*	32%	42%
Permintaan Puncak (MW) *Peak Demand (MW)*	18,808	18,585
Penjanaan Tenaga (GWj) *Energy Generation (GWh)*	394.238	391.282
Tarikh *Date*	10 Mac / *March* 2020	13 Oktober / *October* 2021
Jumlah Tenaga (GWj) *Energy Total (GWh)*	125,032	125,503

Secara keseluruhannya, jumlah kapasiti terpasang telah meningkat pada 2021 melalui penambahan kapasiti di sistem grid lanjutan permulaan operasi dua (2) blok Loji Jana Kuasa *Southern Power Generation Sdn. Bhd.* (1,440 MW) pada Januari dan Februari 2021, satu (1) blok Loji Jana Kuasa *Edra Energy Sdn. Bhd.* (747.3 MW) pada Disember 2021 dan projek Solar Berskala Besar (LSS) *Halpro Engineering Sdn. Bhd.* (30 MW) pada Jun 2021.

Namun pada masa yang sama, sistem grid telah mengalami sedikit penurunan kapasiti hasil daripada penamatan operasi loji *YTL Power Generation Sdn. Bhd.*, Paka (585 MW) pada Jun 2021.

Di samping itu juga, kapasiti bekalan sambungtara penghantaran daripada Lao PDR melalui grid sambungtara Lao PDR-Thailand-Malaysia (LTM), kekal pada 300 MW pada 2021 seperti kapasiti pada tahun sebelumnya.

Sabah

Penjanaan tenaga di Sabah terdiri daripada sumber bahan api gas, diesel, hidro dan tenaga boleh baharu (TBB) seperti biojisim dan biogas serta penjanaan daripada LSS.

Pada 2021, kapasiti boleh harap di Sabah adalah sebanyak 1,176.34 MW berbanding 1,171 MW pada 2020.

Overall, total installed capacity increased in 2021, through capacity additions in the grid system following the commencement of Southern Power Generation Sdn. Bhd.'s two (2) power plant blocks (1,440 MW) in January and February 2021, Edra Energy Sdn. Bhd.'s one (1) power plant block (747.3 MW) in December 2021 and Halpro Engineering Sdn. Bhd.'s Large Scale Solar (LSS) project (30 MW) in June 2021.

At the same time, the grid system experienced a decrease in capacity resulting from the decommissioning of YTL Power Generation Sdn. Bhd. Plant, Paka (585 MW) in June 2021.

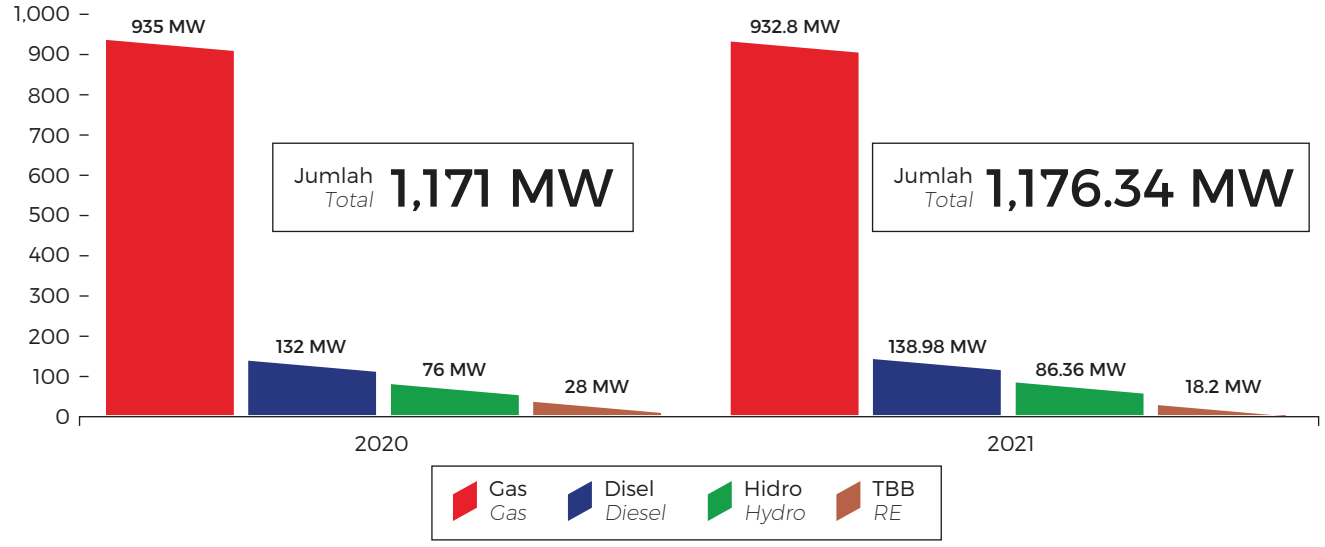
Besides that, capacity supplied from Lao PDR through the Lao PDR-Thailand-Malaysia (LTM) interconnection grid was maintained at 300 MW in 2021, the same capacity from the previous year.

Sabah

Energy generation in Sabah is sourced from gas, diesel, hydro and renewable energy (RE) such as biomass and biogas including generation from the LSS.

In 2021, dependable capacity in Sabah was 1,176.34 MW compared to 1,171 MW in 2020.

Kapasiti Boleh Harap di Sabah, 2020 & 2021
Dependable Capacity in Sabah, 2019 & 2020



Nota : Jumlah kapasiti boleh harap ini tidak termasuk LSS yang berkapasiti 50 MW.
Note : Total dependable capacity does not include LSS with a capacity of 50 MW.

Perubahan kepada jumlah kapasiti boleh harap adalah disebabkan oleh semakan semula keboleharapan yang dijalankan oleh pihak *Grid System Operator* (GSO) bagi unit hidro di Stesen Jana Kuasa Hidro Tenom Pangi (66.88 MW) dan Stesen Jana Kuasa Patau-Patau (67.08 MW) berdasarkan pengujian *Tested Annual Availability Capacity* (TAAC).

Selain itu, terdapat juga permulaan tugas loji di Sabah yang melibatkan kemasukan set jana kuasa DE3B di Stesen Jana Kuasa Tawau (5 MW) pada Ogos 2021 dan *Lower Bengkoka Hydro Plant* (One River) (10.98 MW) pada November 2021.

Manakala, Stesen Jana Kuasa TSH Biomass (10 MW) pula telah menamatkan tempoh operasinya pada Julai 2021.

Campuran Penjanaan

Tahun 2021 menyaksikan pengurangan terhadap penggunaan arang batu dalam penjanaan elektrik berbanding tahun sebelumnya.

Penggunaan gas asli sebaliknya merekodkan peningkatan berikutan permulaan *Commercial Operation Date* (COD) dua (2) blok Loji Jana Kuasa *Southern Power Generation Sdn. Bhd.* dan satu (1) blok Loji Jana Kuasa *Edra Energy Sdn. Bhd* pada 2021, serta penamatan operasi *YTL Power Generation Sdn. Bhd.*, Paka pada 2020.

Changes to the total dependable capacity are caused by the dependency revisions conducted by the Grid System Operator (GSO) for the hydro unit in the Tenom Pangi Hydro Power Station (66.88 MW) and the Patau-Patau Power Station (67.08 MW) based on the Tested Annual Availability Capacity (TAAC).

Aside from that, there was also the commissioning of power plants in Sabah involving the introduction of DE3B power generation sets at Tawau Power Station (5 MW) in August 2021 and Lower Bengkoka Hydro Plant (One River) (10.98 MW) in November 2021.

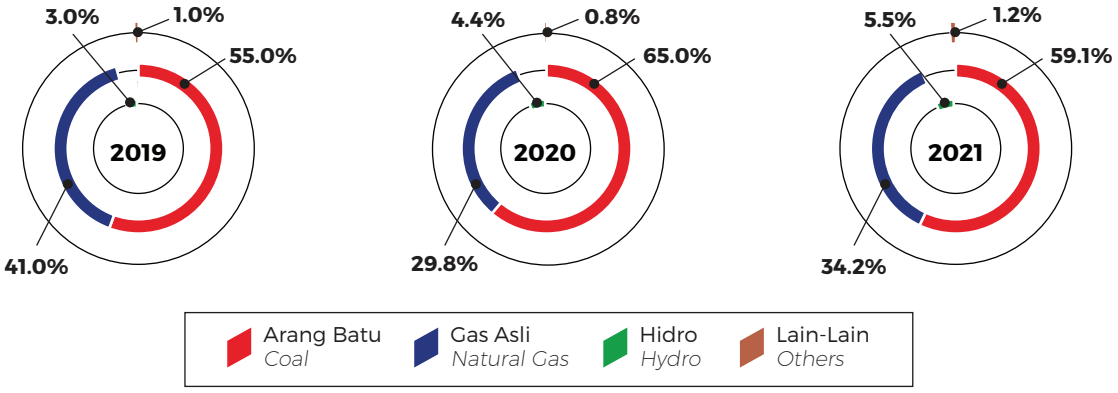
Meanwhile, TSH Biomass Power Station (10 MW) was decommissioned in July 2021.

Generation Mix

2021 saw a decrease in the use of coal to generate electricity compared to the previous year.

On the other hand, natural gas recorded an increase following the Commercial Operation Date (COD) of Southern Power Generation Sdn. Bhd.'s two (2) power plant blocks and Edra Energy Sdn. Bhd.'s one (1) power plant block in 2021, as well as the decommissioning of YTL Power Generation Sdn. Bhd. Paka in 2020.

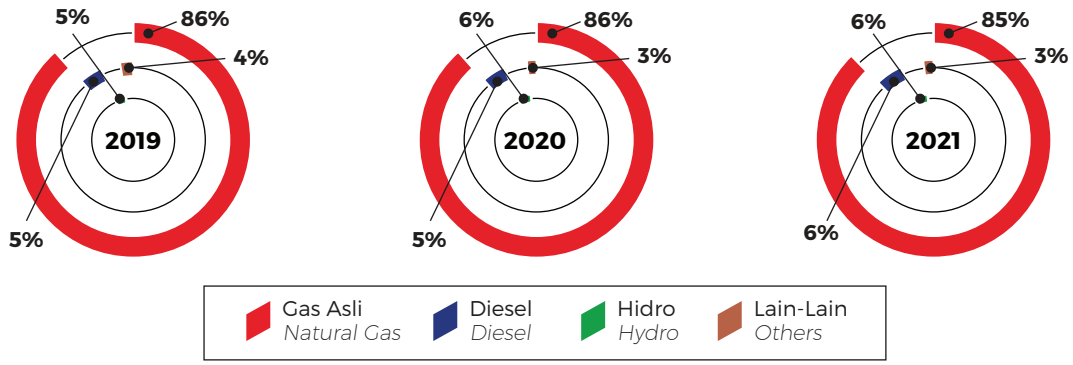
Campuran Penjanaan di Semenanjung, 2019–2021
Generation Mix in the Peninsula, 2019–2021



Di Sabah pula, trend campuran penjanaan tidak banyak berubah berbanding tahun sebelumnya.

In Sabah, the generation mix trend has not changed much compared to the previous year.

Campuran Penjanaan di Sabah, 2019–2021
Generation Mix in Sabah, 2019–2021



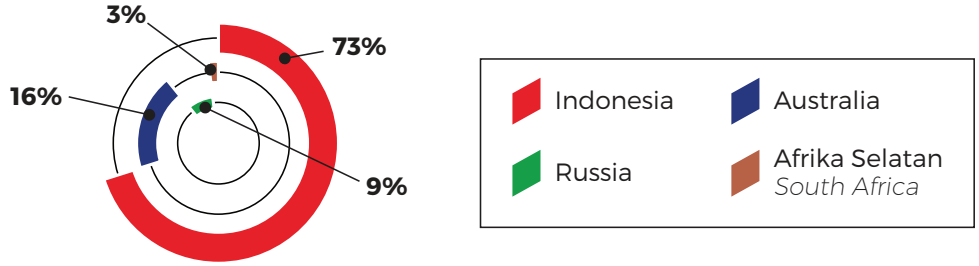
Arang Batu

Pada 2021, sebanyak 32.13 metrik tan arang batu telah diimport ke stesen-stesen jana kuasa arang batu di Semenanjung. Daripada jumlah tersebut, 72.7% adalah arang batu *sub-bituminous* manakala 27.3% adalah arang batu *bituminous*.

Coal

In 2021, as much as 32.13 metric tonnes of coal were imported for use in power stations in the Peninsula. From that total, 72.7% were sub-bituminous coal while 27.3% were bituminous coal.

Pecahan Sumber Arang Batu yang Diimport, 2021
Breakdown of Imported Coal, 2021



Gas Asli

Jumlah penggunaan bekalan gas asli oleh sektor tenaga mencatatkan purata 801 mmscfd bagi Semenanjung, iaitu lebih tinggi daripada yang dijangkakan.

Bagi negeri Sabah pula, penggunaan gas asli oleh sektor tenaga mencatatkan purata 123 mmscfd, iaitu purata yang tidak jauh berbeza jika dibandingkan dengan kadar penggunaan negeri tersebut pada tahun-tahun sebelumnya.

Natural Gas

The energy sector recorded average consumption of 801 mmscfd of natural gas in the Peninsula, which was more than expected.

Over in Sabah, the energy sector consumed 123 mmscfd of natural gas on average, which was almost similar to the amount consumed in previous years.

Bagi memastikan daya harap dan keberterusan bekalan tenaga sentiasa terjamin, beberapa siri Mesyuarat Jawatankuasa telah dijalankan bagi membolehkan perbincangan yang lebih berkesan berhubung isu-isu bekalan bahan api.

i. **Mesyuarat Jawatankuasa Pembekalan Gas bagi Semenanjung** membincangkan prestasi pembekalan gas, kadar penggunaan gas oleh sektor tenaga, operasi sistem grid serta perancangan pembekalan dan penggunaan gas bagi 2021.

ii. **Mesyuarat Jawatankuasa Pembekalan Gas Bagi Sabah dan Wilayah Persekutuan Labuan** pada Jun 2021 membincangkan prestasi pembekalan gas, kadar penggunaan gas oleh sektor tenaga, operasi sistem grid serta perancangan pembekalan dan penggunaan gas bagi 2021.

iii. **Mesyuarat Jawatankuasa Pembekalan Arang Batu** membincangkan situasi pembekalan arang batu dan isu-isu berkaitan serta prestasi sistem grid.

iv. **Mesyuarat Jawatankuasa Kod Grid Semenanjung** membincangkan perkara-perkara berkenaan keboleharapan dan sekuriti sistem grid berpandukan Kod Grid Semenanjung Malaysia.

v. **Mesyuarat Jawatankuasa Kod Grid Sabah dan Wilayah Persekutuan Labuan** membincangkan perkara-perkara keboleharapan dan sekuriti sistem grid berpandukan Kod Grid Sabah dan Wilayah Persekutuan Labuan.

Penjanaan Berasaskan Tenaga Boleh Baharu (TBB)

Seiring dengan klasifikasi sumber TBB oleh agensi-agensi antarabangsa seperti *United Nations Statistics Division* (UNSD), *International Energy Agency* (IEA) dan *International Renewable Energy Agency* (IRENA), kapasiti penjanaan TBB negara telah diselaraskan agar turut mengambil kira hidroelektrik berkapasiti 30 MW ke atas. Transisi ini adalah bertepatan dalam merealisasikan sasaran 31% kapasiti TBB negara menjelang 2025.

Pada 2021, Semenanjung dan Sabah mencatatkan peratusan TBB sebanyak 16.6%, iaitu 5,511.1 MW daripada jumlah kapasiti keseluruhan sebanyak 33,244.4 MW. Selain daripada stesen penjanaan milik syarikat utiliti utama, kapasiti keseluruhan ini turut mengambil kira kapasiti *cogeneration*, *Feed-in Tariff* (FiT), LSS dan penjanaan persendirian.

To ensure secure and reliable energy supply, a series of Committee Meetings were held to enable more effective discussions on fuel source supply issues.

i. The Peninsula Gas Supply Committee Meeting discussed gas supply performance, energy sector usage rate, and grid system operations including gas usage and supply plans for 2021.

ii. Sabah and Federal Territory of Labuan Gas Supply Committee Meeting discussed gas supply performance, energy sector usage rate, and grid system operations including gas usage and supply plans for 2021.

iii. Coal Supply Committee Meeting discussed the coal supply situation and issues related to the grid system operations.

iv. Peninsula Malaysia Grid Code Committee Meeting discussed matters related to grid system reliability and security guided by the Peninsula Malaysia Grid Code.

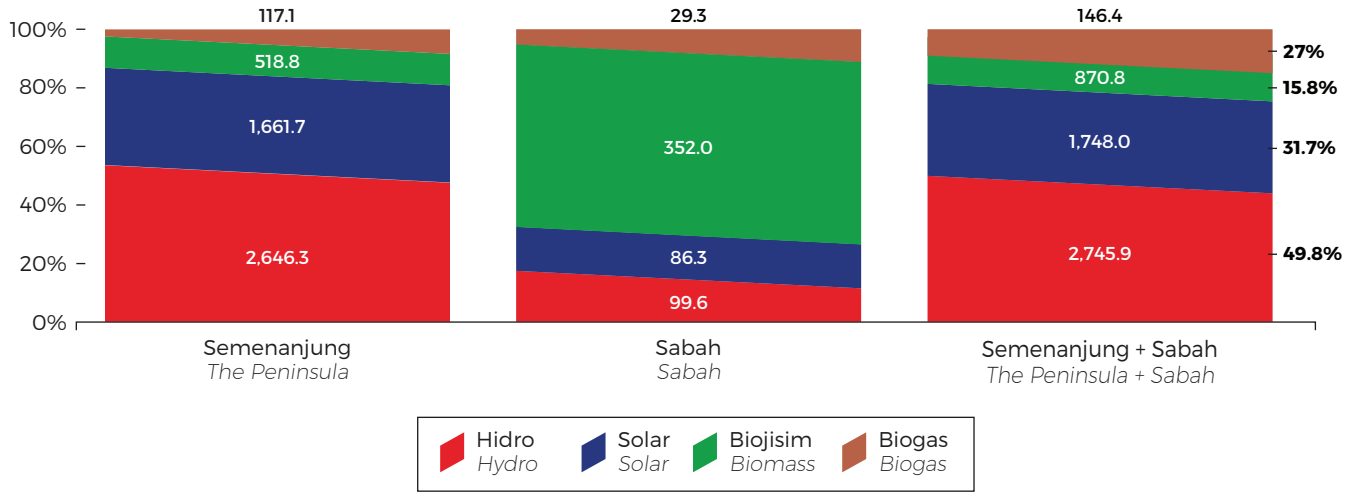
v. Sabah and Federal Territory of Labuan Grid Code Committee Meeting discussed matters related to grid system reliability and security guided by the Sabah and Federal Territory of Labuan Grid Code.

Renewable Energy (RE) Based Generation

With the classification of RE sources by international agencies such as the United Nations Statistics Division (UNSD), the International Energy Agency (IEA) and the International Renewable Energy Agency (IRENA), the country's RE generation capacity was adjusted to also consider hydroelectricity that is over 30 MW in capacity. This transition is in line to realise the country's 31% RE capacity target by 2025.

In 2021, the Peninsula and Sabah recorded 16% RE at 5,511.1 MW from an overall capacity of 33,244.4 MW. Besides the generation stations belonging to the main utility companies, this overall capacity also takes into account cogeneration capacity, Feed-in Tariff (FiT), LSS and private generation.

Kapasiti Elektrik TBB di Semenanjung dan Sabah, 2021
RE Electricity Capacity in the Peninsula and Sabah, 2021



Kapasiti TBB di Semenanjung dan Sabah menunjukkan perbezaan profil di mana kapasiti TBB di Semenanjung didominasi oleh sumber hidro manakala di Sabah adalah biojisim.

Bagi hidroelektrik, jumlah kapasiti di Semenanjung dan Sabah ialah 2,745.9 MW, dengan hanya 2.0% daripadanya dari hidro mini. Di Semenanjung, peratusan hidroelektrik yang dicatatkan pada 2021 ialah sebanyak 53.5%. Sebagai sumber penjanaan elektrik tertua di negara ini, hidroelektrik telah dimanfaatkan secara maksimum semenjak pembangunan Stesen Hidroelektrik Chenderoh di Perak yang berkapasiti 30 MW pada sekitar 1927 hingga 1930.

Kini, Stesen Hidroelektrik Chenderoh terletak di dalam Skim Hidroelektrik Sungai Perak di samping stesen-stesen hidroelektrik yang lain seperti Temenggor, Bersia, Kenering, Chenderoh dan Sungai Piah *(Upper dan Lower)*.

Di Sabah pula, stesen hidroelektrik yang utama adalah Tenom Pangi milik SESB yang berkapasiti 75 MW.

Biojisim yang merupakan TBB dominan di Sabah mempunyai kapasiti keseluruhan sebanyak 352 MW, mewakili 62.1% daripada jumlah keseluruhan kapasiti TBB bagi negeri tersebut. Majoriti stesen jana kuasa berasaskan biojisim adalah daripada segmen penjanaan persendirian. Pada peringkat awal fasa kemasukan TBB, sumber biojisim seperti kelapa sawit, sisa kayu dan sekam padi merupakan bahan api kelima yang dimanfaatkan secara meluas bagi penjanaan elektrik di negara ini.

RE capacity in the Peninsula and Sabah showed different profiles where RE capacity source in the Peninsula is dominated by hydro while Sabah's is biomass.

For hydroelectricity, the total capacity in the Peninsula and Sabah is 2,745.9 MW, with only 2.0% of it is from the mini hydro. In the Peninsula, hydroelectricity in 2021 was recorded at 53.5%. As the country's oldest source of electricity generation, hydroelectricity was used to its maximum ever since the 30 MW capacity Chenderoh Hydroelectricity Station in Perak was developed around 1927 to 1930.

Today, the Chenderoh Hydroelectricity Station falls under the Perak River Hydroelectricity Scheme alongside other hydroelectricity stations such as Temenggor, Bersia, Kenering, Chenderoh dan Sungai Piah (Upper dan Lower).

For Sabah, the main hydroelectricity station is Tenom Pangi, owned by SESB with a 75 MW capacity.

Biomass, which is Sabah's dominant RE has an overall capacity of 352 MW which represents 62.1% of the state's overall RE capacity. The majority of biomass based power stations are from private generation segments. In the early stages of RE entry phase, biomass sources such as palm oil, wood waste and rice husk are the fifth fuel source utilised broadly to generate electricity in this country.

Tenaga solar merupakan antara agenda utama Pelan Pembangunan Penjanaan Semenanjung Malaysia (2021-2039) seperti yang diluluskan oleh Mesyuarat Jawatankuasa Perancangan dan Pelaksanaan Pembekalan Elektrik dan Tarif (JPPPET) pada 2020. Kerajaan telah menyasarkan sebanyak 1,098 MW kapasiti tambahan berasaskan solar menjelang 2025, yang akan dibangunkan di Semenanjung mulai 2021. Peningkatan tenaga solar sebagai sumber penjanaan elektrik turut dipacu oleh pelbagai program-program galakan TBB bermula dengan *Small Renewable Energy Programme* (SREP) pada 2001, FiT pada 2011, Pemeteran Tenaga Bersih (NEM) pada 2016 dan terbaharu LSS pada 2017. Kos pemasangan modul fotovoltaik (PV) yang mampu milik dengan faedah pembiayaan yang menarik serta pelbagai penambahbaikan terhadap operasinya juga menjadi faktor penggalak dalam penerimaan tenaga solar sebagai sumber penjanaan elektrik pada masa kini.

Tenaga solar mencatatkan kapasiti berjumlah 1,748 MW secara keseluruhan di Semenanjung dan Sabah pada 2021. Selain itu, solar merupakan sumber TBB kedua tertinggi dalam kapasiti TBB di Semenanjung, dengan peratusan sebanyak 53.5% daripada jumlah keseluruhan kapasiti. Di Sabah pula, peratusan tenaga solar adalah sebanyak 15.5%.

Tenaga solar dikategorikan sebagai TBB boleh ubah yang mana ianya menghasilkan tenaga secara terputus-putus berbanding mengikut permintaan. Kelebihan tenaga solar berbanding sumber TBB yang lain ialah ianya merupakan sumber yang tidak akan kehabisan dan mudah dibangunkan dalam pelbagai skala, sama ada secara persendirian di rumah, di kawasan pedalaman atau di bandar, malah yang berskala besar bagi disambungkan ke grid nasional. Malaysia sebagai sebuah negara Khatulistiwa dengan purata harian sinaran matahari sebanyak 4,500 kWh m^2 dan mendapat sinaran matahari sekurang-kurangnya 12 jam sehari wajar mengoptimumkan sumber ini sebagai alternatif utama dalam mengurangkan kebergantungan terhadap arang batu secara beransur-ansur menjelang 2050.

Selain sektor penjanaan elektrik, tenaga solar juga diharap dapat diperluaskan dalam sektor-sektor lain seperti di sektor pengangkutan sebagai sumber pengecasan stesen kenderaan elektrik, sektor pembangunan bandar pintar seperti lampu jalan dan rumah kediaman serta bagi penggunaan spesifik seperti satelit berkuasa solar di Malaysia.

Solar energy is one of the main agenda for the Peninsular Malaysia Generation Development Plan (2021-2039) as approved by the Planning and Implementation Committee for Electricity Supply and Tariff (JPPPET) meeting in 2020. The Government is aiming for 1,098 MW in solar based additional capacity by 2025, which will be developed in the Peninsula in 2021. The increase of solar energy as a source of electricity generation is propagated through a number of RE encouragement programmes, starting with the Small Renewable Energy Programme (SREP) in 2001, FiT in 2011, Net Energy Metering (NEM) in 2016 with the latest being LSS in 2017. Affordable installation costs for photovoltaic (PV) modules with attractive financing options and a multitude of operational improvements also became contributing factors in the adoption of solar energy as a source of electricity generation today.

Solar energy in the Peninsula and Sabah recorded an overall capacity of 1,748 MW in 2021. Besides that, solar is the second highest source of RE capacity in the Peninsula, with 53.5% from overall capacity total. In Sabah, solar energy holds 15.5%.

Solar energy is categorised as variable RE where it produces energy intermittently compared to on demand. The advantages of solar energy compared to other RE sources is that it is an infinite source that is easier to develop in a variety of scales, whether personally in households, rural and urban areas, even large scale ones that is connected to the national grid. As a country located at the equator, that gets an average sunshine that last 12 hours a day which amounts to 4,500 kWh m^2, Malaysia should optimise this source as the main alternative to gradually reduce dependency on coal by 2050.

Besides the electricity generation sector, it is hoped that solar energy is able to expand into the other sectors such as the transportation sector with solar powered charging stations for electric vehicles, smart city development sector such as street lights, households and for specific use such as solar powered satellites in Malaysia.

Selain itu, terdapat sebanyak 3% daripada kapasiti keseluruhan TBB di Semenanjung dan Sabah yang terdiri dari sumber biogas.

Mitigasi pengurangan karbon melalui TBB ini sama ada dalam peratusan yang besar atau kecil dalam campuran kapasiti penjanaan akan menyumbang terhadap pengurangan intensiti karbon sebanyak 45% pada 2030, berbanding tahap pada 2005.

Selain daripada itu, TBB juga difokuskan sebagai salah satu solusi dalam dasar Rancangan Malaysia ke-12 (RMK-12) untuk menzahirkan negara rendah karbon, bersih dan berdaya tahan. TBB dilihat paling relevan dan berpotensi untuk menjadi sumber penjanaan elektrik yang mampan bagi semua lapisan masyarakat dalam pembangunan sektor tenaga berdasarkan prinsip trilema tenaga, iaitu bekalan tenaga yang terjamin, mampu milik dan lestari.

Apart from that, 3% of the overall RE capacity in the Peninsula and Sabah comes from biogas sources.

Decarbonisation through RE, in either large or small percentages in the generation capacity mix will contribute to a 45% reduction in carbon intensity in 2030, compared to levels in 2005.

Moreover, RE is also focused as one of the solutions in the Twelfth Malaysia Plan (RMK-12) to create a low carbon, clean and resilient country. RE is seen as the most relevant and has the potential to become a source of sustainable electricity generation for all of society in the energy sector development based on the energy trilemma principle, which is a reliable, affordable and sustainable energy supply.

PEMBEKALAN GAS ASLI MELALUI TALIAN PAIP
GAS SUPPLY VIA PIPELINES

Penggunaan Gas Asli Mengikut Sektor

Pada 2021, jumlah penggunaan gas asli di Semenanjung yang dibekalkan oleh *Petronas Energy and Gas Trading Sdn. Bhd.* (PEGT) adalah sebanyak 673,432,396.64 MMBtu, manakala jumlah penggunaan yang dibekalkan oleh *Gas Malaysia Energy and Services Sdn. Bhd.* (GMES) adalah sebanyak 203,179,562.38 MMBtu.

Bagi penggunaan oleh PEGT, 17.53% daripada jumlah penggunaan adalah dalam sektor industri, manakala 43.80% daripada sektor komersial, dan baki 38.67% daripada sektor domestik.

Majoriti penggunaan gas asli oleh GMES pula iaitu sebanyak 99.76% daripada jumlah keseluruhan penggunaan adalah digunakan oleh sektor industri. Sektor komersial pula telah menggunakan sebanyak 0.23% manakala baki 0.01% digunakan oleh sektor domestik.

Penggunaan gas asli di Sabah dan Wilayah Persekutuan Labuan pula telah merekodkan bacaan sebanyak 856,201.91 MMBtu pada 2021. Sebahagian besar daripada penggunaan gas asli adalah oleh sektor industri dengan jumlah penggunaan sebanyak 823,130.44 MMBtu dan selebihnya digunakan oleh sektor komersial iaitu sebanyak 33,071.47 MMBtu. Tiada penggunaan gas asli dicatatkan oleh sektor domestik negeri tersebut.

Natural Gas Consumption By Sector

In 2021, the total consumption of natural gas in the Peninsula, supplied by Petronas Energy and Gas Trading Sdn. Bhd. (PEGT), amounted to 673,432,396.64 MMBtu, while the total supplied by Gas Malaysia Energy and Services Sdn. Bhd. (GMES) amounted to 203,179,562.38 MMBtu.

17.53% of total consumption of natural gas from PEGT was by the industrial sector, 43.80% by the commercial sector while the remaining 38.67% was from the domestic sector.

For GMES-supplied natural gas, 99.76% of consumption was from the industrial sector, while the commercial and domestic sectors consumed 0.23% and 0.01% respectively.

Natural gas consumption in Sabah and Federal Territory of Labuan stood at 856,201.91 MMBtu in 2021. A large part of this was consumed by the industrial sector, amounting to 823,130.44 MMBtu. The rest, which amounted to 33,071.47 MMBtu, was consumed by the commercial sector. There was no natural gas consumption by the State's domestic sector.

Penggunaan Gas Asli di Semenanjung, Sabah dan Wilayah Persekutuan Labuan, 2021
Natural Gas Consumption in the Peninsula, Sabah and Federal Territory of Labuan, 2021

Syarikat *Company*	Penggunaan mengikut Sektor (MMBtu) *Consumers by Sector (MMBtu)*			
	Industri *Industrial*	**Komersial** *Commercial*	**Domestik** *Domestic*	**JUMLAH** *Total*
PEGT	118,065,960.51	294,978,445.68	260,387,990.45	**673,432,396.64**
GMES	202,682,539.00	469,909.34	27,114.04	**203,179,562.38**
SEC	823,130.44	33,071.47	–	**856,201.91**

Penggunaan Gas Asli Mengikut Sub-Industri

Penggunaan gas asli di Semenanjung adalah mengikut sub-industri yang terdiri daripada industri bukan tenaga, tenaga dan eksport di Semenanjung, Sabah dan Wilayah Persekutuan Labuan.

Penggunaan gas asli untuk sektor bukan tenaga yang dibekalkan oleh PEGT bagi kategori sub-industri kimia, mesin dan peralatan serta lain-lain masing-masing adalah sebanyak 118,065,168.62 MMBtu, 791.90 MMBtu, dan 57,430,934.12 MMBtu. Ini menjadikan jumlah penggunaan gas asli untuk sektor bukan tenaga yang dibekalkan oleh PEGT adalah sebanyak 175,496,894.64 MMBtu.

Selain itu, penggunaan gas asli bagi sektor tenaga pula adalah sebanyak 294,978,445.68 MMBtu, manakala bagi eksport adalah 63,546,921.98 MMBtu.

Bagi tahun yang sama, penggunaan secara keseluruhan untuk GMES pula adalah sebanyak 202,682,539 MMBtu gas asli untuk sektor bukan tenaga. Penggunaan tertinggi jatuh di bawah sub-industri getah iaitu sebanyak 68,792,166 MMBtu.

Penggunaan gas asli di Sabah dan Wilayah Persekutuan Labuan pula dibekalkan oleh *Sabah Energy Corporation Sdn. Bhd.* (SEC) dan tertumpu kepada sektor bukan tenaga yang terdiri daripada sub-industri galian bukan logam (5,689.39 MMBtu), getah (50,524.13 MMBtu), makanan, minuman dan tembakau (74,388.14 MMBtu), fabrikasi logam (144,285.15 MMBtu) dan sebahagian besar adalah bagi penggunaan lain-lain (581,315.10 MMBtu).

Natural Gas Consumption By Sub-Industry

Natural gas consumption in the Peninsula is categorised into sub-industries consisting of non-energy, energy and export industries in the Peninsula, Sabah and Federal Territory of Labuan.

The consumption of natural gas supplied by PEGT for the non-energy sector was 118,065,168.62 MMBtu for the chemicals sub-industry, 791.90 MMBtu for the machinery and equipment sub-industry, and 57,430,934.12 MMBtu for the others sub-category. This brings the total consumption of natural gas supplied by PEGT for the non-energy sector to 175,496,894.64 MMBtu.

At the same time, natural gas consumption in the energy sector stood at 294,978,445.68 MMBtu, with exports at 63,546,921.98 MMBtu.

In the same year, overall consumption of natural gas supplied by GMES in the non-energy sector was 202,682,539 MMBtu. The highest usage was from the rubber sub-industry which was 68,792,166 MMBtu.

Natural gas consumption in Sabah and Federal Territory of Labuan is supplied by the Sabah Energy Corporation Sdn. Bhd. (SEC) and is focused on the non-energy sector which comprises of non-metallic minerals (5,689.39 MMBtu), rubber (50,524.13 MMBtu), food, drinks and tobacco (74,388.14 MMBtu), metal fabrication (144,285.15 MMBtu) sub-industries and a large part is for other uses (581,315.10 MMBtu).

Penggunaan Gas Asli Mengikut Sub-Industri bagi Sektor Bukan Tenaga, Tenaga dan Eksport di Semenanjung, Sabah dan Wilayah Persekutuan Labuan, 2021

Natural Gas Consumption by Sub-Industry for the Non-Energy, Energy and Export Sector in the Peninsula, Sabah and Federal Territory of Labuan, 2021

Tahun *Year*	**Syarikat** *Company*	**Penggunaan Mengikut Kategori Industri (MMBtu)** *Consumers by Sector (MMBtu)*				
		Bukan Tenaga *Non-Energy*				
		Galian Bukan Logam *Non-Metallic Mineral*	**Logam Asas** *Base Metal*	**Getah** *Rubber*	**Makanan, Minuman & Tembakau** *Food, Drinks and Tobacco*	**Kimia** *Chemical*
2021	PEGT	–	–	–	–	118,065,168.62
	GMES	9,442,045.00	8,382,949.00	68,792,166.00	41,767,885.00	24,963,431.00
	SEC	5,689.39	–	50,524.13	74,388.14	–

Pengguna Gas Asli Mengikut Sektor di Semenanjung, Sabah dan Wilayah Persekutuan Labuan, 2021

Natural Gas Consumers By Sector in the Peninsula, Sabah and Federal Territory of Labuan, 2021

Syarikat *Company*	**Pengguna Mengikut Sektor** *Consumers by Sector*			
	Industri *Industrial*	**Komersial** *Commercial*	**Domestik** *Domestic*	**JUMLAH** *Total*
PEGT	20	11	4	**35**
GMES	989	879	10,335	**12,203**
SEC	27	2	–	**29**

Talian Paip Gas Asli di Semenanjung, Sabah dan Wilayah Persekutuan Labuan, 2021

Natural Gas Pipelines in the Peninsula, Sabah and Federal Territory of Labuan, 2021

Syarikat *Company*	**Talian Paip (km)** *Pipeline (km)*			
	Semenanjung *Peninsula*		**Sabah dan Wilayah Persekutuan Labuan** *Sabah and Federal Territory of Labuan*	
	Polyethylene *Polyethylene*	***Steel*** *Steel*	***Polyethylene*** *Polyethylene*	***Steel*** *Steel*
PGB	–	2,218.15	–	**13.86**
TTMM	–	8.2	–	**–**
GMD	582.86	2,038.32	–	**–**
SEC	–	-	11.00	**4.00**

	Elektrik & Elektronik *Electricity And Electronics*	**Mesin & Peralatan** *Machinery and Equipment*	**Fabrikasi Logam** *Metal Fabrication*	**Kaca** *Glass*	**Lain- Lain** *Others*	**Tenaga** *Energy*	**Eksport** *Export*
	–	791.90	–	–	57,430,934.12	294,978,445.68	63,546,921.98
	1,632,353.00	176,869.00	3,287,899.00	21,367,344.00	22,869,608.00	–	–
	–	–	144,285.15	–	581,315.10	–	–

PRESTASI SISTEM PENGHANTARAN
TRANSMISSION SYSTEM PERFORMANCE

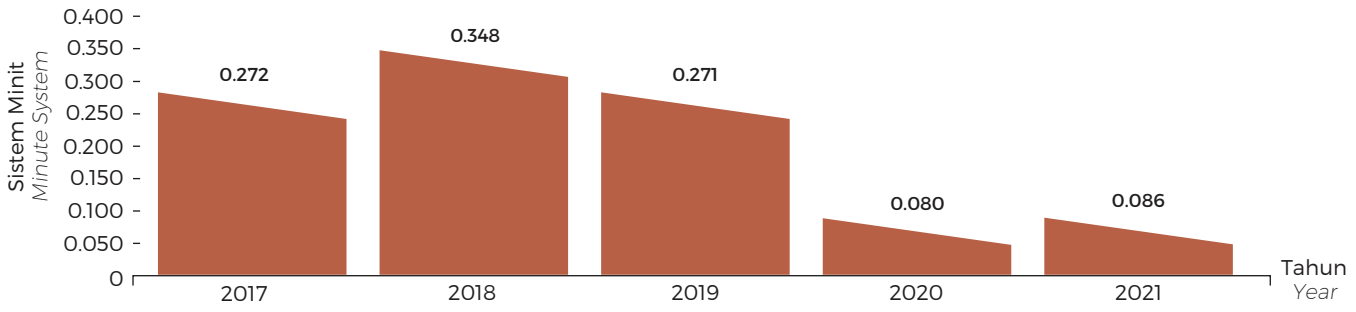
Semenanjung

Secara keseluruhannya, prestasi *Delivery Points Unreliability Index* (DePUI) sistem penghantaran TNB di Semenanjung pada 2021 masih berada di tahap yang baik dan tidak melebihi sasaran yang ditetapkan oleh ST iaitu dua (2) minit.

The Peninsula

Overall, the national grid's Delivery Points Unreliability Index (DePUI) performance fared well in 2021 and did not exceed the two (2) minutes target set by the Commission.

Prestasi DePUI di Semenanjung (TNB), 2017-2021
DePUI Performance in the Peninsula (TNB), 2017–2021



Selain itu, tiada kejadian insiden lucutan beban (UFLS) dicatatkan di Semenanjung pada 2021.

Tiada juga kejadian *Wide Area System Loss* (WASL) dilaporkan bagi Semenanjung pada 2021 yang melibatkan kehilangan beban melebihi 1,858.5 MW atau 10% daripada permintaan puncak, 18,585 MW.

In addition, there were no records of under frequency load shedding (UFLS) incidents recorded in the Peninsula in 2021.

In 2021, there were also no reports of incidents in the Peninsula on Wide Area System Loss (WASL) involving load losses exceeding 1,858.5 MW or 10% of the peak demand of 18,585 MW.

Sabah dan Wilayah Persekutuan Labuan

Pada 2021, peningkatan DePUI adalah disebabkan oleh empat (4) insiden lucutan beban grid 66 kV yang telah menyumbang sebanyak 16 minit kepada keseluruhan nilai DePUI.

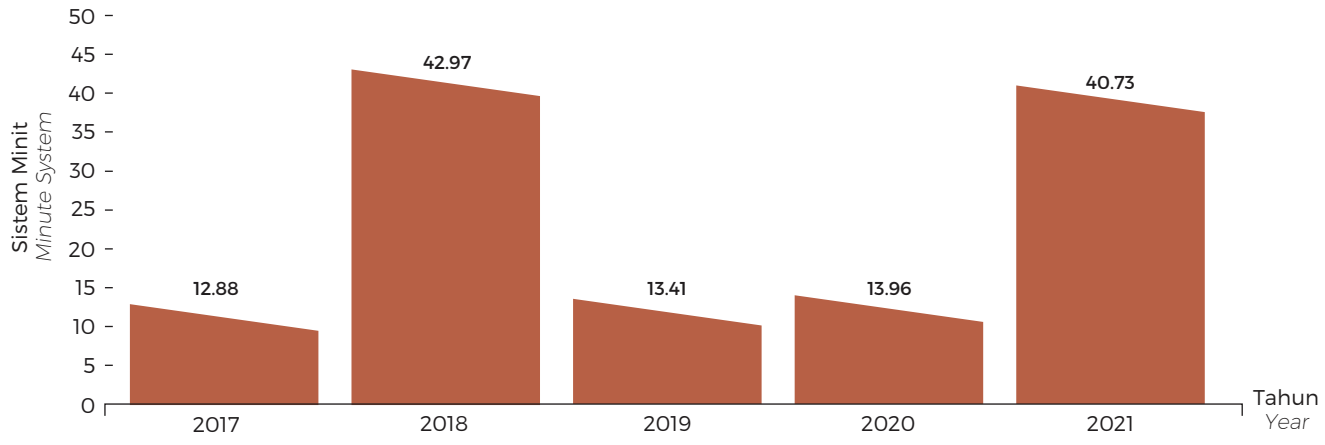
Pada keseluruhannya, prestasi sistem minit bagi grid Sabah dan Wilayah Persekutuan Labuan pada 2021 berada di tahap yang baik dan dalam sasaran yang ditetapkan ST iaitu 50 minit.

Sabah and Federal Territory of Labuan

In 2021, the increase in DePUI resulted from four (4) load shedding incidents of 66 kV which contributed 16 minutes to the overall DePUI value.

Overall, the minute system performance for the Sabah and Federal Territory of Labuan grid in 2021 fared well and was within the 50-minute target set by the Commission.

Prestasi DePUI di Sabah dan Wilayah Persekutuan Labuan (SESB), 2017-2021
DePUI Performance in Sabah and Federal Territory of Labuan (SESB), 2017–2021



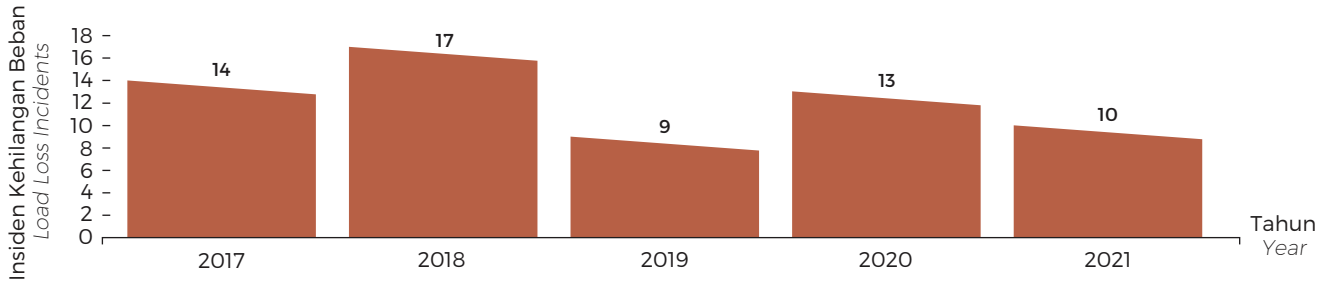
Terdapat juga sedikit penurunan bilangan insiden lucutan beban iaitu daripada 13 insiden pada 2020 kepada 10 insiden pada 2021.

Manakala, jumlah kehilangan bekalan akibat gangguan di sistem grid dicatatkan pada 691.84 MWj yang merupakan peningkatan sebanyak 41% pada 2021 berbanding 489.47 MWj pada 2020.

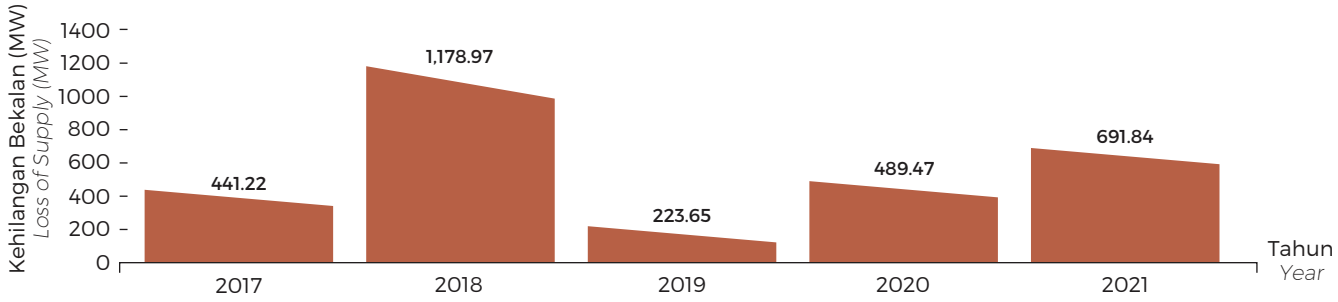
There was a slight decrease in the number of load shedding incidents from 13 incidents in 2020 to 10 incidents in 2021.

The total supply loss due to grid system interruptions was recorded at 691.84 MWh, which was an increase of 41% in 2021 compared to 489.47 MWh in 2020.

Insiden Kehilangan Beban Berpunca daripada Gangguan Sistem Grid di Sabah dan Wilayah Persekutuan Labuan, 2017–2021
Total Load Loss Incidents due to Grid System Interruptions in Sabah and Federal Territory of Labuan, 2017-2021



Kehilangan Bekalan di Sabah dan Wilayah Persekutuan Labuan, 2017–2021
Loss of Supply in Sabah and Federal Territory of Labuan, 2017–2021



Tiada WASL direkodkan pada 2021 sama seperti 2020 yang melibatkan kehilangan beban melebihi 300.84 MW atau 30% daripada permintaan puncak, 1,002.8 MW.

Just as in 2020, there was no record of WASL in 2021, involving a load loss of more than 300.84 MW or 30% of the peak demand of 1,002.8 MW.

PRESTASI SISTEM PENGAGIHAN
DISTRIBUTION SYSTEM PERFORMANCE

SAIDI, SAIFI dan CAIDI Elektrik

Semenanjung

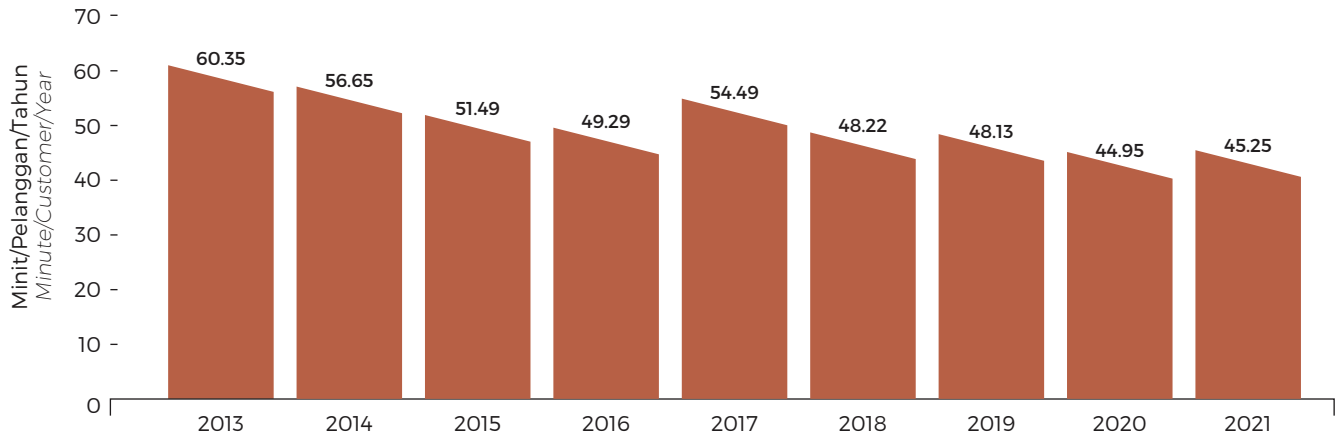
Pencapaian *System Average Interruption Duration Index* (SAIDI) di Semenanjung telah menunjukkan peningkatan sebanyak 0.7% dengan catatan SAIDI sebanyak 45.25 minit/pelanggan/tahun pada 2021, berbanding 44.95 minit/pelanggan/tahun pada 2020.

Electricity SAIDI, SAIFI and CAIDI

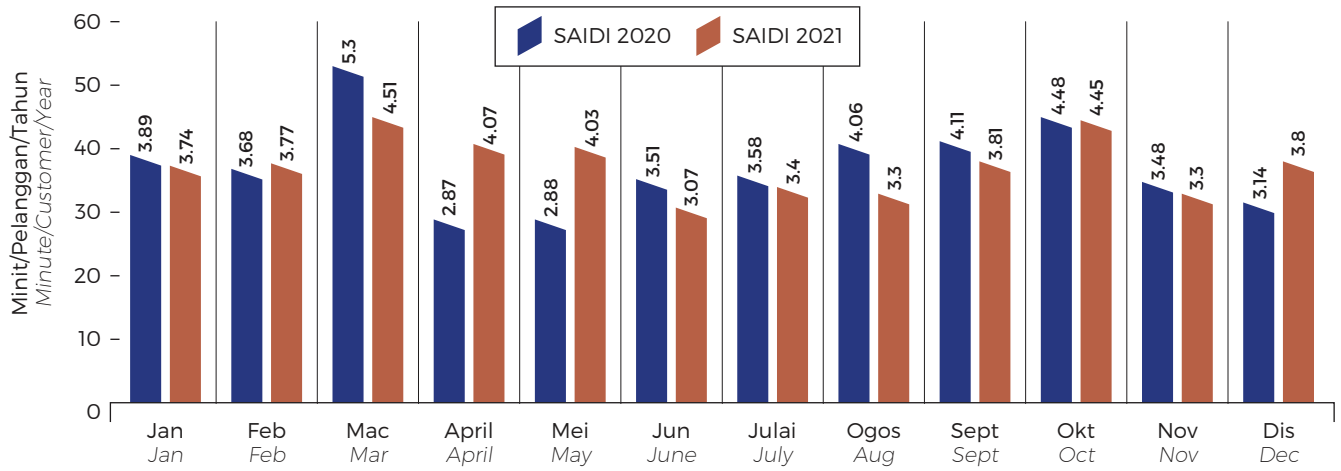
The Peninsula

The System Average Interruption Duration Index (SAIDI) performance in the Peninsula recorded an increase of 0.7% to 45.25 minutes/customer/year in 2021, compared to 44.95 minutes/customer/year in 2020.

SAIDI Elektrik Tahunan di Semenanjung, 2013-2021
Annual Electricity SAIDI in the Peninsula, 2013–2021



SAIDI Elektrik Bulanan di Semenanjung, 2020 & 2021
Monthly Electricity SAIDI in the Peninsula, 2020 & 2021



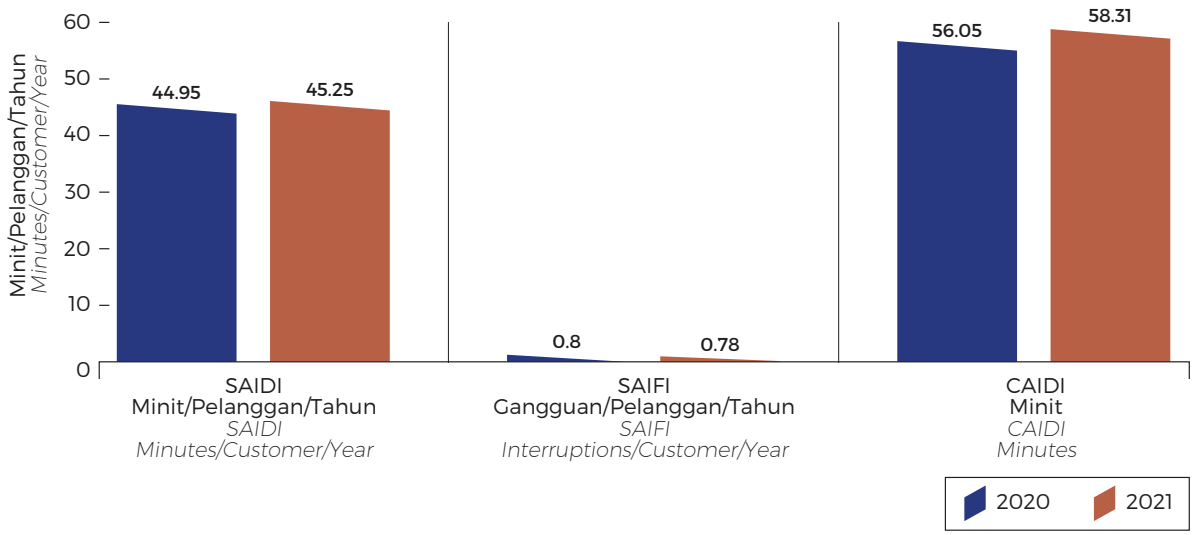
Sasaran SAIDI di Semenanjung kekal di bawah 55 minit/pelanggan/tahun seperti 2020.

Secara keseluruhannya, terdapat sedikit peningkatan dari segi prestasi SAIDI, *System Average Interruption Frequency Index* (SAIFI) dan *Customer Average Interruption Duration Index* (CAIDI) di Semenanjung berbanding 2020, berikutan sedikit peningkatan jumlah gangguan bekalan elektrik untuk tahun 2021.

The target for SAIDI in the Peninsula remained below 55 minutes/customer/year as in 2020.

Overall, there was a slight increase in terms of the SAIDI, System Average Interruption Frequency Index (SAIFI) and Customer Average Interruption Duration Index (CAIDI) in the Peninsula compared to 2020, following the slight increase of electricity supply interruptions for the year 2021.

SAIDI, SAIFI dan CAIDI di Semenanjung, 2020 & 2021
SAIDI, SAIFI AND CAIDI in the Peninsula, 2020 & 2021



Sabah

Pencapaian SAIDI bagi 2021 telah mencapai sasaran yang ditetapkan iaitu di bawah 350 minit/pelanggan/tahun dengan catatan SAIDI sebanyak 332.14 minit/pelanggan/tahun. Pengiraan SAIDI pada 2021 adalah berdasarkan penggunaan data ECOMS dan pengecualian ke atas SAIDI bagi *Shut Down for System Improvement* (SDSI) iaitu sebanyak 22 minit.

Dalam usaha meningkatkan daya harap sistem pembekalan elektrik di Sabah, sasaran SAIDI baharu telah ditetapkan di Mesyuarat JPPPET Bilangan 1/2021 iaitu di bawah 150 minit/pelanggan/tahun menjelang 2025.

Sehubungan dengan sasaran baharu tersebut, Pasukan Petugas Khas Penurunan SAIDI 150 telah ditubuhkan pada 2021 bagi memantau dan menyelesaikan isu-isu penyumbang bacaan SAIDI SESB yang tinggi, termasuk prestasi kerja senggaraan di Bahagian Pembahagian yang merupakan punca peningkatan SAIDI di negeri tersebut.

Di bawah inisiatif Pasukan Petugas Khas Penurunan SAIDI 150 ini juga, Bahagian Pembahagian dan Penjanaan telah menunjukkan penurunan purata sebanyak 17% dan 42% berbanding 2020.

SESB juga telah mengemukakan *5-Year Roadmap Plan* bagi menyokong pencapaian sasaran SAIDI di bawah 150 minit menjelang 2025.

Sabah

SAIDI's performance in 2021 reached the set target of under 350 minutes/customer/year and stood at 332.14 minutes/customer/year. SAIDI 2021 calculations are based on the use of ECOMS data and exemptions to SAIDI for Shut Down for System Improvement (SDSI) which was 22 minutes.

In an effort to improve the reliability of the electricity supply system in Sabah, the new SAIDI target of below 150 minutes/customer/year by 2025 was set at the JPPPET Committee Meeting No. 1/2021.

In relation to the new target, the SAIDI Reduction Special Task Force 150 was established in 2021 to monitor and resolve the issues contributing to the SESB's high SAIDI reading, including the performance of maintenance work in the Distribution Division which is the cause of the increase in SAIDI.

Under this Task Force initiative, the Distribution and Generation Divisions showed an average decrease of 17% and 42% compared to 2020.

SESB also came up with the 5-year Roadmap Plan to support the performance target of SAIDI of below 150 minutes by 2025.

Pada 2021, kadar SAIFI telah mengalami sedikit penurunan kepada 12.10 gangguan/pelanggan/tahun berbanding 12.41 gangguan/pelanggan/tahun pada 2020.

Pelbagai inisiatif sedang giat dilaksanakan bagi mengatasi kekerapan gangguan oleh kerosakan kabel dan gangguan pokok yang menjadi penyumbang utama kepada SAIDI yang tinggi.

CAIDI pada 2021 pula dicatatkan pada 29.27 minit berbanding 28.59 minit pada tahun 2020 berikutan penutupan bekalan bagi kerja-kerja menaik taraf sistem bekalan.

SAIDI Sistem Bekalan Gas Berpaip untuk Sektor Bukan Tenaga

Daya harap talian paip pengagihan gas asli di Semenanjung terus dipantau berdasarkan pencapaian SAIDI oleh pemegang lesen iaitu GMD.

Pada 2021, terdapat peningkatan pencapaian SAIDI pada Julai disebabkan satu (1) gangguan terancang bagi penghantaran gas ke empat (4) *offtakers* di Taman Industri Integrasi Rawang yang dilaksanakan pada 26 hingga 27 Julai 2021.

In 2021, the SAIFI rate has slightly decreased to 12.10 outages/customer/year compared to 12.41 outages/customer/year in 2020.

Various initiatives are actively being implemented to overcome the frequency of interruptions caused by damaged cables and trees, which are the main contributors to the high SAIDI.

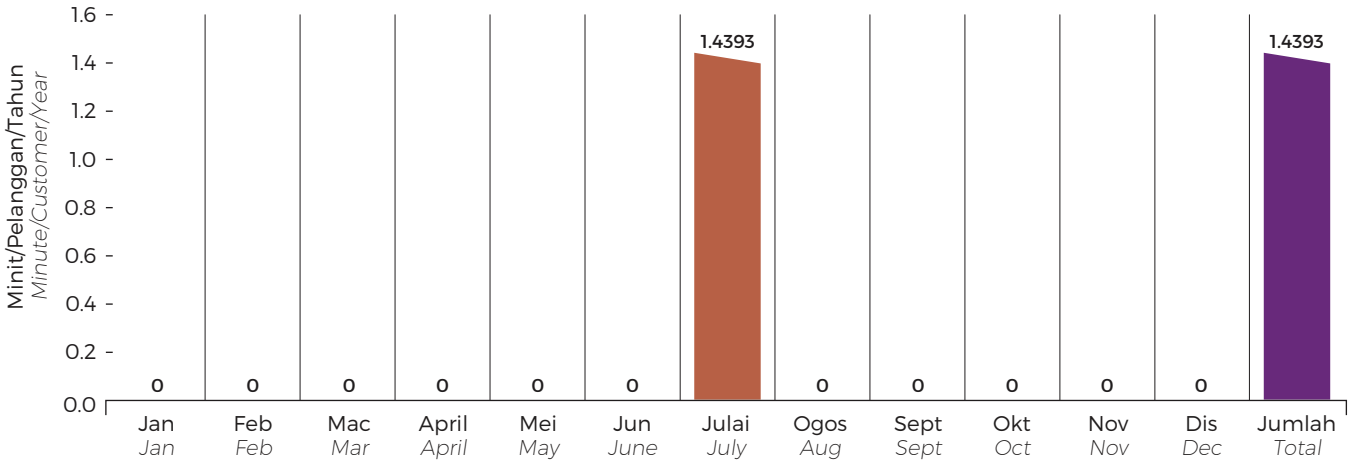
CAIDI in 2021 was recorded at 29.27 minutes compared to 28.59 minutes in 2020 following the shutdown of supply for upgrading works.

Piped Gas Supply System SAIDI in the Non-Energy Sector

The reliability of the natural gas distribution pipeline in the Peninsula is continuously monitored based on the SAIDI performance of the licensee, GMD.

In 2021, the SAIDI performance increased in July due to one (1) controlled disturbance for gas delivery to four (4) offtakers in Taman Industri Integrasi Rawang that was carried out from 26 to 27 July 2021.

SAIDI Sistem Bekalan Gas Berpaip untuk Sektor Bukan Tenaga di Semenanjung (GMD), 2021
Piped Gas Supply System SAIDI in the Non-Energy Sector in the Peninsula (GMD), 2021



Gangguan Bekalan Elektrik

Semenanjung

Semenanjung telah mencatatkan sedikit peningkatan bagi jumlah keseluruhan bilangan gangguan bekalan elektrik bagi setiap 1,000 pelanggan pada 2021 di mana sebanyak 7.44 gangguan telah dicatatkan bagi setiap 1,000 orang pelanggan berbanding dengan 7.14 gangguan pada 2020.

Jumlah ini terdiri daripada 70,004 gangguan, di mana kebanyakannya merupakan insiden voltan rendah dan sederhana yang tidak berjadual.

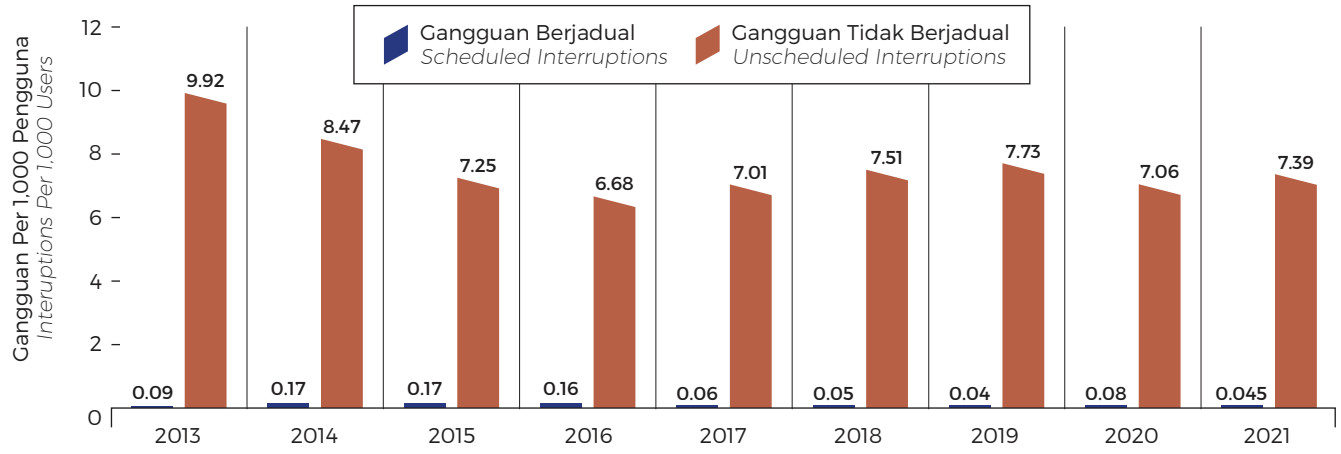
Electricity Supply Interruptions

The Peninsula

The Peninsula recorded a slight increase in the total number of electricity supply interruptions per 1,000 customers in 2021 with a total of 7.44 interruptions per 1,000 customers compared to 7.14 interruptions in 2020.

This consisted of 70,004 interruptions, most of which were unscheduled low and medium voltage incidents.

Gangguan Bekalan Elektrik TNB per 1,000 Pengguna di Semenanjung, 2013–2021
TNB Electricity Supply Interruptions per 1,000 Consumers in The Peninsula, 2013–2021



Gangguan Bekalan mengikut Tahap Voltan Sehingga 2021
Supply Interruptions by Voltage Level as of 2021

Jenis Voltan *Voltage Type*	**Gangguan Tidak Berjadual** *Unscheduled Interruptions*	**Gangguan Berjadual** *Scheduled Interruptions*	**JUMLAH** *Total*
Voltan Rendah *Low Voltage*	61,042	409	**61,451**
Voltan Sederhana *Medium Voltage*	8,532	17	**8,549**
Voltan Tinggi *High Voltage*	4	–	**4**
JUMLAH *Total*	69,578	426	**70,004**

Sabah

Pada 2021, sistem pembekalan elektrik mencatatkan sebanyak 23.4 gangguan bagi setiap 1,000 pengguna yang terdiri daripada 4,130 gangguan berjadual dan 19,287 gangguan yang tidak berjadual.

Sabah

In 2021, the electricity supply system recorded 23.4 interruptions per 1,000 consumers, consisting of 4,130 scheduled interruptions and 19,287 unscheduled interruptions.

PRESTASI KUALITI KUASA
POWER QUALITY PERFORMANCE

Kejadian Junaman Voltan

Sebanyak 673 kejadian junaman voltan telah direkodkan oleh *Power Quality Management System* (PQMS) TNB di Semenanjung bagi 2021 berbanding 678 kejadian pada 2020. Nilai $SARFI_{70}$ bagi TNB juga telah mencatatkan peningkatan sebanyak 56 kepada 232 bagi 2021 berbanding 176 pada 2020.

Johor telah mencatatkan rekod $SARFI_{70}$ tertinggi iaitu pada nilai 47, diikuti Pahang (33) dan Kedah (25).

Bilangan aduan tertinggi yang direkodkan adalah di Pulau Pinang iaitu sebanyak 370 aduan dan melibatkan seramai 115 pengguna. Bilangan kejadian junaman voltan yang tertinggi pula telah dicatatkan di Selangor iaitu sebanyak 118 kejadian melibatkan seramai 41 pengguna.

Bilangan insiden junaman voltan di *Kulim Hi-Tech Park* (KHTP) juga telah meningkat kepada 38 insiden berbanding 30 insiden pada tahun sebelumnya. Begitu juga dengan bilangan pengguna yang terlibat iaitu daripada dua (2) pengguna pada 2020 kepada sembilan (9) pengguna pada 2021.

Pada 2021, terdapat satu (1) insiden junaman voltan yang disebabkan oleh NUR, berbanding rekod tiada insiden pada dua (2) tahun sebelumnya.

Melalui *Technical Working Group - Getting Electricity* (TWGGE) yang dipengerusikan bersama oleh ST dan wakil PEMUDAH, terdapat satu (1) projek perintis yang telah ditubuhkan dalam usaha menangani masalah kualiti kuasa yang dihadapi oleh pihak industri. Penubuhan ini dibahagikan kepada dua (2) bahagian iaitu *working committee* dan *management review committee* yang disertai oleh ST, Pemudah, MPC, TNB dan INTEL.

Voltage Sag Incidents

A total of 673 voltage sag incidents were recorded by TNB's Power Quality Management System (PQMS) in the Peninsula for 2021 compared to 678 incidents in 2020. The $SARFI_{70}$ value for TNB also went up by 56 to 232 in 2021 compared to 176 in 2020.

Johor recorded the highest $SARFI_{70}$ value with 47, followed by Pahang (33) and Kedah (25).

Penang had the highest number of complaints at 370 complaints involving a total of 115 consumers. The highest number of incidents of voltage sag was recorded in Selangor which were 118 incidents involving a total of 41 consumers.

The number of voltage sag incidents at Kulim Hi-Tech Park (KHTP) also increased to 38 incidents compared to 30 incidents in the previous year. Likewise, the number of consumers involved also went up from two (2) consumers in 2020 to nine (9) consumers in 2021.

There was one (1) incident of voltage sag due to NUR, compared to none in the last two (2) years.

Through the Technical Working Group - Getting Electricity (TWGGE) which is co-chaired by the Commission and PEMUDAH representative, one (1) pilot project has been established in an effort to deal with power quality problems faced by the industry. This establishment is divided into two (2) parts, namely the working committee and the management review committee, joined by the Commission, Pemudah, MPC, TNB and INTEL.

PEMATUHAN TERHADAP TAHAP PERKHIDMATAN YANG DIJAMIN (GSL) DAN TAHAP PERKHIDMATAN MINIMUM (MSL) BAGI SEKTOR BEKALAN ELEKTRIK

COMPLIANCE OF THE GUARANTEED SERVICE LEVELS (GSL) AND MINIMUM SERVICE LEVELS (MSL) FOR THE ELECTRICITY SUPPLY SECTOR

Tahap Perkhidmatan Yang Dijamin (GSL) Elektrik

Pencapaian keseluruhan Tahap Perkhidmatan yang Dijamin (GSL) bagi 2021 adalah lebih rendah berbanding 2020 (99.61%) di mana ianya telah mencatatkan GSL sebanyak 98.92%.

Penurunan pencapaian bagi GSL 2 (94.52%) dan GSL 3 (97.64%) telah menyumbang kepada penurunan pencapaian keseluruhan GSL tersebut.

Jumlah sebenar pembayaran rebat bagi tahun 2021 adalah sebanyak RM333,917.63 di mana penalti tertinggi adalah untuk GSL 2 iaitu sebanyak RM333,517.63.

Tahap Perkhidmatan Minimum (MSL) Elektrik

Pencapaian keseluruhan Tahap Perkhidmatan Minimum (MSL) didapati meningkat dari 95.96% pada 2020 kepada 96.79% pada 2021. Ini termasuk dari segi kualiti bekalan, hubungan pelanggan dan perkhidmatan meter yang mencatatkan peningkatan prestasi yang ketara berbanding 2020.

Pada tahun 2021, ST telah meneliti beberapa penambahbaikan yang perlu dibuat dari segi pembangunan dan pengurusan data GSL dan MSL TNB bagi meningkatkan lagi tahap prestasi perkhidmatan TNB. Antara cadangan penambahbaikan tersebut adalah mengenai data integriti, pelaksanaan aplikasi digital dan penetapan sasaran bagi setiap indikator perkhidmatan.

Sehingga 31 Disember, ST telah memudahcarakan tuntutan rebat GSL oleh pengguna melalui penambahbaikan terhadap aplikasi myTNB, di mana inisiatif ini menunjukkan pertambahan permohonan tuntutan rebat GSL oleh pengguna kepada 109 pada 2021 berbanding 14 permohonan pada 2020.

Electricity Guaranteed Service Levels (GSL)

The overall Guaranteed Service Levels (GSL) for 2021 was 98.82%, which was lower than that of 2020 (99.61%).

Decline in performance for GSL 2 (94.52%) and GSL 3 (97.64%) also contributed to a drop in the overall GSL performance.

The actual amount of rebate payment for 2021 was RM333,917.63 with the highest penalty was for GSL 2 amounting to RM333,517.63.

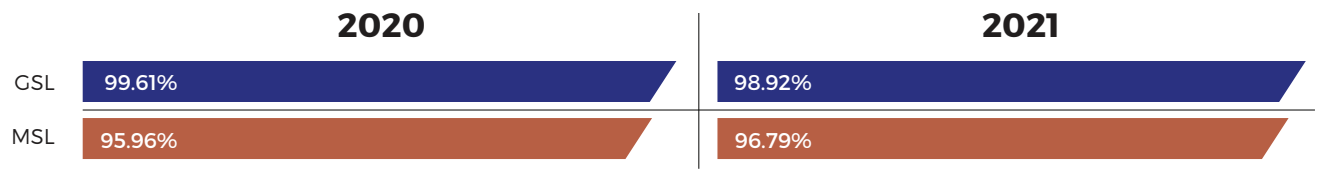
Electricity Minimum Service Levels (MSL)

The overall performance of the Minimum Service Level (MSL) increased from 95.96% in 2020 to 96.79% in 2021. This include in terms of quality of supply, customer contact and metering services which recorded a significant improvement compared to 2020.

In 2021, the Commission studied improvements on development and management of TNB's GSL and MSL data to enhance TNB's performance. Among the suggestions include data integrity, the implementation of digital application and target setting for every service indicator.

Up to 31 December, the Commission facilitated GSL rebate claims by consumers through improvements to the myTNB application, resulting in an increase in GSL rebate claims by consumers to 109 in 2021 compared to 14 applications in 2020.

Kadar Pematuhan TNB untuk GSL dan MSL, 2020 & 2021
TNB Compliance Rate for GSL and MSL, 2020 and 2021

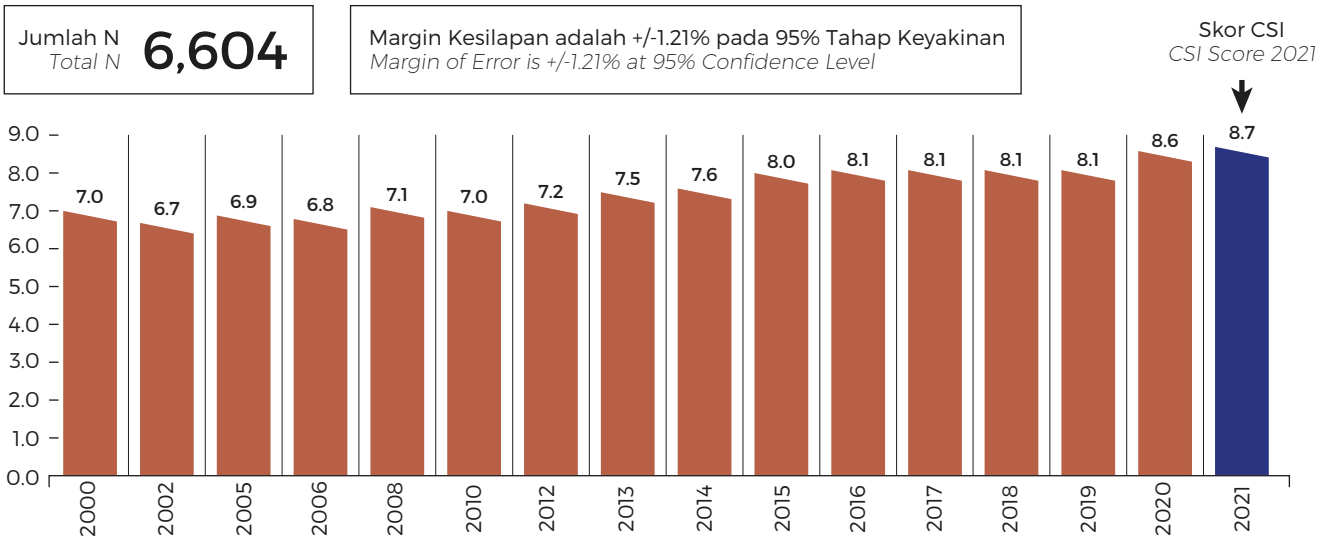


KAJIAN INDEKS KEPUASAN PELANGGAN TNB (CSI TNB)
TNB CUSTOMER SATISFACTION INDEX (CSI TNB) SURVEY

Pada 2021, TNB telah memulakan kajian lapangan Pelaksanaan Kajian Indeks Kepuasan Pelanggan TNB (CSI-TNB) dari 5 Oktober hingga 17 Disember 2021 bagi pengguna-pengguna TNB di Semenanjung. Sebanyak 6,604 orang responden telah dipilih dan ditemuramah secara bersemuka bagi mendapatkan data yang tepat.

In 2021, TNB started a TNB Customer Satisfaction Index (CSI-TNB) field study from 5 October to 17 December 2021 for TNB consumers in the Peninsula. A total of 6,604 respondents were selected and face-to-face interviews conducted with them to obtain accurate data.

Skor CSI-TNB yang Direkodkan, 2000–2021
CSI-TNB Recorded Scores, 2000–2021



18 Elemen yang Diambil Kira dalam Pengiraan Skor CSI-TNB
18 Elements Considered in the CSI-TNB Score Calculation

Penyambungan Baharu / Tambah Baik atau Muat Turun Sambungan / Perubahan Penyewaan / Penutupan Akaun *New Connection / Connection Upgrade or Download / Change Of Tenancy / Close Of Account*	**Meter** *Meter*	**Kios Layan Diri** *Self-service Kiosk*
Daya Harap dan Kualiti Bekalan *Reliability & Quality Of Supply*	**Caj** *Billing*	**Talian Khidmat Pelanggan TNB** *TNB Careline* **(15454 atau / *or* 1-300-88-5454)**
Henti Tugas yang Dirancang *Planned Shutdown*	**Pembayaran** *Payment*	**Talian Khidmat Pelanggan TNB *Facebook*** *TNB Careline Facebook Page*
Kerosakan dan Pemulihan *Breakdown and Restoration*	**Pengendalian Pertanyaan** *Enquiries Handling*	**Pengurus Akaun / Warga Kerja TNB** *Account Manager / TNB Staff*
Kualiti Kuasa *Power Quality*	**Pengendalian Aduan** *Complaints Handling*	**Portal myTNB** *myTNB Portal*
Keselamatan *Safety*	**Kedai Tenaga** *Kedai Tenaga*	**Aplikasi Mudah Alih myTNB** *myTNB Mobile Application*

Secara keseluruhan, hasil kajian CSI-TNB telah merekodkan skor sebanyak 8.7 mata pada 2021 iaitu merupakan peningkatan sebanyak 0.1 berbanding skor yang diperolehi pada 2020 (8.6 mata). Skor ini juga mengambil kira penambahan satu (1) segmen baharu iaitu Tips Keselamatan Elektrik.

Overall, the results of the CSI-TNB study recorded a score of 8.7 points in 2021, which is an increase of 0.1 compared to the score obtained in 2020 (8.6 points). This score also takes into account the addition of one (1) new segment which is Electrical Safety Tips.

MESYUARAT JAWATANKUASA PERANCANGAN DAN PELAKSANAAN PEMBEKALAN ELEKTRIK DAN TARIF (JPPPET)

THE PLANNING AND IMPLEMENTATION COMMITTEE FOR ELECTRICITY SUPPLY AND TARIFF (JPPPET) MEETING

Semenanjung

Pada Disember 2021, Kabinet telah meluluskan Pelan Pembangunan Penjanaan Semenanjung Malaysia yang telah diperakui oleh Jawatankuasa Perancangan dan Pelaksanaan Pembekalan Elektrik dan Tarif (JPPPET). Pelan tersebut telah dibangunkan dengan memenuhi kriteria-kriteria perancangan yang ditetapkan serta bertujuan untuk mengimbangi tiga (3) elemen Trilema Tenaga yang merangkumi jaminan, kemampuan dan kelestarian bekalan elektrik. Semakan terhadap Pelan Pembangunan Penjanaan Semenanjung Malaysia (2021 - 2040) juga telah dilaksanakan dengan mengambil kira situasi semasa ekonomi negara disebabkan oleh kesan pemulihan pandemik COVID-19.

Selaras dengan pengumuman RMK-12, pelan ini memberi penekanan kepada aspirasi Kerajaan dalam mencapai sasaran negara sifar bersih karbon seawal-awalnya pada tahun 2050 termasuk keputusan Kerajaan untuk tidak melaksanakan pembangunan loji jana kuasa arang batu baharu. Berdasarkan pelan pembangunan yang diluluskan, unjuran kapasiti arang batu di Semenanjung didapati berkurang daripada 12,054 MW pada tahun 2021 kepada 6,410 MW pada tahun 2040.

Pelan ini turut menekankan bahawa kajian lanjut diperlukan dengan mengambil kira landskap tenaga pada masa hadapan termasuk kesesuaian teknologi *Battery Energy Storage System* (BESS) dan teknologi baharu seperti hidrogen dan *pumped storage hydroelectric.*

Sabah

Di Sabah, Mesyuarat Jawatankuasa Perancangan dan Pelaksanaan Pembekalan Elektrik dan Tarif (JPPPET) Sabah Bil. 1/2021 yang dipengerusikan bersama YB Menteri Tenaga dan Sumber Asli dan YAB Ketua Menteri Sabah telah diadakan pada 22 April 2021.

Antara perkara-perkara yang telah dibentangkan di mesyuarat tersebut adalah semakan semula Pelan Pembangunan Penjanaan Elektrik Sabah bagi Jangka Masa Pendek (2021 - 2023), Sederhana (2024 - 2029) dan Panjang (2030 - 2039); pelaksanaan projek-projek talian penghantaran yang berimpak tinggi di Sabah serta penetapan sasaran SAIDI Sabah sebanyak 150 minit/pengguna/tahun menjelang 2025.

The Peninsula

In December 2021, the Cabinet approved the Peninsula Generation Development Plan which was approved by the Electricity Supply and Tariff Planning and Implementation Committee (JPPPET). The plan was developed by meeting the set planning criteria which aims to balance the three (3) elements of the Energy Trilemma which includes reliability, affordability and sustainability of electricity supply. A review of the Peninsular Malaysia Generation Development Plan (2021 - 2040) has also been implemented, which takes into account the current situation of the country's economy due to the effects of the recovery from COVID-19 pandemic.

In line with the RMK-12 announcement, this plan emphasises the Government's aspiration in achieving the net zero carbon country as early as 2050 including the Government's decision to move away from new coal-fired power plants. Based on the approved development plan, the projected coal capacity in the Peninsula would decrease from 12,054 MW in 2021 to 6,410 MW in 2040.

This plan also stresses that further studies are needed considering the future energy landscape including the Battery Energy Storage System (BESS) technology and new technologies such as hydrogen and pumped storage hydroelectric.

Sabah

In Sabah, the Sabah Electricity Supply and Tariff Planning and Implementation Committee Meeting (JPPPET) No. 1/2021, which was co-chaired by YB Minister of Energy and Natural Resources and YAB Chief Minister of Sabah was held on 22 April 2021.

Among the matters presented at the meeting were the revision of the Sabah Electricity Generation Development Plan for the Short Term (2021 - 2023), Medium (2024 - 2029) and Long Term (2030 - 2039); the implementation of high impact transmission line projects in Sabah as well as the setting of Sabah's SAIDI target of 150 minutes/user/year by 2025.

Semakan semula Pelan Pembangunan Penjanaan Elektrik Sabah telah dilaksanakan dengan mengambil kira keperluan kapasiti baharu thermal oleh *step load* pada 2024, dan keperluan kapasiti sebanyak 315 MW di Pantai Timur Sabah pada 2025 hingga 2026 dengan menimbang opsyen *Battery Energy Storage System* (BESS) hibrid dan loji jana kuasa berasaskan gas.

Pelan Pembangunan Penjanaan Elektrik Sabah bagi Jangka Masa Panjang akan disemak semula dengan melaksanakan kajian bagi mempertimbangkan kepelbagaian sumber penjanaan seperti sambungtara rentas sempadan dan hidro serta mengurangkan kebergantungan kepada sumber bahan api gas.

The revision of Sabah Electricity Generation Development Plan took into account the need for new thermal capacity of step load in 2024, as well as the need for 315 MW capacity on the East Coast of Sabah for 2025 to 2026 by considering the option of a hybrid Battery Energy Storage System (BESS) and gas-based power plants.

Sabah's Long-Term Electricity Generation Development Plan will be revised by carrying out a study to consider the diversification of generation sources such as cross-border interconnection and hydro to reduce dependence on gas fuel sources.

DEMAND FORECASTING COMMITTEE (DFC) 2021
DEMAND FORECASTING COMMITTEE (DFC) 2021

Demand Forecasting Committee (DFC) merupakan platform pengumpulan input daripada pihak-pihak berkepentingan dan berkepakaran berhubung unjuran pertumbuhan ekonomi dan permintaan elektrik. Input daripada DFC akan diguna pakai di dalam Pelan Pembangunan Penjanaan di Semenanjung dan Sabah untuk kelulusan JPPPET di peringkat Kementerian yang seterusnya.

Mesyuarat DFC Bil. 1/2021 pada 28 Jun 2021 telah membincang dan memperhalusi andaian yang boleh diguna pakai sebagai input bagi membangunkan unjuran permintaan elektrik untuk 2021 sehingga 2040 seperti berikut:

- Mengambil kira impak cuaca dan teknologi terkini terhadap permintaan puncak, contohnya dengan memodelkan profil kenderaan elektrik dan solar dengan lebih terperinci.
- Mengambil kira Keluaran Dalam Negara Kasar (KDNK) akan berkurangan secara perlahan dengan situasi pandemik COVID-19 yang masih membantutkan pemulihan ekonomi negara. Situasi ini dijangka akan memberikan impak iaitu sedikit penurunan terhadap unjuran permintaan puncak bermula 2030 berbanding unjuran pada DFC 2020.
- Pertumbuhan permintaan puncak elektrik pada kadar 1.0% bagi Semenanjung dan 1.8% bagi Sabah untuk tempoh 19 tahun ke hadapan.

Hasil Kajian Unjuran Permintaan Elektrik bagi Semenanjung dan Sabah (2021 - 2040) ini telah dapat membantu perancangan pembekalan dan permintaan elektrik dengan lebih tepat bagi menyokong analisis kajian Mesyuarat JPPPET 2021.

The Demand Forecasting Committee (DFC) 2021 collected inputs from stakeholders and experts regarding economic growth and electricity demand forecasts. Inputs from the DFC will be used in the Generation Development Plan in the Peninsula and Sabah for JPPPET approval at the next Ministry level.

The DFC meeting No. 1/2021 on 28 June 2021 discussed and refined the assumptions that could be used as inputs to develop electricity demand projections for 2021 until 2040 as follows:

- *By taking into consideration the impact of weather and emerging technologies on peak demand, by modelling the profile of electric and solar vehicles in more detail.*
- *By taking into consideration, a slow decrease in the Gross Domestic Product (GDP) as a result of the COVID-19 pandemic which is still hindering the recovery of the country's economy. This situation is expected to result in a slight decrease in forecast peak demand forecast from 2030 compared to DCF's 2020 forecast.*
- *Peak electricity demand is expected to grow at a rate of 1.0% for the Peninsula and 1.8% for Sabah over the next 19 years.*

The results of the Electricity Demand Projection Study for the Peninsula and Sabah (2021 - 2040) would help in planning a more accurate electricity supply and demand plan to support the analysis of the 2021 JPPPET Meeting.

02 MENGUTAMAKAN KESELAMATAN DAN PENGUATKUASAAN
PRIORITISING SAFETY AND ENFORCEMENT

PRESTASI KEMALANGAN ELEKTRIK DAN GAS BERPAIP
ELECTRICAL AND PIPED GAS ACCIDENT PERFORMANCE

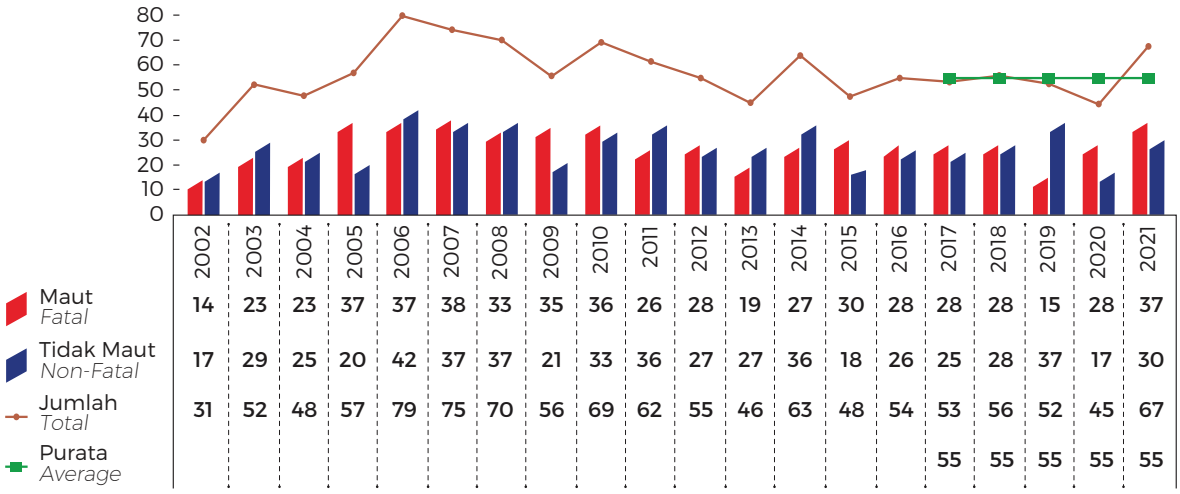
Statistik Kemalangan Elektrik

Sejak 2002, sebanyak 1,138 kes kemalangan elektrik telah dilaporkan dan disiasat oleh ST. Kes-kes tersebut melibatkan 570 kes maut dan 568 kes tidak maut. Pada 2021, kemalangan elektrik telah meningkat iaitu sebanyak 67 kes (37 maut dan 30 tidak maut) berbanding jumlah kes pada tahun lepas. Analisis turut menunjukkan purata kemalangan elektrik yang berlaku bagi tempoh lima (5) tahun ke belakang adalah sebanyak 55 kes setahun.

Electrical Accident Statistics

Since 2002, a total of 1,138 electrical accident cases have been reported and investigated by the Commission which involve 570 fatal and 568 non-fatal cases. In 2021, electrical accident cases increased to 67 (37 fatal and 30 non-fatal) compared to the previous year. Analysis also showed that the average number of electrical accidents in the past five (5) years was 55 cases per year.

Bilangan Kemalangan Elektrik, 2002–2021
Number of Electrical Accidents, 2002–2021



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Maut *Fatal*	14	23	23	37	37	38	33	35	36	26	28	19	27	30	28	28	28	15	28	37
Tidak Maut *Non-Fatal*	17	29	25	20	42	37	37	21	33	36	27	27	36	18	26	25	28	37	17	30
Jumlah *Total*	31	52	48	57	79	75	70	56	69	62	55	46	63	48	54	53	56	52	45	67
Purata *Average*																55	55	55	55	55

Bilangan Kemalangan Elektrik: Perbandingan Tempoh 5–Tahun
Number of Electrical Accidents: Comparative 5-Year Cycle

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Maut *Fatal*	38	33	35	36	26	28	19	27	30	28	28	28	15	28	37
Tidak Maut *Non-Fatal*	37	37	21	33	36	27	27	36	18	26	25	28	37	17	30
Jumlah *Total*	75	70	56	69	62	55	46	63	48	54	53	56	52	45	67
Purata *Average*	66	66	66	66	66	53	53	53	53	53	55	55	55	55	55

Nota: Analisa berdasarkan kes dilaporkan kepada ST sehingga 1 Januari 2022.
Note: Analysis are based on cases reported to the Commission up to 1 January 2022.

Trend penurunan kes kemalangan elektrik direkodkan dalam perbandingan kitaran lima (5) tahun sejak 2007. Bagi tempoh semasa 2017 hingga 2021, jumlah kes adalah sebanyak 273 berbanding dengan tempoh lima (5) tahun sebelumnya (2012 hingga 2016) iaitu sebanyak 266 kes, dan sebanyak 332 bagi tempoh lima (5) tahun terawal, iaitu dari 2007 hingga 2011.

Kadar Kemalangan Elektrik Mengikut Populasi

Populasi penduduk Semenanjung dan Sabah telah menunjukkan pertambahan sebanyak 23.5% bagi tempoh 15 tahun. Walau bagaimanapun, jumlah kadar kemalangan elektrik per sejuta penduduk pula telah menurun secara konsisten bagi setiap tempoh lima (5) tahun.

Purata kadar kes kemalangan elektrik per sejuta penduduk bagi tempoh lima (5) tahun secara keseluruhannya menunjukkan trend positif iaitu penurunan dari 27.2% (tempoh 2007-2011 kepada 2012-2016) dan seterusnya kepada 4.7% (tempoh 2012-2016 kepada 2017-2021).

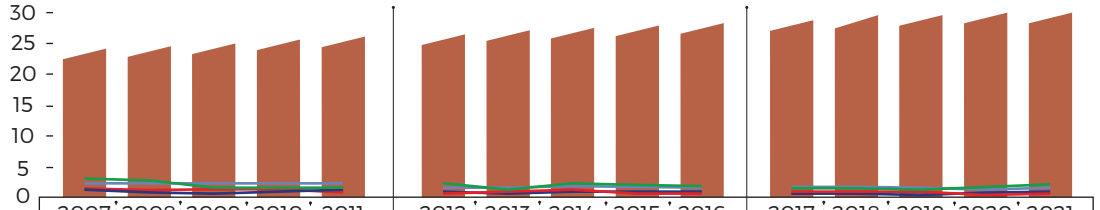
A downward trend in electrical accident cases was recorded in a five (5) year cycle comparison since 2007. From 2007 to 2011, there were 332 accident cases whereas from 2012 to 2016, there were 266 cases, and then 273 cases from 2017 to 2021.

Electrical Accident Rate By Population

Although the population of the Peninsula and Sabah has increased by 23.5% over the past 15 years, the cumulative accident rate per million population has consistently gone down over each five (5) year period.

Overall, the average rate of electrical accidents per million population during a period of five (5) years showed a positive trend, with the number of electrical accidents per million population declining by 27.2% (from 2007-2011 to 2012-2016) and subsequently by 4.7% (from 2012-2016 to 2017-2021).

Kadar Kemalangan per Populasi: Perbandingan Tempoh 5–Tahun
Accident Rate per Population: 5-year Comparison



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Populasi Penduduk (juta) *Population (million)*	24.23	24.66	25.11	25.64	26.12	26.57	27.10	27.56	28.02	28.45	28.85	29.61	29.79	29.88	29.93
Tidak Maut (per sejuta penduduk) *Non-Fatal (per million population)*	1.53	1.50	0.84	1.29	1.38	1.02	1.00	1.31	0.64	0.91	0.87	0.95	1.24	0.57	1.00
Maut (per sejuta penduduk) *Fatal (per million population)*	1.57	1.34	1.39	1.40	1.00	1.05	0.70	0.98	1.07	0.98	0.97	0.95	0.50	0.94	1.24
Kadar Kemalangan (per sejuta penduduk) *Accident Rate (per million population)*	3.10	2.84	2.23	2.69	2.38	2.07	1.70	2.29	1.71	1.90	1.84	1.89	1.75	1.51	2.24
Purata Kadar Kemalangan (per sejuta penduduk) *Average Accident Rate (per million population)*	2.65	2.65	2.65	2.65	2.65	1.93	1.93	1.93	1.93	1.93	1.84	1.84	1.84	1.84	1.84

Lokasi Kemalangan Elektrik

Pada 2021, sebanyak 19 kes kemalangan telah berlaku di kawasan kediaman. Amalan norma baharu kehidupan dalam suasana pandemik COVID-19 di mana orang ramai banyak menghabiskan masa di rumah dipercayai antara sebab utama menyumbang kepada kes kemalangan di lokasi ini meningkat berbanding sembilan (9) kes yang dicatatkan pada tahun lepas.

Pepasangan elektrik iaitu talian atas voltan rendah, talian atas voltan tinggi dan pencawang elektrik masing-masing menunjukkan peningkatan ketara berbanding tahun lalu dengan keseluruhan peningkatan sebanyak 93.3% iaitu daripada 15 kes pada 2020 kepada 29 kes pada tahun ini.

Electrical Accident Locations

In 2021, a total of 19 accidents occurred in residential areas, which is up from nine (9) cases the year before. The increased number of people staying home during the COVID-19 pandemic believed to be the main cause of this rise in accident cases in residential areas.

Accident cases in electrical installations, such as low voltage overhead lines, high voltage overhead lines and electrical substations, also showed a significant increase from last year, with an overall increase of 93.3% from 15 cases in 2020 to 29 cases this year.

Kemalangan Elektrik mengikut Lokasi, 2002–2021
Electrical Accidents by Location, 2002–2021

Tahun *Year*	**Kawasan Kediaman** *Residential Areas*	**Sekolah** *Schools*	**Institusi Pengajian Tinggi** *Higher Learning Institutions*	**Kilang (Industri)** *Factories (Industrial)*	**Majlis Kerajaan Tempatan** *Local Government Councils*	**Premis Kerajaan** *Government Premises*	**Premis Swasta (Komersial)** *Private Premises (Commercial)*	**Tapak Pembinaan** *Construction Sites*	**Talian Atas Voltan Rendah** *Low Voltage Overhead Lines*	**Talian Atas Voltan Tinggi** *High Voltage Overhead Lines*	**Pencawang Elektrik** *Electrical Substations*	**Kabel Bawah Tanah** *Underground Cables*	**Ladang** *Farms*	**Jumlah** *Total*
2002	5	1	0	4	0	0	3	0	9	2	4	2	1	**31**
2003	10	0	0	8	3	2	2	0	10	9	7	1	0	**52**
2004	4	0	1	6	2	1	3	0	11	10	9	0	1	**48**
2005	11	1	0	2	0	4	6	1	17	4	11	0	0	**57**
2006	9	0	0	5	3	4	4	1	15	12	21	3	2	**79**
2007	14	2	1	10	0	2	5	2	16	9	14	0	0	**75**
2008	11	1	1	5	1	2	7	0	10	8	22	2	0	**70**
2009	9	1	0	7	1	1	4	1	12	5	12	1	2	**56**
2010	8	0	0	8	3	0	10	2	10	6	17	3	2	**69**
2011	15	0	2	7	2	0	4	1	11	4	13	2	1	**62**
2012	6	0	0	5	2	2	4	0	13	13	7	2	1	**55**
2013	8	0	0	5	0	3	6	1	6	5	9	3	0	**46**
2014	11	0	0	7	1	1	9	0	11	5	14	4	0	**63**
2015	10	0	0	5	1	1	1	0	4	7	13	1	5	**48**
2016	5	0	0	11	2	2	6	0	9	6	11	0	2	**54**
2017	7	0	1	3	3	0	7	0	11	8	8	3	2	**53**
2018	15	0	0	8	2	0	6	1	6	8	7	2	1	**56**

Tahun *Year*	Kawasan Kediaman *Residential Areas*	Sekolah *Schools*	Institusi Pengajian Tinggi *Higher Learning Institutions*	Kilang (Industri) *Factories (Industrial)*	Majlis Kerajaan Tempatan *Local Government Councils*	Premis Kerajaan *Government Premises*	Premis Swasta (Komersial) *Private Premises (Commercial)*	Tapak Pembinaan *Construction Sites*	Talian Atas Voltan Rendah *Low Voltage Overhead Lines*	Talian Atas Voltan Tinggi *High Voltage Overhead Lines*	Pencawang Elektrik *Electrical Substations*	Kabel Bawah Tanah *Underground Cables*	Ladang *Farms*	Jumlah *Total*
2019	2	1	0	10	1	1	6	0	7	12	10	2	0	**52**
2020	9	2	1	4	3	0	6	0	6	5	4	4	1	**45**
2021	19	1	0	5	2	0	5	2	11	10	8	1	3	**67**
Jumlah *Total*	**188**	**10**	**7**	**125**	**32**	**26**	**104**	**12**	**205**	**148**	**221**	**36**	**24**	**1,138**

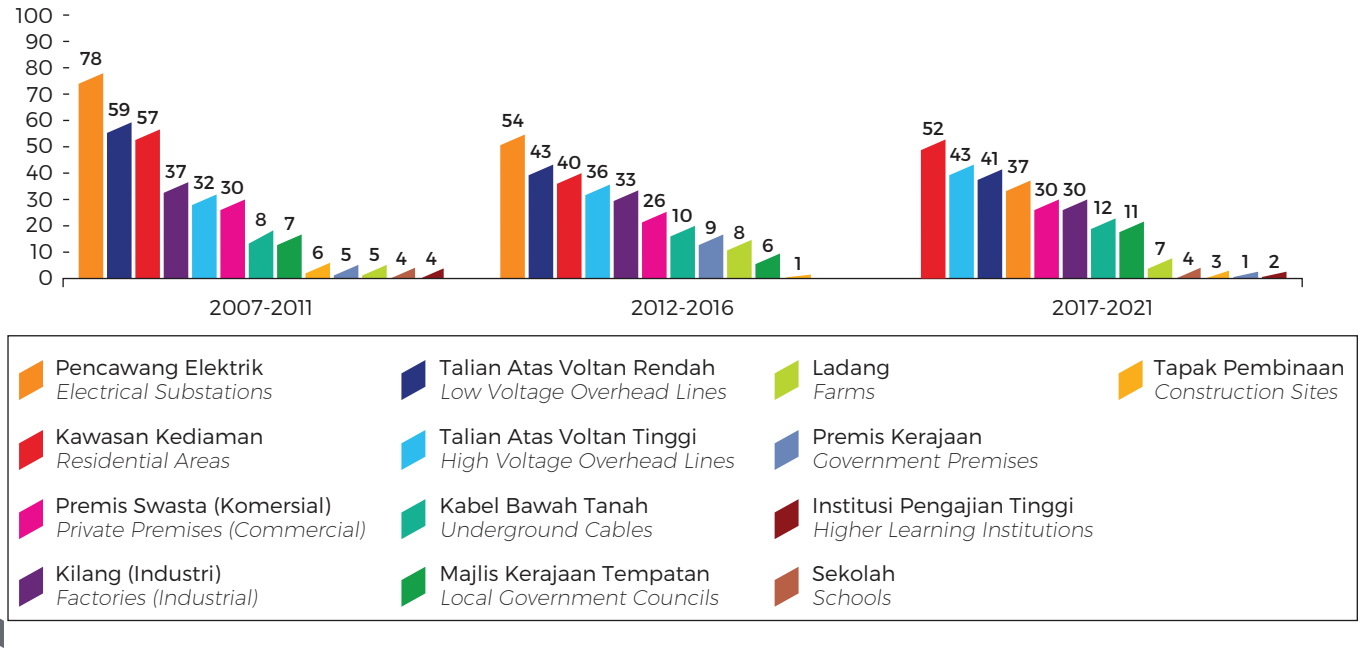
Secara kumulatif, bagi tempoh lima (5) tahun ke belakang ini, kawasan kediaman menjadi lokasi utama bagi kemalangan elektrik diikuti talian atas voltan rendah dan talian atas voltan tinggi.

Lokasi kawasan kediaman menunjukkan peningkatan berbanding tempoh 2012 hingga 2016 dan tempoh 2007 hingga 2011 di mana ia merupakan lokasi ketiga tertinggi berlakunya kes kemalangan elektrik pada tempoh-tempoh tersebut. Bagaimanapun, kemalangan elektrik melibatkan pencawang elektrik mencatatkan penurunan iaitu daripada 78 kes (tempoh 2007-2011) kepada 54 kes (tempoh 2012-2016) dan seterusnya 37 kes bagi lima (5) tahun belakang.

Cumulatively, for the past five (5) years, the majority of electrical accidents have occurred in residential areas, followed by low voltage overhead lines and high voltage overhead lines.

Electrical accidents at residential homes showed an increase compared to the period from 2012 to 2016 and 2007 to 2011 where it came in third. However, electrical accidents involving electrical substations recorded a decrease from 78 cases (in 2007-2011) to 54 cases (in 2012-2016) and 37 cases five (5) years before.

Kemalangan Elektrik mengikut Lokasi: Perbandingan Tempoh 5-Tahun
Electrical Accidents by Location: Comparative 5-Year Cycle



Punca Kemalangan Elektrik

Pada 2021, ST merekodkan sebanyak 33 kes kemalangan elektrik yang berpunca daripada pemasangan dan senggaraan yang tidak sempurna (2020: 18 kes), sebanyak 14 kes ketidakpatuhan pada prosedur kerja selamat (2020: 7 kes) dan aktiviti kerja orang awam berhampiran dengan pepasangan elektrik sebanyak 12 kes (2020: 11 kes).

Causes of Electrical Accidents

In 2021, the Commission recorded 33 electrical accident cases caused by improper installation and maintenance (2020: 18 cases), 14 cases due to non-compliance with safe work procedures (2020: 7 cases) and public work activities near electrical installations, with 12 cases (2020: 11 cases).

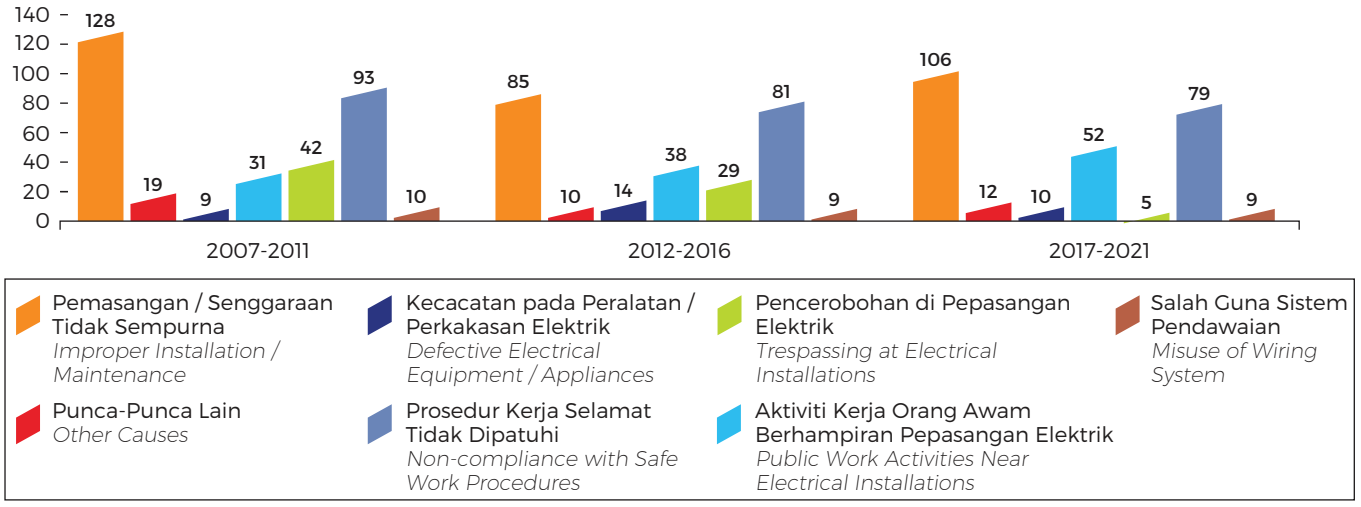
Kemalangan Elektrik mengikut Punca, 2002–2021
Causes of Electrical Accidents, 2002–2021

Tahun *Year*	**Pemasangan / Senggaraan Tidak Sempurna** *Improper Installation / Maintenance*	**Prosedur Kerja Selamat Tidak Dipatuhi** *Non-Compliance with Safe Work Procedures*	**Aktiviti Kerja Orang Awam Berhampiran Pepasangan Elektrik** *Public Work Activities Near Electrical Installations*	**Pencerobohan di Pepasangan Elektrik** *Trespassing at Electrical Installations*	**Punca-Punca Lain** *Other causes*	**Salah Guna Sistem Pendawaian** *Misuse of Wiring System*	**Kecacatan pada Peralatan / Perkakasan Elektrik** *Defective Electrical Equipment / Appliances*	**Jumlah** *Total*
2002	11	12	4	1	1	2	0	**31**
2003	18	18	9	3	3	1	0	**52**
2004	15	15	9	3	4	1	1	**48**
2005	24	22	2	3	4	1	1	**57**
2006	26	22	7	10	8	3	3	**79**
2007	34	23	5	7	4	1	1	**75**
2008	25	21	6	11	5	1	1	**70**
2009	27	13	6	6	2	2	0	**56**
2010	18	21	9	12	2	4	3	**69**
2011	24	15	5	6	6	2	4	**62**
2012	22	15	5	5	2	2	4	**55**
2013	12	16	7	9	0	2	0	**46**
2014	20	21	11	7	0	1	3	**63**
2015	12	12	8	5	5	3	3	**48**
2016	19	17	7	3	3	1	4	**54**
2017	18	16	10	1	2	3	3	**53**
2018	21	17	10	0	5	1	2	**56**
2019	16	25	9	0	1	0	1	**52**
2020	18	7	11	0	3	3	3	**45**
2021	33	14	12	4	1	2	1	**67**
Jumlah *Total*	**413**	**342**	**152**	**96**	**61**	**36**	**38**	**1,138**

Sepanjang tempoh-tempoh lima (5) tahun sebelum ini iaitu 2007 hingga 2011, 2012 hingga 2016 dan 2017 hingga 2021, punca utama kemalangan elektrik adalah pemasangan atau senggaraan yang tidak sempurna diikuti punca kedua iaitu kegagalan untuk mematuhi prosedur kerja selamat. Punca ketiga adalah aktiviti kerja orang awam berhampiran pepasangan elektrik di mana bagi tempoh lima (5) tahun ke belakang ini menunjukkan peningkatan sebanyak 36.8% berbanding tempoh 10 tahun terdahulu dan 67.7% berbanding tempoh 15 tahun sebelumnya.

Over the period of five (5) years from 2007 to 2011, 2012 to 2016 and 2017 to 2021, the primary causes of electrical accidents were improper installation and maintenance, followed by failure to comply with safe work procedures. The third cause of electrical accidents were due to public work activities near electrical installations increased by 36.8% over the last five (5) years compared to the previous 10 years and 67.7% compared to the previous 15 years.

Kemalangan Elektrik mengikut Punca: Perbandingan Tempoh 5–Tahun
Electrical Accidents by Cause: Comparative 5–Year Cycle



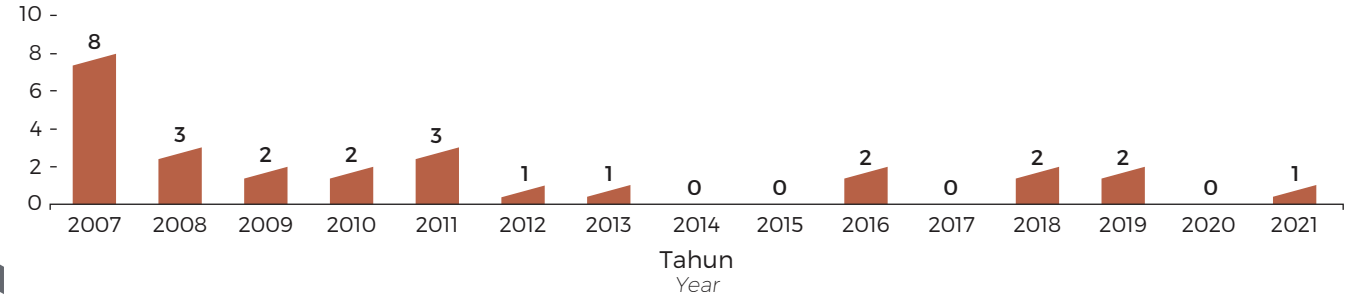
Statistik Kemalangan Gas Berpaip

Terdapat satu (1) kes kemalangan gas melibatkan premis dobi direkodkan pada tahun ini. Pelbagai usaha dilaksanakan ST daripada semasa ke semasa bagi mengurangkan kes kemalangan gas. Sehingga kini, sejumlah 27 kes kemalangan gas yang direkodkan daripada 2007 sehingga 2021.

Piped Gas Accident Statistics

There was one (1) gas accident involving a launderette recorded this year. Many efforts were carried out by the Commission from time to time to reduce gas accident cases. Until now, a total of 27 gas accident cases were recorded from 2007 to 2021.

Bilangan Kemalangan Gas Berpaip, 2007–2021
Number of Piped Gas Accidents, 2007–2021



Lokasi Kemalangan Gas Berpaip

Secara keseluruhan, kes kemalangan gas menunjukkan trend penurunan sejak 15 tahun lepas. Bagi tempoh 2017 hingga 2021, kes kemalangan gas tertinggi berlaku melibatkan premis dobi iaitu sebanyak tiga (3) kes. Tiada kes melibatkan premis dobi pada tempoh 2012 hingga 2016 dan tempoh 2007 hingga 2011.

Piped Gas Accident Locations

Overall, gas accident cases show a downward trend since 15 years ago. For the period from 2017 to 2021, the highest number of piped gas accidents occurred at launderettes, with three (3) cases. There were no recorded cases at launderettes during the period of 2012 to 2016 and 2007 to 2011.

Kemalangan Gas Berpaip mengikut Lokasi, 2007–2021
Piped Gas Accidents by Location, 2007–2021

Lokasi *Location*	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	**Jumlah** *Total*
Paip Bawah Tanah *Underground Pipes*	6	1	1	1	0	1	1	0	0	0	0	0	1	0	0	**12**
Bangunan Kediaman *Residential Buildings*	2	1	0	1	1	0	0	0	0	1	0	0	0	0	0	**6**
Restoran *Restaurants*	0	1	0	0	1	0	0	0	0	1	0	0	1	0	0	**4**
Pusat Beli-Belah *Shopping Centres*	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	**2**
Stesen Gas *Gas Stations*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Dobi *Launderettes*	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	**3**
Jumlah (per tahun) *Total (per year)*	8	3	2	2	3	1	1	0	0	2	0	2	2	0	1	**27**
Jumlah (per 5-tahun) *Total (per 5-years)*			**18**					**4**					**5**			

Punca Kemalangan Gas Berpaip

Pada tempoh 2017 hingga 2021, sebanyak lima (5) kes kemalangan gas berlaku berpunca daripada kegagalan mematuhi prosedur kerja selamat sekaligus menjadi punca utama direkodkan pada tempoh tersebut.

Terdapat satu (1) kes kemalangan gas telah berlaku pada 2021 yang berpunca daripada ketidakpatuhan pada prosedur.

Causes of Piped Gas Accidents

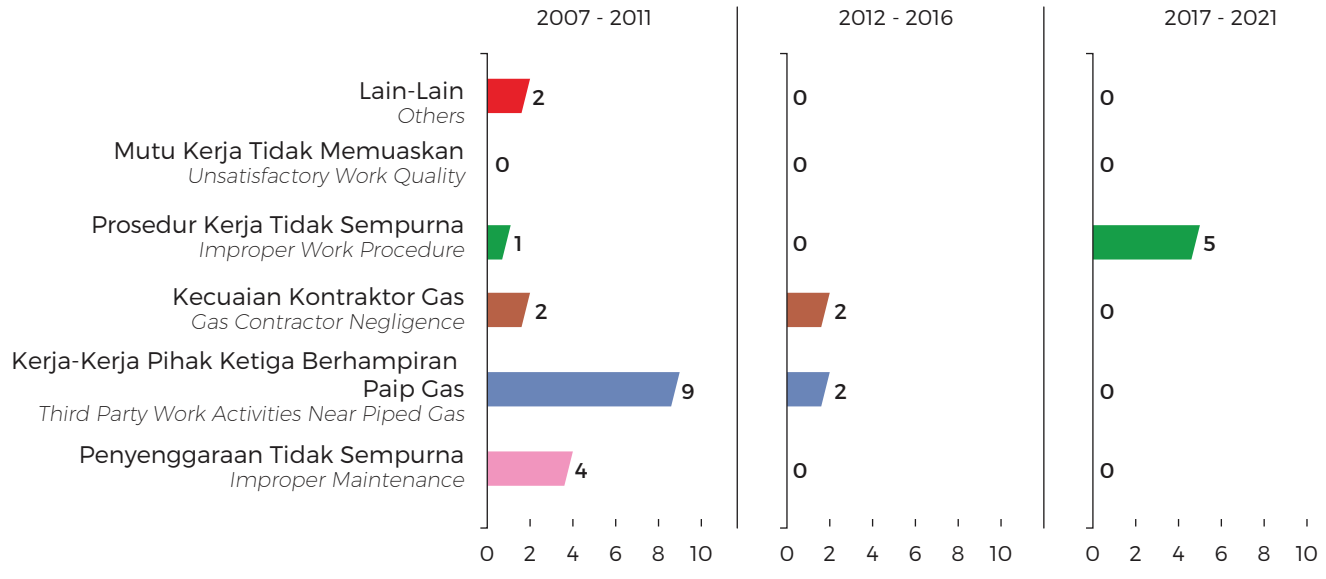
The main cause of gas accidents during the period from 2017 to 2021 was failure to comply with safe work procedures, during which five (5) gas accidents occurred.

Of these five (5) gas accident cases, one (1) case occurred in 2021 due to the non-compliance to procedures.

Kemalangan Gas Berpaip mengikut Punca, 2007–2021
Piped Gas Accidents by Causes, 2007–2021

Punca *Cause*	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Jumlah *Total*
Penyenggaraan Tidak Sempurna *Improper Maintenance*	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	**4**
Kerja-Kerja Pihak Ketiga Berhampiran Paip Gas *Third Party Work Activities Near Piped Gas*	5	1	1	1	1	1	1	0	0	0	0	0	0	0	0	**11**
Kecuaian Kontraktor Gas *Gas Contractor Negligence*	0	1	1	0	0	0	0	0	0	2	0	0	0	0	0	**4**
Prosedur Kerja Tidak Sempurna *Improper Work Procedure*	0	0	0	0	1	0	0	0	0	0	0	2	2	0	1	**6**
Mutu Kerja Tidak Memuaskan *Unsatisfactory Work Quality*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Lain-Lain *Others*	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**2**
Jumlah (per tahun) *Total (per year)*	8	3	2	2	3	1	1	0	0	2	0	2	2	0	1	**27**
Jumlah (per 5-tahun) *Total (per 5-years)*			**18**					**4**					**5**			

Kemalangan Gas Berpaip mengikut Punca: Perbandingan Tempoh 5-Tahun
Piped Gas Accidents by Causes: Comparative 5-Year Cycle



Kemalangan Gas Berpaip mengikut Lokasi: Perbandingan Tempoh 5–Tahun
Piped Gas Accidents by Location: Comparative 5–Year Cycle

INISIATIF-INISIATIF MEMPERTINGKATKAN TAHAP KESELAMATAN ELEKTRIK DAN GAS BERPAIP
INITIATIVES TO IMPROVE ELECTRICAL AND PIPED GAS SAFETY

Program Webinar Kesedaran Keselamatan Elektrik dan Gas bersama Pelajar Sekolah

Penerapan pendidikan dan kefahaman mengenai keselamatan elektrik dan gas di sekolah dilihat sebagai satu keperluan memandangkan penggunaan sumber elektrik dan gas dengan tatacara yang betul dapat mengurangkan kemalangan elektrik dan gas di kalangan pelajar sekolah. Selain itu, penyampaian maklumat berkaitan kesedaran keselamatan dalam bidang ini di kalangan pelajar sekolah di peringkat awal pembelajaran dapat memberikan impak yang positif untuk jangka masa panjang di samping memupuk kesedaran keselamatan di kalangan pelajar.

Sehubungan dengan itu, ST telah mengadakan seminar secara dalam talian melibatkan wakil daripada warga pendidik dan pelajar sekolah di Zon Utara dan Tengah Semenanjung. Menerusi program seminar yang disampaikan, diharap dapat memberi pendedahan kepada pelajar sekolah dalam memastikan keselamatan elektrik dan gas sentiasa diutamakan dalam apa jua keadaan seterusnya dapat mengurangkan risiko berlakunya kemalangan.

Webinar Programmes on Electrical and Piped Gas Safety Awareness to School Students

Understanding of electrical and gas safety at schools is important as proper usage of electricity and gas can reduce the number of electrical and gas related accidents among school students. Apart from that, relaying information related to safety to school students in the early learning stages can have a positive impact in the long term, in addition to inculcating safety awareness among students.

In this regard, the Commission held online seminars with educators and school students at the Northern and Central Zones of the Peninsula. These seminars aimed to expose school students to the importance of electrical and gas safety in all situations, which in turn will help reduce the risk of accidents.

Sesi Libat Urus

ST mengadakan libat urus bersama agensi-agensi Kerajaan, Pihak Berkuasa Tempatan, pihak utiliti, industri, pemegang taruh dan golongan sasar yang berkaitan bagi membincangkan isu-isu semasa keselamatan elektrik dan gas berpaip agar relevan dengan keperluan industri masa kini tanpa mengabaikan keselamatan umum.

Antara program-program yang telah dijalankan adalah:

- Seminar Keselamatan Elektrik bersama FGV Holding Berhad dan Telekom Malaysia Berhad
- Penyelarasan Usahasama dan Pembangunan Memorandum Persefahaman (MoU) bersama Jabatan Bomba dan Penyelamat Malaysia (JBPM)
- Mitigasi Kes Kemalangan Melibatkan Keretapi bersama Keretapi Tanah Melayu Berhad (KTMB), Agensi Pengangkutan Awam Darat (APAD) dan Perbadanan Aset Keretapi (RAC)
- IEM-ST-TEEAM *National Electrical Safety Virtual Conference 2021*
- Webinar Keselamatan Sistem Gas Berpaip 2021

Beberapa mesyuarat, program, lawatan pemeriksaan, audit keselamatan sebagai inisiatif-inisiatif untuk mempertingkatkan tahap keselamatan elektrik dan gas berpaip turut dijalankan.

Engagement Sessions

The Commission conducted engagement sessions with Government agencies, Local Authorities, utilities, and the industry, as well as stakeholders and relevant target groups where participants discussed how to ensure that electrical and piped gas safety remains relevant to industry needs without compromising the public's safety.

Among the programmes carried out were:

- *Electrical Safety Seminar with FGV Holding Berhad and Telekom Malaysia Berhad*
- *Coordination of Cooperation and Development of Memorandum of Understanding (MoU) with Fire and Rescue Department of Malaysia*
- *Mitigation of Accident Cases Involving Trains with Malayan Railways Limited, Land Public Transport Agency and Railway Assets Corporation (RAC)*
- *IEM-ST-TEEAM National Electrical Safety Virtual Conference 2021*
- *Webinar on Piped Gas Safety Systems 2021*

Several meetings, programmes, inspection visits and safety audits were carried out as part of the initiative to improve the level of electrical and piped gas safety.

MEMPERTINGKATKAN PEMATUHAN TERHADAP PERATURAN
IMPROVING COMPLIANCE WITH REGULATIONS

Pelesenan Elektrik

Pengeluaran Lesen Pepasangan Awam dan Pepasangan Persendirian (Bagi Kapasiti 5MW dan Ke Atas)

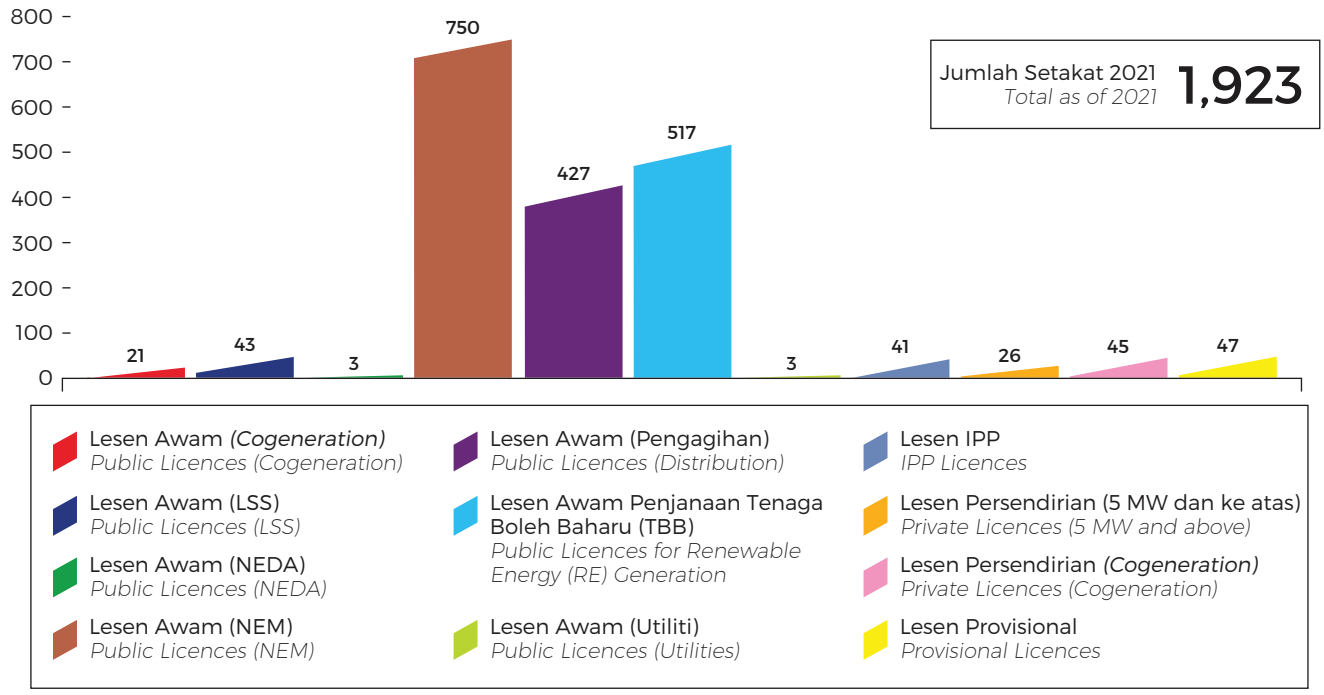
Sehingga akhir 2021, ST telah mengeluarkan sejumlah 1,923 lesen pepasangan awam dan pepasangan persendirian (bagi kapasiti 5 MW dan ke atas). Daripada jumlah tersebut, 1,805 lesen (94%) adalah daripada pepasangan awam, manakala bakinya sebanyak 118 lesen (6.1%) adalah daripada pepasangan persendirian (bagi kapasiti 5MW dan ke atas), pepasangan persendirian *(Cogeneration)* dan lesen provisional.

Electrical Licensing

Issuance of Licences for Public Installations and Private Installations (for the Capacity of 5 MW and Above)

As of end 2021, the Commission had issued a total of 1,923 licences for public installations and private installations (for the capacity of 5 MW and above). From that total, 1,805 licences (94%) were for public installations, while the remaining 118 licences (6.1%) were for private installations (for the capacity of 5 MW and above), private installations (cogeneration) and provisional licenses.

Jumlah Pengeluaran Lesen mengikut Kategori, 2021
Total Licenses Issued by Category, 2021



Pada keseluruhannya, jumlah pengeluaran lesen pepasangan awam dan pepasangan persendirian (bagi kapasiti 5MW dan ke atas) pada 2021 telah mencatatkan peningkatan kepada 460 lesen (39.4%) berbanding 330 lesen pada 2020.

Setakat akhir 2021, permohonan lesen awam *Net Energy metering* (NEM) telah meningkat kepada 383 lesen (78%) berbanding 215 lesen pada 2020 berikutan permohonan lesen NEM 3.0 [Gomen / *Net Offset Virtual Aggregation* - NOVA) yang telah mula diterima dalam sistem *Online Application System* (OAS) pada bulan Jun 2021.

Permohonan lesen awam *Large Scale Solar* (LSS) pula telah menurun kepada dua (2) lesen (82%) berbanding 11 lesen pada 2020.

Permohonan lesen awam pengagihan juga menurun sebanyak 57% kepada 27 lesen berbanding 63 lesen pada tahun sebelumnya.

Sementara itu, permohonan lesen Tenaga Boleh Baharu (TBB) pula didapati telah mencatatkan peningkatan sebanyak 91% kepada 21 lesen pada tahun ini berbanding 11 lesen pada tahun lepas.

Overall, the total number of licences issued for public and private installations (for the capacity of 5 MW and above) in 2021 recorded an increase to 460 licences (39.4%) compared to 330 licences in 2020.

Up to the end of 2021, public licence application for Net Energy Metering (NEM) increased to 383 licences (78%) as compared to 215 licences in 2020 due to the NEM 3.0 licence applications (Gomen / Net Offset Virtual Aggregation - NOVA) which was opened for application in the Online Application System (OAS) in June 2021.

Meanwhile, applications for Large Scale Solar (LSS) public licences decreased to two (2) licences (82%) compared to 11 licences in 2020.

The application for public distribution licences decreased by 57% to 27 licences compared to 63 licences the year before.

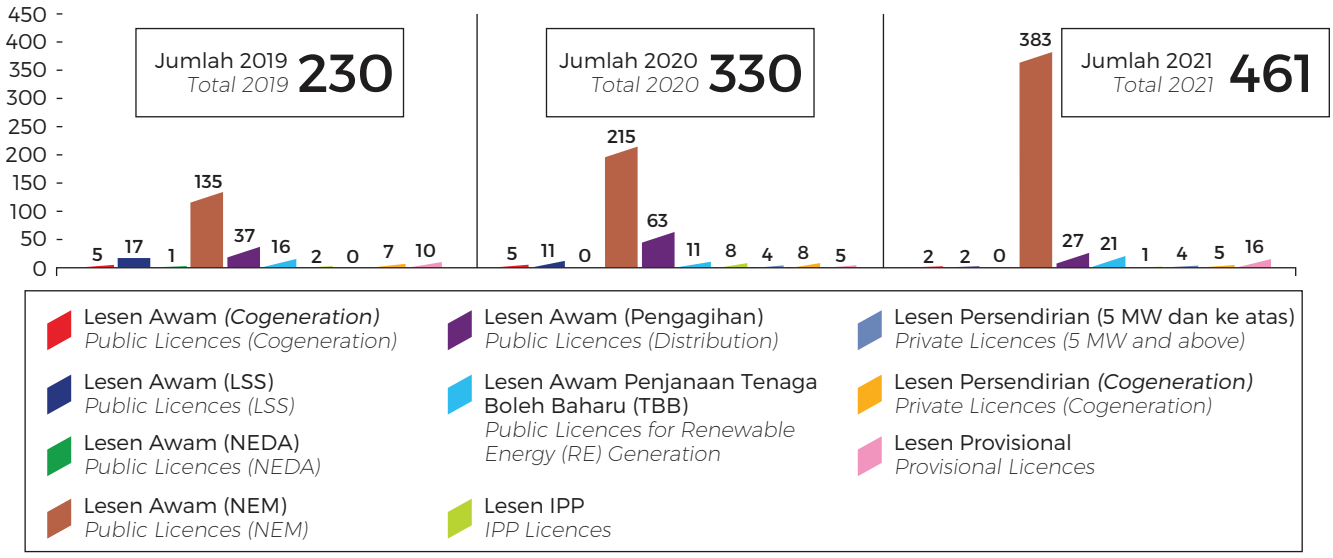
Meanwhile, licence application for Renewable Energy (RE) increased by 91% to 21 licences this year as compared to 11 licences the previous year.

Terdapat pengurangan sebanyak 88% dalam permohonan lesen Penjana Bebas (IPP) iaitu kepada satu (1) lesen berbanding lapan (8) lesen pada 2020 manakala bilangan lesen provisional pula telah meningkat sebanyak 220% kepada 16 lesen berbanding lima (5) lesen pada 2020.

Moreover, applications for Independent Power Producer (IPP) licences decreased by 88% to one (1) licence compared to eight (8) licences in 2020, while the number of provisional licences increased by 220% to 16 licences compared to five (5) licences in 2020.

Pengeluaran Lesen Pepasangan Awam dan Pepasangan Persendirian (Bagi Kapasiti 5 MW dan ke Atas), 2019–2021

Issuance of Licences for Public Installations and Private Installations (for the Capacity of 5 MW and Above), 2019-2021



Nota / Note:

TBB – Tenaga Boleh Baharu *(Feed-in-Tariff)*
RE – *Renewable Energy (Feed-in-Tariff)*
LSS – *Large Scale Solar*
NEM – *Net Energy Metering*
NEDA – *New Enhanced Dispatch Arrangement*

**- Data terkini OAS*
**- Latest OAS Data*

Pelesenan Gas Berpaip

Lesen di bawah Akta Bekalan Gas (ABG) 1993

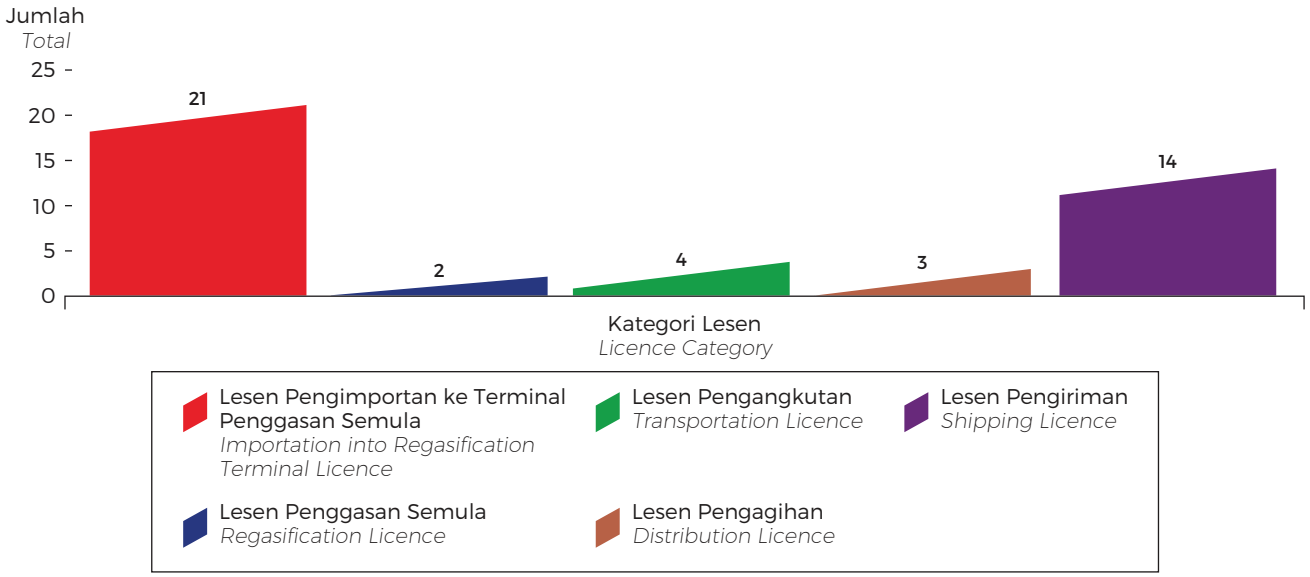
Sehingga 31 Disember 2021, sebanyak 44 lesen berkaitan Akses Pihak Ketiga telah dikeluarkan oleh ST.

Piped Gas Licensing

Licence under the Gas Supply Act (GSA) 1993

As of 31 December 2021, a total of 44 Third Party Access (TPA) licences were issued by the Commission.

Jumlah Lesen Berkaitan Akses Pihak Ketiga, 2021
Total Licences Related to the Third Party Access, 2021



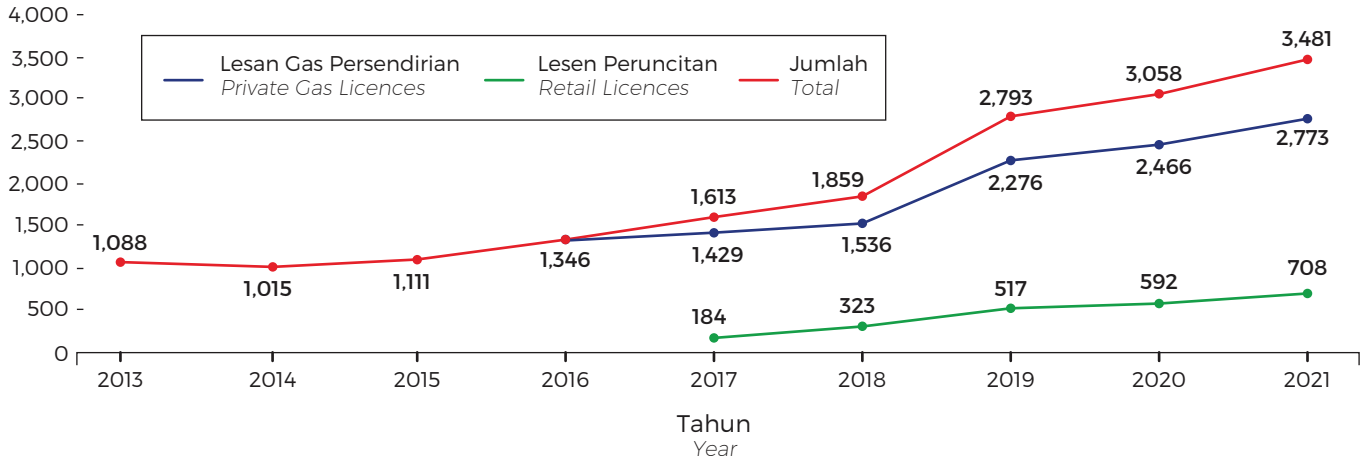
Pada 2021, ST juga telah mengeluarkan sejumlah 3,481 lesen gas persendirian dan lesen peruncitan sepertimana yang dikehendaki oleh Seksyen 11, ABG 1993. Didapati bahawa jumlah lesen gas persendirian dan lesen peruncitan yang telah dikeluarkan oleh ST bertambah sebanyak 423 pada 2021 jika dibandingkan dengan tahun sebelumnya.

Pertambahan ini adalah disebabkan oleh peningkatan kesedaran pengguna serta orang awam tentang keperluan pelesenan gas terutama bagi memastikan keselamatan bersama.

In 2021, the Commission also issued 3,481 private gas and retail licences as required under Section 11, ABG 1993. The number of private gas and retail licences issued by the Commission increased by 423 in 2021 as compared to the previous year.

The increase was due to the heightened awareness among consumers and the public on gas licensing requirement in ensuring safety for all.

Jumlah Lesen Gas Persendirian dan Lesen Peruncitan, 2013 – 2021
Total Private Gas Licenses and Retail Licenses, 2013 – 2021



MENINGKATKAN BILANGAN ORANG KOMPETEN ELEKTRIK DAN GAS
INCREASING THE NUMBER OF ELECTRICAL AND GAS COMPETENT PERSONS

Perakuan Kekompetenan Elektrik

Jenis-jenis Perakuan Kekompetenan yang dikeluarkan ialah:

- Jurutera Perkhidmatan Elektrik (JPE)
- Jurutera Elektrik Kompeten (JEK)
- Jurutera Elektrik Kompeten Terhad (JEK Terhad)
- Penyelia Elektrik (PE)
- Penjaga Jentera Elektrik (PJ)
- Penjaga Jentera Terhad (PJ Terhad)
- Pendawai (PW)
- Pendawai Endorsan Pengujian (END. PW)
- Pencantum Kabel (PK)
- Pencantum Kabel Terhad (PK Terhad)
- Ganti Sijil (GS)

Pada 2021, sebanyak 3,615 Perakuan Kekompetenan yang telah dikeluarkan, lebih kurang 25.07% penurunan berbanding dengan jumlah pada 2020. Daripada jumlah tersebut, 92.31% atau 3,337 perakuan telah dikeluarkan melalui institusi bertauliah manakala 7.70% atau 278 perakuan dikeluarkan melalui peperiksaan kendalian ST. Sehingga 2021, jumlah perakuan yang telah dikeluarkan oleh ST adalah sebanyak 150,399 perakuan.

Electrical Certificates of Competency

The categories of Certificates of Competency issued are:

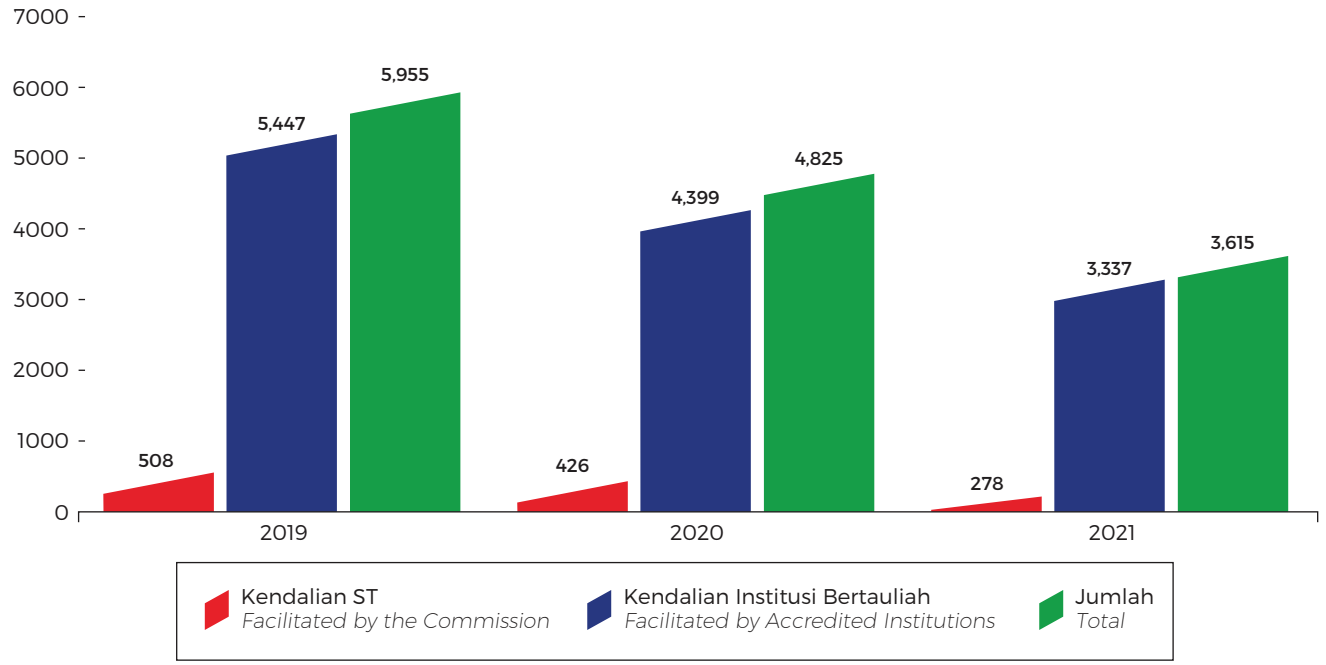
- *Electrical Services Engineer*
- *Competent Electrical Engineer*
- *Restricted Competent Electrical Engineer*
- *Electrical Supervisor*
- *Electrical Chargeman*
- *Restricted Electrical Chargeman*
- *Wireman*
- *Wireman with Testing Endorsement*
- *Cable Jointer*
- *Restricted Cable Jointer*
- *Certificate Replacement*

In 2021, a total of 3,615 Certificates of Competency were issued with a reduction of about 25.07% compared to the total in 2020. From that total, 92.31% or 3,337 certificates were issued by accredited institution whereas 7.70% or 278 certificates were issued through the examinations facilitated by the Commission. As of 2021, a total of 150,399 certificates have been issued by the Commission.

Perakuan Kekompetenan Elektrik yang Dikeluarkan, 2021
Electrical Certificates of Competency Issued, 2021

	Kategori Perakuan Kekompetenan *Category of Certificates of Competency*											
	PW	END PW	PJ	PJ THD	PK	PK THD	PE	JEK	JEK THD	JPE	GS	Jumlah *Total*
Melalui Peperiksaan Kendalian ST *Through Examinations Facilitated by the Commission*	10	3	92	41	7	–	1	37	44	4	39	**278**
Melalui Peperiksaan Kendalian Institusi Bertauliah *Through Examinations Facilitated by Accredited Institutions*	1,932	–	1,326	–	41	–	–	–	–	–	38	**3,337**
Jumlah *Total*	**1,942**	**3**	**1,418**	**41**	**48**	**–**	**1**	**37**	**44**	**4**	**77**	**3,615**

Perakuan Kekompetenan Elektrik yang Dikeluarkan, 2019–2021
Electrical Certificates of Competency Issued, 2019 – 2021



Perakuan Kekompetanan Gas

Pada 2021, ST telah mengeluarkan sebanyak 32 Perakuan Kekompetenan Gas kepada dua (2) kategori kelas, iaitu Jurugegas Gas Kelas I dan III.

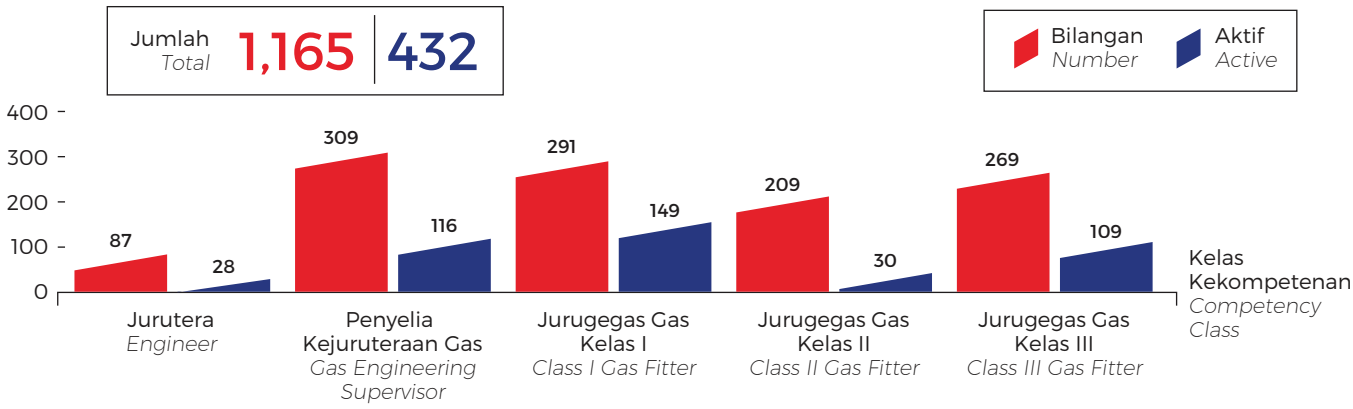
Pada keseluruhannya, terdapat seramai 1,165 pemegang Perakuan Kekompetenan Gas yang dikeluarkan oleh ST sehingga akhir 2021.

Gas Certificates of Competency

In 2021, the Commission issued a total of 32 Gas Certificates of Competency to two (2) different categories of classes, namely Gas Fitters Class I and III.

Overall, a total of 1,165 Gas Certificates of Competency were issued by the Commission until the end of 2021.

Bilangan Pemegang Perakuan Kekompetenan Gas mengikut Kategori
Number of Gas Certificate of Competency Holders by Category



Peperiksaan Kekompetenan Elektrik

Antara aktiviti pada 2021 turut meliputi pengendalian peperiksaan Amali dan Lisan bagi Penjaga Jentera (Persendirian), Jurutera Perkhidmatan Elektrik (JPE) dan Jurutera Elektrik Kompeten. Peperiksaan teori Penjaga Jentera telah dijalankan secara dalam talian pada 17 hingga 18 November 2021.

Peperiksaan Jurutera (JPE, JEK & PE)

Peperiksaan JPE, JEK dan Penyelia Elektrik telah dijalankan di Ibu Pejabat ST dan pejabat Kawasan ST Kota Kinabalu sementara bagi peperiksaan JEK Terhad Makmal Voltan Tinggi dijalankan di makmal yang terlibat. Peperiksaan ini dijalankan sepanjang tahun kecuali dalam tempoh PKP dan PKPB.

Sepanjang 2021, jumlah calon peperiksaan JPE, JEK dan PE adalah seramai 108 orang, di mana 58 calon telah lulus dan 50 calon gagal.

Peperiksaan Penjaga Jentera Voltan Tinggi

Pada sekitar bulan Mac dan April 2021, peperiksaan Penjaga Jentera Voltan Tinggi telah dilaksanakan di ILSAS dan INSTEP. Seramai 50 orang calon telah menduduki peperiksaan tersebut.

Electrical Competency Examinations

Activities carried out in 2021 consisted of Practical and Oral examinations for Chargemen (Private), Electrical Service Engineers (JPE) and Competent Electrical Engineers. Meanwhile, the theory examinations for Chargemen were conducted online on 17 to 18 November 2021.

Examination for Engineers ((JPE, JEK & PE)

The JPE, JEK & PE examinations were conducted at the Commission's Head Office and the Kota Kinabalu Regional Office while the Restricted JEK for High Voltage Laboratory examinations were conducted at selected laboratories. These examinations were conducted all year long except during the MCO and CMCO periods.

In 2021, there were 108 candidates for the JPE, JEK and PE examinations, of which 58 candidates passed and the remaining 50 candidates failed.

Examination for High Voltage Chargeman

Around March and April 2021, examinations for High Voltage Chargeman were conducted at ILSAS and INSTEP. A total of 50 candidates sat for the examination.

Peperiksaan Penjaga Jentera mengikut Kategori, 2021
Examinations for Chargemen by Category, 2021

	ILSAS Bangi	ILSAS Malim Nawar Perak	INSTEP K.Terengganu	Jumlah Calon *Total Candidates*
Lulus B0 11 kV *Passed B0 11 kV*	7	9	0	**16**
Gagal B0 11 kV *Failed B0 11 kV*	3	1	0	**4**
Lulus B0 33 kV *Passed B0 33 kV*	5	0	6	**11**
Gagal B0 33 kV *Failed B0 33 kV*	10	0	9	**19**
Bilangan Calon *Number of Candidates*	**25**	**10**	**15**	**50**

Aktiviti-Aktiviti Berkaitan Peperiksaan

ST telah menjalankan peperiksaan teori Penjaga Jentera secara dalam talian pada 17 hingga 18 November 2021 melibatkan 344 calon peperiksaan.

Pada 29 November 2021 sehingga 2 Disember 2021 pula, satu Bengkel Menanda Kertas Jawapan bagi peperiksaan Penjaga Jentera juga telah diadakan secara dalam talian.

Bagi penyelarasan dan pelaksanaan perkara-perkara yang berhubung dengan peperiksaan, Mesyuarat Jawatankuasa Peperiksaan diadakan sebanyak empat (4) kali pada 2021 iaitu pada bulan April, Jun, September dan Disember 2021.

Sebanyak empat (4) sesi libat urus bersama pengurusan tertinggi institusi juga telah dijalankan secara dalam talian.

Peperiksaan Kekompetenan Gas

Peperiksaan Bertulis

Tiada peperiksaan bertulis diadakan pada 2021 berikutan pematuhan terhadap prosidur operasi standard COVID-19.

Peperiksaan Lisan (Temuduga)

Sebanyak 20 sesi temuduga telah dijalankan dan telah dihadiri oleh 38 calon. Daripada bilangan ini, seramai 32 calon telah lulus peperiksaan lisan masing-masing dan telah diberi Perakuan Kekompetenan Gas. Mereka terdiri daripada 14 Jurugegas Gas Kelas I dan 18 Jurugegas Gas Kelas III.

Pentauliahan Institusi

Permohonan Pentauliahan Institusi

Lawatan pemeriksaan telah djadualkan dengan lebih kerap bermula bulan Disember 2021 setelah Kerajaan telah membenarkan merentas daerah dan negeri pada pertengahan Oktober 2021. Sebanyak lapan (8) institusi telah dijalankan lawatan pemeriksaan secara bersemuka.

Activities Related to the Examinations

The Commission carried out online Chargeman theory exams on the 17 to 18 November 2021 involving 344 candidates.

On 29 November to 2 December 2021, a Workshop on Marking Examination Papers for Chargeman examinations was carried out online.

For standardisation and implementation of matters related to examinations, Examination Committee meetings were held four (4) times in 2021 in April, June, September and December 2021.

Another four (4) online engagement sessions were also carried out with higher management from institutions.

Gas Competency Examinations

Written Examinations

No written examinations were carried out in 2021 in compliance with the COVID-19 standard operating procedures.

Oral Examinations (Interviews)

A total of 20 interview sessions were conducted with 38 candidates. A total of 32 candidates passed their respective oral examinations and were awarded the Gas Certificates of Competency. This comprised of 14 Class I and 18 Class III Gas Fitters.

Accreditation of Institutions

Application for the Accreditation of Institution

Inspection visits were scheduled more frequently starting from December 2021 after the Government allowed district and state border crossing in mid-October 2021. Eight (8) institutions underwent physical inspection visits.

Lawatan Pemeriksaan bagi Institusi, 2021
Inspection Visits of Institutions, 2021

Bil. *No.*	Institusi *Institution*	Kursus yang Dipohon *Courses Applied*	Tarikh *Date*
1.	GIATMARA Sepang	PW2	14 Oktober 2021 *14 October 2021*
2.	GIATMARA Hulu Selangor, Selangor	PW4	6 Disember 2021 *6 December 2021*
3.	GIATMARA Selayang, Selangor	PW4	6 Disember 2021 *6 December 2021*
4.	ILP Kuantan, Pahang	PJA1 & A4	9 Disember 2021 *9 December 2021*
5.	BMI UniKL Kuala Lumpur	PJ B033 kV	13 Disember 2021 *13 December 2021*
6.	GIATMARA Arau, Perlis	PW4	16 Disember 2021 *16 December 2021*
7.	ILP Mersing, Johor	PW4	22 Disember 2021 *22 December 2021*
8.	GIATMARA Tebrau, Johor	PW4	23 Disember 2021 *23 December 2021*

Pengauditan di Institusi Latihan Bertauliah

Pada 2021, sebanyak 17 buah institusi bertauliah dipilih untuk diaudit secara dalam talian. Audit ini perlu dilaksanakan bagi memastikan institusi-institusi ini mematuhi semua syarat-syarat pentauliahan yang ditetapkan seperti kelengkapan pembelajaran, pengambilan pelajar, bilangan tenaga pengajar berkompeten yang mencukupi dan lain-lain syarat yang perlu diikuti.

Institusi yang diaudit akan diberikan teguran, nasihat dan tunjuk ajar bagi mempertingkatkan lagi mutu latihan agar boleh melahirkan Orang-Orang Kompeten yang berkualiti.

Audits of Accredited Training Institutions

In 2021, 17 institutions underwent online audits to ensure compliance with all accreditation criteria such as learning equipment, student recruitment, number of competent instructors and other necessary conditions.

The audited institutions were advised on methods to further improve the quality of training to produce quality electrical Competent Persons.

Senarai Institusi Bertauliah yang Diaudit Secara Dalam Talian, 2021
List of Accredited Institutions Audited Online, 2021

Bil. *No.*	Institusi *Institution*
1.	GIATMARA Langkawi, Kedah
2.	GIATMARA Jeli, Kelantan
3.	GIATMARA Setiu, Terengganu
4.	GIATMARA Kemaman, Terengganu
5.	GIATMARA Rompin, Pahang
6.	GIATMARA Permatang Pauh, Bukit Mertajam Pulau Pinang
7.	GIATMARA Sungai Petani, Kedah
8.	GIATMARA Kuala Telemong, Terengganu
9.	Institut Latihan Teknik & Perdagangan (ILTP) Papar, Sabah
10.	Penang Skills Development Centre (PSDC), Penang
11.	Kolej Kemahiran Tinggi MARA (KKTM) Kemaman, Terengganu
12.	ADTEC Kemaman, Terengganu
13.	Institut Kemahiran Belia Negara (IKBN) Jitra, Kedah
14.	Miraj Academy Ampang, Selangor
15.	Azmida Technical College, Batu Caves, Selangor
16.	ILSAS Malim Nawar, Perak
17.	ILSAS-SESB Kota Belud, Sabah

Sebanyak dua (2) audit telah dijalankan secara dalam talian ke atas institusi yang ditauliahkan untuk kekompetenan gas iaitu UTM Skudai pada 4 Ogos 2021 dan IKM Johor Bahru pada 30 Ogos 2021. Tiada institusi baharu yang telah ditauliahkan pada 2021.

A total of two (2) audits were conducted online on institutions accredited for gas competency, which were UTM Skudai on 4 August 2021 and IKM Johor Bahru on 30 August 2021. No new institutions were accredited in 2021.

Pendaftaran Orang Kompeten Gas

Pada 2021, seramai 434 pendaftaran Orang Kompeten Gas berbanding 494 pendaftaran pada tahun sebelumnya. Daripada jumlah ini, seramai 424 adalah pembaharuan dan 10 pula adalah pendaftaran baharu. Secara umumnya, terdapat penurunan sebanyak 12% Orang Kompeten Gas yang berdaftar bagi 2021 berbanding pada 2020.

Antara faktor yang menyumbang kepada penurunan peratusan yang rendah kepada pendaftaran Orang Kompeten ini adalah disebabkan berkurangnya pendaftaran Orang Kompeten bagi kategori Jurugegas Gas Kelas II.

Registration of Gas Competent Persons

In 2021, a total of 434 Gas Competent Persons were registered compared to 494 the year before of which 424 were renewals and 10 were new registrations. Overall, there was a decrease of 12% in the number of registration of Gas Competent Persons in 2021 compared to 2020.

The lower number of registrations for Gas Fitter Class II Competent Persons was one factor which contributed to the decline in the number of Gas Competent Persons.

Pendaftaran Orang Kompeten Gas, 2017–2021
Registration of Gas Competent Persons, 2017–2021

Kelas Kekompetenan *Competency Class*	Bilangan Orang Kompeten Gas yang Berdaftar *Number of Registered Gas Competent Persons*									
	Pendaftaran Pembaharuan *Registration Renewals*					Pendaftaran Baharu *New Registrations*				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Jurutera *Engineers*	26	26	24	22	28	2	0	1	2	1
Penyelia Kejuruteraan Gas *Gas Engineering Supervisors*	95	109	101	105	116	0	1	6	11	0
Jurugegas Gas Kelas I *Class I Gas Fitters*	135	143	137	143	145	1	0	7	9	5
Jurugegas Gas Kelas II *Class II Gas Fitters*	25	28	42	89	27	1	85	3	1	3
Jurugegas Gas Kelas III *Class III Gas Fitters*	63	88	81	107	108	1	4	6	5	1
Jumlah *Total*	**344**	**394**	**385**	**466**	**424**	**5**	**90**	**23**	**28**	**10**

Pendaftaran Kontraktor Gas

Pada 2021, jumlah pendaftaran kontraktor gas kekal pada 115 pendaftaran seperti tahun sebelumnya. Daripada jumlah ini, 105 merupakan pendaftaran bagi pembaharuan dan baki 10 merupakan permohonan baharu termasuk tiga (3) kontraktor yang bertukar kelas.

Registration of Gas Contractors

In 2021, the number of gas contractor registrations remained at 115 registrations as per the previous year consisting of 105 renewals and 10 new applications including three (3) contractors who changed classes.

Pendaftaran Kontraktor Gas mengikut Kelas, 2017–2021
Registration of Gas Contractors by Class, 2017–2021

Tahun *Year*	Kelas A *Class A*	Kelas B *Class B*	Kelas C *Class C*	Kelas D *Class D*	Jumlah *Total*
2017	46	34	21	6	**107**
2018	47	35	24	5	**111**
2019	49	32	17	5	**103**
2020	52	36	20	7	**115**
2021	55	31	21	8	**115**

PERAKUAN KELULUSAN KELENGKAPAN ELEKTRIK DAN PERALATAN GAS
CERTIFICATES OF APPROVAL FOR ELECTRICAL AND GAS EQUIPMENT

Statistik Pengeluaran Perakuan Bagi Kelengkapan Elektrik

Pengeluaran Perakuan Pendaftaran Pengilang dan Pengimport

Pada 2021, peratusan kelulusan yang dikeluarkan kepada pengimport adalah sebanyak 81% berbanding pengilang iaitu sebanyak 19%.

Statistics on the Issuance of Certificates for Electrical Equipment

Issuance of Certificates of Registration for Manufacturer and Importer

In 2021, 81% of certificates issued were to importers whereas the remaining 19% were issued to manufacturers.

Jumlah Pengeluaran Perakuan Pendaftaran bagi Pengimport dan Pengilang, 2021
Total Issuance of Certificates of Registration for Importers and Manufacturers, 2021

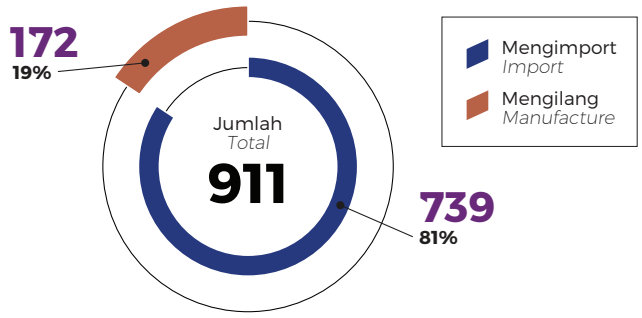
Permohonan Baharu
New Application

Mengimport *Imports*	Mengilang *Manufacturing*
248	39

Permohonan Pembaharuan
Renewal Application

Mengimport *Imports*	Mengilang *Manufacturing*
491	133

Perakuan Pendaftaran untuk Mengimport dan Mengilang Kelengkapan Elektrik, 2021
Certificates of Registration to Import and Manufacture Electrical Equipment, 2021



Statistik Pengeluaran Perakuan Kelulusan (PK) Bagi Mengimport/Mengilang, Pameran Dan Surat Pelepasan

Di bawah Peraturan 97(1), Peraturan-peraturan Elektrik 1994, Perakuan Kelulusan (PK) adalah diperlukan untuk aktiviti mengilang, mengimport, mempamer, menjual atau mengiklan kelengkapan elektrik. Jenis-jenis kelengkapan elektrik yang dikawal oleh ST adalah;

Statistics on the Issuance of Certificates of Approval (CoA) for Importing/Manufacturing, Exhibitions And Letters Of Release

Under Regulation 97(1), Electricity Regulations 1994, a Certificate of Approval (CoA) is required for the activity of manufacturing, importing, exhibiting, selling or advertising electrical equipment. The types of electrical equipment regulated by the Commission are;

i) apa-apa kelengkapan domestik;
ii) apa-apa kelengkapan voltan rendah yang biasanya dijual secara langsung kepada orang awam; atau
iii) apa-apa kelengkapan voltan rendah yang tidak memerlukan kemahiran khusus dalam pengendaliannya.

PK diperlukan bagi memastikan kelengkapan elektrik yang berada di pasaran mematuhi standard keselamatan yang telah ditetapkan dan seterusnya mengurangkan risiko kemalangan elektrik yang disebabkan oleh kelengkapan elektrik tersebut.

ST juga mengeluarkan Surat Pelepasan (RL) kepada pihak Kastam sebagai kelulusan pengecualian dari PK untuk pengimportan kelengkapan elektrik yang dikawal selia oleh ST.

Terdapat lapan (8) jenis RL iaitu:

i) Tujuan Khas
ii) Konsert
iii) Kajian Kilang
iv) Kajian Kualiti
v) Pembaikan dan Eksport Semula
vi) Import Komponen untuk 100% Eksport
vii) Import Komponen untuk Pasaran Tempatan
viii) Tujuan Transit

Sehingga kini, ST mengawal selia sebanyak 34 kategori kelengkapan elektrik. Bagi kelengkapan elektrik untuk tujuan pameran, ia tidak boleh dijual kepada orang awam dan perlu dikembalikan semula ke negara asal setelah pameran tamat.

i) any domestic equipment;
ii) any low voltage equipment normally sold directly to the public; or
iii) any low voltage equipment that does not require special skills in its operation.

CoA is required to ensure that electrical equipment on the market complies with the safety standards that have been set and further reduce the risk of electrical accidents caused by such electrical equipment.

The Commission also issues a Release Letter (RL) to the Customs as an approval for exemption from the CoA for the importation of electrical equipment regulated by the Commission.

There are eight (8) types of RL which are:
i) Special Purpose
ii) Concert
iii) Factory Study
iv) Quality Study
v) Repair and Re-Export
vi) Import Components for 100% Export
vii) Import of Components for the Local Market
viii) Transit Purpose

Presently, the Commission regulates 34 categories of electrical equipment. For electrical equipment for the purpose of exhibition, it cannot be sold to the public and needed to be returned to the origin country after the exhibition ends.

Jumlah PK dan Surat Pelepasan bagi Kelengkapan Elektrik, 2017-2021
Number of CoA and Release Letter for Electrical Equipment, 2017-2021

Tahun *Year*	PK *CoA*			Jumlah *Total*	PEMBAHARUAN PK *Renewal of CoA*		Jumlah *Total*	Surat Pelepasan *Release Letter*
	Import *Import*	Kilang *Factory*	Pameran *Exhibition*		Import *Import*	Kilang *Factory*		
2017	7,324	1,304	16	8,644	3,487	1,323	4,810	2,933
2018	8,941	1,398	8	10,347	3,461	1,217	4,678	3,315
2019	8,176	1,316	8	9,500	4,382	1,262	5,644	2,845
2020	8,262	1,419	2	9,681	4,550	1,028	5,578	2,330
2021	**8,789**	**1,176**	**0**	**9,965**	**4,941**	**1,162**	**6,103**	**2,621**

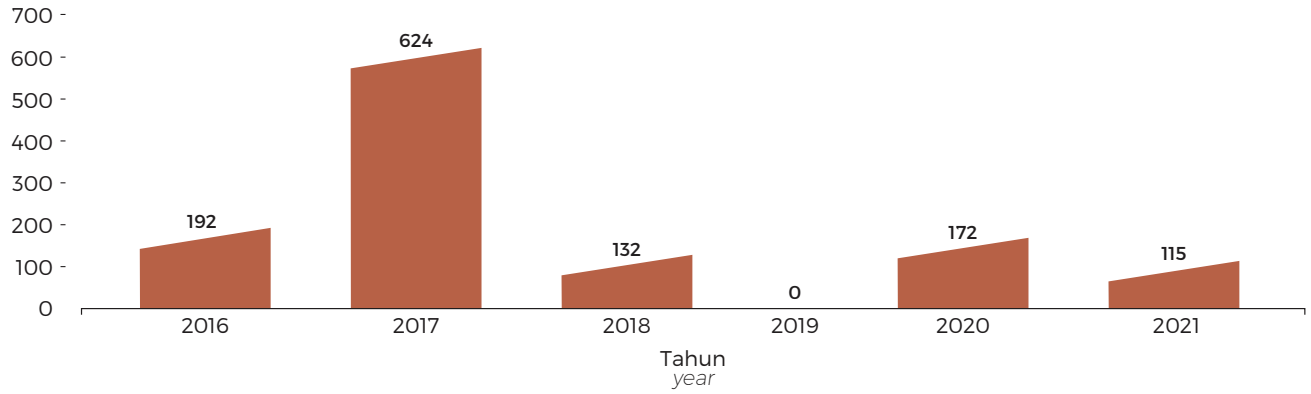
Pembatalan PK yang Didapati Gagal Ujian Konsainmen SIRIM

Sejak September 2016, ST telah membatalkan PK yang didapati gagal Ujian Konsainmen SIRIM. Sehingga Disember 2021, sejumlah 22 *batch* PK telah mendapat persetujuan pembatalan yang melibatkan sebanyak 1,235 PK dan 413 syarikat pengimport. Jumlah PK yang dibatalkan pada 2021 telah menurun sebanyak 33.13% kepada 115 berbanding 2020.

Cancellation of Certificate of Approvals (CoA) that Failed the SIRIM Consignment Test

Since September 2016, the Commission has cancelled the CoA of electrical equipment that failed the SIRIM Consignment Test. As of December 2021, a total of 22 batches of CoA have received consensus for cancellation, involving a total of 1,235 CoAs belonging to 413 importing companies. In 2021, 115 CoA were cancelled, which was a reduction of 33.13% in comparison to 2020.

Jumlah PK yang Dibatalkan, 2016–2021
Total CoA Cancelled, 2016–2021



Jumlah pengimport yang terlibat juga menunjukkan penurunan sebanyak 39.75% berbanding 2020 di mana kes gagal ujian konsainmen SIRIM telah melibatkan seramai 50 pengimport.

The number of importers involved also decreased by 39.75% compared to 2020 where a total of 83 importers failed the SIRIM consignment test.

Antara sebab-sebab kegagalan Ujian Konsainmen SIRIM adalah:

Among the reasons for failing the SIRIM Consignment tests were:

- Isi kandungan laporan ujian diubah oleh pemohon
  Contents of test report changed by applicant
- Sampel yang diperiksa dan diuji amat berlainan daripada kelengkapan rujukan dalam laporan ujian
  Samples that were inspected and tested were different from the reference equipment in the test report
- Kelengkapan elektrik daripada batch yang berlainan untuk PK yang sama, mempunyai rupa bentuk dan rekabentuk yang berlainan
  Electrical equipment from a different batch but for the same CoA, with a different shape and design
- Penandaan pada plat nama atau label produk tidak memenuhi keperluan syarat penandaan dan amaran
  The markings on the name plate or product lable does not fulfil the marking requirements and warnings
- Manual pengguna tidak memenuhi syarat penandaan dan amaran
  User manual does not fulfil the requirement of markings and warnings

Kapasiti dan kadaran pada plat nama berlainan daripada yang telah diluluskan
Capacity and rates on the name plate different from what is approved

Komponen kritikal berlainan daripada yang tersenarai dalam laporan ujian
Critical components different from what is listed in test report

Bagi kelengkapan elektrik yang telah gagal ujian konsainmen SIRIM ini, pengimport dikehendaki untuk memberikan maklum balas kepada ST berkenaan tindakan yang telah diambil terhadap kelengkapan tersebut.

Antara tindakan yang telah diambil oleh pengimport adalah memohon semula PK & Ujian Konsainmen SIRIM menggunakan laporan ujian keselamatan yang baharu, menghantar pulang ke negara asal dan melupuskan kelengkapan elektrik tersebut.

For electrical equipment that failed the SIRIM consignment test, importers are required to provide feedback to the Commission on actions taken to address the equipments' problems.

Among actions taken by importers include re-applying for the CoA and SIRIM Consignment Test with a new safety test report, return the equipment to its country of origin and dispose of the electrical equipment.

PK Pengilang, Pemasang dan Pengimport & PK Gegasan, Perkakas dan Kelengkapan Gas

Bagi 2021, sebanyak 151 PK Pengilang, Pemasang dan Pengimport telah dikeluarkan. Jika dibuat perbandingan dengan tahun sebelumnya, terdapat 7% peningkatan bilangan PK yang telah dikeluarkan.

Manakala bagi PK Gegasan, Perkakas dan Kelengkapan Gas pula, sebanyak 1,291 PK telah dikeluarkan melibatkan pelbagai jenis dan model peralatan gas. Jika dibuat perbandingan dengan tahun sebelumnya, terdapat 14% peningkatan bilangan PK ini yang telah dikeluarkan.

Kenaikan bilangan PK Gegasan, Perkakas dan Kelengkapan Gas pada 2021 adalah berkait rapat dengan pelaksanaan label SIRIM-ST pada dapur gas memasak domestik.

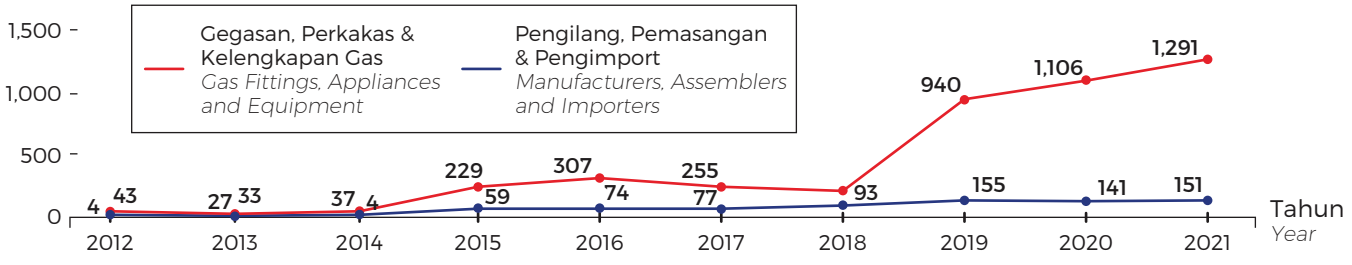
CoA for Manufacturers, Assemblers and Importers & CoA for Gas Fittings, Appliances and Equipment

In 2021, a total of 151 CoA for Manufacturers, Assemblers and Importers were issued, recording a 7% decrease compared to the number of CoA issued in the previous year.

For CoA for Gas Fittings, Appliances and Equipment, a total of 1,291 CoA were issued involving many different models and gas equipment. There was a 14% increase in the number of CoA issued as compared to the previous year.

The increase in the number of CoA for Gas Fittings, Appliances and Equipment in 2021 is largely due to the implementation of the SIRIM-ST label on domestic gas stoves.

Bilangan PK Kelengkapan Gas yang Dikeluarkan, 2012–2021
Number of CoA Issued for Gas Equipment, 2012–2021



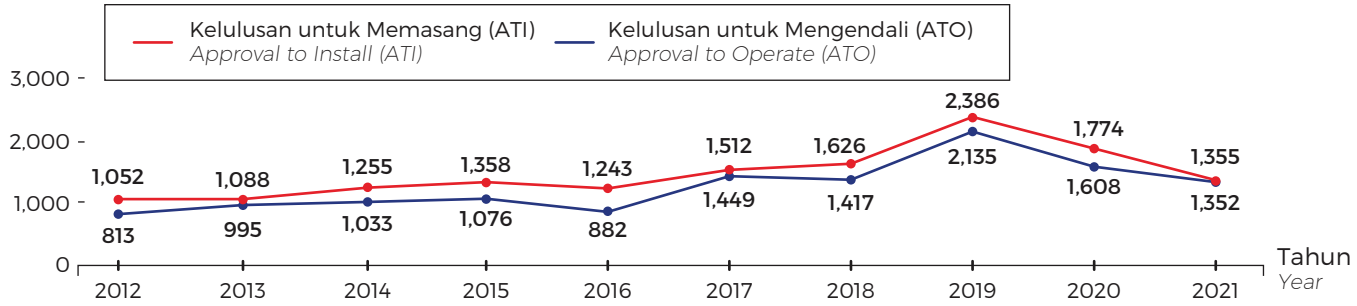
Kelulusan untuk Memasang (ATI) & Kelulusan untuk Mengendali (ATO) Pepasangan Gas Berpaip

Bagi 2021, permohonan ATI yang diterima adalah sebanyak 1,355, manakala sebanyak 1,352 permohonan ATO. Berbanding 2020, permohonan ATI mengalami penurunan sebanyak 31% dan penurunan sebanyak 19% bagi ATO,

Approval to Install (ATI) & Approval to Operate (ATO) for Piped Gas Installations

A total of 1,355 ATI applications and 1,352 ATO applications were received in 2021. In comparison to 2020, ATI and ATO applications showed a decrease of 31% and 19% respectively.

Bilangan ATI dan ATO yang Dikeluarkan, 2012–2021
Number of ATI and ATO Issued, 2012–2021



Pelan dan Program Pengurusan Keselamatan Gas Berpaip (PGSMPP)

Pada 2021, premis D'pulze Shopping Centre di Cyberjaya telah dilawat dan diaudit dibawah Pelan dan Program Pengurusan Keselamatan Gas Berpaip (PGSMPP). Kekangan PKP dan penularan pandemik COVID-19 menyebabkan lawatan tapak tidak dapat diadakan di tempat lain.

Piped Gas Safety Management Plan and Programme (PGSMPP)

In 2021, the D'Pulze Shopping Centre was visited and audited under the Piped Gas Safety Management Plan and Programme add (PGSMPP). Due to the restrictions of the MCO and the COVID-19 pandemic, the Commission was unable to conduct site visits at other premises.

PENINGKATAN AKTIVITI PENGUATKUASAAN
INCREASED ENFORCEMENT ACTIVITIES

Penguatkuasaan

Notis-notis pematuhan telah dikeluarkan kepada pemilik pepasangan yang didapati melanggar peruntukan undang-undang. Beserta dengan notis tersebut, pada 2021, satu format baharu telah diperkenalkan melalui prosedur melampirkan Akuan Pematuhan serta pemberian tempoh selama 14 hari supaya pelanggaran undang-undang dipatuhi.

Selanjutnya, pemeriksaan-pemeriksaan lain juga telah dijalankan akibat daripada kegagalan pemilik-pemilik pepasangan mematuhi notis yang diberi.

Enforcement

Compliance notices were issued to installation owners who violated provisions of the law. A new format was introduced in 2021, whereby a Statement of Compliance was issued along with the notice, and violators were given 14 days to rectify the problem.

Furthermore, other inspections were also carried out on installation owners who have failed to comply with the notice issued.

Aktiviti Penguatkuasaan yang Dijalankan, 2021
Enforcement Activities Conducted, 2021

Aktiviti Pemeriksaan *Inspection Activities*	**Bilangan Pemeriksaan yang Telah Dijalankan** *Number of Inspections Conducted*	**Bilangan Surat Pematuhan Keselamatan yang Dikeluarkan*** *Number of Safety Compliance Letters Issued**
Pemeriksaan Pepasangan / Pelesenan Elektrik *Installation Inspection / Electrical Licensing*	522 Premis *522 Premises*	145 Surat Pematuhan *145 Compliance Letters*
Pemeriksaan Pepasangan Gas (Keutamaan Kepada Dobi) *Gas Installation Inspection (Priority to Launderettes)*	130 Premis *130 Premises*	53 Surat Pematuhan *53 Compliance Letters*
Pemeriksaan Orang Kompeten Berdaftar *Registered Competent Person Inspection*	48 Premis *48 Premises*	168 Surat Pematuhan *168 Compliance Letters*
Pemeriksaan Kelengkapan Elektrik (Pengimport / Pengilang / Pengedar / Penjual) *Electrical Appliances Inspection (Importers / Manufacturers / Distributors / Sellers)*	186 Premis *186 Premises*	62 Surat Pematuhan *62 Compliance Letters*
Pemeriksaan Kontraktor Berdaftar *Registered Contractor Inspection*	106 Premis *106 Premises*	30 Surat Pematuhan *30 Compliance Letters*
Pemeriksaan Pengurus Tenaga Elekrik *Electrical Energy Manager Inspection*	47 Premis *47 Premises*	12 Surat Pematuhan *12 Compliance Letters*
Audit Program / Plan Pengurusan Keselamatan *Audit Programmes / Safety Management Plans*	139 Premis *139 Premises*	24 Surat Pematuhan *24 Compliance Letters*
Audit Kerja Senggaraan oleh Pemegang Lesen *Maintenance Work Audit by Licensees*	48 Kerja Senggaraan *48 Maintenance Work*	5 Surat Pematuhan *5 Compliance Letters*

*Nota : Bilangan Surat Pematuhan Keselamatan yang dikeluarkan adalah tertakluk kepada bilangan ketidakpatuhan yang dijumpai sewaktu pemeriksaan dilakukan dan tidak bergantung kepada bilangan premis yang diperiksa.
**Note : The number of Safety Compliance Letters issued are subject to the number of non-compliances found during inspections and not on the number of premises inspected.*

Pemantauan

Satu (1) Jawatankuasa Rayuan Penilaian Pemasukan Semula Kontraktor telah ditubuhkan pada 2020. 15 Mesyuarat Penilaian Rayuan Pemasukan Semula Kontraktor telah dijalankan pada 2021 di mana dari 366 jumlah permohonan, 364 daripadanya telah lulus dan bakinya telah gagal.

Penyiasatan

Penilaian Kertas Siasatan

Pada 2021, sebanyak 27 Mesyuarat Jawatankuasa Siasatan telah diadakan bagi menganalisis, mengkaji, menyemak dan menilai kesemua 149 kes yang dilaporkan.

Manakala, sebanyak 107 Kertas Siasatan telah dibuka pada tahun ini di mana pelbagai kategori kes telah dilaporkan.

Monitoring

A Contractor Reinstatement Committee was established in 2021. 15 Contractor Reinstatement Appeal Evaluation Meetings were held in 2021 where out of 366 applications, 364 passed while the remaining failed.

Investigation

Evaluation of Investigation Papers

In 2021, a total of 27 Investigation Committee meetings were held to analyse, investigate, check and evaluate the total of 149 cases that were reported.

Meanwhile, a total of 107 Investigation Papers were opened this year with many categories of cases reported.

Kategori Kes yang Disiasat dan Dibuka Kertas Siasatan, 2020 & 2021
Categories of Cases Investigated and Investigation Papers Opened, 2020 & 2021

Kategori *Category*	**2020**	**2021**
Kemalangan Elektrik Maut *Fatal Electrical Accidents*	14	20
Kemalangan Elektrik Tidak Maut *Non-Fatal Electrical Accidents*	14	20
Kemalangan Maut (Haiwan) *Fatal Accidents (Animals)*	4	5
Kemalangan Maut Bukan Elektrik *Non-Electrical Fatal Accidents*	1	0
Kemalangan Tidak Maut Bukan Elektrik *Non-Fatal Non-Electrical Accidents*	2	4
Kes Kebakaran Elektrik *Electrical Fire Cases*	2	1
Gangguan Bekalan Elektrik *Electrical Supply Interruptions*	4	2
Aduan kepada Unit Hal Ehwal Pengguna (UHEP) *Complaints Made to the Consumer Affairs Unit (UHEP)*	0	1
Kemalangan Gas Maut *Fatal Gas Accidents*	0	0
Kemalangan Gas Tidak Maut *Non-Fatal Gas Accidents*	0	1

Kategori *Category*	**2020**	**2021**
Operasi Curi Elektrik *Electricity Theft Operations*	13	3
Operasi Kelengkapan Elektrik *Electrical Equipment Operations*	0	1
Operasi Pepasangan Elektrik *Electricity Installation Operations*	0	1
Operasi Orang Kompeten *Competent Person Operations*	0	1
Lesen (Awam / Persendirian / NEM) *Licences (Public / Private / NEM)*	16	46
Operasi Pepasangan Gas *Gas Installation Operations*	2	1
Jumlah *Total*	**72**	**107**

Jumlah Kertas Siasatan yang dibuka didapati meningkat sebanyak 49% pada 2021 berbanding pada tahun sebelumnya. Penyumbang terbesar bagi kenaikan Kertas Siasatan yang mendadak ini adalah daripada kategori Kes Lesen di mana terdapat 46 kes lesen yang disiasat pada tahun ini.

The number of Investigation Papers opened in 2021 increased by 49% compared to the year before. The biggest contributor for this increase is from the Licence Case category where 46 cases were investigated this year.

Pendakwaan dan Pengkompaunan

Prosecution and Compound

Nama Syarikat *Company Name*	Kesalahan *Offence*	Keputusan *Verdict*
Harta Packaging Sdn. Bhd.	Penggunaan elektrik secara curang (Subseksyen 37(3) ABE 1990) *Dishonest use of electricity (Subsection 37(3) ESA 1990)*	Orang Kena Saman (OKS) mengaku salah pada 10 Mei 2021. Mahkamah Sesyen Klang, Selangor menjatuhkan hukuman denda sebanyak RM50,000 untuk setiap empat (4) pertuduhan. Denda sebanyak RM200,000 dibayar. *Accused pleaded guilty on 10 May 2021.* *Klang Sessions Court, Selangor imposed a fine of RM50,000 for every four (4) charges.* *A fine of RM200,000 was paid.*
WRP Asia Pacific Sdn. Bhd.	Penggunaan elektrik secara curang (Subseksyen 37(3) ABE 1990) *Dishonest use of electricity (Subsection 37(3) ESA 1990)*	OKS didapati bersalah di akhir kes pihak pembelaan pada 25 Ogos 2021. Mahkamah Sesyen Sepang, Selangor menjatuhkan hukuman denda RM50,000. Denda sebanyak RM50,000 dibayar. *Accused was found guilty at the end of the defence case on 25 August 2021.* *Sepang Sessions Court, Selangor imposed a fine of RM50,000.* *A fine of RM50,000 was paid.*
Amrich Foam Sdn. Bhd.	Penggunaan elektrik secara curang (Subseksyen 37(3) ABE 1990) *Dishonest use of electricity (Subsection 37(3) ESA 1990)*	OKS mengaku salah pada 12 Oktober 2021. Mahkamah Sesyen Klang, Selangor menjatuhkan hukuman denda RM15,000 untuk setiap dua (2) pertuduhan. Denda sebanyak RM30,000 dibayar. *Accused pleaded guilty on 12 October 2021.* *Klang Sessions Court imposed a fine of RM15,000 for every two (2) charges.* *A fine of RM30,000 was paid.*

Pada 2021, sebanyak 58 kompaun telah dikeluarkan kepada TNB, SESB, syarikat pemegang lesen dan individu. Antara kesalahan yang sering dilakukan adalah di bawah Peraturan 110(1) dan 110(2) PPE. Keseluruhan jumlah kompaun yang telah dibayar adalah sebanyak RM111,500.00.

In 2021, a total of 58 compounds were issued to TNB, SESB, licensee companies and individuals for violating Regulation 110 (1) and 110 (2) PPE with the total compound paid amounting to RM111,500.00.

Penguatkuasaan Pelesenan
Licensing Enforcement

Sistem pelesenan dan pemerakuan sentiasa disemak dan dipantau dari semasa ke semasa bagi memastikan status pendaftaran dan pengoperasian yang sah serta kawalan Orang Kompeten yang berkelayakan. Melalui semakan pada pangkalan data ST, ST telah melaksanakan serbuan terhadap premis yang disyaki beroperasi tanpa lesen atau melanggar syarat lesen.

Sepanjang 2021, ST telah mengambil tindakan penguatkuasaan yang berkaitan dengan pelesenan ke atas 60 premis. Daripada 60 premis yang diperiksa, sebanyak 46 Kertas Siasatan telah dibuka manakala selebihnya masih lagi di dalam proses siasatan lanjut ataupun didapati tiada kes.

In line with ensuring that businesses are operating legitimately and having qualified Competent Person, licensing and certification systems are always reviewed and monitored from time to time. Through review of the Commission's database, raids were carried out on premises suspected of operating without licence or violating licensing requirements.

Throughout 2021, the Commission took action against 60 premises for violating licensing issues. Out of the 60 premises investigated, 46 Investigation Papers were opened while the remaining are still under investigation or found to have no case.

Aktiviti Penguatkuasaan di Bawah Kategori Pelesenan, 2021
Enforcement Activities under Licensing Category, 2021

Tarikh *Date*	**Tempat / Negeri** *Location / State*	**Jenis Operasi** *Operation Type*
17 Mac 2021 *17 March 2021*	Daerah Tawau, Sabah	Syarat Lesen Pegangan Saham *Shareholding Licence Provision*
	Seberang Perai, Pulau Pinang	
25 Mac 2021 *25 March 2021*	Pulau Indah, Selangor	Syarat Lesen Pegangan Saham *Shareholding Licence Provision*
	Ara Damansara, Petaling Jaya, Selangor	
15 April 2021 *15 April 2021*	Sepang, Selangor	Lesen Awam, NEM *Public Licence, NEM*
16 Ogos 2021 *16 August 2021*	Tongkang Yard, Alor Setar, Kedah	Lesen Awam, NEM *Public Licence, NEM*
	Pekan Jitra, Jitra, Kedah	
	Telok Wanjah, Alor Setar, Kedah	
30 Ogos 2021 *30 August 2021*	Kuala Ketil, Kedah	Lesen Awam, NEM *Public Licence, NEM*
1 September 2021 *1 September 2021*	Taman Perindustrian Bukit Panchor, Pulau Pinang	Lesen Awam, NEM *Public Licence, NEM*
6 September 2021 *6 September 2021*	Kawasan Perusahaan Sg Lalang, Sungai Petani, Kedah	Lesen Awam, NEM *Public Licence, NEM*

Tarikh *Date*	Tempat / Negeri *Location / State*	Jenis Operasi *Operation Type*
8 September 2021 *8 September 2021*	Bandar Baru Sg Buloh, Sungai Buloh, Selangor	Lesen Awam, NEM *Public Licence, NEM*
	Seberang Perai Selatan, Pulau Pinang	
	Sungai Bakau, Nibong Tebal, Pulau Pinang	
10 September 2021 *10 September 2021*	Taman Perindustrian Tago, Sri Damansara, Selangor	Lesen Awam, NEM *Public Licence, NEM*
	Bandar Amanjaya, Sg Petani, Kedah	
14 September 2021 *14 September 2021*	Kuala Terengganu, Terengganu	Lesen Awam, NEM *Public Licence, NEM*
20 September 2021 *20 September 2021*	Kg Parit Jerman, Setiawan, Perak	Lesen Awam, NEM *Public Licence, NEM*
	Chemor, Perak	
	Sekinchan, Selangor	
	Kawasan Perindustrian Sekinchan, Sekinchan, Selangor	
	Bandar Amanjaya, Sungai Petani, Kedah	
21 September 2021 *21 September 2021*	Lorong Perusahaan, Perai, Pulau Pinang	Lesen Awam, NEM *Public Licence, NEM*
	Kg Telok Gong, Pelabuhan Klang, Selangor	
	Mukim Sungai Segamat, Segamat, Johor	
	Bandar Medini Iskandar,Iskandar Puteri,Johor	
	Seberang Perai Tengah, Pulau Pinang	
	Daerah Seberang Selatan, Pulau Pinang	
	Taman Tasik Utama, Ayer Keroh, Melaka	
22 September 2021 *22 September 2021*	Jalan Air Hitam, Yong Peng, Johor	Lesen Awam, NEM *Public Licence, NEM*
	Kawasan Industri Sri Gading, Batu Pahat, Johor	
	Taman Perindustrian Bukit Panchor, Nibong Tebal, Pulau Pinang	
	Air Lintas, Nibong tebal, Pulau Pinang	

Tarikh *Date*	**Tempat / Negeri** *Location / State*	**Jenis Operasi** *Operation Type*
23 Septmber 2021 *23 September 2021*	Kawasan Perindustrian, Parit Buntar, Perak	Lesen Awam, NEM *Public Licence, NEM*
	Wakaf Tapai, Marang, Terengganu	
27 September 2021 *27 September 2021*	Industries Area Sg Buloh, Selangor	Lesen Awam, NEM *Public Licence, NEM*
	Seberang Perai Utara, Pulau Pinang	
28 September 2021 *28 September 2021*	Kawasan Trisegi, Kuala Lumpur	Lesen Awam, NEM *Public Licence, NEM*
	Kg Koskan, Rawang, Selangor	
29 September 2021 *29 September 2021*	Tanjong Kling, Melaka	Lesen Awam, NEM *Public Licence, NEM*
	Bandar Darul Aman, Jitra, Kedah	
	Changloon, Kedah	
	Labis Chaah Baru, Yong Peng, Batu Pahat, Johor	
	Tongkang Yard, Alor Setar, Kedah	
	Sungai Petani, Kedah	
	Mukim Bentong, Pahang	
	Jalan Jerantut Ferry, Pahang	
	Kg Tanjong Gemok, Kuala Rompin, Pahang	
	Seksyen 16, Shah Alam, Selangor	
	Bandar Amanjaya, Sungai Petani, Kedah	
	Kawasan Industri, Kuala Ketil, Kedah	
	Lorong Perusahaan ,Perai, Pulau Pinang	
	Permatang Manggis, Kepala Batas, Pulau Pinang	
	Tanjong Kling, Melaka	

Tarikh *Date*	Tempat / Negeri *Location / State*	Jenis Operasi *Operation Type*
5 Oktober 2021 *5 October 2021*	Sungai Bakau, Nibong Tebal, Pulau Pinang	Lesen Awam, NEM *Public Licence, NEM*
	Kota Kemuning, Shah Alam, Selangor	
6 Oktober 2021 *6 October 2021*	Kg Balakong, Seri Kembangan, Selangor	Lesen Awam, NEM *Public Licence, NEM*
	Kg Balakong, Seri Kembangan, Selangor	
13 Oktober 2021 *13 October 2021*	Taman Equin, Bandar Putra Permai, Seri Kembangan, Selangor	Lesen Awam, NEM *Public Licence, NEM*
10 November 2021 *10 November 2021*	Jalan Klang Lama, Kuala Lumpur	Lesen Awam, NEM *Public Licence, NEM*

Operasi Bersepadu Kelengkapan Elektrik
Electrical Appliances Joint Operation

Sepanjang 2021, ST telah menerima banyak aduan berkaitan penjualan kelengkapan elektrik yang tidak mempunyai kelulusan daripada ST serta tidak dilabelkan dengan pelekat SIRIM-ST. Dalam amalan norma baharu, pengguna didapati lebih cenderung untuk membeli barangan kelengkapan elektrik secara dalam talian di mana ianya lebih sukar untuk menjejaki penjual berkenaan.

Dengan itu, ST melalui kerjasama di antara SIRIM dan KPDNHEP telah menggerakkan Operasi Bersepadu Kelengkapan Elektrik dan menyerbu sebanyak lima (5) gudang di mana empat (4) daripadanya didapati telah menjual kelengkapan elektrik tanpa kelulusan daripada ST.

Sehubungan dengan itu, pihak ST juga telah merampas kelengkapan-kelengkapan elektrik tersebut dengan nilai keseluruhan rampasan yang dianggarkan melebihi RM2.1 juta.

Pemilik syarikat pula akan disiasat di bawah Peraturan 97, Peraturan-Peraturan Elektrik 1994 dan sekiranya disabitkan kesalahan, boleh didenda sehingga RM5,000.00 atau dipenjarakan sehingga tempoh setahun.

Tindakan ini diharapkan dapat membendung pembelian kelengkapan elektrik secara dalam talian yang tidak mempunyai kelulusan daripada ST serta tidak dilabelkan dengan pelekat SIRIM-ST.

Throughout 2021, the Commission received many complaints about the sale of electrical appliances without approval from the Commission and the SIRIM-ST labels. In the new normal, consumers are more inclined to purchase electrical appliances online, which makes it more difficult to keep track of the seller.

Due to this, the Commission in collaboration with SIRIM and KPDNHEP mobilised the Electrical Appliances Joint Operation and raided five (5) warehouses where four (4) of them were found to be selling electrical appliances without the Commission's approval.

As a result of these raids, the Commission managed to confiscate electrical equipment with a total estimated value of over RM2.1 million.

The company owners will be investigated under Regulation 97, of the Electricity Regulations 1994 and they face a fine of up to RM5,000.00 or imprisonment for a period of up to 1 year, if found guilty.

This action aims to curb the online purchase of electrical equipment without the Commission's approval and SIRIM-ST label.

Penguatkuasaan Penggunaan Elektrik Secara Curang
Enforcement on the Dishonest Use of Electricity

Pada 2021, ST telah melaksanakan operasi penguatkuasaan penggunaan elektrik secara curang di 12 premis. Daripada jumlah tersebut, sebanyak sembilan (9) kertas siasatan telah dibuka di samping sedang disiasat oleh pegawai penyiasat ST.

Operasi serbuan yang dijalankan tidak hanya tertumpu kepada aktiviti perlombongan *Bitcoin* malah juga terhadap premis-premis komersial. Pemegang lesen boleh menuntut semula kerugian hasil akibat aktiviti penggunaan elektrik secara curang. Disamping itu, ST juga akan memantau semua tindakan yang diambil oleh pemegang lesen di bawah Seksyen 38, ABE 1990.

Di Sabah, ST turut bekerjasama dengan pihak Pihak Berkuasa Tempatan (PBT) dan SESB dalam inisiatif membanteras aktiviti sambungan haram.

In 2021, the Commission carried out enforcement activities on dishonest use of electricity in 12 premises. From that total, nine (9) Investigation Papers were opened for investigation by the Commission's investigating officers.

The raid not only focused on Bitcoin mining activities, but also on commercial premises. Licensees may claim losses of revenue due to dishonest use of electricity. Apart from that, the Commission will also monitor all actions taken by the licensees under Section 38, ESA 1990.

In Sabah, the Commission worked with the Local Authorities and SESB in their initiative to curb illegal electricity connections.

Senarai Operasi Penggunaan Elektrik Secara Curang, 2021
List of Dishonest Use of Electricity Operations, 2021

Tarikh *Date*	**Tempat** *Location*	**Kaedah Kejanggalan** *Irregularity*
6 Mei 2021 *6 May 2021*	Taman Pelangi Semenyih, Semenyih, Selangor	Sambungan terus dari terminal *incoming* TNB sebelum meter. *Direct connection from TNB's incoming terminal before meter.*
	Taman Pelangi Semenyih, Semenyih, Selangor	
25 Ogos 2021 *25 August 2021*	Jalan Pasir Mas, Tanah Merah, Kelantan	Sambungan terus dari *incoming* TNB sebelum meter. *Direct connection from TNB's incoming terminal before meter.*
30 September 2021 *30 September 2021*	Taman Perindustrian Alfa Impian, Cheras, Selangor	Pintasan pada S1 dan S2 bagi ketiga-tiga fasa di terminal CT. *Bypass on S1 and S2 for all three phases at CT terminal.*
	Sunway Mas Commercial, Petaling Jaya, Selangor	Tiada kes. *No case.*
	Sunway Mas Commercial, Petaling Jaya, Selangor	
	Aman Suria, Damansara, Petaling Jaya, Selangor	Sambungan terus dari terminal *incoming* TNB sebelum meter. *Direct connection from TNB's incoming terminal before meter.*
21 Oktober 2021 *21 October 2021*	Taman Kota Jaya, Simpang Ampat, Taiping, Perak	Tiada kes. *No case.*

Tarikh *Date*	Tempat *Location*	Kaedah Kejanggalan *Irregularity*
25 November 2021 *25 November 2021*	Warehouse Golden Hill Industrial Park, Kota Kinabalu, Sabah	Pengusikan dalam meter. *Tampering of meter.*
	Warehouse Golden Hill Industrial Park, Kota Kinabalu, Sabah	
	Taman Soon Kiong, Jalan Kolam Loyang, Kota Kinabalu, Sabah	
	Taman Permai, Menggatal, Kota Kinabalu, Sabah	Sambungan terus dari terminal i *incoming* SESB sebelum meter. *Direct connection from Terminal I, incoming SESB before meter.*

Kempen *#ThinkSafetyThinkST*
#ThinkSafetyThinkST Campaign

Pembangunan Video Keselamatan Elektrik

ST telah membangunkan dua (2) video kesedaran keselamatan elektrik bagi meningkatkan pengetahuan serta memupuk budaya keselamatan elektrik khususnya kepada pelajar sekolah dan orang awam secara amnya agar dapat mengurangkan risiko berlakunya kemalangan atau kebakaran.

Video pertama adalah bertajuk "Mat Geiber" yang memaparkan lakonan sekumpulan remaja yang mengabaikan keselamatan elektrik dengan melakukan pengubahsuaian pada pendawaian elektrik secara sendiri berdasarkan maklumat dari Youtube.

Video kedua pula membawa tajuk "Rindu" dan memaparkan lakonan orang dewasa yang alpa akan kepentingan menggunakan kelengkapan elektrik yang diluluskan oleh ST.

Selain itu, ST juga telah membangunkan satu video animasi yang menunjukkan cara-cara menguji Peranti Arus Baki (PAB) di papan agihan rumah.

Kesemua video ini boleh ditonton menerusi semua platform media sosial ST.

Development of Electrical Safety Video

The Commission produced two (2) videos to spread awareness on electrical safety, increase knowledge and inculcate awareness about the importance of electrical safety among school students and the general public in order to reduce the risk of accidents or fire.

The first video titled 'Mat Geiber' shows a group of teenagers who ignore electrical safety by carrying out do it yourself (DIY) electrical wiring modifications based on information found on YouTube.

The second video titled 'Rindu" shows an adult who neglects the importance of using electrical appliances that are approved by the Commission.

Apart from that, the Commission also developed an animated video showing the right ways to test Residual Current Devices at the home distribution board.

These videos can be watched on all of the Commission's social media platforms.

Program *Safety Moments with Utilities & Industries*

Program *Safety Moments with Utilities & Industries* telah diperkenalkan bertujuan untuk menekankan kepentingan peranan pihak utiliti dan industri dalam memastikan serta meningkatkan keselamatan elektrik melalui sebaran media sosial syarikat dan ST agar kemalangan elektrik dapat dikurangkan.

Menerusi program *Safety Moments* ini, pihak utiliti dan industri akan berkongsi gambar atau video berdurasi pendek yang menunjukkan suasana semasa bekerja di tapak atau di pejabat dengan kapsyen yang menarik berkaitan amalan keselamatan elektrik yang menekankan slogan *#ThinkSafetyThinkST.*

ST turut mewar-warkan gambar dan video berkenaan di semua platform media sosial ST bagi mempromosikan amalan keselamatan elektrik yang dipraktis oleh pihak utiliti dan industri tersebut.

Pada 2021, ST telah membangunkan beberapa video Tiktok yang bertujuan untuk mempromosi ST serta mempergiatkan kempen keselamatan elektrik dan gas kepada orang ramai melalui media sosial yang selaras dengan perkembangan teknologi semasa.

Safety Moments with Utilities & Industries Programme

The Safety Moments with Utilities & Industries Programme was introduced to stress the important role of utilities and industries in ensuring and improving electrical safety through their and the Commission's social media to reduce the rate of electrical accidents.

Through this Safety Moments programme, utilities and industries will share pictures or short videos which show their working environment with interesting captions about electrical safety emphasising the slogan #ThinkSafetyThinkST.

The Commission also promotes the pictures and videos in all of its social media platforms to promote electrical safety practiced by utilities and industries.

In 2021, the Commission also developed several TikTok videos to promote and intensify the Commission's electrical and gas safety campaign to the masses through social media in line with the current technology.

03 MEMPERKUKUHKAN KEBERTERUSAN BEKALAN DAN KEMAMPANAN TENAGA
STRENGTHENING ENERGY SECURITY AND SUSTAINABILITY

SOROTAN UTAMA
MAIN HIGHLIGHTS

PERANCANGAN PEMBANGUNAN KAPASITI
CAPACITY DEVELOPMENT PLAN

Pada 2021, Kerajaan telah mengekalkan sasaran kapasiti tenaga boleh baharu (TBB) di Malaysia sebanyak 31% menjelang 2025, dan seterusnya menyasarkan 40% menjelang 2040. Secara amnya, penjanaan tenaga melalui TBB di Semenanjung menunjukkan peningkatan di samping penjanaan tenaga daripada sumber bahan api arang batu dan gas.

Pada 2021, sebanyak lima (5) projek Solar Berskala Besar (LSS) telah ditambah ke dalam sistem, dengan beberapa lagi dijadualkan beroperasi dalam masa beberapa tahun akan datang.

In 2021, the Government maintained the renewable energy (RE) capacity target in Malaysia at 31% by 2025 and subsequently 40% by 2040. In general, energy generated through RE in the Peninsula as well as energy generated from coal and gas fuel sources showed an increase.

In 2021, a total of five (5) Large Scale Solar (LSS) projects were added to the system, with more scheduled to be operational over the next few years.

Loji-loji Jana Kuasa di Semenanjung, 2021
Power Plants in the Peninsula, 2021

17 Gas
Gas

8 Arang Batu
Coal

7 Hidro
Hydro

38 LSS
LSS

70
Jumlah
Total

Pelan Pembangunan Penjanaan Semenanjung Malaysia (2021-2040)

Pada 23 Disember 2021, Pelan Pembangunan Penjanaan Semenanjung Malaysia (2021–2040) telah diluluskan oleh Jawatankuasa Perancangan dan Pelaksanaan Pembekalan Elektrik dan Tarif (JPPPET) yang dipengerusikan oleh YB Menteri Tenaga dan Sumber Asli. Pelan ini bertujuan memastikan bekalan yang berdaya harap dan terjamin dapat disediakan kepada pengguna pada harga yang berpatutan, di samping berupaya memenuhi aspirasi Kerajaan serta komitmen antarabangsa.

Pelan ini turut mengambil kira polisi dan aspirasi Kerajaan seperti peningkatan kapasiti penjanaan TBB di Malaysia kepada sasaran 31% menjelang 2025, dan seterusnya 40% menjelang 2040. Kadar kemasukan solar juga ditetapkan bagi memastikan kestabilan grid. Pengurangan sebanyak 45% intensiti pelepasan gas (karbon dioksida per KDNK dan dengan bantuan negara maju) menjelang 2030 dan 60% menjelang 2035 juga adalah termasuk dalam kriteria perancangan tersebut. Selain itu, ketersediaan bahan api, teknologi penjanaan dan kemajuan projek-projek talian penghantaran sedia ada turut dipertimbangkan.

The Peninsular Malaysia Generation Development Plan (2021-2040)

The Planning and Implementation Committee for Electricity Supply and Tariff (JPPPET), which is chaired by YB Minister of Energy and Natural Resources, approved the Peninsular Malaysia Generation Development Plan (2021-2040) on 23 December 2021. Its objective is to ensure reliable and secure energy supply at affordable prices for consumers, in line with the Government's aspirations and global commitment.

The plan also took into account Government policies and aspirations to increase RE generation capacity in Malaysia to 31% by 2025 and subsequently 40% by 2040. Solar penetration level was also set to ensure grid stability. A reduction of 45% of greenhouse gas emissions intensity (carbon dioxide per GDP and with the assistance of developed countries) by 2030 and 60% by 2035 were also included in these planning criteria. Besides that, fuel availability, generation technology and the progress of ongoing transmission line projects were also considered.

Berdasarkan pertimbangan-pertimbangan tersebut, pelan ini berperanan menentukan campuran kapasiti, campuran bahan api dan margin rizab yang optimum bagi 20 tahun yang akan datang.

Campuran Kapasiti Terpasang

Kapasiti terpasang bagi TBB di Semenanjung dijangkakan akan bertambah daripada 17% pada 2021 kepada 26% pada 2025, dan seterusnya 32% menjelang 2040.

Lanjutan kemasukan TBB ini, pengurangan ketara dalam penjanaan berasaskan bahan api fosil dijangka berlaku dalam tempoh 20 tahun akan datang, iaitu daripada 82% pada 2021 kepada 68% pada 2040. Pengurangan penjanaan terbesar adalah bagi arang batu, iaitu daripada 40% pada 2021 kepada 36% pada 2025 dan 17% menjelang 2040. Walau bagaimanapun, kedudukan gas sebagai bahan api fosil yang paling bersih akan terus mendominasi campuran kapasiti ini.

Bagi mencapai sasaran 26% kapasiti TBB di Semenanjung menjelang 2025, 420 MW kapasiti TBB perlu dibangunkan bermula 2022. Keperluan kapasiti baharu ini merangkumi kapasiti tenaga solar sahaja.

Kestabilan sistem grid dijangka kekal terkawal dengan kemasukan tenaga solar yang akan berada pada paras antara 30% ke 45% daripada jumlah kehendak maksimum.

Based on these considerations, the plan aims to determine the optimal capacity mix, fuel mix and reserve margin for the next 20 years.

Installed Capacity Mix

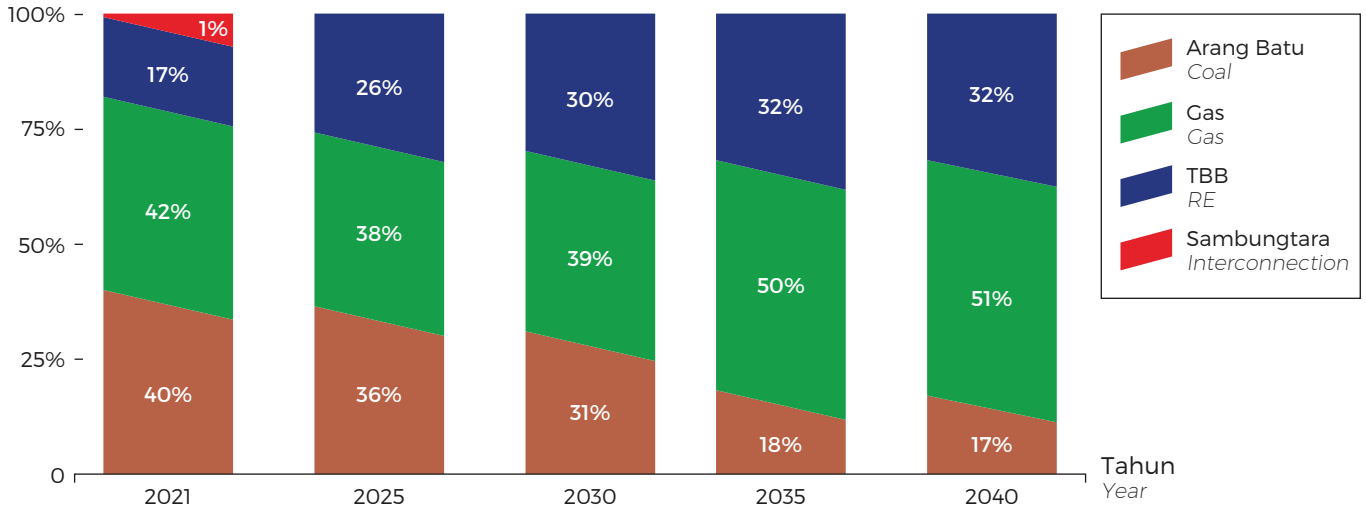
The Peninsula's RE installed capacity is expected to increase from 17% in 2021 to 26% in 2025 and subsequently 32% come 2040.

With the inflow of RE capacity, a significant reduction in fossil fuel-based generation is expected over the next 20 years, from 82% in 2021 to 68% in 2040. The largest generation reduction will be for coal, from 40% in 2021 to 36% in 2025 and 17% by 2040. However, gas as the cleaner fossil fuel source will continue to dominate the capacity mix.

In order to achieve the 26% RE target in the Peninsula by 2025, a total of 420 MW of RE capacity needs to be developed starting 2022. This new capacity encompasses solar energy capacity only.

Grid system stability is expected to remain stable with solar energy penetration estimated to be between 30% to 45% of the total maximum demand.

Campuran Kapasiti di Semenanjung, 2021-2040
Capacity Mix in the Peninsula, 2021-2040



Campuran Tenaga

Walaupun secara puratanya gas mendominasi campuran kapasiti bagi tempoh sehingga 2040, dari segi campuran tenaga, arang batu mendahului penjanaan bahan api yang lain disebabkan unjuran harganya yang lebih rendah, iaitu pada 48%, berbanding gas pada 38% dan TBB pada 15% menjelang 2030.

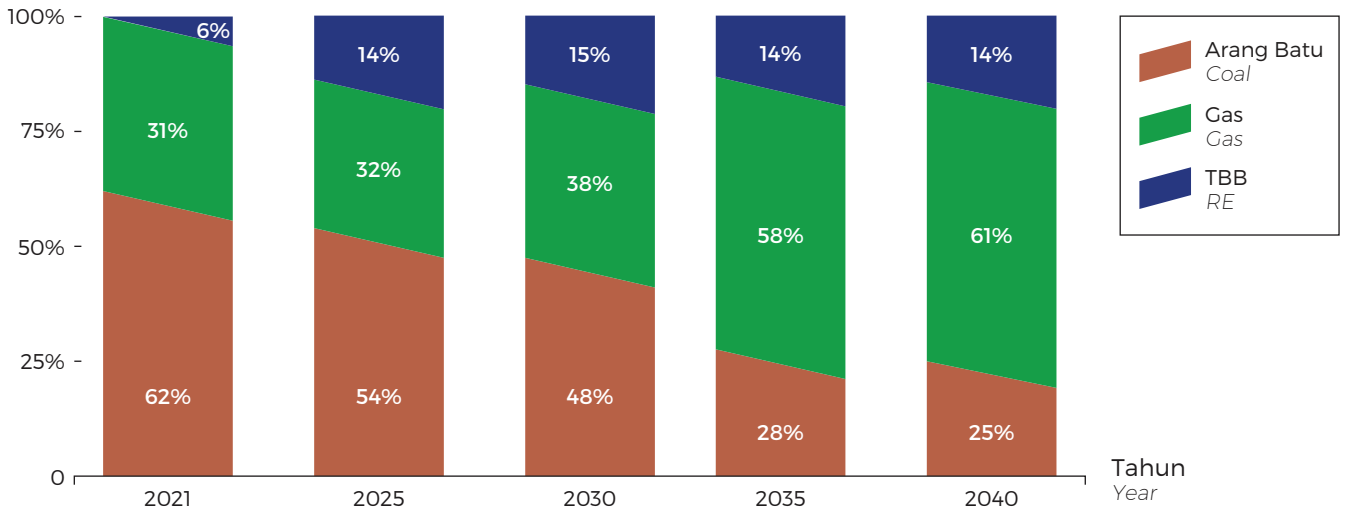
Walau bagaimanapun, campuran arang batu dijangka akan menunjukkan trend yang menurun dalam tempoh 10 tahun yang akan datang. Menjelang 2040, gas akan mendominasi campuran tenaga pada tahap 61%, diikuti dengan arang batu pada 25% dan TBB pada 14%.

Energy Mix

Although on average, gas dominates the capacity mix up to 2040, coal is set to be the major contributor to the energy mix due to its lower forecasted price, accounting for 48% compared to gas at 38% and RE at 15% by 2030.

However, coal is expected to display a downward trend over the next 10 years. By 2040, gas will contribute 61% of the energy mix followed by coal with 25% and RE with 14%.

Campuran Tenaga di Semenanjung, 2021-2040
Energy Mix in the Peninsula, 2021-2040



Margin Rizab

Jumlah kapasiti terpasang di Semenanjung bertambah sebanyak 1,632 MW dengan permulaan operasi loji jana kuasa *Southern Power Generation Sdn. Bhd.* (1,440 MW), projek *LSS Halpro Engineering Sdn. Bhd.* (30 MW) dan loji jana kuasa *Edra Energy Sdn. Bhd.* (747 MW) serta penamatan operasi loji *YTL Power Generation Sdn. Bhd., Paka* (585 MW) pada Jun 2021 menjadikan jumlah keseluruhan kapasiti terpasang di Semenanjung sebanyak 26,890 MW.

Dengan rekod permintaan puncak sebanyak 18,585 MW, margin rizab pada 31 Disember 2021 adalah berada pada tahap 42%.

Reserve Margin

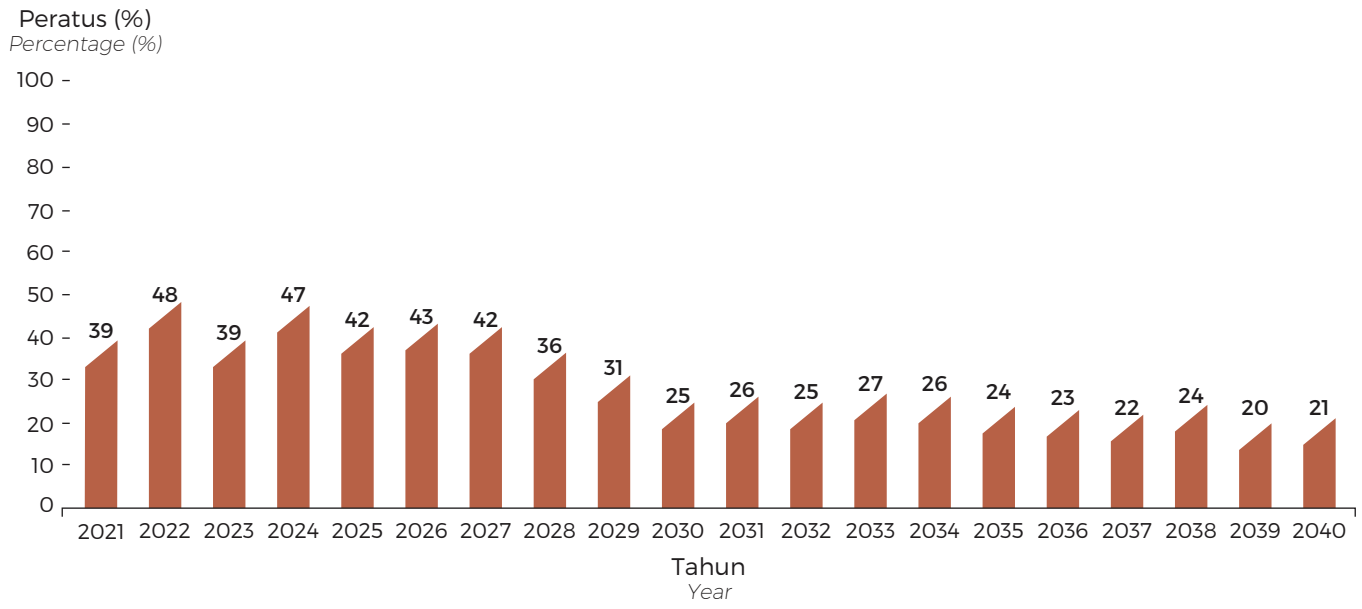
The total installed capacity in the Peninsula increased by 1,632 MW with the commencement of the Southern Power Generation Sdn. Bhd. power plant (1,440 MW), LSS Halpro Engineering Sdn. Bhd. project (30 MW) and Edra Energy Sdn. Bhd. power plant (747 MW) and the decommissioning of the YTL Power Generation Sdn. Bhd., Paka power plant (585 MW) in June 2021 bringing the overall total installed capacity in the Peninsula at 26,890 MW.

With a record peak demand of 18,585 MW, the reserve margin as of 31 December 2021 stood at 42%.

Tahun 2022 akan menyaksikan peningkatan ketara margin rizab sehingga 48% disebabkan oleh mula tugas loji *Edra Energy* (2,241 MW). Namun, margin rizab dijangka akan menurun ke lingkungan 20% mulai 2030.

The year 2022 will witness a significant increase in the reserve margin of up to 48% due to the commencement of the Edra Energy power plant (2,241 MW). However, the reserve margin is expected to decline to around the 20% mark starting from 2030.

Unjuran Margin Rizab, 2021-2040
Reserve Margin Projections, 2021-2040



Nota: Margin rizab bagi 2021 adalah merujuk kepada permintaan puncak 18,585 MW yang direkodkan pada 13 Oktober 2021 dan kapasiti terpasang sebanyak 27,045 MW termasuk kapasiti sambungtara Lao PDR-Thailand-Malaysia (LTM) sebanyak 300 MW, serta kredit kapasiti 17% daripada 609 MW LSS pada rangkaian penghantaran.
Note: The 2021 reserve margin refers to the peak demand that was recorded on 13 October 2021 at 18,585 MW and installed capacity at 27,045 MW including the 300 MW Lao PDR-Thailand-Malaysia interconnection capacity (LTM) as well as 17% of credit capacity from the 609 MW LSS on the transmission network.

Di Sabah pula, margin rizab yang telah direkodkan pada 2021 adalah pada tahap 19%. Beberapa loji jana kuasa baharu telah mula beroperasi seperti Lower Bengkoka Hydro Plant, One River (10.98 MW) pada November 2021 dan Tawau DE3B (5 MW) pada Ogos 2021.

In Sabah, the reserve margin stood at 19% in 2021. Several new power plants have commenced operations such as the Lower Bengkoka Hydro Plant, One River (10.98 MW) in November 2021 and Tawau DE3B (5 MW) in August 2021.

Nota: Margin rizab bagi 2021 adalah merujuk kepada permintaan maksimum 1,002.8 MW yang direkodkan pada 28 Mei 2021 dan kapasiti boleh harap yang telah disemak semula oleh Pengendali Sistem Grid (GSO) namun tidak termasuk pengoperasian semula Stesen Jana Kuasa Serudong (33 MW) dan Stesen Jana Kuasa Libaran (30 MW), penempatan semula GT Melawa (18 MW) dan LSS 1 & 2 yang mengalami kelewatan sehingga 2022/2023.
Note: The 2021 reserve margin refers to the maximum demand of 1002.8 MW recorded on 28 May 2021 and dependable capacity revised by Grid System Operator (GSO), but does not include the reoperation of Serudong Power Station (33 MW) and Libaran Power Station (30 MW), the relocation of GT Melawa (18 MW) and LSS 1 & 2 that are experiencing delays untill 2022/2023.

Projek-Projek Pembangunan Pembekalan Tenaga Berimpak Tinggi

Bagi memenuhi keperluan penjanaan dan margin rizab serta memastikan kadar tarif yang kompetitif, pada 2021, ST telah mengeluarkan *Commissioning Test Certificate* bagi dua (2) loji jana kuasa untuk memulakan operasi komersial. Dengan bermulanya operasi *Southern Power Generation Sdn. Bhd.* dan *Edra Energy Sdn. Bhd.* ini, kadar margin rizab telah meningkat kepada 39%.

Kedua-dua loji jana kuasa ini akan terus beroperasi selama 21 tahun dengan tarikh tamat tempoh konsesi pada 31 Disember 2041 bagi Southern Power Generation dan 15 Disember 2042 bagi Edra Energy.

Dua (2) blok penjanaan Edra Energy dengan kapasiti masing-masing 747.377 MW dijangka akan memulakan operasi komersial pada suku pertama 2022.

High Impact Energy Supply Development Projects

To fulfill the generation demand and reserve margin, as well as ensure competitive tariff rates, the Commission issued Commissioning Test Certificates to two (2) power plants to begin commercial operations. With the commencement of the Southern Power Generation Sdn. Bhd. and Edra Energy Sdn. Bhd., the reserve margin increased to 39%.

Both power plants will continue to operate for 21 years with a consessionary decommisioning date on 31 December 2041 for Southern Power Generation and 15 December 2042 for Edra Energy.

Two (2) Edra Energy generation blocks (each with 747.377 MW capacity) are expected to begin commercial operations in the first quarter of 2022.

Projek Penjanaan yang Diberikan Sijil Kelulusan untuk Memulakan Operasi Komersial di Semenanjung
Generation Projects Issued with Commissioning Test Certificates to Begin Commercial Operations in the Peninsula

Bil. *No.*	Projek *Project*	Lokasi *Location*	Bahan Api *Fuel Source*	Kapasiti (MW) *Capacity (MW)*	Tarikh Sijil *Certificate Date*
1.	Southern Power Generation Sdn. Bhd.	Johor	Gas *Gas*	**1,440**	1 Januari 2021 *1 January 2021* 16 Februari 2021 *16 February 2021*
2.	Edra Energy Sdn. Bhd.	Melaka	Gas *Gas*	**2,242**	16 Disember 2021 *16 December 2021*

Selain itu, bagi memenuhi unjuran kehendak pelan bagi pembangunan penjanaan, ST telah melaksanakan beberapa penilaian ke atas cadangan tarif loji jana kuasa hidroelektrik termasuk Projek Hidroelektrik Nenggiri dan Sungai Perak oleh *TNB Power Generation Sdn. Bhd.* dan Projek Hidroelektrik Upper Padas oleh Konsortium Kerjaya Kagum Hi-Tech JV Sdn. Bhd. dan *Sabah Energy Corporation.*

Satu surat pemakluman telah dikeluarkan kepada *TNB Power Generation* pada 24 Jun 2021 untuk memulakan proses pembinaan projek loji jana kuasa hidroelektrik Nenggiri dengan tarikh jangkaan operasi komersial pada 1 Jun 2027.

Apart from that, in order to fulfil the forecasted demand for generation development, the Commission carried out some evaluations to the proposed hydroelectric power plant tariff which includes the Nenggiri Hydroelectric Project, Sungai Perak by TNB Power Generation Sdn. Bhd. and the Hydroelectric Upper Padas Project by Kerjaya Kagum Hi-Tech JV Sdn Bhd Consortium and Sabah Energy Corporation.

A letter of notification was issued to TNB Power Generation on 24 June 2021 to begin the construction of the Nenggiri hydroelectric power plant project with the expected commercial operations to begin on 1 June 2027.

Projek Talian Penghantaran di Semenanjung *Transmission Line Projects in the Peninsula*		
Bil. *No.*	**Projek** *Project*	**Lokasi** *Location*
1.	**500 kV** OHL Ayer Tawar – Bentong South	Perak, Selangor & Pahang
2.	**500 kV** OHL Bentong South - Lenggeng	Pahang, Selangor & Negeri Sembilan
3	**500 kV** OHL Lenggeng – Yong Peng East	Negeri Sembilan & Johor
4	**275 kV** OHL Supply to Penang Island	Pulau Pinang

Projek-projek penghantaran tersebut merupakan sebahagian daripada tulang belakang 500 kV yang sedang dalam pembinaan dari Gurun di utara ke Pasir Gudang di selatan, untuk memudahkan penyaluran tenaga secara pukal antara kawasan bagi memenuhi keperluan permintaan yang berpusat di Kawasan Tengah. Projek 275 kV *OHL Supply to Penang Island* pula adalah bagi menampung permintaan di pulau tersebut setelah penamatan loji jana kuasa Gelugor pada 2024.

Di Sabah pula, Kementerian melalui JPPPET telah melaksanakan perancangan jangka panjang untuk memenuhi keperluan permintaan tenaga elektrik di negeri tersebut. Pelan perancangan tersebut merangkumi penilaian unjuran permintaan, teknologi penjanaan dan kecukupan bahan api dengan mengambil pendekatan *least cost options*, pengukuhan infrastruktur talian penghantaran dan opsyen penjanaan baharu dalam usaha menjamin keberterusan bekalan elektrik.

Dana sejumlah RM2.3 bilion telah diperuntukkan di bawah Rancangan Malaysia ke-10 (RMK-10) dan Rancangan Malaysia ke-11 (RMK-11) bagi pelaksanaan projek pengukuhan rangkaian oleh Sabah Electricity Sdn. Bhd. (SESB) dan Pasukan Projek Khas Bekalan Elektrik Sabah (PPKBES). Ini termasuk projek menaik taraf talian penghantaran 132 kV kepada 275 kV daripada Segaliud ke *Dam Road* bagi meningkatkan kapasiti penyaluran elektrik daripada Pantai Barat ke Pantai Timur Sabah kepada 400 MW yang dijangka siap pada 2023.

The transmission projects listed are part of the 500 kV backbone that is currently under construction from Gurun in the north to Pasir Gudang in the south, to facilitate the inter-area bulk energy transmission to meet demand centered in the Central Region. Meanwhile, the 275 kV OHL Supply to Penang Island Project is to accommodate demand in the island upon decommissioning of the Gelugor Power Plant in 2024.

In Sabah, the Ministry through JPPPET implemented long-term plans to meet the state's electricity demand. The plan covers an assessment of demand forecasts, generation technology and fuel adequacy by taking the least cost options approach, the strengthening of transmission line infrastructures and new generation options in an effort to ensure energy supply security.

A total of RM2.3 billion was allocated under the 10th Malaysia Plan (RMK-10) and the 11th Malaysia Plan (RMK-11) for the implementation of network strengthening projects by Sabah Electricity Sdn. Bhd. (SESB) and the Sabah Electricity Supply Special Project Team (PPKBES). This includes the 132 kV to 275 kV transmission line upgrading project from Segaliud to Dam Road to increase the electricity transmission capacity to 400 MW from the West Coast to the East Coast of Sabah, which is expected to be completed in 2023.

Projek Penjanaan di Sabah
Generation Projects in Sabah

Bil. *No.*	Projek *Project*	Lokasi *Location*	Bahan Api *Fuel Source*	Kapasiti (MW) *Capacity (MW)*
1.	Penempatan Semula GT Melawa *GT Melawa Relocation*	Sandakan	Diesel	**18**
2.	Rehabilitasi SJ Tawau *SJ Tawau Rehabilitation*	Tawau	Diesel	**7**

Projek Talian Penghantaran di Sabah
Transmission Line Projects in Sabah

Bil. *No.*	Projek *Project*
1.	132 kV PMU Apas
2.	132 kV PMU Bukit Nenas
3.	275 kV Kimanis - Mengalong
4.	Menaiktaraf PMU Dam Road kepada 275 kV *Upgrading PMU Dam Road to 275 kV*
5.	Sambungtara Sabah dan Sarawak 275 kV Sipitang - Lawas *Sabah and Sarawak 275 kV Sipitang – Lawas Interconnection*

Bagi menangani isu kelewatan projek, beberapa langkah mitigasi telah dirancang dan akan dilaksanakan untuk menyokong kapasiti penjanaan dan menjamin kestabilan grid terutamanya di Pantai Timur Sabah, iaitu pengoperasian semula Stesen Jana Kuasa Serudong (33 MW), Stesen Jana Kuasa Libaran (30 MW) dan Stesen Jana Kuasa TSH Biomass (10 MW) yang dijangka akan mula beroperasi pada 2022.

A few mitigation plans were planned and executed to combat the delayed project issue in order to support generation capacity and ensure grid stability, especially in the East Coast of Sabah, where the re-operations of Kuasa Serudong Power Station (33 MW), Kuasa Libaran Power Station (30 MW) and TSH Biomass Power Station (10 MW) are expected to begin operating in 2022.

PERKEMBANGAN TENAGA BOLEH BAHARU (TBB)
Development of Renewable Energy (RE)

Pada 2021, Kerajaan telah menyasarkan kemasukan kapasiti projek LSS daripada program bidaan LSS pusingan ketiga dengan jumlah kapasiti 491 MW. Namun, situasi pandemik COVID-19 dan pelaksanaan PKP telah menyebabkan *Scheduled Commercial Operation Date* (SCOD) bagi projek-projek LSS pusingan ketiga ditunda ke suku pertama tahun 2022.

In 2021, the Government targetted for the inclusion of LSS capacity project from the third round of the LSS bidding programme with a total capacity of 491 MW. However, due to the COVID-19 pandemic and the enforcement of the Movement Control Order (MCO), the Scheduled Commercial Operation Date (SCOD) for the third round of LSS projects were delayed to the first quarter of 2022.

Sebahagian daripada projek-projek LSS bidaan pusingan kedua yang dijadualkan SCOD pada 2020, berjaya mencapai operasi komersial pada 2021.

Some projects from the second round of LSS biddings that was scheduled to have a SCOD in 2020, had successfully become commercially operational in 2021.

Projek LSS Pusingan Kedua yang Mencapai Operasi Komersial, 2021
Projects Under the Second Round of LSS that Reached Commercial Operations, 2021

Bil. *No.*	Pemaju *Developer*	Lokasi *Location*	Kapasiti (MW) *Capacity (MW)*
1.	Hong Seng Assembly Sdn. Bhd.	Seberang Perai, Pulau Pinang	**1**
2.	Fairview Equity Project (Mersing) Sdn. Bhd.	Mersing, Johor	**5**
3.	I2 Solarpark One Sdn. Bhd.	Alor Gajah, Melaka	**6.8**
4.	Fairview Equity Project (Kluang) Sdn. Bhd.	Kluang, Johor	**9.99**
5.	Halpro Engineering Sdn. Bhd.	Pekan, Pahang	**30**

Rundingan LSS Sabah dan Pemuktamadan Terma Perjanjian Pembelian Tenaga (PPA) SESB

LSS Sabah Negotiations and Finalisation of SESB's Power Purchase Agreement (PPA) Terms

Projek LSS di Sabah yang Memuktamadkan PPA bersama SESB, 2021
LSS Projects in Sabah Finalised with SESB, 2021

Bil. *No.*	Pemaju *Developer*	Lokasi *Location*	Kapasiti (MW) *Capacity (MW)*
1.	BP Energy Sdn. Bhd.	Kunak	**5**
2.	Sabah Energy Corporation Sdn. Bhd.	Labuan	**5**
3.	Suria Alliance Sdn. Bhd.	Tawau	**5**
4.	Nusantara Suriamas Sdn. Bhd.	Tawau	**5.9**
5.	Beau Energy East Sdn. Bhd.	Beaufort	**6**
6.	GV Bumi Solar (Sandakan) Sdn. Bhd.	Sandakan	**10**
7.	SDK Power Sdn. Bhd.	Sandakan	**10**
8.	Solar PV Power Sdn. Bhd.	Labuan	**10**

Beberapa pemaju di Sabah telah bersetuju untuk memindahkan lokasi loji jana kuasa solar dari Pantai Barat Sabah dengan tujuan membantu menambah baik situasi pembekalan tenaga elektrik di kawasan Pantai Timur Sabah. Kesemua projek LSS di Sabah adalah dijadualkan untuk beroperasi pada pertengahan 2023.

In order to improve electricity supply, a few developers have agreed to relocate solar power plants from the West Coast region to the East Coast region of Sabah. All LSS projects in Sabah are scheduled to be operational by mid-2023.

Tahun 2021 telah menyaksikan pertambahan kapasiti LSS ke dalam sistem sebanyak 52.79 MW, menjadikan keseluruhan LSS yang telah beroperasi sejak 2017 adalah sebanyak 910 MW. Pertambahan ini menunjukkan prestasi baik dalam menuju sasaran Kerajaan untuk mencapai 31% kapasiti TBB sistem pembekalan elektrik negara menjelang 2025.

There was an increase of 52.79 MW of LSS capacity into the system in 2021 making the total number of LSS operational since 2017 to be 910 MW. This increase indicates good performance and in line with the Government's goal to achieve 31% of the RE capacity of the national electricity supply system by 2025.

PELAKSANAAN AKSES PIHAK KETIGA (TPA)
IMPLEMENTATION OF THE THIRD PARTY ACCESS (TPA)

Tahun 2021 mencatatkan kemajuan seterusnya dalam perlaksanaan akses pihak ketiga (TPA) apabila satu (1) pemegang lesen pengiriman gas *(shipper)* pihak ketiga berjaya membekalkan gas kepada pengguna akhir secara pengimportan LNG melalui terminal penggasan semula di Sungai Udang, Melaka (RGTSU). Walaupun usaha ini berhadapan dengan kekangan operasi dan keadaan pasaran gas global yang tidak menentu, *shipper* tersebut berjaya memuktamadkan rundingan perjanjian bekalan gas kepada pengguna mengikut kaedah *willing-buyer-willing seller*.

Kapasiti RGTSU telah ditempah sepenuhnya (100%) oleh Petronas Energy & Gas Trading Sdn. Bhd. (PEGT) melalui perjanjian novasi dengan PETRONAS bagi tempoh 20 tahun dari 2013 sehingga 2033. Walau bagaimanapun, analisis ST menunjukkan penggunaan RGTSU berada di tahap yang rendah dalam julat 30-40% daripada jumlah kapasiti tersedia RGTSU. Melalui dokumen set peraturan kemasukan bagi RGTSU iaitu *Access Arrangement* (AA), kaedah pindahan separa perkhidmatan *(Partial Service Transfer)* membenarkan *shipper* sedia ada dalam RGTSU untuk memberi sebahagian hak dan tanggungjawabnya kepada shipper lain. Kaedah ini memberi ruang kepada *shipper* lain mendapatkan akses kepada RGTSU walaupun kapasiti telah ditempah sepenuhnya.

Dalam usaha untuk meningkatkan penyertaan *shipper* lain di dalam rangka kerja TPA ini, ST mengambil langkah proaktif dalam membuat rundingan bersama pihak PGB dalam melaksanakan aktiviti penjadualan kapal kargo LNG tahunan *(Annual Operation Schedule-AOS)* dan juga PEGT dalam mendapatkan ruang bagi kapal kargo LNG *shipper* pihak ketiga berlabuh.

There were further improvements recorded in 2021 in the implementation of third party access (TPA) when one (1) third party shipper successfully supplied gas to the end user by importing LNG through the regasification terminal at Sungai Udang, Melaka (RGTSU). Although this effort faced operational constraints with uncertain global gas market conditions, the shipper had successfully finalised the gas supply negotiations to consumers by using the willing-buyer-willing-seller method.

The RGTSU capacity has been fully booked (100%) by Petronas Energy & Gas Trading Sdn. Bhd. (PEGT) through a novation agreement with Petronas for a period of 20 years, from 2013 to 2033. Nevertheless, the Commission's analysis showed the use of RGTSU to be low, at a range of just 30-40% from the total existing RGTSU capacity. Through a set of admission documents for RGTSU, namely the Access Arrangement (AA), Partial Service Transfer allows existing shippers in the RGTSU to transfer some of their rights and responsibilities to other shippers. This method allows other shippers to gain access to the RGTSU despite its capacity being fully booked.

In an effort to increase shipper participation in the TPA framework, the Commission took proactive measures by having consultations with PGB in the implementation of the annual LNG ship scheduling (Annual Operation Schedule - AOS) and with PEGT to obtain space for third party LNG shippers to dock their vessels.

Aktiviti *AOS* membuka peluang kepada *shipper* pihak ketiga dalam mendapatkan akses ke RGTSU yang dijalankan oleh PGB. Walaupun *AOS* yang pertama kali dijalankan pada 2020 bagi tahun pembekalan bermula 2021 dibuka dalam tempoh yang singkat iaitu dua (2) minggu dan dengan had kapasiti 100 mmscfd bagi tempoh pembekalan selama dua (2) tahun, dua (2) daripada tiga (3) *shipper* yang menyatakan minat untuk kapasiti telah berjaya mendapatkan akses.

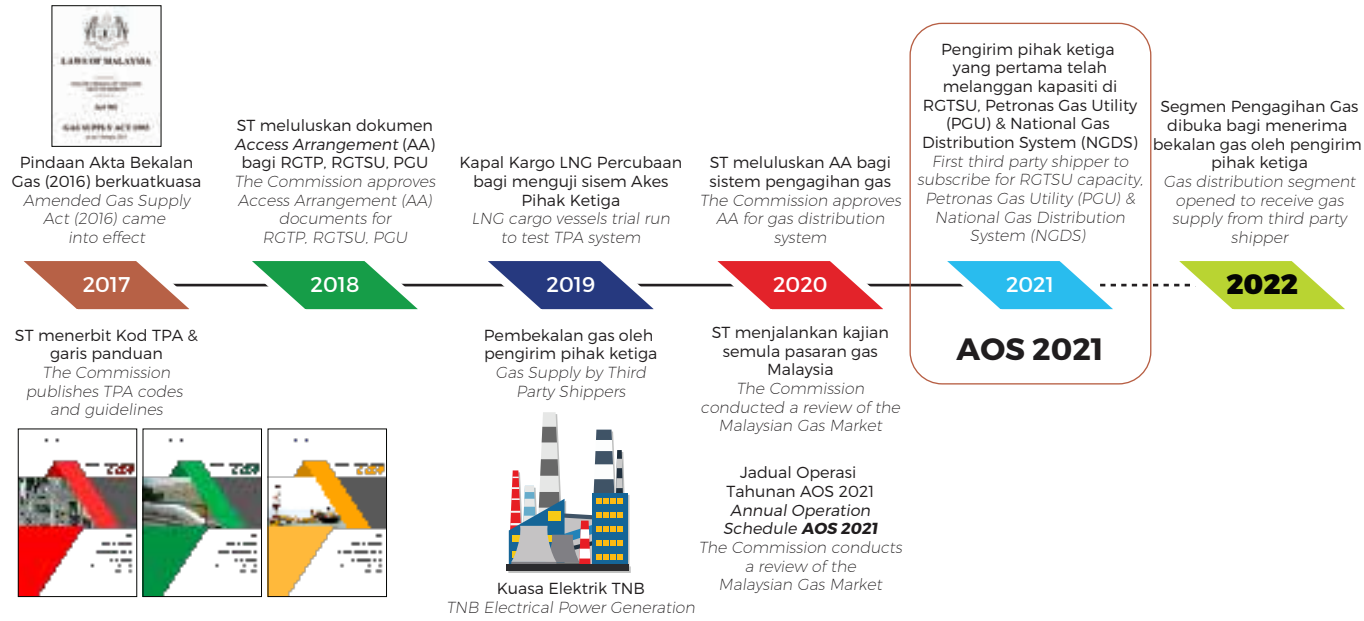
Walaupun dengan kapasiti RGTSU yang terhad, kejayaan ini menjadi satu penanda aras dalam menuju liberalisasi pasaran gas, seterusnya memberikan pengguna keyakinan untuk mendapatkan bekalan daripada *shipper* dalam kerangka TPA.

The OAS activity opened up opportunities for third party shippers to gain access to RGTSU that is run by PGB. Even though the first AOS carried out in 2020 for the supply year commencing 2021 was opened for a short period of two (2) weeks, with a capacity limit of 100 mmscfd for a supply period of two (2) years, two (2) out of the three (3) shippers who had expressed interest on capacity had successfully obtained access.

Despite RGTSU's limited capacity, this success has become a benchmark towards liberalising the gas market; which in turn, gives users the confidence to acquire their gas supplies from shippers in the TPA framework.

Pencapaian Perlaksanaan Akses Pihak Ketiga Sejak Pindaan Akta Bekalan Gas (2016) Berkuatkuasa pada 2017 dan Sasaran 2022

Achievements under the Third Party Access Implementation Since the Gas Supply Act Amendment (2016) Came Into Effect in 2017 And the 2022 Target

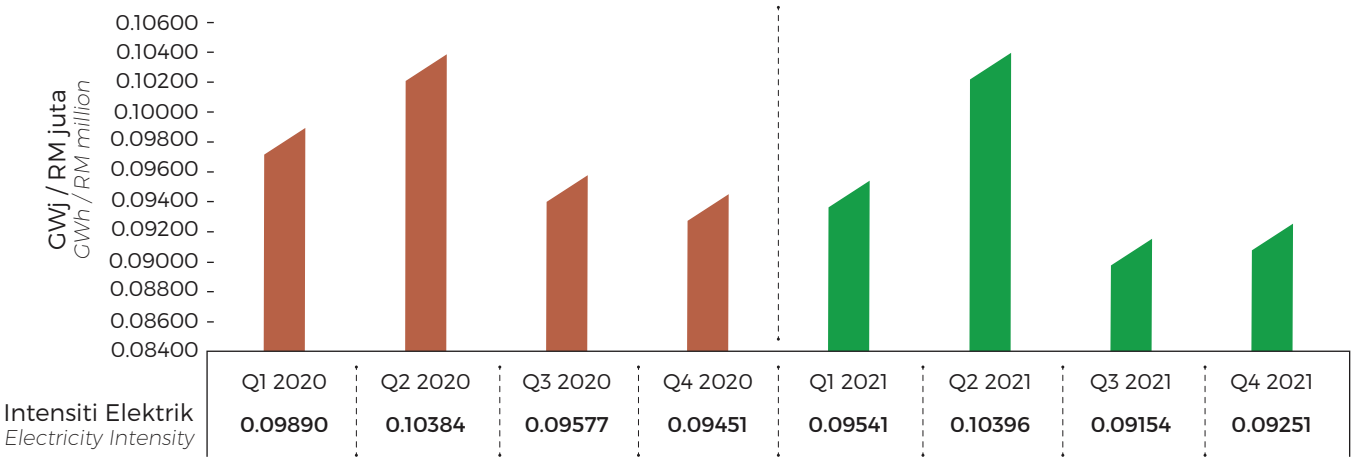


KECEKAPAN TENAGA
ENERGY EFFICIENCY

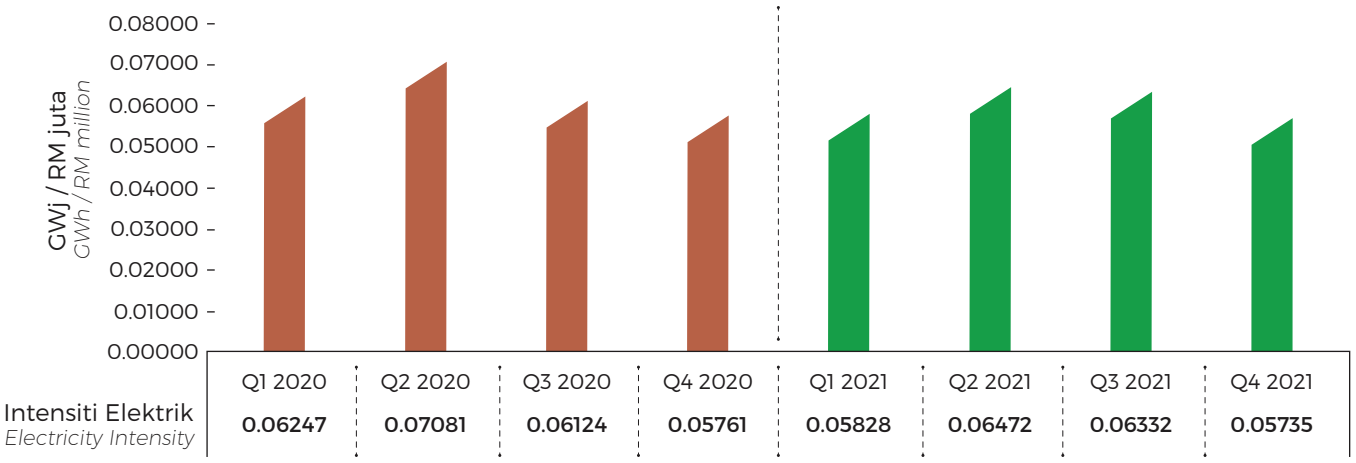
Intensiti Tenaga Elektrik

Electricity Intensity

Intensiti Tenaga Elektrik di Semenanjung, 2020 & 2021
Electricity Intensity in the Peninsula, 2020 & 2021



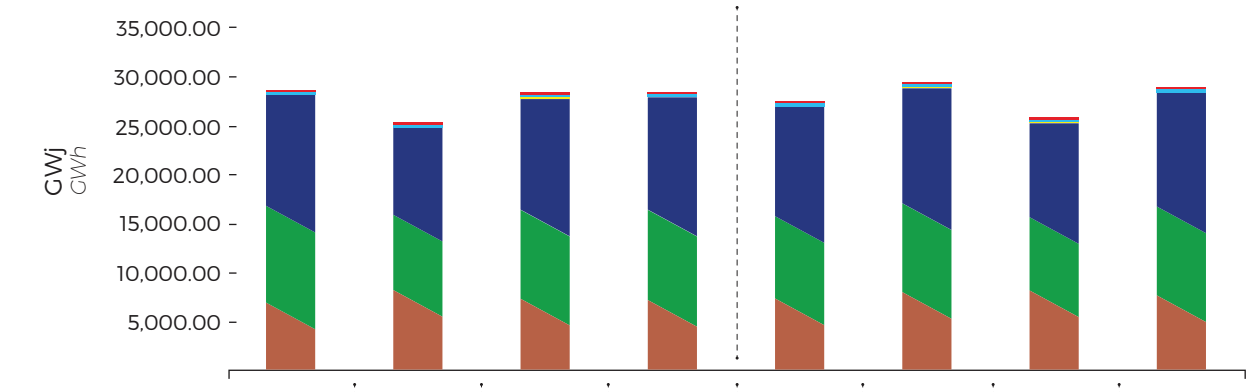
Intensiti Tenaga Elektrik di Sabah, 2020 & 2021
Electricity Intensity in Sabah, 2020 & 2021



Sepanjang 2021, intensiti tenaga elektrik tahunan di Semenanjung direkodkan pada 0.0958 GWj/RM juta berbanding 0.0980 GWj/RM juta pada 2020, iaitu pengurangan sebanyak 2.26%. Di Sabah pula, intensiti tenaga elektrik direkodkan pada 0.0608 GWj/RM juta iaitu pengurangan sebanyak 2.95% berbanding 0.0627 GWj/RM juta pada tahun sebelumnya.

Throughout 2021, the annual electricity intensity in the Peninsula was recorded at 0.0958 GWh/RM million compared to 0.0980 GWh/RM million in 2020, indicating a decline of 2.26%. In Sabah, electricity intensity was recorded at 0.0608 GWh/RM million, a decrease of 2.95% compared to 0.0627 GWh/RM million in the year before.

Penggunaan Tenaga Elektrik di Semenanjung, 2020 & 2021
Electricity Consumption in the Peninsula, 2020 & 2021



	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Pertanian *Agriculture*	169.54	170.89	175.32	171.89	164.51	171.31	178.07	168.99
Lampu Awam *Public Lighting*	375.91	361.25	364.77	373.24	376.66	372.48	371.38	378.71
Perlombongan *Mining*	38.88	20.80	37.89	36.93	35.92	43.86	35.92	48.11
Perindustrian *Industrial*	11,205.7	8,824.97	11,261.9	11,497.1	11,163.2	11,717.4	9,543.87	11,542.4
Perdagangan *Trade*	9,932.85	7,660.16	9,125.68	9,112.82	8,397.08	9,102.01	7,515.24	9,045.37
Domestik *Domestic*	6,985.04	8,298.20	7,388.58	7,288.77	7,422.92	8,051.83	8,240.45	7,770.21

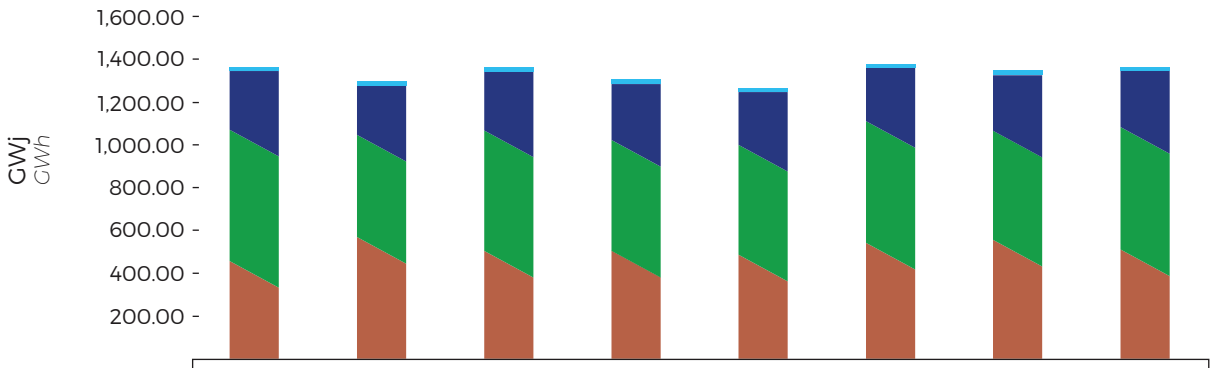
Dari segi penggunaan tenaga elektrik pula, terdapat peningkatan sebanyak 1.19% di Semenanjung bagi 2021 iaitu 112,194.34 GWj berbanding 110,879.26 GWj pada 2020.

Peningkatan penggunaan tenaga elektrik juga direkodkan sebanyak 0.48% di Sabah iaitu 5,356.81 GWj bagi 2021 berbanding 5,331.28 GWj pada 2020.

In 2021, 112,194.34 GWh of electricity was consumed in the Peninsula - an increase of 1.19% from the 110,879.26 GWh consumed in 2020.

An increase of 0.48% or 5,356.81 Gwh of electricity consumption in Sabah was recorded in 2021 compared to 5,331.28 in 2020.

Penggunaan Tenaga Elektrik di Sabah, (2020 & 2021)
Electricity Consumption in Sabah (2020 & 2021)



	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Lampu Awam *Public Lighting*	19.34	21.73	20.05	20.50	19.35	16.73	21.28	18.52
Perindustrian *Industrial*	275.81	229.20	276.39	261.74	248.22	251.13	260.41	263.35
Perdagangan *Trade*	611.63	478.56	564.12	516.97	511.85	569.92	510.31	573.54
Domestik *Domestic*	456.64	569.58	502.83	506.19	486.41	541.24	554.54	510.02

Penguatkuasaan Peraturan Pengurusan Tenaga Elektrik Dengan Cekap (PPTEC) 2008

Pada 2021, penguatkuasaan Peraturan Pengurusan Tenaga Elektrik Dengan Cekap (PPTEC) 2008 telah dilaksanakan terhadap 21 pepasangan berbanding 12 pada 2020. Hasil pemantauan dan penguatkuasaan ST, kadar pematuhan terhadap PPTEC 2008 telah meningkat kepada 74% iaitu pematuhan di 1,439 pepasangan, berbanding 1,414 pepasangan pada kadar pematuhan sebanyak 72% pada 2020.

Pelaksanaan Pelan Tindakan Kecekapan Tenaga Nasional (NEEAP)

Sehingga Disember 2021, pelaksanaan NEEAP telah berjaya mencapai penjimatan tenaga elektrik sebanyak 4.37% berbanding jangkaan sasaran 3.9%. Peratusan penjimatan ini diukur dengan mengambil kira penjimatan tahunan terhasil bagi 2021 berbanding jangkaan penggunaan tenaga elektrik 2021 tanpa pelaksanaan NEEAP.

Enforcement of the Efficient Management of Electrical Energy Regulations (EMEER) 2008

In 2021, the Efficient Management Of Electrical Energy Regulations (EMEER) 2008 was enforced on 21 installations compared to 12 in 2020. As a result of the Commission's monitoring and enforcement, the compliance rate for EMEER 2008 increased to 74% with compliance in 1,439 installations, compared to 1,414 installations at a compliance rate of 72% in 2020.

Implementation of the National Energy Efficiency Action Plan (NEEAP)

As of December 2021, the implementation of NEEAP successfully achieved electricity savings of 4.37% compared to the expected target of 3.9%. The percentage of these savings was measured by taking into account the resulting annual savings for 2021 compared to the expected electricity consumption in 2021 without the implementation of NEEAP.

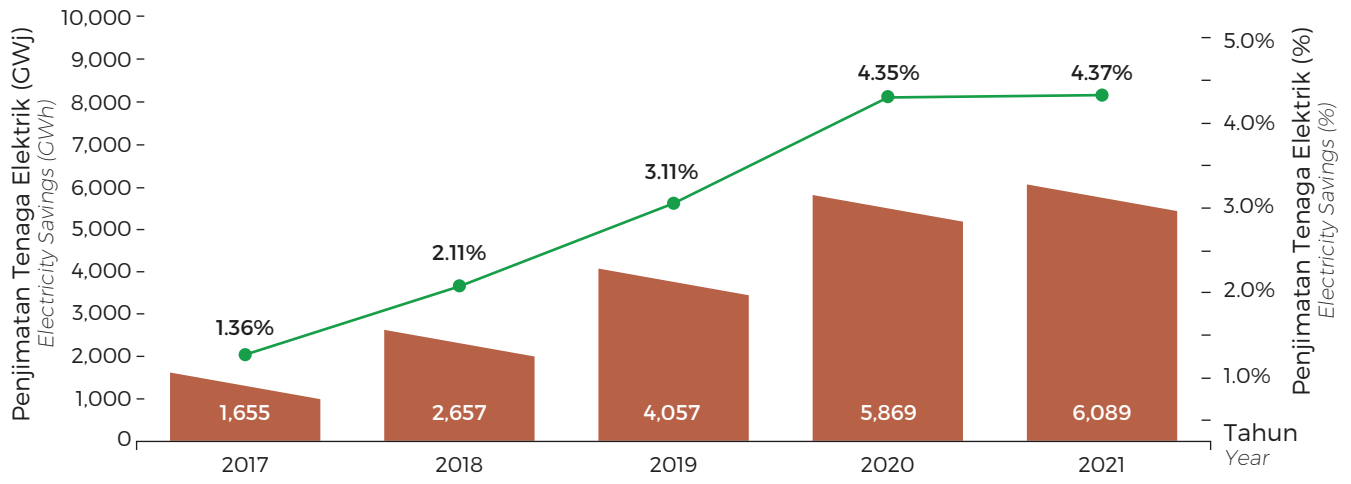
Penjimatan tenaga elektrik tahunan sehingga Disember 2021 adalah sebanyak 6,089 GWj, bersamaan dengan RM1.67 bilion.

Sehingga kini, pencapaian pelaksanaan NEEAP telah menunjukkan prestasi yang melebihi jangkaan dan turut menyumbang kepada pengurangan pelepasan gas rumah hijau sebanyak 3,562 $ktCO_2$, selaras dengan sasaran Kerajaan untuk mengurangkan kadar pelepasan gas rumah hijau sebanyak 45% pada 2030 berbanding aras pelepasan gas rumah hijau pada 2005.

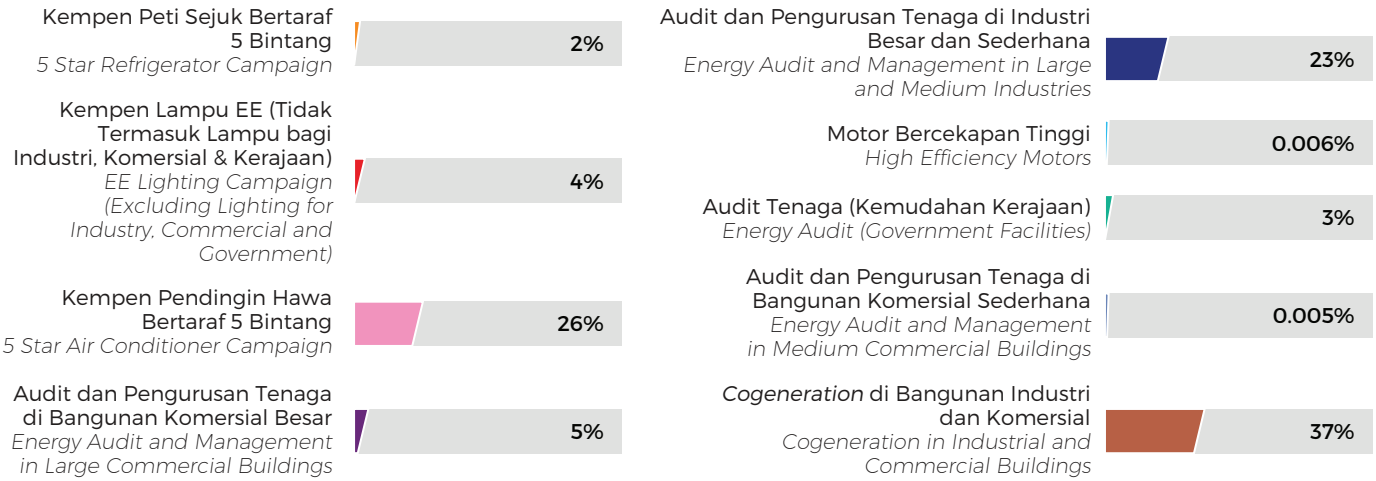
The annual electricity savings until December 2021 is 6,089 GWh, which is equivalent to RM1.67 billion.

To date, the implementation of NEEAP has shown a performance that exceeded expectations and contributed to the reduction of greenhouse gas emissions by 3,562 $ktCO_2$, in line with the Government's target to reduce the rate of greenhouse gas emissions by 45% in 2030 compared to the level of greenhouse gas emissions in 2005.

Penjimatan Tenaga Elektrik Tahunan Sebenar NEEAP, 2017-2021
NEEAP Actual Annual Electricity Savings, 2017-2021



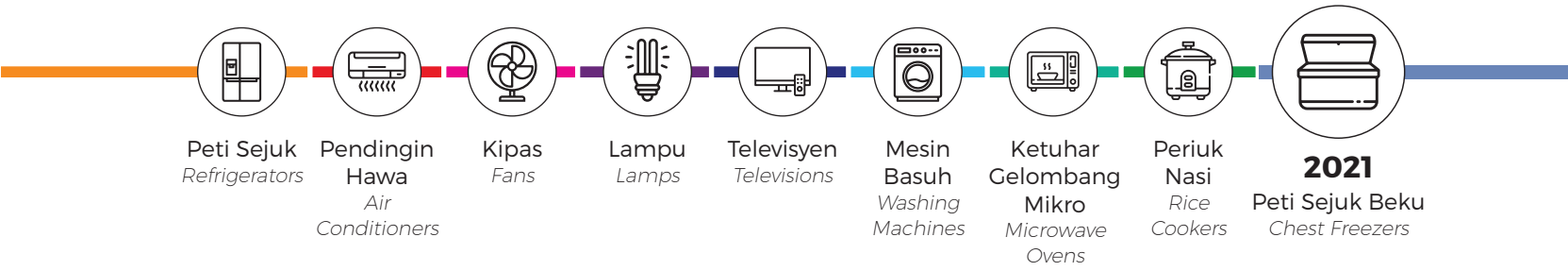
Pecahan Pencapaian Berdasarkan Program-Program di bawah NEEAP
Breakdown of Achievements Based on NEEAP Programmes



Peningkatan Standard Prestasi Tenaga Minimum (MEPS)

Enhancement of the Minimum Energy Performance Standards (MEPS)

Kelengkapan di bawah MEPS
Equipment under MEPS



Dokumen rujukan *Guide on Minimum Energy Performance Standard* (MEPS) for Freezer telah dikeluarkan pada 1 Mac 2021 dan akan berkuatkuasa sepenuhnya pada 1 Mac 2022.

The reference document Guide on Minimum Energy Performance Standard (MEPS) for Chest Freezers was issued in March, 2021 and will be effective on March, 2022.

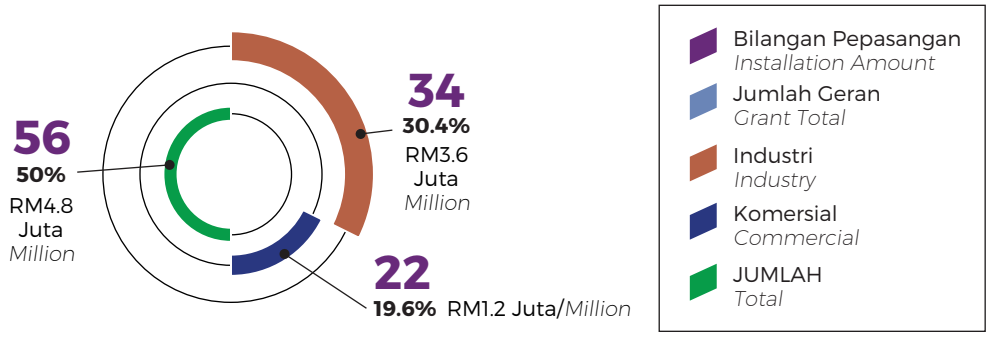
Geran Audit Tenaga Bersyarat (EACG)

Untuk tempoh 2021-2025, EACG 2.0 dijalankan di bawah RMK-12. Program ini disasarkan kepada pepasangan- pepasangan yang tertakluk di bawah PPTEC 2008.

Energy Audit Conditional Grant (EACG)

For the period of 2021-2025, the EACG 2.0 was carried out under RMK-12. This programme is aimed at installations under the EMEER 2008.

Pepasangan yang Menerima EACG, 2021
Installations that received EACG, 2021



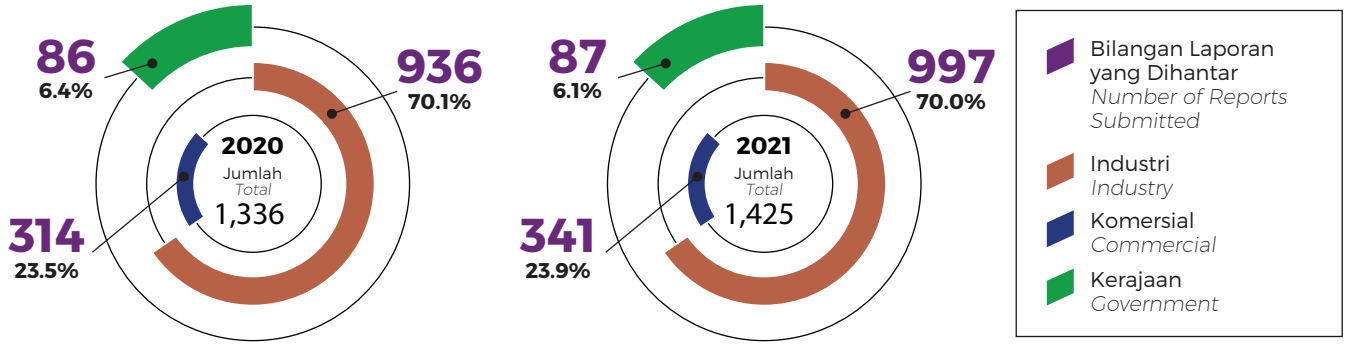
Pemantauan Langkah-Langkah Kecekapan Tenaga Di Bawah PPTEC 2008

Sepanjang 2021, 1,425 pepasangan telah menghantar laporan berkala berbanding 1,336 pepasangan pada 2020.

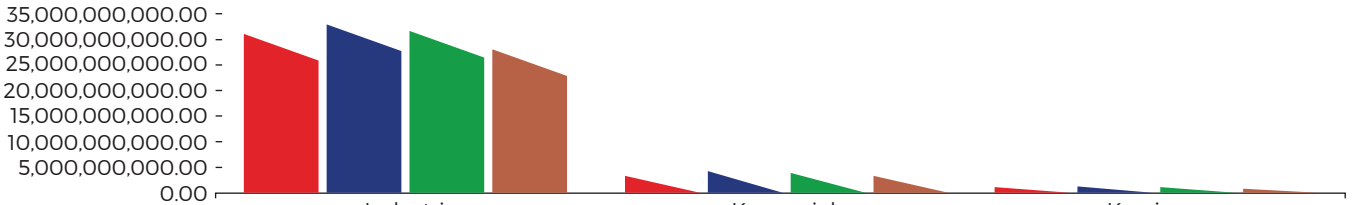
Monitoring Of Energy Efficiency Measures Under EMEER 2008

Throughout 2021, as much as 1,425 installations submitted periodic reports, compared to 1,336 installations in 2020.

Pepasangan Yang Menghantar Laporan Berkala,2020 & 2021
Installations that Submitted Periodic Reports, 2020 & 2021



Trend Penggunaan Tenaga Elektrik, 2018 – 2021
Electricity Consumption Trend, 2018 - 2021



	Industri *Industry*	Komersial *Commercial*	Kerajaan *Government*
2018	30,891,848,847.35	3,397,930,782.07	1,317,262,963.40
2019	32,933,859,295.34	4,392,121,616.12	1,404,616,550.42
2020	31,653,911,602.09	4,099,341,991.37	1,284,266,351.55
2021	28,130,461,491.35	3,578,153,880.48	1,044,068,238.41

Penggunaan tenaga elektrik pada 2021 adalah menurun bagi sektor industri, komersial dan Kerajaan memandangkan majoriti pepasangan untuk ketiga-tiga sektor ini hanya akan menghantar laporan berkala kedua bagi 2021 bermula dari Januari 2022, dan juga kebanyakan operasi industri dan bangunan-bangunan komersial masih dalam fasa pemulihan daripada kesan penutupan semasa PKP.

Electricity consumption in 2021 decreased for the industrial, commercial and Government sectors considering that the majority of installations for these three (3) sectors will only submit the second periodic report for 2021 starting from January 2022. Furthermore, most industrial operations and commercial buildings are still in the recovery phase from the effects of closure during MCO.

PELAKSANAAN *LAO PDR-THAILAND-MALAYSIA-SINGAPORE POWER INTEGRATION PROJECT (LTMS-PIP)*

IMPLEMENTATION OF THE LAO PDR-THAILAND-MALAYSIA-SINGAPORE POWER INTEGRATION PROJECT (LTMS-PIP)

Lanjutan daripada kejayaan pelaksanaan projek Lao PDR-Thailand-Malaysia *Power Integration Project* LTM-PIP, Malaysia, Thailand, Lao PDR dan Singapura kini sedang memuktamadkan perbincangan di bawah inisiatif Lao PDR-Thailand-Malaysia-Singapore *Power Integration Project* (LTMS-PIP) bagi membolehkan penjualan elektrik rentas sempadan dari Lao PDR ke Singapura melalui Thailand dan Malaysia.

Dalam kenyataan bersama Lao PDR, Thailand, Malaysia dan Singapura mengenai LTMS-PIP semasa ASEAN *Ministers on Energy Meeting* (AMEM) ke-38 dan juga ke-39, keempat-empat negara telah mengumumkan komitmen mereka untuk memulakan perdagangan tenaga rentas sempadan dari Lao PDR ke Singapura melalui Thailand dan Malaysia dengan kapasiti sehingga 100 MW menggunakan talian sambungtara sedia ada yang dijangkakan pada 2022. Susulan itu, beberapa siri perbincangan serta mesyuarat peringkat kumpulan kerja melibatkan keempat-empat negara sedang giat diadakan bagi memuktamadkan aspek teknikal, komersial dan perundangan projek tersebut.

Following the successful implementation of the Lao PDR-Thailand-Malaysia Power Integration Project LTM-PIP, Malaysia, Thailand, Lao PDR and Singapore are now finalising discussions under the Lao PDR-Thailand-Malaysia-Singapore Power Integration Project (LTMS-PIP) initiative to enable the cross-border sale of electricity from Lao PDR to Singapore via Thailand and Malaysia.

In a joint statement by Lao PDR, Thailand, Malaysia and Singapore on LTMS-PIP during the 38th and 39th ASEAN Ministers on Energy Meeting (AMEM), the four (4) countries have announced their commitment to start cross-border energy trade from Lao PDR to Singapore via Thailand and Malaysia with a capacity of up to 100 MW using existing interconnection lines expected in 2022. Following that, a series of discussions and working group level meetings involving all four (4) countries are being actively held to finalise the technical, commercial and legal aspects of the project.

PELAKSANAAN PROGRAM BIDAAN LSS@MENTARI

IMPLEMENTATION OF THE LSS@MENTARI BIDDING PROGRAMME

Kementerian Tenaga dan Sumber Asli (KeTSA) melalui ST telah melaksanakan program bidaan kompetitif projek LSS@MEnTARI pada Mei 2020 dengan sasaran kapasiti 1,000 MW untuk kemasukan tahun 2023.

Pelaksanaan program LSS@MEnTARI adalah selaras dengan hasrat Kerajaan untuk memastikan pelaburan dalam bidang TBB memberi manfaat kepada rakyat tempatan serta memberikan kesan limpahan serta-merta kepada ekonomi negara.

Program LSS@MEnTARI telah dimuktamadkan pada 12 Mac 2021 dengan pengeluaran *Letter of Notification* kepada pembida-pembida yang berjaya disenarai pendek untuk membangunkan projek LSS di Semenanjung Malaysia. Kesemua 30 pembida yang disenarai pendek telah memuktamadkan Perjanjian Pembelian Tenaga dengan pihak TNB Ogos 2021.

Pada suku keempat 2021, beberapa cabaran dihadapi oleh pemaju-pemaju LSS@MEnTARI rentetan pandemik COVID-19 yang melanda dunia seperti perolehan panel dan pekakasan untuk pembangunan projek.

The Ministry of Energy and Natural Resources (KeTSA) through the Commission has implemented a competitive bidding programme for the LSS@MEnTARI project in May 2020, with a target entry capacity of 1,000 MW for year 2023.

The implementation of the LSS@MEnTARI programme is in accordance with the Government's intention to ensure that investments in RE would benefit the local and have immediate spillover impact on the national economy.

The LSS@MEnTARI programme was concluded on 12 March 2021 with the issuance of a Letter of Notification to successful shortlisted bidders to develop the LSS project in the Peninsula. All 30 shortlisted bidders finalised the Power Purchase Agreement with TNB in August 2021.

In the fourth quarter of 2021, LSS@MEnTARI developers encountered various challenges due to the global COVID-19 pandemic including the procurement of panels and equipment for project development.

Senarai Projek LSS@MEnTARI yang Akan Dibangunkan oleh Pemaju
List of LSS@MEnTARI Projects to be Developed by Successful Developers

Bil. *No.*	Pemaju *Developer*	Lokasi *Location*	Kapasiti (MW) *Capacity (MW)*
1	Greenviro Solutions Sdn. Bhd.	Seberang Perai Selatan	**10**
2	Sun Estates Sdn. Bhd	Batang Padang	**10**
3	Teja 2 Sdn. Bhd.	Kampar	**10**
4	Solar Citra Sdn. Bhd.	Kerian	**10.95**
5	Serimas Energy (Manjung) Sdn. Bhd.	Manjung	**12**
6	Bikam Energy Sdn. Bhd.	Batang Padang	**13**
7	Fusion Trend Sdn. Bhd.	Kuala Selangor	**13**
8	Sinarmas Energy (Api-api) Sdn. Bhd.	Kuala Selangor	**13**
9	Bakateam Services Sdn. Bhd.	Seberang Perai Tengah	**15**
10	Green RE Sdn. Bhd	Larut dan Matang	**15**
11	Kellie Energy Sdn. Bhd.	Kinta	**15**
12	Selarong Solar Sdn. Bhd.	Padang Meha	**15**
13	Teja 1 Sdn. Bhd.	Kampar	**15**
14	Tesdec Services Sdn. Bhd.	Marang	**17**
15	Grooveland Sdn. Bhd.	Perak Tengah	**17.36**
16	TC Sunergy Sdn. Bhd.	Hulu Selangor	**20**
17	Energy ES Sdn. Bhd.	Kulim	**20.76**
18	Suriamas Energy (Maritime) Sdn. Bhd	Manjung	**25**
19	LSS TPG Sdn. Bhd.	Kuala Langat	**26**
20	Nextenaga Sdn. Bhd.	Kuala Selangor	**29.99**

Bil. *No.*	Pemaju *Developer*	Lokasi *Location*	Kapasiti (MW) *Capacity (MW)*
21	Asiabina Solar Sdn. Bhd.	Kerian	**50**
22	Classic Solar Farm Sdn. Bhd.	Chuping	**50**
23	GBS Suria Sdn. Bhd.	Gopeng	**50**
24	JAKS Solar Nibong Tebal Sdn. Bhd.	Seberang Perai Selatan	**50**
25	PKNP Kpower Suria Sdn. Bhd.	Pekan	**50**
26	Ragawang Power Sdn. Bhd.	Pekan	**50**
27	Ranhill Solar 1 Sdn. Bhd.	Batang Padang	**50**
28	Sharp Ventures Solar Sdn. Bhd.	Klang	**50**
29	TNB Bukit Selambau Solar 2 Sdn. Bhd.	Kuala Muda	**50**
30	Uzma Kuala Muda Sdn. Bhd.	Kuala Muda	**50**

PROGRAM PEMETERAN TENAGA BERSIH (NEM) 3.0
NET ENERGY METERING (NEM) 3.0 PROGRAMME

Pada 29 Disember 2020, Kerajaan telah mengumumkan tawaran kuota sebanyak 500 MW bagi tempoh 2021 hingga 2023 dalam inisiatif pemasangan solar PV di atas bumbung premis bangunan dan kediaman di bawah program Pemeteran Tenaga Bersih atau NEM 3.0. Tiga (3) inisiatif iaitu NEM Rakyat, NEM GoMEn *(Government Ministries and Entities)* dan NOVA *(Net Offset Virtual Aggregation)* telah membuka peluang kepada semua pelanggan TNB mengikut kategori yang ditetapkan untuk memasang solar PV di bumbung bangunan masing-masing bagi tujuan kegunaan sendiri dan untuk menjimatkan bil elektrik, dan sekiranya berlebihan, jika ada boleh dieksport ke grid.

Program NEM 3.0 turut memperkenalkan inovasi baharu menggunakan konsep NEM maya yang dikenali sebagai NOVA dengan membenarkan pemilik bangunan komersial dan industri untuk berkongsi lebihan tenaga dengan bangunan-bangunan mereka di lokasi berlainan.

On 29 December 2020, the Government announced an offer quota of 500 MW for the 2021 to 2023 period in an initiative to install solar PV on the roofs of buildings and residential premises under the Net Energy Metering or NEM 3.0 programme. Three (3) initiatives, namely the NEM Rakyat, NEM GoMEn (Government Ministries and Entities) and NOVA (Net Offset Virtual Aggregation) opened up opportunity for all TNB customers within the specified categories to install solar PV on the roof of their respective buildings for their own use and to save on electricity bills, and if there is excess of energy, can be exported to the grid.

The NEM 3.0 programme also introduces a new innovation using the virtual NEM concept known as NOVA which allows commercial and industrial building owners to share excess energy with their buildings that are in different locations.

Di bawah Seksyen 50C, Akta Bekalan Elektrik 1990, dua (2) garis panduan baharu bagi membantu pengguna yang berminat menyertai Program NEM 3.0. telah dikeluarkan oleh ST pada Februari dan April 2021.

Memandangkan terdapat sambutan daripada pengguna bukan domestik, pada 22 Oktober 2021, KeTSA telah membuat keputusan untuk menambah kuota sejumlah 300 MW untuk NOVA.

Under Section 50C, Electricity Supply Act 1990, two (2) new guidelines to assist users that are interested in participating in the NEM3.0 Programme were issued by the Commission in February and April 2021.

With positive response from non-domestic users, on 22 October 2021, KeTSA has decided to add a total quota of 300 MW for NOVA.

Jumlah Kapasiti NEM 3.0 yang Telah Dimohon, 2021
Total NEM 3.0 Capacity Applied, 2021

NEM Rakyat	NEM GoMEn	NOVA	JUMLAH *TOTAL*
22.95 MW	**20.42 MW**	**323.37 MW**	**366.74 MW**
dari kuota sebanyak *from a quota of*	dari kuota sebanyak *from a quota of*	dari kuota sebanyak *from a quota of*	
100 MW	**100 MW**	**600 MW**	

PENCAPAIAN PROGRAM *SUSTAINABILITY ACHIEVED VIA ENERGY EFFICIENCY* (SAVE) 2.0

PERFORMANCE OF THE SUSTAINABILITY ACHIEVED VIA ENERGY EFFICIENCY (SAVE) 2.0 PROGRAMME

Program *Sustainability Achieved Via Energy Efficiency* (SAVE) 2.0 merupakan program pemberian e-rebat sebanyak RM200.00 kepada isi rumah yang membeli alat pendingin hawa atau peti sejuk cekap tenaga bertaraf lima (5) atau empat (4) bintang. Tempoh pelaksanaan program SAVE 2.0 ditetapkan selama satu (1) tahun bermula dari Januari sehingga Disember 2021.

The Sustainability Achieved Via Energy Efficiency (SAVE) 2.0 programme is an e-rebate programme that offers RM200.00 to households that purchase energy efficient air conditioners or refrigerators rated five (5) or four (4) stars. The implementation period of the SAVE 2.0 programme is set for one (1) year starting from January until December 2021.

Sasaran Unit Rebat dan Anggaran Penjimatan Tenaga & Kos
Unit Rebate Targets, Estimated Energy & Cost Savings

Jenis Kelengkapan Elektrik Domestik *Domestic Electrical Equipment Type*		**Penyaman Udara (split unit, wall mounted)** *Air Conditioner (split unit, wall mounted)*	**Peti Sejuk** *Refrigerator*
2021	Sasaran *Target*	**140,000** isi rumah / *households*	
	e-Rebat setiap unit *e-Rebate per unit*	**RM200.00**	
	Jumlah Peruntukan (1 Tahun) *Total Allocation (1 Year)*	**RM30** juta / *million*	
	Anggaran Penjimatan/Setahun *Estimated Savings/Per Year*	**53.90 GWj /** *GWh*	
		RM21.26 juta / *million*	
		37,403 ton CO_2 / *tonne CO_2*	

Pencapaian Program SAVE 2.0, 2021
Achievements of the SAVE 2.0 Programme, 2021

55.17
GWj
GWh
Penjimatan Tenaga
Energy Savings

137,603
Unit e-Rebat
e-Rebate units

RM21.76
juta
million
Penjimatan Kos
Cost Saving

38,288
ton CO_2
tonne CO_2
Pengurangan Karbon Setahun
Yearly Carbon Reduction

04 MENINGKATKAN KECEKAPAN EKONOMI DAN KEMAMPUAN
ENHANCING ECONOMIC EFFICIENCY AND AFFORDABILITY

SOROTAN UTAMA
HIGHLIGHTS

PELAKSANAAN LANJUTAN TEMPOH KAWAL SELIA KEDUA (RP2) BAGI TENAGA NASIONAL BERHAD (TNB) DI BAWAH MEKANISME KAWAL SELIA BERASASKAN INSENTIF (IBR)

IMPLEMENTATION OF THE EXTENSION OF THE SECOND REGULATORY PERIOD (RP2) FOR TENAGA NASIONAL BERHAD (TNB) UNDER THE INCENTIVE-BASED REGULATION (IBR) MECHANISM

Penularan pandemik COVID-19 telah memberikan impak terhadap situasi sosio-ekonomi secara global, dimana penguatkuasaan Perintah Kawalan Pergerakan (PKP) pada 18 Mac 2020 juga mengehadkan pengoperasian ekonomi pada kapasiti 45% sahaja. Hal ini menyebabkan unjuran Keluaran Dalam Negara Kasar (KDNK) mencatatkan kadar pertumbuhan di antara 0.5% sehingga defisit 4.5%, dengan menjangkakan tempoh masa pemulihan ekonomi negara berada di antara enam (6) bulan hingga dua (2) tahun.

Unjuran penurunan pertumbuhan kadar KDNK ini memberikan impak yang signifikan terhadap unjuran permintaan tenaga elektrik negara melangkaui tempoh PKP, yang merupakan data utama dalam semakan tarif elektrik asas Tenaga Nasional Berhad (TNB) di bawah mekanisme Kawal Selia Berasaskan Insentif (IBR).

Sehubungan dengan itu, atas faktor-faktor utama ketidaktentuan penurunan permintaan tenaga elektrik disebabkan pelaksanaan PKP, ditambah pula dengan jangkaan tempoh masa pemulihan ekonomi yang tidak dapat dipastikan dan ketidakstabilan harga bahan api yang juga sebagai data-data utama dalam semakan kadar tarif asas TNB, Kerajaan telah memutuskan untuk melanjutkan tempoh kawal selia kedua (IBR RP2: 2018 - 2020) selama setahun lagi iaitu bermula daripada 1 Januari 2021 hingga 31 Disember 2021.

Keputusan ini bertujuan memastikan senario permintaan tenaga elektrik semasa termasuklah asas penetapan harga bahan api dan ketidaktentuan ekonomi global dalam tempoh PKP dan COVID-19 ini diambil kira, setelah keadaan ekonomi negara agak stabil dan unjuran permintaan tenaga elektrik dapat dimuktamadkan dengan lebih tepat.

Beberapa parameter utama telah diluluskan oleh Kerajaan untuk pelaksanaan tempoh lanjutan RP2 bagi TNB di bawah mekanisme IBR mulai 1 Januari 2021 sehingga 31 Disember 2021.

The COVID-19 pandemic had impacted the global socio-economic situation, where the enforcement of the Movement Control Order (MCO) on 18 March 2020 had limited the country's economic operations to only 45%. This caused the Gross Domestic Product (GDP) projection to record a growth rate of 0.5% to a deficit of 4.5%, with the country's economy expected to recover between six (6) months to two (2) years.

The projected decrease in GDP growth rate has a significant impact on the national electricity demand forecast beyond the MCO period. This is the main data used in the review of the Tenaga Nasional Berhad (TNB)'s electricity base tariff under the Incentive-Based Regulation (IBR) mechanism.

The Government has decided to extend the second regulatory period (IBR RP2: 2018 - 2020) for another year, starting from 1 January 2021 to 31 December 2021 due to the uncertainty of decrease in electricity demand from the implementation of the MCO, coupled with the economic recovery period that cannot be ascertained and the instability of fuel prices as also the main data in the TNB's electricity base tariff review.

This decision is made to ensure that the current electricity demand scenario including the basis of setting fuel prices and global economic uncertainty during the MCO and COVID-19 period is taken into account once the country's economy is stable again and the electricity demand projection can be finalised more accurately.

Some key parameters were approved by the Government for the implementation of the RP2 extension period for TNB under the IBR mechanism from 1 January 2021 to 31 December 2021.

Parameter Penetapan Tarif Elektrik untuk Tempoh Lanjutan IBR RP2 Bagi TNB *Electricity Tariff Setting Parameters for the Extended Period under the RP2 of the IBR for TNB*	
Parameter *Parameters*	**Keputusan Kerajaan** *Government's Decision*
Kadar Purata Tarif Asas Tempoh Lanjutan RP2 (2021) *Average Base Tariff Rate for Extended Period of RP2 (2021)*	**39.45 sen/kWj** *39.45 sen/kWh*
Kadar Kawal Selia *Weighted Average Cost of Capital* (WACC) *Regulatory Rate of the Weighted Average Cost of Capital (WACC)*	**7.3%**
Unjuran Permintaan Elektrik *Electricity Demand Forecast*	**113,909 GWj** *113,909 GWh*
Andaian Harga Bahan Api Gas *Estimated Gas Fuel Price*	**RM27.20/MMBtu**
Andaian Harga Arang Batu *Estimated Coal Price*	**USD67.45/MT**
Kadar Tukaran Wang Asing (1USD:RRM) *Foreign Currency Exchange Rates (1USD:RRM)*	**RM4.212**
Perbelanjaan Modal (CAPEX) yang Dibenarkan untuk TNB *Allowed Capital Expenditure (CAPEX) for TNB*	**RM7.2957 bilion** *RM7.2957 billion*
Perbelanjaan Operasi (OPEX) yang Dibenarkan untuk TNB *Allowable Operating Expenditure (OPEX) for TNB*	**RM6.3046 bilion** *RM6.3046 billion*

Dalam masa yang sama, ST turut membuat semakan ke atas purata harga jualan TNB bagi 2021 iaitu sekitar 39.95 sen/kWj dan mendapati ianya adalah melebihi daripada kadar tarif purata yang ditetapkan bagi tempoh ini iaitu pada kadar 39.45 sen/kWj. Oleh itu, lebihan hasil yang diperolehi oleh TNB akan diselaraskan berdasarkan mekanisme IBR dan dipindahkan ke dana Kumpulan Wang Industri Elektrik (KWIE).

Daripada rekod perbelanjaan modal TNB bagi tempoh RP2, jumlah purata tahunan yang telah dibelanjakan adalah RM6.624 bilion, iaitu sebanyak 99.5% berbanding jumlah kelulusan RP2. Bagi rekod perbelanjaan operasi pula, jumlah purata tahunan yang telah dibelanjakan adalah RM5.831 bilion, iaitu sebanyak 95% berbanding jumlah yang diluluskan dalam tempoh RP2.

ST turut melaksanakan pemantauan bagi pengukur prestasi utama (KPI) TNB dalam tempoh RP2, dengan jumlah insentif yang akan diselaraskan dalam semakan tarif asas bagi tempoh kawal selia ketiga (RP3) kelak sekitar RM49.54 juta, iaitu dengan anggaran purata tahunan sebanyak RM16.51 juta.

At the same time, the Commission did a review of TNB's average selling price for 2021 which is around 39.95 sen/kWh and found that it is higher than the average tariff rate set for this period which is at a rate of 39.45 sen/kWh. Therefore, the excess revenue earned by TNB will be adjusted based on the IBR mechanism and transferred to the Electricity Industry Fund (KWIE).

From TNB's capital expenditure records for the RP2, the annual average amount that has been spent is RM6.624 billion, which is 99.5% compared to the RP2 approval amount. As for the operational expenditure record, the annual average amount that has been spent is RM5.831 billion, which is 95% compared to the amount approved in the RP2.

The Commission also carried out monitoring of TNB's key performance indicators (KPI) in the RP2, where the incentives that will be adjusted in the base tariff review for the third regulatory period (RP3) at around RM49.54 million, which is an estimated annual average of RM16.51 million.

PELAKSANAAN TEMPOH LANJUTAN KAWAL SELIA PERTAMA (RP1) BAGI NUR POWER SDN. BHD. (NUR) DI BAWAH MEKANISME IBR

IMPLEMENTATION OF THE EXTENSION OF THE FIRST REGULATORY PERIOD (RP1) FOR NUR POWER SDN. BHD. (NUR) UNDER THE IBR MECHANISM

Berdasarkan kekangan penularan pandemik yang sama dialami oleh syarikat *NUR Power Sdn. Bhd.* (NUR) di *Kulim Hi-Tech Park* (KHTP), Kerajaan turut memutuskan untuk melanjutkan tempoh kawal selia pertama (IBR RP1: 2018 - 2020) selama setahun untuk NUR di KHTP iaitu bermula daripada 1 Januari 2021 hingga 31 Disember 2021.

Beberapa parameter utama juga telah diluluskan oleh Kerajaan untuk pelaksanaan tempoh lanjutan RP1 bagi NUR di bawah mekanisme IBR.

Based on the constraints during the pandemic experienced by NUR Power Sdn. Bhd. (NUR) at Kulim Hi-Tech Park (KHTP), the Government has decided to extend the first regulatory period (IBR RP1: 2018 - 2020) for one year for NUR at KHTP, which starts from 1 January 2021 to 31 December 2021.

Some key parameters have also been approved by the Government for the implementation of the RP1 extension period for NUR under the IBR mechanism.

Parameter Penetapan Tarif Elektrik untuk Tempoh Lanjutan IBR RP1 bagi NUR
Electricity Tariff Setting Parameters for the Extended Period under the RP1 of the IBR for NUR

Parameter *Parameters*	**Keputusan Kerajaan** *Government's Decision*
Kadar Purata Tarif Asas Tempoh Lanjutan RP1 (2021) *Average Basic Tariff Rate for Extended Period of RP1 (2021)*	**35.70 sen/kWj** *35.70 sen/kWh*
Kadar Kawal Selia WACC *WACC Regulatory Rate*	**8.5%**
Unjuran Permintaan Elektrik *Electricity Demand Forecast*	**1,469.90 GWj** *1,469.90 GWh*
Andaian Harga Bahan Api Gas *Estimated Gas Fuel Prices*	**RM20.70/MMBtu**
Perbelanjaan Modal (CAPEX) yang Dibenarkan untuk NUR *Allowable Capital Expenditure (CAPEX) for NUR*	**RM28.09 juta** *RM28.09 million*
Perbelanjaan Operasi (OPEX) yang Dibenarkan untuk NUR *Allowable Operating Expenditure (OPEX) for NUR*	**RM101.35 juta** *RM101.35 million*

Nota: Jadual tarif elektrik bagi pengguna elektrik di KHTP kekal seperti sedia ada.
Note: The electricity tariff schedule for electricity consumers in KHTP remains as it is.

Berdasarkan rekod, prestasi perbelanjaan modal NUR bagi tempoh RP1 dan RP1 lanjutan (2018 - 2021) berbanding jumlah yang diluluskan adalah terlebih berbelanja sebanyak 15%, manakala prestasi perbelanjaan operasi NUR untuk tempoh yang sama adalah kurang berbelanja iaitu sebanyak -17%.

Based on the records, the performance of NUR's capital expenditure for the RP1 and extended RP1 (2018 - 2021) compared to the approved amount was found to be overspent by 15%, while the performance of NUR's operational expenditure for the same period was found to be underspent, at -17%.

Terdapat enam (6) KPI NUR yang telah dilulus dan dilaksanakan di bawah pelaksanaan IBR untuk tempoh 2018 hingga 2021 iaitu *High Voltage* (HV) SAIDI, *Low Voltage* (LV) SAIDI, *Power Quality* (*Recorded / Affecting Customer*), *Customer Satisfaction Survey, Effective Unplanned Outage* (EUOF) dan *Effective Maintenance Programme* (EPOF).

Secara kesimpulannya, laporan pengukur prestasi sebenar NUR bagi tempoh IBR RP1 (2018 - 2021) menunjukkan kebanyakannya adalah di tahap neutral iaitu tiada insentif atau penalti yang akan dikenakan.

KPI NUR bagi tempoh IBR RP1 ini adalah berdasarkan pemantauan oleh ST sahaja, tanpa implikasi kewangan yang perlu diselaraskan dalam semakan tarif asas yang akan datang.

Walaupun berdepan dengan pelbagai ketidaktentuan kos pembekalan elektrik, lanjutan tempoh RP1 dilihat telah membantu dalam meringankan kos operasi pengguna elektrik di KHTP, terutamanya bagi kategori industri di mana kadar tarif yang dinikmati masih dikekalkan.

There are six (6) NUR KPIs that have been approved and implemented under the implementation of IBR for the period of 2018 to 2021, which are High Voltage (HV) SAIDI, Low Voltage (LV) SAIDI, Power Quality (Recorded / Affecting Customer), Customer Satisfaction Survey, Effective Unplanned Outage (EUOF) and Effective Maintenance Programme (EPOF).

On the whole, NUR's actual performance report for the period of IBR RP1 (2018 - 2021) shows that most of them are neutral, where no incentives or penalties were imposed.

The KPI for NUR during the IBR RP1 is based on the Commission's monitoring only, without any financial implication that needs to be adjusted in the coming base tariff reviews.

Despite the uncertainties of electricity supply cost, the extension of RP1 period is seen to help reduce the KHTP consumers' operating costs especially for the industrial category where the tariff rate is maintained.

SEMAKAN KADAR TARIF ASAS ELEKTRIK DI SEMENANJUNG DI BAWAH MEKANISME IBR BAGI TEMPOH KAWAL SELIA KETIGA (RP3: 2022-2024)

REVISION OF THE ELECTRICITY BASE TARIFF RATES IN THE PENINSULA UNDER THE IBR MECHANISM FOR THE THIRD REGULATORY PERIOD (RP3: 2022 - 2024)

Pelaksanaan tempoh percubaan mekanisme IBR bagi TNB di Semenanjung pada 2014 telah memberikan input penambahbaikan yang signifikan ke arah amalan-amalan terbaik, di mana pengguna telah menerima manfaat daripada tadbir urus industri pembekalan elektrik yang lebih cekap dan telus.

Di bawah mekanisme ini, dua (2) komponen utama yang memerlukan penelitian adalah pelarasan tarif asas elektrik yang dibuat setiap tiga (3) tahun tempoh kawal selia, dan pelarasan tarif melalui mekanisme ICPT yang dilaksanakan bagi tempoh setiap enam (6) bulan.

Bagi pelaksanaan tempoh IBR RP2 di Semenanjung, ianya telah dilanjutkan selama setahun lagi sehingga 2021 berikutan penularan pandemik COVID-19 yang melanda. Oleh itu, pelaksanaan IBR TNB bagi tempoh RP3 untuk tiga (3) tahun telah disasarkan bermula daripada 1 Januari 2022 hingga 31 Disember 2024.

The implementation of the trial period of the IBR mechanism for TNB in the Peninsula in 2014 has provided significant improvement inputs towards best practices, where consumers have benefited from more efficient and transparent governance of the electricity supply industry.

Under this mechanism, the two (2) main components that require scrutiny are the electricity base tariff adjustment made every three (3) years of the regulatory period, and the tariff adjustment through the ICPT mechanism implemented every six (6) months.

As for the implementation of the IBR RP2 in the Peninsula, it has been extended for another year until 2021 following the COVID-19 pandemic situation. Therefore, the implementation of TNB's IBR for the RP3 for three (3) years has been targeted to start from 1 January 2022 to 31 December 2024.

Bagi memperkemaskan inisiatif tersebut, ST telah menyemak dan menilai cadangan penetapan tarif asas elektrik di bawah mekanisme IBR bagi tempoh RP3 yang dimajukan oleh TNB bermula awal 2021, untuk pertimbangan Kerajaan.

Di samping itu juga, *Regulatory Implementation Guidelines* (RIGs) untuk penetapan kadar tarif asas TNB di Semenanjung turut ditambah baik pada 2021 seiring dengan garis panduan terkini yang diterbitkan oleh ST.

Namun begitu, bencana banjir besar pada penghujung 2021 telah menyebabkan Kerajaan mengambil pendekatan untuk menangguhkan pelaksanaan mekanisme IBR TNB bagi tempoh RP3 ini.

Oleh itu, kadar purata tarif asas elektrik dikekalkan pada kadar 39.45 sen/kWj di Semenanjung sehingga ke satu tarikh yang akan diputuskan oleh Kerajaan.

In order to streamline the initiative, the Commission has reviewed and evaluated the proposal to set the electricity base tariff under the IBR mechanism for the RP3 enhanced by TNB starting early 2021, for the Government's consideration.

In addition to this, the Regulatory Implementation Guidelines (RIGs) for the setting of TNB's base tariff rates in the Peninsula was also enhanced in 2021 in line with the latest guidelines published by the Commission.

However, the major flood disaster at the end of 2021 caused the Government to postpone the implementation of TNB's IBR mechanism for the RP3.

Therefore, the average base electricity tariff is maintained at 39.45 sen/kWh in the Peninsula to a date stipulated by the Government.

SEMAKAN KADAR TARIF ASAS ELEKTRIK DI KAWASAN PERINDUSTRIAN KULIM HI-TECH PARK (KHTP) DI BAWAH MEKANISME IBR BAGI TEMPOH KAWAL SELIA KEDUA (RP2: 2022–2024)

REVISION OF THE ELECTRICITY BASE TARIFF RATES IN THE KULIM HI-TECH PARK (KHTP) INDUSTRIAL AREA UNDER THE IBR MECHANISM FOR THE SECOND REGULATORY PERIOD (RP2: 2022 - 2024)

Di bawah mekanisme IBR, penetapan tarif asas elektrik adalah berdasarkan unjuran kos modal dan kos operasi yang berhemah dan efisien, berpandukan garis panduan yang ditetapkan dan disemak setiap tiga (3) tahun tempoh kawal selia, dengan pelarasan secara teratur terhadap perubahan kos bahan api yang berada di luar kawalan. Terdapat tiga (3) syarikat utiliti elektrik yang dikawal selia di bawah rangka kerja IBR iaitu TNB, NUR dan Sabah Electricity Sdn. Bhd. (SESB).

Bagi NUR, pelaksanaan mekanisme IBR telah dimulakan secara tempoh percubaan dari 2016 hingga 2017 dan tempoh RP1 bermula 2018 hingga 2020.

Disebabkan penularan pandemik COVID-19 juga, tempoh RP1 tersebut telah dilanjutkan sehingga 31 Disember 2021. Bagi tempoh RP2 pula iaitu dari 2022 hingga 2024, semakan dan penilaian terhadap cadangan penetapan tarif asas elektrik di bawah mekanisme IBR telah dimulakan sejak awal 2021.

Under the IBR mechanism, the setting of the electricity base tariff is centered on a prudent and efficient projection of capital costs and operating costs, based on guidelines that are set and reviewed every three (3) years of the regulatory period, with regular adjustments based on changes in fuel costs that are beyond control. There are three (3) electricity utility companies that are regulated under the IBR framework namely TNB, NUR and Sabah Electricity Sdn.Bhd. (SESB).

For NUR, the implementation of the IBR mechanism was started on a trial basis from 2016 to 2017 and subsequently, the RP1 starting from 2018 to 2020.

Due to the COVID-19 pandemic situation, the RP1 was extended until December 31, 2021. As for the RP2, which is from 2022 to 2024, the review and evaluation of the proposal to set the electricity base tariff under the IBR mechanism started since the beginning of 2021.

Cadangan semakan tarif asas elektrik di KHTP untuk tempoh RP2 telah dikemukakan oleh NUR pada Mac 2021 untuk semakan, penilaian dan pertimbangan ST secara komprehensif dan terperinci. Penilaian terhadap cadangan adalah termasuk unjuran kos modal, kos operasi, kadar keuntungan WACC dan KPI.

Sama seperti pelaksanaan mekanisme IBR TNB bagi tempoh RP3, pelaksanaan kadar purata tarif asas elektrik baharu di bawah IBR bagi tempoh RP2 untuk KHTP yang sepatutnya bermula pada 1 Januari 2022 juga telah ditangguhkan lantaran bencana banjir pada penghujung 2021.

Sehubungan dengan itu juga, Kerajaan telah mengambil pendekatan kadar purata tarif asas elektrik di KHTP dikekalkan pada kadar 35.70 sen/kWj sehingga ke tarikh yang akan diputuskan oleh Kerajaan kelak. Ketetapan kadar tarif asas berhubung keputusan ini adalah dengan berpandukan parameter utama bagi tempoh lanjutan IBR RP1, 2021.

The proposed revision of the electricity base tariff at KHTP for the RP2 was submitted by NUR in March 2021 for a comprehensive and detailed review, evaluation and consideration of the Commission. The evaluation of the proposal includes projected capital costs, operating costs, WACC profit rates and KPIs.

Similar to the implementation of TNB's IBR mechanism for the RP3, the implementation of the new average electricity base tariff rate under the IBR for the RP2 for KHTP which should have started on 1 January 2022 was also delayed due to the flood disaster at the end of 2021.

With regards to that, the Government has taken the approach of maintaining the average rate of the electricity base tariff in KHTP at a rate of 35.70 sen/kWh until a date stipulated by the Government later. The determination of the base tariff rate is based on the main parameters for the extended period of IBR RP1, 2021.

SEMAKAN PELAKSANAAN TEMPOH PERCUBAAN DAN CADANGAN PELAKSANAAN PENUH MEKANISME IBR UNTUK SABAH ELECTRICITY SDN. BHD. (SESB) BAGI TEMPOH KAWAL SELIA PERTAMA (RP1: 2022–2024)

REVIEW OF THE IMPLEMENTATION OF THE TRIAL PERIOD AND THE RECOMMENDATION FOR FULL IMPLEMENTATION OF THE IBR MECHANISM FOR SABAH ELECTRICITY SDN. BHD. (SESB) FOR THE FIRST REGULATORY PERIOD (RP1: 2022 - 2024)

Usaha untuk melaksanakan mekanisme IBR bagi SESB di Sabah dan Wilayah Persekutuan Labuan telah dimulakan sejak 2016, namun pelaksanaan IBR di negeri ini terus diperhalusi selain mempertimbangkan kesediaan pengguna untuk menerima semakan kadar tarif elektrik baharu ini.

Secara dasarnya, Kerajaan telah bersetuju agar pelaksanaan bagi tempoh percubaan mekanisme IBR di Sabah dan Wilayah Persekutuan Labuan dapat dilaksanakan bermula 1 September 2020 dan seterusnya dilanjutkan sehingga 31 Disember 2021 dengan kadar purata tarif asas yang dikekalkan pada 34.52 sen/kWj. Terkini, Kerajaan pada 22 Disember 2021 telah bersetuju untuk melaksanakan tempoh sebenar mekanisme IBR SESB bagi tempoh RP1 bermula 1 Januari 2022 hingga 31 Disember 2024 iaitu dengan mengekalkan kadar purata tarif asas dan struktur tarif elektrik semasa yang sedia ada di Sabah dan Wilayah Persekutuan Labuan.

Efforts to implement the IBR mechanism for SESB in Sabah and Federal Territory of Labuan started since 2016, but the implementation of IBR in this state continues to be refined while considering the willingness of consumers to accept the new electricity tariff rate review.

In principle, the Government has agreed that the implementation for the trial period of the IBR mechanism in Sabah and Federal Territory of Labuan will be from 1 September 2020 and then extended until 31 December 2021 with the average base tariff rate maintained at 34.52 sen/kWh. Recently, on 22 December 2021, the Government has agreed to implement the actual period of the SESB IBR mechanism for the RP1 starting from 1 January 2022 to 31 December 2024, where the average base tariff rate and the current electricity tariff structure in Sabah and Federal Territory of Labuan continues to be maintained.

Dalam melaksanakan semakan ke atas tarif asas SESB bagi tempoh RP1, ST telah meneliti cadangan yang diusulkan oleh SESB untuk memastikan pelaksanaan mekanisme IBR ini berjalan dengan lancar dan mampu memberi kesan yang positif terhadap industri pembekalan elektrik di Sabah dan Wilayah Persekutuan Labuan.

Semakan terhadap tarif SESB turut melibatkan penelitian lanjut berhubung subsidi daripada Kerajaan. Sehingga kini, Kerajaan Persekutuan telah memberikan subsidi sebanyak RM8.63 bilion, antaranya subsidi bahan api dan subsidi sokongan tarif bagi pengguna-pengguna di Sabah dan Wilayah Persekutuan Labuan daripada 2005 hingga 2021, mengekalkan kadar tarif semasa serta menyokong pengoperasian SESB dalam membekalkan elektrik kepada pengguna.

Beberapa parameter utama telah diluluskan oleh Kerajaan untuk pelaksanaan tempoh IBR RP1 bagi SESB di bawah mekanisme IBR mulai 1 Januari 2022 sehingga 31 Disember 2024.

In carrying out a review of SESB's base tariff for the RP1 the Commission has examined the proposals by SESB to ensure that the implementation of the IBR mechanism runs smoothly and is able to have a positive impact on the electricity supply industry in Sabah and Federal Territory of Labuan.

The review of the SESB tariff also involves further research on subsidies from the Government. To date, the Federal Government has provided subsidies amounting to RM8.63 billion, including fuel subsidies and tariff support subsidies for consumers in Sabah and Federal Territory of Labuan from 2005 to 2021, to maintain the current tariff rate and to support SESB in supplying electricity to consumers.

Some key parameters have been approved by the Government for the implementation of the IBR RP1 for SESB under the IBR mechanism from 1 January 2022 until 31 December 2024.

Parameter Penetapan Tarif Elektrik bagi Tempoh IBR RP1 SESB
Electricity Tariff Setting Parameters for the IBR RP1 SESB Period

Parameter *Parameters*	**Keputusan Kerajaan** *Government's Decision*
Kadar Purata Tarif Asas Tempoh RP1 (SESB) *Average Base Tariff Rate for RP1 (SESB)*	**34.52 sen/kWj** *34.52 sen/kWh*
Kadar Kawal Selia WACC *WACC Regulatory Rate*	**4.0%**
Unjuran Permintaan Elektrik *Electricity Demand Forecast*	**6,322 GWj (Purata Tahunan)** *6,322 GWh (Annual Average)*
Perbelanjaan Modal (CAPEX) yang Dibenarkan untuk SESB *Allowed Capital Expenditure (CAPEX) for SESB*	**RM381.63 juta (Purata Tahunan)** *RM381.63 million (Annual Average)*
Perbelanjaan Operasi (OPEX) yang Dibenarkan untuk SESB *Allowable Operating Expenditure (OPEX) for SESB*	**RM604.72 juta (Purata Tahunan)** *RM604.72 million (Annual Average)*

Nota: Jadual tarif elektrik bagi pengguna elektrik di Sabah dan Wilayah Persekutuan Labuan kekal seperti sedia ada.
Note: The electricity tariff schedule for electricity consumers in Sabah and Federal Territory of Labuan remains as it is.

Pelbagai inisiatif dan usaha telah dimulakan oleh ST dan SESB selaras dengan garis panduan IBR yang dikeluarkan pada 2016, termasuk penyediaan pemantauan pengukur prestasi SESB, penyediaan dokumen *Service Level Agreement* (SLA) dan penyediaan *Revenue Requirement Model* (RRM) sebagai model penetapan tarif asas elektrik.

Dengan kelulusan pelaksanaan mekanisme IBR SESB bagi tempoh tiga (3) tahun RP1 bermula 1 Januari 2022 sehingga 31 Disember 2024, ia dapat memastikan cadangan semakan kadar tarif elektrik dari segi data dan tadbir urus yang lebih berkesan serta memastikan kesemua cadangan kos modal dan kos operasi untuk penetapan tarif elektrik adalah munasabah dan efisien sebelum dikemukakan untuk pertimbangan Kerajaan. Hasil positif bagi pelaksanaan mekanisme IBR ini dapat dilihat seperti yang diguna pakai oleh utiliti lain seperti TNB di Semenanjung dan NUR di KHTP.

Various initiatives and efforts have been initiated by the Commission and SESB in line with the IBR guidelines issued in 2016, including the provision of the performance measurement monitoring of SESB, the provision of Service Level Agreement (SLA) documents and the provision of Revenue Requirement Model (RRM) as a model for setting the electricity base tariff.

With the approval of the SESB IBR mechanism for a period of three (3) years of RP1 starting from 1 January 2022 until 31 December 2024, it can ensure the proposed review of electricity tariff rates in terms of data and more effective governance as well as ensure all the proposed capital costs and operating costs for the setting of electricity tariffs is reasonable and efficient before it is submitted for the Government's consideration. The IBR mechanism applied by TNB in the Peninsula and NUR in KHTP is the proof of positive benefits from this implementation.

PELAKSANAAN PELARASAN TARIF DI BAWAH MEKANISME *IMBALANCE COST PASS THROUGH* (ICPT) BAGI TNB DI SEMENANJUNG

IMPLEMENTATION OF TARIFF ADJUSTMENTS UNDER THE IMBALANCE COST PASS THROUGH (ICPT) MECHANISM FOR TNB IN THE PENINSULA

Mekanisme ICPT merupakan sebahagian daripada kerangka kerja IBR bagi menetap dan melaraskan tarif elektrik di Semenanjung.

Di bawah mekanisme ICPT, kadar tarif elektrik asas bagi tempoh RP2, iaitu daripada 2018 hingga 2021, ditentukan dengan menetapkan harga penanda aras bahan api arang batu dan gas dalam tempoh tersebut. Sebarang perbezaan kos sebenar dengan harga penanda aras bahan api dalam penetapan tarif asas akan diselaraskan setiap enam (6) bulan di bawah mekanisme ini, sama ada dalam bentuk surcaj atau rebat, bergantung kepada kos bahan api dan kos penjanaan lain dalam tempoh tersebut.

Mesyuarat Jawatankuasa Mekanisme ICPT telah diadakan sebanyak dua (2) kali pada 2021 bagi membincangkan jumlah ICPT yang perlu dilepaskan kepada pengguna TNB di Semenanjung.

The ICPT mechanism is part of the IBR framework for setting and adjusting electricity tariffs in the Peninsula.

Under the ICPT mechanism, the electricity base tariff rate for the RP2 which is from 2018 to 2021, is determined by setting the benchmark price of coal and gas during that period. Any difference in the actual cost with the benchmark price in the base tariff setting will be adjusted every six (6) months under this mechanism, either in the form of surcharge or rebate, depending on the cost of fuel and other generation costs during that period.

The ICPT Mechanism Committee meeting was held two (2) times in 2021 to discuss the amount of ICPT that needs to be released to TNB consumers in the Peninsula.

Pelarasan ICPT TNB bagi Tempoh Januari Hingga Jun 2021

Kerajaan pada 18 Disember 2020 telah memutuskan supaya pelarasan tarif elektrik di bawah mekanisme ICPT di Semenanjung bagi tempoh 1 Januari 2021 hingga 30 Jun 2021 dengan kos penjimatan keseluruhan sebanyak RM2.25 bilion atau bersamaan rebat ICPT pada kadar 3.94 sen/kWj dilaksanakan seperti berikut:

- Penjimatan ICPT sebanyak RM1.14 bilion bagi tempoh 1 Januari 2021 hingga 30 Jun 2021 dilepaskan sebagai rebat ICPT pada kadar 2.00 sen/kWj kepada semua pengguna elektrik di Semenanjung.
- Lebihan penjimatan ICPT bagi tempoh 1 Januari 2021 hingga 30 Jun 2021 sebanyak RM1.11 bilion iaitu bersamaan 1.94 sen/kWj dipindahkan ke dana KWIE.

Pelarasan ICPT TNB Bagi Tempoh Julai Hingga Disember 2021

Kerajaan pada 23 Jun 2021 telah memutuskan berhubung pelarasan tarif elektrik di bawah mekanisme ICPT di Semenanjung bagi tempoh 1 Julai 2021 hingga 31 Disember 2021 dilaksanakan seperti berikut:

- Rebat sebanyak 2.00 sen/kWj kepada semua pengguna elektrik di Semenanjung dikekalkan dengan keperluan kos keseluruhan sebanyak RM1,130.54 juta.
- Pengekalan kadar rebat 2.00 sen/kWj ini ditampung melalui:
    - Penjimatan ICPT bagi tempoh semakan 1 Januari 2021 hingga 30 Jun 2021 di bawah mekanisme ICPT yang beranggaran sebanyak RM638.98 juta atau bersamaan rebat 1.13 sen/kWj.
    - Dana KWIE yang beranggaran sebanyak RM491.56 juta atau bersamaan rebat pada kadar 0.87 sen/kWj.

TNB ICPT Adjustment for January To June 2021

On 18 December 2020, the Government has decided that the electricity tariff adjustment under the ICPT mechanism in the Peninsula for the period of 1 January 2021 to 30 June 2021 with an overall savings of RM2.25 billion or the equivalent of an ICPT rebate at a rate of 3.94 sen/kWh would be implemented as follows:

- *ICPT savings of RM1.14 billion for the period 1 January 2021 to 30 June 2021 is released as an ICPT rebate at a rate of 2.00 sen/kWh to all electricity consumers in the Peninsula.*
- *Excess ICPT savings for the period 1 January 2021 to 30 June 2021 amounting to RM1.11 billion which is equivalent to 1.94 sen/kWh is transferred to the KWIE fund.*

TNB ICPT Adjustment For July To December 2021

The Government on 23 June 2021 has decided to adjust the electricity tariffs under the ICPT mechanism in the Peninsula for the period of 1 July 2021 to 31 December 2021 as follows:

- *A rebate of 2.00 sen/kWh to all electricity consumers in the Peninsula is maintained with a total cost requirement of RM1,130.54 million.*
- *Maintenance of the rebate rate of 2.00 sen/kWh is accommodated through:*
    - *ICPT savings for the review period of 1 January 2021 to 30 June 2021 under the ICPT mechanism estimated at RM638.98 million or equivalent to a rebate of 1.13 sen/kWh.*
    - *KWIE Fund with a budget of RM491.56 million or the equivalent of a rebate at a rate of 0.87 sen/kWh.*

PELAKSANAAN PELARASAN TARIF DI BAWAH MEKANISME ICPT BAGI NUR DI KAWASAN PERINDUSTRIAN KHTP

IMPLEMENTATION OF TARIFF ADJUSTMENTS UNDER THE ICPT MECHANISM FOR NUR IN KHTP INDUSTRIAL AREAS

Pelarasan tarif yang dilaksanakan di KHTP di bawah mekanisme ICPT juga membolehkan NUR untuk mengenal pasti sebarang perubahan sama ada kenaikan atau penurunan kos ICPT yang disebabkan oleh turun naik harga bahan api dan kos penjanaan dalam tarif elektrik setiap enam (6) bulan.

Bermula 1 Januari 2021, sekiranya kos ICPT NUR melebihi 5% daripada perbezaan di antara kadar tarif NUR dan kadar tarif industri TNB, NUR hanya dibenarkan melepaskan kos ICPT sebanyak 5% kepada pengguna-pengguna bukan domestik, manakala baki peratusan perlu diserap oleh NUR.

Pelarasan ICPT NUR Bagi Tempoh Januari Hingga Jun 2021

Kerajaan pada 18 Disember 2020 telah memutuskan supaya pelarasan tarif elektrik di bawah mekanisme ICPT di KHTP bagi tempoh 1 Januari 2021 hingga 30 Jun 2021 dengan kos sebanyak RM11.12 juta atau bersamaan kadar surcaj ICPT pada kadar 1.54 sen/kWj dilaksanakan seperti berikut:

- Had maksimum kos ICPT yang dilepaskan kepada semua pengguna bukan domestik sebagai surcaj ICPT adalah sebanyak RM6.43 juta. Ini adalah bersamaan kadar surcaj ICPT pada kadar 0.89 sen/kWj iaitu penurunan surcaj sebanyak 70.23% atau 2.10 sen/kWj berbanding kadar surcaj yang dilaksanakan dalam tempoh terdahulu iaitu Julai hingga Disember 2020.
- Baki kos ICPT sebanyak RM4.69 juta atau bersamaan 0.65 sen/kWj ditanggung oleh NUR.

The tariff adjustment implemented in KHTP under the ICPT mechanism also allows NUR to identify any changes in terms of increase or decrease in ICPT costs caused by fluctuations in fuel prices and generation costs in the electricity tariff every six (6) months.

Starting January 1, 2021, if NUR's ICPT cost exceeds 5% of the difference between NUR's tariff rate and TNB's industrial tariff rate, NUR is only allowed to release 5% of ICPT cost to non-domestic consumers, while the remaining percentage must be absorbed by NUR.

NUR ICPT Adjustment For January To June 2021

On 18 December 2020, the Government decided that the electricity tariff adjustment under the ICPT mechanism in KHTP for 1 January 2021 to 30 June 2021 at a cost of RM11.12 million or equivalent to the ICPT surcharge rate of 1.54 sen/kWh would be implemented as follows:

- *The maximum ICPT cost limit that is released to all non-domestic consumers as ICPT surcharge is RM6.43 million. This is equivalent to the ICPT surcharge rate of 0.89 sen/kWh which is a surcharge reduction of 70.23% or 2.10 sen/kWh compared to the surcharge rate implemented earlier, in the month of July to December 2020.*
- *The remaining ICPT cost of RM4.69 million or equivalent to 0.65 sen/kWh is borne by NUR.*

Pelarasan ICPT NUR Bagi Tempoh Julai Hingga Disember 2021

Kerajaan pada 23 Jun 2021 telah memutuskan supaya pelarasan tarif elektrik di bawah mekanisme ICPT di KHTP bagi tempoh 1 Julai 2021 hingga 31 Disember 2021 dengan kos penjimatan keseluruhan sebanyak RM25.26 juta atau bersamaan rebat ICPT pada kadar 3.15 sen/kWj dilaksanakan seperti berikut:

- Jumlah penjimatan ICPT yang beranggaran sebanyak RM16.04 juta atau bersamaan rebat ICPT pada kadar 2.00 sen/kWj dilepaskan kepada semua pengguna bukan domestik.
- Penjimatan ICPT yang beranggaran sebanyak RM9.22 juta atau kadar rebat ICPT 1.15 sen/kWj dipindahkan ke dalam dana KWIE bagi menangani impak kenaikan tarif pada masa akan datang.

NUR ICPT Adjustment For The Period From July To December 2021

On 23 June 2021, the Government has decided that the adjustment of electricity tariffs under the ICPT mechanism in KHTP for 1 July 2021 to 31 December 2021 with a total savings cost of RM25.26 million or the equivalent of ICPT rebate at the rate of 3.15 sen/kWh would be implemented as follows:

- *Total ICPT savings estimated at RM16.04 million or the equivalent of an ICPT rebate at the rate of 2.00 sen/kWh is released to all non-domestic consumers.*
- *Estimated ICPT savings of RM9.22 million or an ICPT rebate rate of 1.15 sen/kWh is transferred to the KWIE fund to deal with the impact of tariff increases in the future.*

LIBERALISASI INDUSTRI PEMBEKALAN GAS ASLI
LIBERALISATION OF THE NATURAL GAS SUPPLY INDUSTRY

Pelaksanaan IBR Dalam Tempoh RP1 Bagi *Regas Terminal* (Sg. Udang) Sdn. Bhd. (RGTSU), Pengerang LNG (Two) Sdn. Bhd. (RGTP), PETRONAS Gas Berhad (PGB) dan *Gas Malaysia Distribution Sdn. Bhd.* (GMD)

Pelaksanaan penetapan tarif bagi penggunaan kemudahan-kemudahan gas di bawah mekanisme IBR melibatkan perkara-perkara berikut:

- Penetapan kadar purata tarif asas untuk tempoh RP1 berkuatkuasa pada 1 Januari 2020 sehingga 31 Disember 2022.
- Pelarasan pendapatan tahunan iaitu semakan semula purata tarif yang dibenarkan sekiranya terdapat perbezaan di antara pendapatan yang dibenarkan dan pendapatan sebenar.

IBR Implementation During The RP1 For Regas Terminal (Sg. Udang) Sdn. Bhd. (RGTSU), Pengerang LNG (Two) Sdn. Bhd. (RGTP), PETRONAS Gas Berhad (PGB) And Gas Malaysia Distribution Sdn. Bhd. (GMD)

The implementation of tariff determination for the use of gas facilities under the IBR mechanism involves the following:

- *Determination of base average tariff for the RP1 effective from 1 January 2020 until 31 December 2022.*
- *Annual revenue adjustment, which is a review of the allowed average tariff if there is a difference between the allowed revenue and the actual revenue.*

Pelarasan Pendapatan Tahunan dan Purata Tarif yang Dibenarkan (1 April 2021 Hingga 31 Disember 2021)
Annual Revenue Adjustment and Allowed Average Tariff (1 April 2021 to 31 December 2021)

Pemegang Lesen *Licensee*	**Kemudahan Gas** *Gas Facilities*	**Purata Tarif Asas (1 Jan 2020 – 31 Dis 2022)** *Base Average Tariff (1 Jan 2020 – 31 Dec 2022)*	**Pelarasan Pendapatan** *Revenue Adjustment*	**Purata Tarif yang Dibenarkan (1 Apr 2021 – 31 Dis 2021)** *Allowed Average Tariff (1 Apr 2021 – 31 Dec 2021)*
Regas Terminal (Sg. Udang) Sdn. Bhd. (RGTSU)	Terminal Penggasan Semula *Regasification Terminal*	**RM3.455/GJ/hari** *RM3.455/GJ/day*	**RM0.000/GJ/hari** *RM0.000/GJ/day*	**RM3.455/GJ/hari** *RM3.455/GJ/day*
Pengerang LNG (Two) Sdn. Bhd. (RGTP)	Terminal Penggasan Semula *Regasification Terminal*	**RM3.485/GJ/hari** *RM3.485/GJ/day*	**RM0.000/GJ/hari** *RM0.000/GJ/day*	**RM3.485/GJ/hari** *RM3.485/GJ/day*
PETRONAS Gas Berhad (PGB)	Talian Paip Penghantaran *Transmission Pipeline*	**RM1.129/GJ/hari** *RM1.129/GJ/day*	**RM0.000/GJ/hari** *RM0.000/GJ/day*	**RM1.129/GJ/hari** *RM1.129/GJ/day*
Gas Malaysia Distribution Sdn. Bhd. (GMD)	Talian Paip Penghantaran *Distribution Pipeline*	**RM1.573/GJ/hari** *RM1.573/GJ/day*	**RM0.142/GJ/hari** *RM0.142/GJ/day*	**RM1.715/GJ/hari** *RM1.715/GJ/day*

Nota: Pelarasan pendapatan merangkumi semakan pada komponen-komponen iaitu *Revenue Cap, Excluded Services, Tariff Cap* dan juga *Internal Gas Consumption.*
Note: The revenue adjustment includes a review on the components of Revenue Cap, Excluded Services, Tariff Cap and also Internal Gas Consumption.

Di bawah mekanisme IBR juga, pemantauan ke atas prestasi pemegang lesen telah dilaksanakan berdasarkan petunjuk-petunjuk prestasi yang telah ditetapkan. Walau bagaimanapun, tiada pemberian ganjaran atau penalti dalam tempoh RP1 memandangkan tempoh tersebut merupakan tempoh pemantauan bagi mengenalpasti kesesuaian penunjuk prestasi sebelum dilaksanakan sepenuhnya dalam tempoh RP2.

Under the IBR mechanism, the monitoring of the licensee's performance is implemented based on the performance indicators that have been set. However, there is no reward or penalty during the RP1 since it is a monitoring period to identify the suitability of performance indicators before being fully implemented in the RP2.

Prestasi RGTSU, RGTP dan PGB, 2021
Performance of RGTSU, RGTP and PGB, 2021

Pemegang Lesen *Licensee*	Petunjuk Prestasi *Performance Indicator*	Sasaran Penalti *Penalty Target*	Had Penalti *Penalty Cap*	Prestasi 2021 *Performance 2021*
RGTSU	Ketersediaan *Availability*	90.0%	78.72%	98.40%
	Daya Harap *Reliability*	98.0%	86.43%	100.00%
RGTP	Ketersediaan *Availability*	90.0%	89.88%	99.88%
	Daya Harap *Reliability*	98.0%	97.88%	99.90%
PGB	Ketersediaan *Availability*	99.0%	98.89%	99.80%
	Daya Harap *Reliability*	99.0%	98.91%	99.96%

Prestasi GMD, 2021
GMD Performance, 2021

Pemegang Lesen *Licensee*	Petunjuk Prestasi *Performance Indicators*	Had Ganjaran *Reward Limits*	Sasaran Ganjaran *Target Rewards*	Sasaran Penalti *Penalty Target*	Had Penalti *Penalty Cap*	Prestasi 2021 *2021 Performance*
GMD	Daya Harap Bekalan – SAIDI (Minit/Pelanggan/Tahun) *Reliability of Supply – SAIDI (Minutes/Customers/Year)*	0	1.12	11.17	16.19	1.4393
	Integriti Rangkaian (Bil. Kebocoran / 1,000 km Talian Paip) *Network Integrity (No. of Leak / 1,000 km Pipeline)*	0	1.5	4.0	5.5	2
	Perkhidmatan Pelanggan – Purata Masa Tindak Balas bagi Lima (5) Kejadian Paling Lama (minit) *Average Customer Service Response Time for the Five (5) Longest Incidents (minutes)*	-	-	60.53	63.20	47

Penetapan Harga Jualan Gas Asli *Gas Malaysia Energy And Services Sdn. Bhd.* (GMES) Dalam Tempoh Peralihan, 2020 – 2021

Harga gas asli oleh GMES kepada pengguna-pengguna gas di segmen pengagihan pada 2021 dikawal selia oleh Kerajaan, memandangkan ianya masih di dalam tempoh peralihan selama dua (2) tahun mulai 1 Januari 2020 sehingga 31 Disember 2021.

Dalam tempoh tersebut, harga gas asli GMES ditetapkan berdasarkan komponen utama yang terlibat dan disemak pada setiap suku tahunan.

Penetapan ini bertujuan melancarkan proses liberalisasi pasaran gas asli di segmen pengagihan dan melaksanakan peralihan tersebut secara berperingkat.

Semakan harga gas asli GMES akan ditetapkan berdasarkan prinsip *willing buyer-willing seller* dan tanpa campur tangan Kerajaan mulai 1 Januari 2022.

Determination of the Selling Prices of Natural Gas Malaysia Energy And Services Sdn. Bhd. (GMES) in The Transition Period, 2020 – 2021

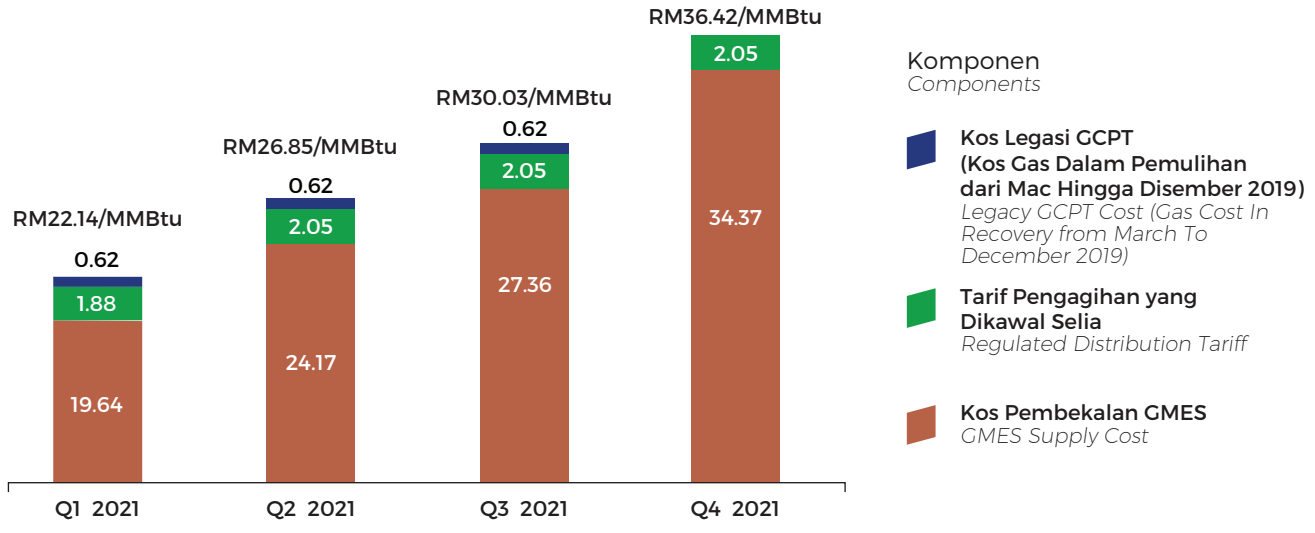
The price of natural gas by GMES to gas consumers in the distribution segment in 2021 is regulated by the Government, considering that it is still in a transition period of two (2) years from January 1, 2020 until December 31, 2021.

During the period, GMES natural gas prices are set based on the main components involved and are reviewed every quarter.

This determination of price aims to smoothen the natural gas market liberalisation process in the distribution segment and transition implemented in stages.

The GMES natural gas price review will be set based on the willing buyer-willing seller principle and without Government intervention from 1 January 2022.

Purata Harga Jualan Gas Asli GMES, 2021
Average GMES Natural Gas Sales Price, 2021



Nota: Tiada lagi komponen kos legasi GCPT dalam suku keempat 2021 kerana telah selesai dikutip sepenuhnya.
Note: There is no more GCPT legacy cost component in the fourth quarter of 2021 as it has been fully collected.

PEMANTAUAN KOS DAN HARGA BEKALAN ARANG BATU
MONITORING THE COST AND PRICE OF COAL SUPPLY

Perolehan arang batu oleh *TNB Fuel Services Sdn. Bhd.* (TNBF) dilaksanakan secara perolehan terbuka berdasarkan unjuran kuantiti yang telah ditetapkan dan mengikut harga indeks lazim yang lebih stabil di pasaran.

Bagi penetapan harga arang batu ke stesen jana kuasa pula, ianya ditetapkan melalui mekanisme *Applicable Coal Price* (ACP) yang dilaksanakan semenjak 2010.

Jawatankuasa Pemantauan Kos dan Harga Bekalan Arang Batu (JKPKHAB) ditubuhkan untuk memantau penetapan harga arang batu setiap suku tahunan yang diisytihar kepada loji jana kuasa bagi arang batu yang dibekal untuk tujuan penjanaan elektrik di Semenanjung.

Selain itu, JKACP memantau kos perolehan arang batu oleh TNBF melalui kontrak-kontrak bekalan, pembelian secara spot dan lain-lain, agar ianya mencerminkan pembelian yang cekap dari segi kos.

Procurement of coal by TNB Fuel Services Sdn. Bhd. (TNBF) is carried out through open procurement based on the forecasted quantity that has been set and according to the common index price which is more stable in the market.

The price of coal to power stations is set through the Applicable Coal Price (ACP) mechanism that has been implemented since 2010.

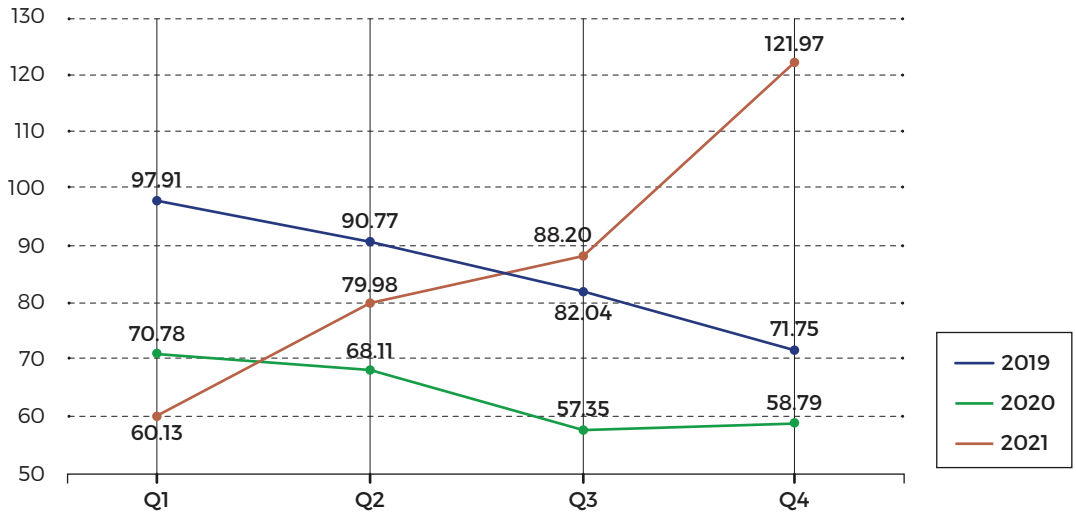
The Coal Supply Cost and Price Monitoring Committee (JKPKHAB) was established to monitor quarterly coal price determination, which will be declared to power plants on the coal supplied for electricity generation in the Peninsula.

In addition, JKACP monitors the cost of coal procurement by TNBF through supply contracts, spot purchases and others, so that it reflects cost-efficient purchases.

***Applicable Coal Price (ACP)*, 2021**
Applicable Coal Price (ACP), 2021

Tempoh *Period*	***Bituminous* (USD/MT)**	***Sub-Bituminous* (USD/MT)**
Q1 2021	**61.07**	**59.65**
Q2 2021	**88.31**	**76.00**
Q3 2021	**91.50**	**86.55**
Q4 2021	**140.93**	**115.09**

Perbandingan *Applicable Coal Price* (ACP), 2019–2021
Comparison of Applicable Coal Price (ACP), 2019–2021



Berbanding tahun-tahun sebelumnya, ACP bagi 2021 menunjukkan peningkatan mendadak terutamanya selepas suku tahunan kedua berikutan permintaan global yang melebihi pembekalan dan akhirnya meningkatkan harga pasaran arang batu.

Antara faktor-faktor penyumbang yang mempengaruhi peningkatan ini adalah:

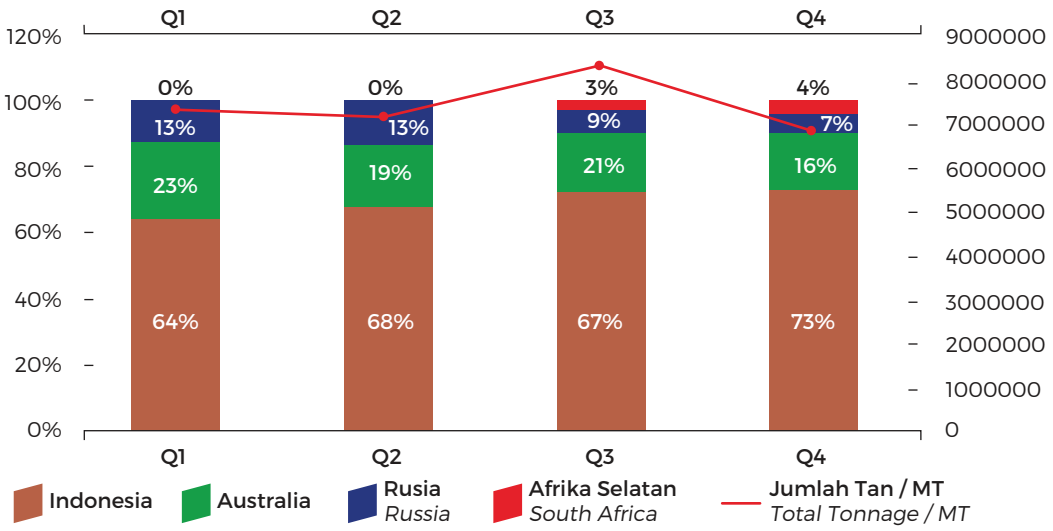
- Permintaan yang tinggi daripada Rusia, China, India dan negara-negara lain di rantau Asia Timur disebabkan oleh musim sejuk yang melampau.
- Pembelian arang batu yang agresif melalui *spot contracts* dari Rusia, Indonesia dan Afrika Selatan sebagai persediaan menghadapi musim sejuk.
- Sentimen positif daripada kemajuan pembangunan vaksin COVID-19 kepada ekonomi dunia.
- Permintaan yang tinggi dari negara-negara Eropah disebabkan oleh kenaikan harga gas dan minyak dunia.
- Pengeluaran yang merosot disebabkan oleh Prosedur Operasi Standard (SOP) yang diperketatkan oleh negara pembekal bagi mengekang gelombang ketiga COVID-19.

Compared to previous years, the ACP for 2021 shows a sharp increase especially after the second quarter due to global demand exceeding supply and ultimately increasing coal market prices.

Among the contributing factors affecting this increase are:

- *High demand from Russia, China, India and other countries in the East Asian region due to extreme winters.*
- *Aggressive purchase of coal through spot contracts from Russia, Indonesia and South Africa in preparation for winter.*
- *Positive sentiment from the progress of the COVID-19 vaccine development to the world economy.*
- *High demand from European countries due to the increase in world gas and oil prices.*
- *Declining production due to Standard Operating Procedures (SOP) tightened by supplier countries to curb the third wave of COVID-19.*

Jumlah Import Arang Batu, 2021
Total Coal Imports, 2021



PENETAPAN HARGA JUALAN DAN PEMBEKALAN GAS ASLI BAGI SEKTOR ELEKTRIK DI SEMENANJUNG

DETERMINATION OF NATURAL GAS SALES AND SUPPLY PRICES FOR THE ELECTRICITY SECTOR IN THE PENINSULA

Penetapan harga gas bagi sektor elektrik berdasarkan harga pasaran *Reference Market Price* (RMP) telah dilaksanakan bermula 1 Januari 2020 di bawah penetapan formula satu (1) peringkat. Ini adalah berikutan harga gas yang dikawal selia di Semenanjung telah mencapai aras harga pasaran pada separuh tahunan kedua 2019.

Kaedah penetapan harga gas berdasarkan RMP ini diteruskan apabila Kerajaan memutuskan agar harga dan isipadu gas asli yang dibekalkan kepada sektor elektrik Semenanjung bagi 2021 dikekalkan seperti keputusan terdahulu, lanjutan daripada kesan penularan pandemik COVID-19 yang menjejaskan ekonomi negara.

The determination of gas prices for the electricity sector based on the Reference Market Price (RMP) has been implemented from 1 January 2020 under the setting of a single tier formula. This is due to the fact that regulated gas prices in the Peninsula have reached market price levels in the second half of 2019.

This method of determining gas prices based on the RMP continued when the Government decided that the price and volume of natural gas supplied to the Peninsula's electricity sector for 2021 would be maintained as decided earlier, further to the impact of the COVID-19 pandemic affecting the national economy.

Bagi penetapan harga gas 2022, ST bersama-sama Unit Perancang Ekonomi (EPU), Kementerian Tenaga dan Sumber Asli (KeTSA), TNB, PETRONAS, *Single Buyer* (SB) dan *Grid System Operator* (GSO) telah melaksanakan kajian dan rundingan dalam usaha untuk mengambil pendekatan yang terbaik untuk pelaksanaan. Dengan mengambil kira faktor-faktor peningkatan harga bahan api, usaha pemulihan ekonomi negara, usaha mengurangkan impak harga gas kepada tariff elektrik serta menggalakkan persaingan pasaran gas, Kerajaan telah memutuskan supaya harga dan pembekalan gas asli kepada sektor elektrik bagi tempoh RP3 dari 1 Januari 2022 hingga 31 Disember 2024 ditetapkan berdasarkan kaedah harga dua (2) peringkat atau *two tier pricing.*

For the gas price determination in 2022, the Commission together with Economic Planning Unit (EPU), Ministry of Energy and Natural Resources (KeTSA), TNB, PETRONAS, Single Buyer (SB) and Grid System Operator (GSO) have carried out studies and negotiations in an effort to take the best approach for implementation. Taking into account the factors of increasing fuel prices, efforts to restore the national economy and to reduce the impact of gas prices on electricity tariffs as well as promote competition in the gas market, the Government has decided that the price and supply of natural gas to the electricity sector for the RP3 from 1 January 2022 to December 31, 2024 is set based on the two (2) tier pricing method.

PELAKSANAAN *NEW ENHANCED DISPATCH ARRANGEMENT* (NEDA)

IMPLEMENTATION OF NEW ENHANCED DISPATCH ARRANGEMENT (NEDA)

Mekanisme *New Enhanced Dispatch Arrangement* (NEDA) telah dilancarkan sejak 2017 dan ditambah baik dari semasa ke semasa. Kini, mekanisme NEDA terbahagi kepada lima (5) kategori iaitu:

- Perjanjian Pembelian Tenaga (PPA) / *Service Level Agreement* (SLA) *Generator*
- *Solar Power Producer*
- *Ex PPA / SLA Generator*
- *Large Merchant Generator*
- *Price Taker*

Objektif utama pelaksanaan NEDA adalah untuk memberi manfaat kepada kos penjanaan yang lebih kompetitif seperti:

- Meningkatkan kecekapan kos penjanaan melalui persaingan jangka pendek.
- Penggunaan teknologi yang cekap, seperti penglibatan loji jana kuasa *cogeneration* di dalam pasaran elektrik.
- Peluang untuk penjana bukan PPA, untuk beroperasi sebagai *Merchant Plant* dan menawarkan tenaga kepada SB.
- Meningkatkan opsyen perniagaan untuk penjana yang telah tamat tempoh PPA dan penjana lain dengan memaksimumkan penggunaan fasiliti secara cekap dan kos efektif untuk faedah industri bekalan elektrik dan pengguna.

Terdapat lima (5) loji jana kuasa yang telah menyertai NEDA di mana kesemuanya merupakan peserta bagi kategori *Price Taker.*

The New Enhanced Dispatch Arrangement (NEDA) mechanism was launched in 2017 and has been improved over time. Currently, the NEDA mechanism is divided into five (5) categories, namely:

- *Power Purchase Agreement (PPA) / Service Level Agreement (SLA) Generator*
- *Solar Power Producer*
- *Ex PPA / SLA Generator*
- *Large Merchant Generator*
- *Price Taker*

The main objective of NEDA implementation is to provide a benefit to more competitive generation costs such as:

- *Increase generation cost efficiency through short-term competition.*
- *Efficient use of technology, such as the involvement of cogeneration power plants in the electricity market.*
- *Opportunity for non-PPA generators, to operate as Merchant Plant and offer energy to SB.*
- *Increase business options for generators whose PPAs have expired and other generators by maximising the efficient and cost-effective use of facilities for the benefit of the electricity supply industry and consumers.*

There are five (5) power plants that have participated in NEDA where all of them are participants in the Price Taker category.

Loji Jana Kuasa yang Menyertai NEDA Setakat 2021
Power Plants Participating in NEDA Until 2021

Peserta *Participants*	**Kategori** *Category*	**Kapasiti Berdaftar (MW)** *Registered Capacity (MW)*	**Hari Dagangan Pertama** *First Trading Day*
NUR Generation	*Price Taker (Small Franchise Utility)*	**29.9**	18 Mac 2019 *18 March 2019*
Petronas Chemicals Fertiliser Kedah (PCFK)	*Price Taker (Cogeneration)*	**8.0**	15 Jun 2019 *15 June 2019*
Perstima Utility	*Price Taker (Cogeneration)*	**3.6**	19 September 2019 *19 September 2019*
PETRONAS Centralised Utility Facility Gebeng	*Price Taker (Cogeneration)*	**29.9**	20 Ogos 2021 *20 August 2021*
PETRONAS Centralised Utility Facility Kertih	*Price Taker (Cogeneration)*	**29.9**	20 Ogos 2021 *20 August 2021*

Berbanding tahun sebelumnya, jumlah penyertaan NEDA telah meningkat bagi 2021 dengan penyertaan dua (2) loji *cogeneration* iaitu *PETRONAS Centralised Utility Facility* Gebeng dan Kertih dengan jumlah kapasiti sebanyak 59.8 MW.

Namun, permohonan-permohonan baharu oleh pihak industri untuk menyertai NEDA melalui loji jana kuasa solar telah ditangguhkan lanjutan keperluan untuk pertimbangan kuota pepasangan solar oleh KeTSA. Keputusan ini adalah berdasarkan kajian penetrasi TBB oleh GSO berhubung had kemasukan TBB berasaskan tenaga solar fotovoltaik (PV), iaitu untuk menilai keupayaan sistem grid sedia ada serta penerimaan kemasukan TBB berasaskan tenaga solar PV pada masa hadapan.

Sebelum penangguhan tersebut, terdapat tiga (3) loji jana kuasa berasaskan tenaga solar PV bagi kategori *Price Taker* yang sedang di dalam proses penyertaan yang bakal meningkatkan lagi pencapaian objektif NEDA.

Penyertaan yang lebih tinggi daripada kategori *PPA / SLA Generator, Solar Power Producer, Ex PPA / SLA Generator, Large Merchant Generator* dan *Price Taker* serta permintaan beban yang lebih tinggi juga dijangka dapat membuka potensi penuh terhadap mekanisme NEDA.

Compared to the previous year, the number of NEDA participants have increased for 2021 with the participation of two (2) cogeneration plants namely PETRONAS Centralised Utility Facility Gebeng and Kertih with a total capacity of 59.8 MW.

However, new applications by industry players to participate in NEDA through solar power plants have been delayed due to the need to consider solar installation quotas by KeTSA. This decision is based on the solar PV penetration study by GSO in relation to the solar photovoltaic (PV) based solar energy penetration limit, which is to evaluate the existing grid system's capability as well as the acceptance of solar PV based solar energy penetration in the future.

Before the postponement, there were three (3) power generation plants based on PV solar energy for the Price Taker category that were in the process of participating which would have further increased the achievement of NEDA's objectives.

Higher participation from the PPA / SLA Generator, Solar Power Producer, Ex PPA / SLA Generator, Large Merchant Generator and Price Taker categories as well as higher load demand is also expected to unlock the full potential of the NEDA mechanism.

PEMANTAUAN PELAKSANAAN *RING-FENCING SINGLE BUYER* (SB) DAN *GRID SYSTEM OPERATOR* (GSO) DI SEMENANJUNG

MONITORING THE IMPLEMENTATION OF RING-FENCING SINGLE BUYER (SB) AND GRID SYSTEM OPERATOR (GSO) IN THE PENINSULA

Garis panduan *SB Market (Peninsular Malaysia)* telah menetapkan supaya kumpulan kerja dibangunkan bagi pengawalseliaan fungsi dan tanggungjawab utama SB dan GSO, antaranya kumpulan kerja *Dispatch Scheduling* dan *SB Website*.

Kumpulan kerja *Dispatch Scheduling* ditubuhkan bagi memberi panduan dan memantau ramalan operasi jangka masa pendek dan sederhana, termasuklah perancangan penghantaran beban dan keperluan bahan api. Kumpulan kerja *SB Website* pula berperanan sebagai medium perbincangan bagi penerbitan maklumat dan panduan di laman sesawang SB. Kedua-dua kumpulan kerja ini dianggotai oleh wakil ST, SB, GSO dan TNB.

Pada 2021, kumpulan kerja *Dispatch Scheduling* telah bermesyuarat secara suku tahunan yang membincangkan:

- Prestasi operasi bagi 2020.
- Prestasi dan keperluan bahan api penjanaan.
- Kadar henti tugas stesen jana kuasa.
- Analisa bagi penetapan isipadu gas untuk 2022.
- Isu kenaikan harga arang batu pasaran yang telah setanding harga gas penjanaan dan menjadikan nilai merit stesen jana kuasa tertumpu kepada penjanaan gas.

Kumpulan kerja *SB Website* telah dijalankan pada 29 Jun 2021 dan membincangkan:

- Pautan *Market Participant Interface* untuk NEDA.
- Paparan kadar *System Marginal Price* untuk rujukan pengguna.
- Isu paparan nilai merit stesen-stesen jana kuasa.

The SB Market (Peninsular Malaysia) guidelines have stipulated that a working group be developed for the regulation of the main functions and responsibilities of SB and GSO, including the Dispatch Scheduling and SB Website working groups.

The Dispatch Scheduling working group was established to provide guidance and monitor short and medium term operational forecasting, including load dispatch planning and fuel requirements. The SB Website working group acts as a discussion medium for the publication of information and guidance on the SB website. These two working groups are composed of representatives of ST, SB, GSO and TNB.

In 2021, the Dispatch Scheduling working group met quarterly to discuss on:

- *Operational performance for 2020.*
- *Generation performance and fuel needs.*
- *Power station downtime rate.*
- *Analysis for the determination of gas volume for 2022.*
- *The issue of increase in the market price of coal which has been comparable to the price of gas generation and becomes the merit of why power stations are focused on gas generation.*

The SB Website working group was conducted on 29 June 2021 and discussed:

- *Market Participant Interface Link for NEDA.*
- *System Marginal Price rate display for user reference.*
- *The issue of displaying the merit value of power stations.*

GARIS PANDUAN *SINGLE BUYER* (SB) DAN *GRID SYSTEM OPERATOR* (GSO) DI SABAH DAN WILAYAH PERSEKUTUAN LABUAN

SINGLE BUYER AND GRID SYSTEM OPERATOR GUIDELINES IN SABAH AND FEDERAL TERRITORY OF LABUAN

Pada 22 Disember 2021, Kerajaan telah meluluskan cadangan penetapan kadar tarif asas elektrik di Sabah dan Wilayah Persekutuan Labuan di bawah kerangka

On 22 December 2021, the Government approved the proposed setting of the electricity base tariff rate in Sabah and Federal

kerja IBR bagi tempoh RP1 yang bermula pada 1 Januari 2022 hingga 31 Disember 2024.

Mekanisme IBR menitikberatkan peranan dan tanggungjawab utama SB dan GSO Sabah sebagai perancang dan pengendali sistem grid Sabah dan Wilayah Persekutuan Labuan. Seperti amalan di Semenanjung, SB dan GSO Sabah berperanan dalam merancang dan mengendalikan pembekalan elektrik di Sabah dan Wilayah Persekutuan Labuan serta memastikan kecukupan bekalan dan bahan api dengan kos penjanaan yang ekonomi dan rendah.

Peranan ini ditekankan di dalam garis panduan SB dan GSO Sabah yang menggariskan secara terperinci proses dan metodologi yang perlu dilaksanakan oleh SB dan GSO Sabah dalam memenuhi pembekalan pada prinsip kos paling rendah.

Pembangunan draf bagi kedua-dua garis panduan telah diperkemas dan dimuktamadkan bersama-sama SB dan GSO Sabah untuk diterbitkan pada 2022.

Territory of Labuan under the IBR framework for the RP1 which starts on 1 January 2022 to 31 December 2024.

The IBR mechanism emphasises the main role and responsibility of the Sabah SB and GSO as planners and operators of the Sabah and Federal Territory of Labuan grid system. As practiced in the Peninsula, SB and GSO Sabah play a role in planning and managing the supply of electricity in Sabah and Federal Territory of Labuan as well as ensuring the adequacy of supply and fuel with economical and low generation costs.

This role was emphasised in the SB and GSO Sabah guidelines which outline in detail the process and methodology to be implemented by the SB and GSO Sabah in fulfilling supply based on the least cost principle.

The draft of both guidelines have been streamlined and finalised together with SB and GSO Sabah to be published in 2022.

KAJIAN PEMBANGUNAN RANGKA KERJA CAJ RANGKAIAN BAGI SEMENANJUNG MALAYSIA

STUDY OF DEVELOPMENT OF ELECTRICITY NETWORK CHARGES FRAMEWORK FOR PENINSULAR MALAYSIA

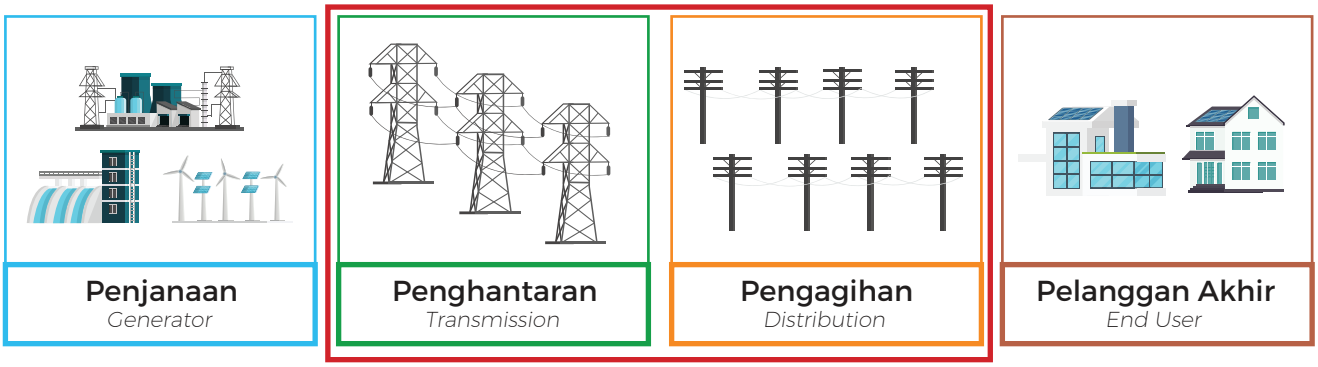
Pada 2018, reformasi industri pembekalan elektrik di Malaysia atau MESI 2.0 telah dilancarkan oleh Kerajaan untuk meningkatkan kecekapan dan ketelusan, menyediakan industri yang kalis masa hadapan dan memperkasakan nilai tambah kepada pengguna. Namun begitu, berikutan ketidaktentuan pasaran dan ekonomi negara akibat ekoran penularan pandemik COVID-19, Kerajaan pada 2020 telah memutuskan penyemakan semula kesemua inisiatif di bawah MESI 2.0.

Walaupun semakan MESI 2.0 masih belum dimuktamadkan, kajian Pembangunan Rangka Kerja Caj Rangkaian bagi Semenanjung Malaysia diteruskan setelah mengambil kira kepentingan pemakaian caj rangkaian dalam isu-isu semasa yang melibatkan rangkaian pembekalan elektrik seperti *Green Third-Party Contract* (GTPC), *Cross Border Electricity Power Sales* (CBES), *Distributed Energy Resources* (DER) dan persediaan kepada *Cost-Reflective Electricity Tariff Design.*

In 2018, reformation of the electricity supply industry in Malaysia or MESI 2.0 was launched by the Government to increase efficiency and transparency, provide a future-proof industry and add value to consumers. However, following the economy and market uncertainty due to the COVID-19 pandemic, the Government in 2020 has decided to review all initiatives under MESI 2.0.

Although the review of MESI 2.0 has not yet been finalised, the study of the Development of Electricity Network Charges Framework for Peninsular Malaysia continues after taking into account the importance of using network charges in current issues involving the electricity supply network such as Green Third-Party Contract (GTPC), Cross Border Electricity Power Sales (CBES), Distributed Energy Resources (DER) and preparation for Cost-Reflective Electricity Tariff Design.

Skop Kajian Pembangunan Rangka Kerja Caj Rangkaian Bagi Semenanjung
Scope of Study of Development of Network Charges Framework for the Peninsula



Caj rangkaian dibangunkan melalui kaedah pengagihan kos berdasarkan *Allowed Revenue* (AR) yang telah diluluskan oleh ST bagi *Regulated Business Entities* (RBE) yang terlibat.

Ianya mencerminkan kos sebenar penggunaan rangkaian elektrik oleh pengguna dan dijangka dapat mengurangkan subsidi silang antara pengguna yang berbeza tahap voltan penggunaannya.

Caj rangkaian ini adalah selaras dengan salah satu objektif utama penetapan harga rangkaian elektrik iaitu pengawalseliaan yang efisien bagi mendorong utiliti elektrik untuk beroperasi dengan cekap.

Sekiranya Kerajaan berhasrat untuk melaksanakan pemakaian caj rangkaian ini, proses peralihan perlu dilakukan secara berperingkat bagi memastikan kestabilan harga di samping memberikan masa untuk pengguna menyesuaikan diri terhadap caj tersebut.

Di peringkat permulaan, ST harus mempertimbangkan pengenalan caj rangkaian bagi talian penghantaran sebagai persediaan kepada pelaksanaan *wholesale market* pada masa hadapan. Kesan caj rangkaian bagi talian penghantaran pada tarif pengguna akhir juga adalah dilihat tidak begitu ketara berbanding pemakaian caj rangkaian bagi talian pengagihan.

Network charges are developed through a cost distribution method based on Allowed Revenue (AR) that has been approved by the Commission for the Regulated Business Entities (RBE) involved.

It reflects the actual cost of using the electricity network by consumers and is expected to reduce cross subsidies between consumers using different voltage levels.

This network charge is in line with one of the main objectives of electricity network pricing which is efficient regulation to encourage electricity utilities to operate efficiently.

If the Government intends to implement the application of this network charge, the transition process needs to be done in stages to ensure price stability while giving time for consumers to adjust to the charge.

At the initial stage, the Commission should consider the introduction of network charges for transmission lines in preparation for the implementation of the wholesale market in the future. The effect of network charges for transmission lines on end user tariffs is also seen to be less significant compared to the application of network charges for distribution lines.

PENGURUSAN DAN KEMAMPANAN KUMPULAN WANG INDUSTRI ELEKTRIK (KWIE)

MANAGEMENT AND SUSTAINABILITY OF THE ELECTRICITY INDUSTRY FUND (KWIE)

Sejak ditubuhkan pada 1 Januari 2016, Kumpulan Wang Industri Elektrik (KWIE) telah membantu dalam mengurangkan impak tarif elektrik kepada pengguna, menggunakan sumber dari dana yang diperoleh seperti yang diperuntukkan di bawah Seksyen 44C(2)(a) hingga (d) dalam Akta Bekalan Elektrik (ABE) 1990.

Penubuhan dana KWIE yang ditadbir urus dan dikawal selia serta dikendalikan oleh ST merupakan mandat besar yang diberikan oleh Kerajaan selaras dengan peruntukan seksyen 44C (1) ABE, agar ST dapat menguruskan dana KWIE berdasarkan amalan kewangan yang baik dan bagi memastikan sumber dana KWIE kekal kukuh dan mampan.

Pengurusan dan kemampanan dana KWIE bagi 2021 dapat diringkaskan seperti berikut:

Since its establishment on 1 January 2016, the Electricity Industry Fund (KWIE) has assisted in reducing the impact of electricity tariffs on consumers, using resources from funds obtained as provided under Section 44C(2)(a) to (d) in the Electricity Supply Act (ESA) 1990.

The establishment of a KWIE fund that is administered, regulated and managed by the Commission is a major mandate by the Government in accordance to section 44C (1) of the ESA, for the Commission to manage KWIE funds based on good financial practices in order to ensure that the source of KWIE funds remains strong and sustainable.

The management and sustainability of KWIE funds for 2021 can be summarised as follows:

Penyata Kewangan dan Laporan Tahunan KWIE 2020

KWIE 2020 Financial Statements and Annual Report

Penyata Kewangan dan Laporan Tahunan KWIE 2020 telah diluluskan oleh Mesyuarat ST pada 29 Julai 2021. Laporan ini telah diaudit oleh Jabatan Audit Negara (JAN) dan diberikan status audit tanpa teguran.

Penyata Kewangan dan Laporan Tahunan KWIE 2020 ini telah diluluskan oleh Mesyuarat Jemaah Menteri (MJM) pada 10 Disember 2021 dan seterusnya telah dibentangkan di kedua-dua Mesyuarat Parlimen, iaitu di Dewan Rakyat pada 16 Disember 2021 dan di Dewan Negara pada 20 Disember 2021.

KWIE 2020 Financial Statements and Annual Report were approved by the Commission's Meeting on 29 July 2021. The report was audited by the National Audit Department (JAN) and given the unqualified audit status.

KWIE 2020 Financial Statements and Annual Report were approved by the Cabinet Meeting (MJM) on 10 December 2021 and was subsequently presented at both Parliament Meetings, the Dewan Rakyat on 16 December 2021 and the Dewan Negara on 20 December 2021.

Pelaburan Dana KWIE
KWIE Fund Investment

Purata jumlah pelaburan dana KWIE dalam instrumen kewangan seperti akaun simpanan tetap (FD) dan *Short-Term Money Market Deposit* (STMMD) untuk 2021 adalah RM942 juta dengan pulangan sebanyak RM19 juta pada purata kadar faedah tahunan sebanyak 2.02%.

Bank Negara Malaysia (BNM) memutuskan untuk mengekalkan kadar *Overnight Policy Rate* (OPR) sepanjang 2021 pada kadar 1.75%.

Secara purata, jumlah pendapatan faedah yang diperolehi oleh KWIE pada 2021 naik sebanyak 15% berbanding 2020.

Average total investment of KWIE funds in financial instruments such as fixed deposits account (FD) and Short-Term Money Market Deposit (STMMD) for 2021 is RM942 million with a return of RM19 million at an average annual interest rate of 2.02%.

Bank Negara Malaysia (BNM) decided to maintain the Overnight Policy Rate (OPR) throughout 2021 at a rate of 1.75%.

On average, the total interest income earned by KWIE in 2021 increased by 15% compared to 2020.

Pembangunan Sistem Kewangan KWIE
KWIE Financial System Development

Sejak beroperasi pada 2017, proses pengurusan kewangan dan penyediaan penyata kewangan KWIE telah dilaksanakan secara manual. Namun begitu, berikutan daripada peningkatan transaksi tahun demi tahun dan beberapa keperluan, KWIE telah mengambil inisiatif untuk membangunkan sistem kewangan yang memenuhi kriteria pematuhan *Standard Accounting System for Government Agencies* (SAGA) seperti yang telah ditetapkan oleh JAN.

Terma rujukan bagi pembangunan Sistem Kewangan KWIE telah diluluskan oleh Mesyuarat ST Bilangan 11/2020 pada 13 Oktober 2020 manakala bajet untuk membangunkan Sistem Kewangan KWIE ini telah diluluskan oleh Mesyuarat ST Bilangan 1/2021 pada 18 Februari 2021.

Pada 8 Mac 2021, tender projek berkaitan pembangunan Sistem Kewangan KWIE telah diiklankan di dalam akhbar *The Star*, Berita Harian dan laman sesawang ST.

Setelah semakan dan sesi penilaian tender dilaksanakan di peringkat ST, Surat Setuju Terima telah ditandatangani oleh petender yang berjaya dan projek dimulakan pada 20 September 2021 dengan tempoh pelaksanaan selama enam (6) bulan.

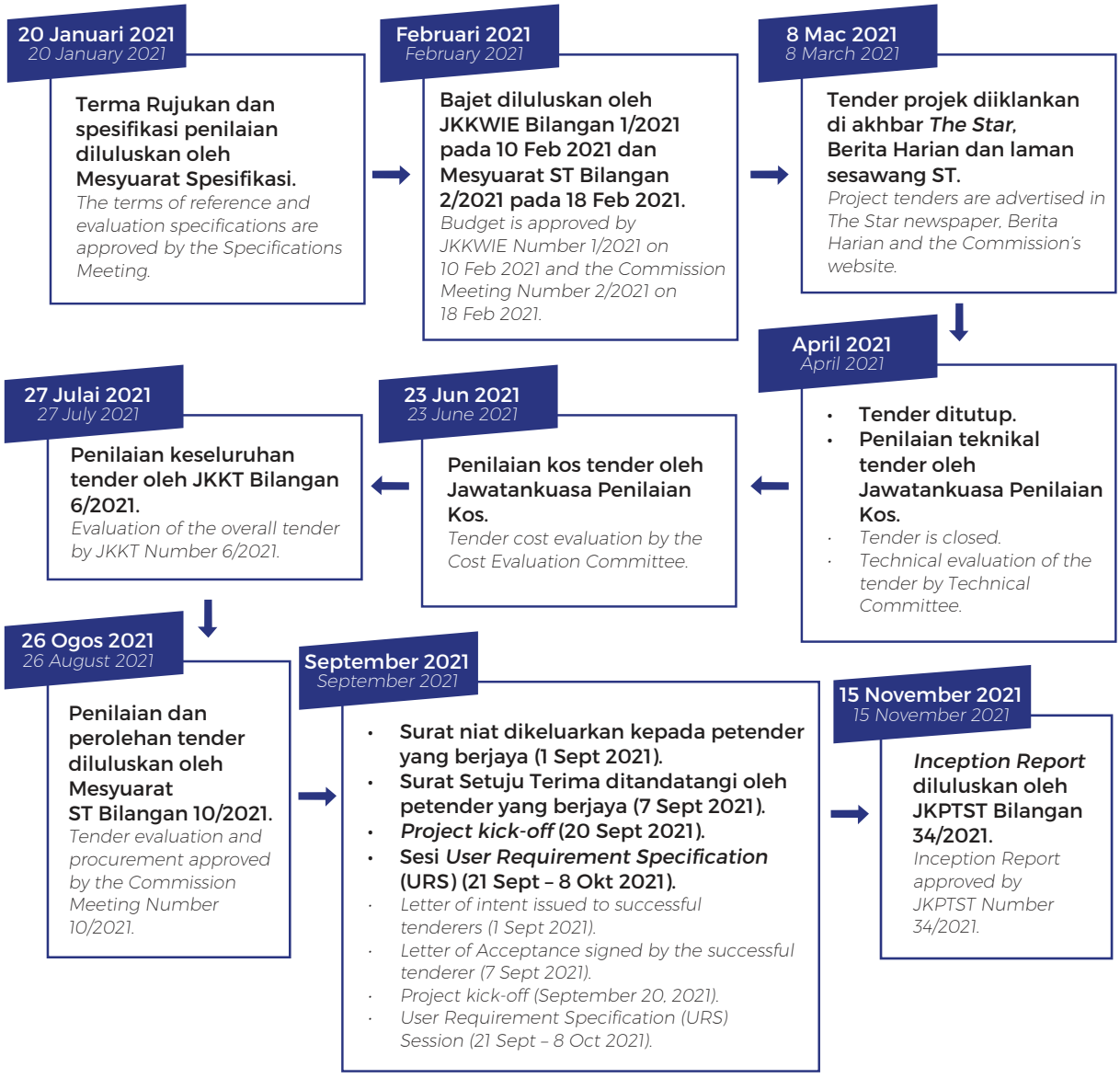
Since operating in 2017, KWIE's financial management and financial statements preparation process has been carried out manually. Nevertheless, due to the increase in transactions year by year and other several requirements, KWIE has taken the initiative to develop a financial system that complies with the Standard Accounting System for Government Agencies (SAGA) as set by JAN.

The terms of reference for the development of the KWIE Financial System were approved by the Commission Meeting Number 11/2020 on 13 October 2020 while the budget to develop the KWIE Financial System was approved by the Commission Meeting Number 1/2021 on 18 February 2021.

On 8 March 2021, the project tender for the development of the KWIE Financial System was advertised in The Star newspaper, Berita Harian and the Commission's website.

After the tender review and evaluation session was carried out at the Commission's level, the Letter of Acceptance was signed by the successful tenderer and the project started on 20 September 2021 with an implementation period of six (6) months.

Pembangunan Sistem Kewangan KWIE, 2021
KWIE Financial System Development, 2021



ASEAN FORUM ON COAL (AFOC)
ASEAN FORUM ON COAL (AFOC)

Kerjasama dalam sektor tenaga antara negara anggota ASEAN merupakan asas penting dalam mengharungi cabaran masa hadapan seperti perubahan iklim dunia dan kenaikan harga bahan api arang batu dan gas. Menyedari hakikat tersebut, *ASEAN Forum on Coal* (AFOC) ditubuhkan untuk menjalankan aktiviti pembangunan dan promosi penggunaan arang batu yang mesra alam.

Malaysia telah diberi penghormatan untuk mempengerusikan AFOC selama lima (5) tahun bermula dari 2019 hingga 2023, di mana ST telah memegang jawatan sebagai Pengerusi AFOC bagi sepanjang tempoh tersebut.

Antara aktiviti AFOC yang telah disertai pada 2021 termasuk penganjuran *ASEAN Coal Awards* 2021. Acara ini telah menarik penyertaan terbesar dari kalangan negara anggota ASEAN sejak ianya mula dianjurkan, di mana negara-negara anggota adalah diharapkan dapat mempelajari amalan-amalan baik dari negara-negara lain dalam menggunakan arang batu secara mampan dan cekap.

Selain itu, AFOC turut menganjurkan beberapa siri webinar berkaitan arang batu bagi menyebarkan maklumat berkaitan kepentingan penggunaan teknologi arang batu bersih (CCT) dalam mengurangkan pelepasan gas rumah hijau, meningkatkan kecekapan pengoperasian stesen jana kuasa arang batu dan seterusnya menjadikan ASEAN ekonomi rendah karbon.

AFOC juga melalui sokongan Indonesia telah melancarkan *ASEAN Centre of Excellence for Clean Coal Technology* (COE CCT) pada September 2021. Melalui COE CCT ini, negara anggota mendapat manfaat dari segi penyelidikan, kerjasama dan pemindahan pengetahuan dalam bidang arang batu dan CCT.

Walaupun arang batu masih digunakan sebagai salah satu sumber penjanaan elektrik negara, Malaysia tetap beraspirasi ke arah negara neutral karbon menjelang 2050. Oleh sebab itu, pengetahuan pengurusan dan penggunaan arang batu secara mampan dan efisien adalah amat penting bagi merealisasikan aspirasi tersebut.

Collaboration between ASEAN countries on the energy sector is an important foundation in facing future challenges such as global climate change and rising coal and gas fuel prices. Realising this fact, the ASEAN Forum on Coal (AFOC) was established to carry out development activities and promote the use of environmentally friendly coal.

Malaysia was given the honour to chair AFOC for five (5) years starting from 2019 to 2023, where the Commission has held the position of AFOC Chairman for the entire period.

Among the AFOC activities participated in 2021 include the organisation of the ASEAN Coal Awards 2021. This event has attracted the largest participation from ASEAN member countries since it was first organised, where member countries are expected to learn good practices from other countries in using coal sustainably and efficiently.

In addition, AFOC also organised a series of coal-related webinars to disseminate information related to the importance of using clean coal technology (CCT) in reducing greenhouse gas emissions, increasing the operational efficiency of coal-fired power stations and further making ASEAN a low carbon economy.

AFOC also through the support of Indonesia launched the ASEAN Centre of Excellence for Clean Coal Technology (COE CCT) in September 2021. Through this COE CCT, member countries benefit from research, cooperation and knowledge transfer in the field of coal and CCT.

Although coal is still used as one of the country's electricity generation source, Malaysia still aspires to be a carbon neutral country by 2050. Therefore, knowledge of the management and use of coal in a sustainable and efficient manner is very important to realise this aspiration.

PROGRAM *GREEN ELECTRICITY TARIFF* (GET) DI SEMENANJUNG
GREEN ELECTRICITY TARIFF (GET) PROGRAMME IN THE PENINSULA

YB Datuk Seri Takiyuddin Hassan, Menteri Tenaga dan Sumber Asli telah melancarkan *Green Electricity Tariff* (GET) pada 23 November 2021 sebagai insiatif strategik Kerajaan dalam menawarkan bekalan elektrik daripada sumber Tenaga Boleh Baharu (TBB) kepada pengguna elektrik yang berhasrat untuk mengurangkan jejak karbon.

Beberapa agensi termasuk KeTSA, ST, SEDA Malaysia dan *MyPOWER Corporation* bersama-sama sembilan (9) buah syarikat korporat telah memberikan komitmen untuk mendapatkan bekalan elektrik daripada sumber TBB melalui langganan di bawah Program GET.

Guide on Green Electricity Tariff juga turut dibangunkan oleh ST sebagai rujukan bagi pelaksanaan program ini.

Permohonan untuk melanggan di bawah Program GET telah dibuka pada 1 Disember 2021 dan bermula 1 Januari 2022, pengguna yang melanggan GET akan dibekalkan dengan bekalan elektrik daripada sumber TBB yang dijana daripada loji jana kuasa solar dan hidro yang sedang beroperasi.

Pengguna juga akan mendapat sijil yang mengesahkan bahawa bekalan elektrik tersebut adalah daripada sumber TBB melalui sijil *Malaysia Renewable Energy Certificates* atau mREC® yang berdaftar dengan badan pensijilan antarabangsa. Pelanggan GET akan dikenakan bayaran tambahan sebanyak 3.7 sen bagi setiap kiloWatt jam TBB yang dibeli melalui program ini.

Dengan penawaran program baharu ini, Program *myGreen+* yang telah diperkenalkan pada 2020 telah ditamatkan.

YB Datuk Seri Takiyuddin Hassan, Minister of Energy and Natural Resources launched the Green Electricity Tariff (GET) on 23 November 2021 as a strategic Government initiative in offering electricity from Renewable Energy (RE) sources to electricity consumers who wish to reduce their carbon footprint.

Several agencies including KeTSA, ST, SEDA Malaysia and MyPOWER Corporation together with nine (9) corporate companies have committed to obtain electricity from RE sources through subscription under the GET Programme.

The Guide on Green Electricity Tariff was also developed by the Commission as a reference for the implementation of this programme.

Applications to subscribe under the GET Programme were opened on 1 December 2021 and starting 1 January 2022, consumers who subscribe to GET will be supplied with electricity from RE sources generated from solar and hydro power plants that are in operation.

Consumers will also get a certificate confirming that the electricity supply is from a RE source through Malaysia Renewable Energy Certificates or mREC® which is registered with an international certification body. GET customers will be charged an additional fee of 3.7 sen for each kiloWatt hour of RE purchased through this programme.

With this new programme offering, the myGreen+ Programme that was introduced in 2020 has been terminated.

PEMBERIAN DISKAUN BIL ELEKTRIK DI BAWAH PAKEJ PERMAI 2021, PEMERKASA, PEMERKASA+ DAN PEMULIH

PROVISION OF ELECTRICITY BILL DISCOUNTS THROUGH PERMAI 2021, PEMERKASA, PEMERKASA+ AND PEMULIH

Bagi merangsang pertumbuhan ekonomi pada 2021, Kerajaan telah memperkenalkan beberapa pakej pemberian diskaun elektrik seperti berikut:

In order to stimulate economic growth in 2021, the Government has introduced several electricity discount packages as follows:

Pakej Perlindungan Ekonomi dan Rakyat Malaysia (PERMAI 2021)

PERMAI 2021 diumumkan pada 18 Januari 2021, iaitu pemberian diskaun sebanyak 10% bagi penggunaan elektrik untuk tempoh 1 Januari sehingga 31 Mac 2021 kepada enam (6) sektor terpilih iaitu:

- Pengendali Hotel
- Agensi Pelancongan
- Pejabat Syarikat Penerbangan Tempatan
- Kompleks Membeli Belah
- Pusat Konvensyen dan Pameran
- Taman Tema

Pakej Perlindungan Ekonomi dan Rakyat Malaysia (PERMAI 2021)

PERMAI 2021 was announced on 18 January 2021, which is a 10% discount for electricity consumption for the period 1 January to 31 March 2021 to six (6) selected sectors, namely:

- *Hotel Operators*
- *Travel Agencies*
- *Local Airline Offices*
- *Shopping Complexes*
- *Convention and Exhibition Centres*
- *Theme Parks*

Pakej Program Strategik Memperkasa Rakyat dan Ekonomi (PEMERKASA)

Pada 17 Mac 2021, Kerajaan sekali lagi mengumumkan pemberian diskaun bil elektrik sebanyak 10% melalui PEMERKASA yang juga melibatkan enam (6) sektor terpilih.

Inisiatif ini yang dilaksanakan bagi tempoh 1 April sehingga 30 Jun 2021 bertujuan untuk melonjakkan kembali ekonomi negara.

Pakej Program Strategik Memperkasa Rakyat dan Ekonomi (PEMERKASA)

On 17 March 2021, the Government once again announced a 10% electricity bill discount through PEMERKASA which also involved six (6) selected sectors.

This initiative, which is implemented for the period from 1 April to 30 June 2021, aims to boost the national economy.

PEMERKASA+

Pakej Program Strategik Memperkasa Rakyat dan Ekonomi Tambahan (PEMERKASA+)

Kerajaan pada 31 Mei 2021 telah mengumumkan pelanjutan pemberian diskaun bil elektrik 10% kepada pengguna di dalam enam (6) sektor perniagaan terpilih berkaitan pelancongan di bawah PEMERKASA+ bermula 1 Julai 2021 sehingga 30 September 2021.

Pakej Program Strategik Memperkasa Rakyat dan Ekonomi Tambahan (PEMERKASA+)

On 31 May 2021, the Government announced an extension of a 10% electricity bill discount to consumers in selected business sectors related to tourism under PEMERKASA+ starting 1 July 2021 until 30 September 2021.

peMulih
Pakej Perlindungan Rakyat Dan Pemulihan Ekonomi

Pakej Perlindungan Rakyat dan Pemulihan Ekonomi (PEMULIH)

Lanjutan daripada pengumuman Kerajaan mengenai pelaksanaan PEMULIH pada 28 Jun 2021, diskaun bil elektrik akan diberikan secara bersasar kepada pengguna domestik dan bukan domestik bagi jumlah penggunaan elektrik bulanan untuk tempoh tiga (3) bulan dari 1 Julai hingga 30 September 2021 untuk pengguna kediaman (Tarif A - Domestik) sehingga 900 kWj sebulan dan perusahaan kecil dan sederhana (PKS) voltan rendah.

Manakala, bagi pengguna komersial dari enam (6) sektor perniagaan terpilih, diskaun PEMULIH adalah bermula dari 1 Oktober 2021 sehingga 31 Disember 2021. Untuk penggunaan dari 1 Julai 2021 sehingga 30 September 2021, diskaun adalah di bawah pakej PEMERKASA+.

Pakej Perlindungan Rakyat dan Pemulihan Ekonomi (PEMULIH)

As announced by the Government on the implementation of PEMULIH on 28 June 2021, the electricity bill discounts will be given on targeted basis to domestic and non-domestic consumers for the total monthly electricity consumption for a period of three (3) months from July 1 to September 30, 2021 on residential consumers (Tariff A - Domestic) up to 900 kWh per month and low voltage small and medium enterprises (SMEs).

Meanwhile, PEMULIH discount for six (6) selected business sectors starts from 1 October 2021 to 31 December 2021. For usage from 1 July 2021 to 30 September 2021, the discount is under PEMERKASA+ package.

Nota: Perincian lanjut dilaporkan di dalam Laporan Tahunan 2021 KWIE.
Note: Details are reported in KWIE's 2021 Annual Report.

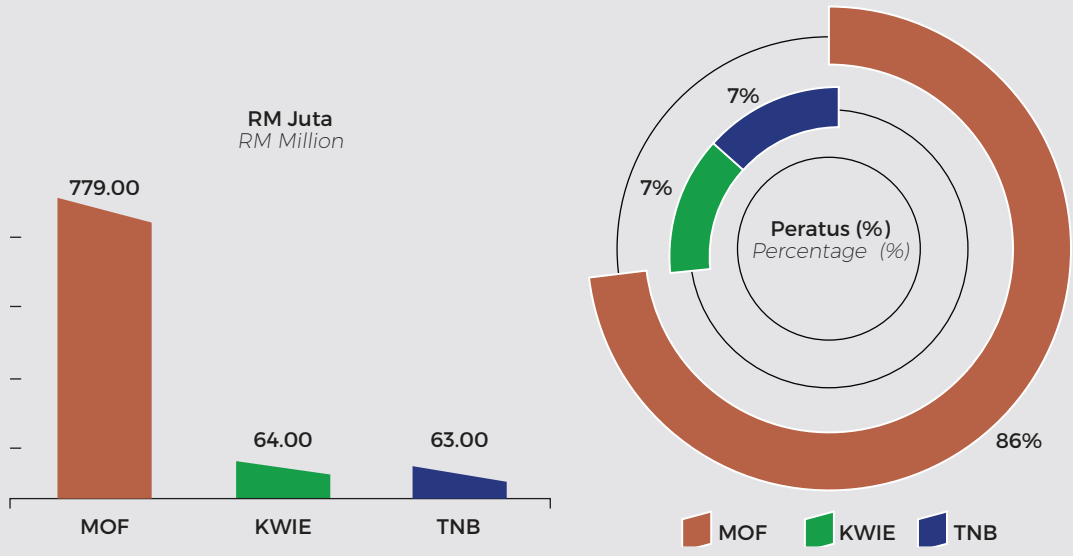
Dari segi peruntukan, pakej-pakej pemberian diskaun bil elektrik ini ditampung bersama Kementerian Kewangan Malaysia (MoF), KWIE dan TNB berjumlah RM906 juta.

In terms of allocation, these electricity bill discount packages are financed by the Malaysian Ministry of Finance (MoF), KWIE and TNB amounting to RM906 million.

Pakej *Package*	**MoF (RM Juta)** *MoF (RM Million)*	**KWIE (RM Juta)** *KWIE (RM Million)*	**TNB (RM Juta)** *TNB (RM Million)*	**JUMLAH (RM Juta)** *TOTAL (RM Million)*
PERMAI 2021	**64**	**64**	**–**	**128**
PEMERKASA	**115**	**–**	**13**	**128**
PEMERKASA+	**128**	**–**	**–**	**128**
PEMULIH	**472**	**–**	**50**	**522**
JUMLAH KESELURUHAN *Total*	**779**[1]	**64**	**63**[1]	**906**

Nota: 1. Tampungan MoF dan TNB tidak dimasukkan di dalam Penyata Kewangan KWIE (Penyata Pendapatan dan Penyata Prestasi Bajet) bagi 2021.
Note: 1. Amount financed by MOF and TNB are not included in the KWIE Financial Statement (Income Statement and Budget Performance Statement) for 2021.

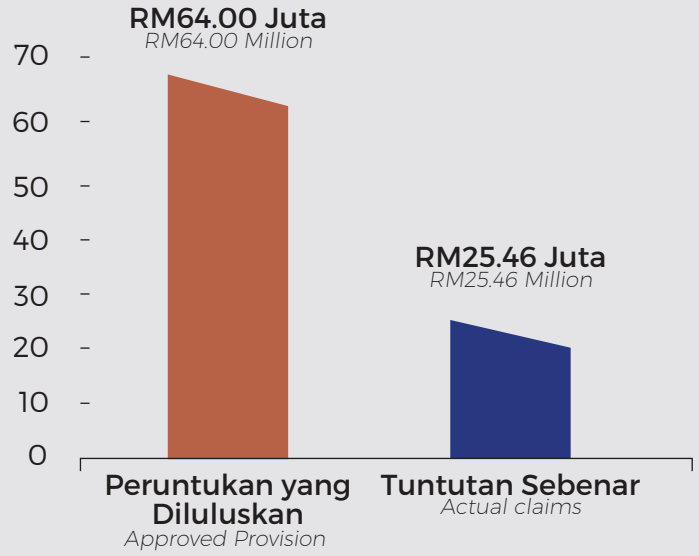
Tampungan Pemberian Diskaun Bil Elektrik
Electricity Bill Discount Provisions



Nota: 1. Termasuk tampungan MoF berjumlah RM779 juta dan tampungan TNB berjumlah RM63 juta.
Note: 1. Includes amount financed by MoF totalling to RM779 million and amount financed by TNB totalling to RM63 million.

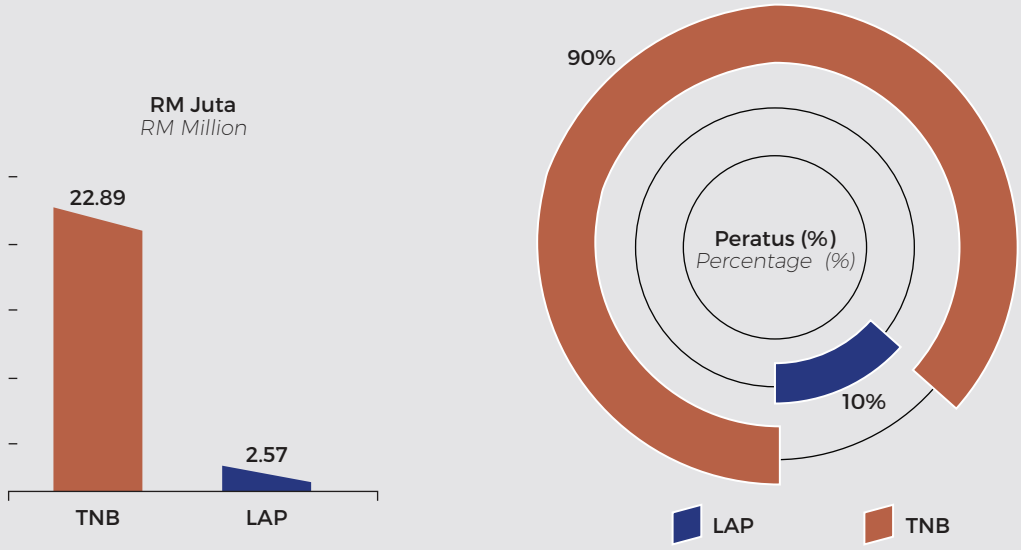
Sehingga 31 Disember 2021, perincian tuntutan diskaun PERMAI 2021, daripada TNB dan pemegang Lesen Awam Pengagihan (LAP) bagi tempoh Januari hingga Mac 2021 yang ditampung menggunakan dana KWIE sepenuhnya berdasarkan tuntutan sebenar adalah seperti berikut:

Until 31 December 2021, details of PERMAI 2021 discount from TNB and Public Distribution License (LAP) holders for the period from January to March 2021 that are financed by KWIE based on actual claims are as follows:



Dari segi perbandingan, jumlah pemberian diskaun yang disalurkan kepada pengguna melalui dua (2) pembekal elektrik adalah seperti berikut:

In terms of comparison, the amount of discounts given to consumers through two (2) electricity suppliers are as follows:



Nota: 1. Pemberian diskaun bil elektrik berdasarkan tuntutan sebenar oleh TNB dan LAP dan setakat amaun tampungan yang diluluskan oleh Kerajaan.
2. Jumlah tuntutan di atas adalah tidak termasuk 50% tuntutan di bawah tampungan MoF.

Note: 1. The electricity bill discounts are based on actual claims by TNB and LAP and up to the approved amount by the Government.
2. The above claims does not include 50% of claims under the MoF.

05 MENAMBAH BAIK KUALITI KAWAL SELIA DAN PELAKSANAAN PERKHIDMATAN
IMPROVEMENT OF REGULATORY QUALITY AND SERVICE DELIVERY

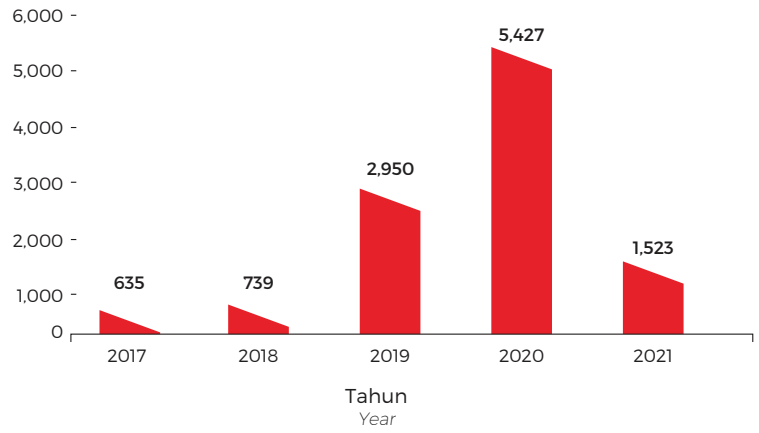
SOROTAN UTAMA
MAIN HIGHLIGHTS

PENGURUSAN ADUAN
MANAGEMENT OF COMPLAINTS

Pada 2021, ST telah menerima sebanyak 1,523 aduan berbanding 5,427 aduan pada tahun sebelumnya. Pengurangan drastik ini adalah lanjutan inisiatif ST dalam membuka akses sistem Aduan ST kepada TNB bagi membolehkan aduan berkaitan dengan perkhidmatan pemegang lesen dapat diambil tindakan dan diselesaikan dengan lebih cepat dan efisien.

In 2021, the Commission received a total of 1,523 complaints compared to 5,427 complaints in the previous year. This drastic decrease was due to the Commission's initiative in giving TNB access to the Aduan ST complaint system to ensure swift and efficient actions against complaints on their services.

Bilangan Aduan Yang Diterima, 2017 – 2021
Number of Complaints Received, 2017 – 2021



Tiga (3) fokus utama yang dapat diselesaikan adalah:

a) Penyiasatan dan penyelesaian aduan kepada ST.
   - Aduan kepada ST diambil tindakan dan diselesaikan mengikut Piagam Pelanggan ST.

b) Menambah baik tahap perkhidmatan dan mengurangkan jumlah aduan kepada ST.
   - Membangunkan aplikasi mudah alih Aduan ST.
   - Data aduan dianalisis dan diteliti bagi mengenal pasti isu-isu setempat yang kerap diadukan.

c) Menambah baik proses bagi mengelakkan aduan dari berulang.
   - Menyediakan maklumat soalan lazim berkaitan isu-isu aduan yang kerap diterima untuk rujukan pengguna.
   - Mengadakan sesi taklimat dengan perkongsian antara pegawai di Pejabat Kawasan bagi penyelesaian isu yang sama.

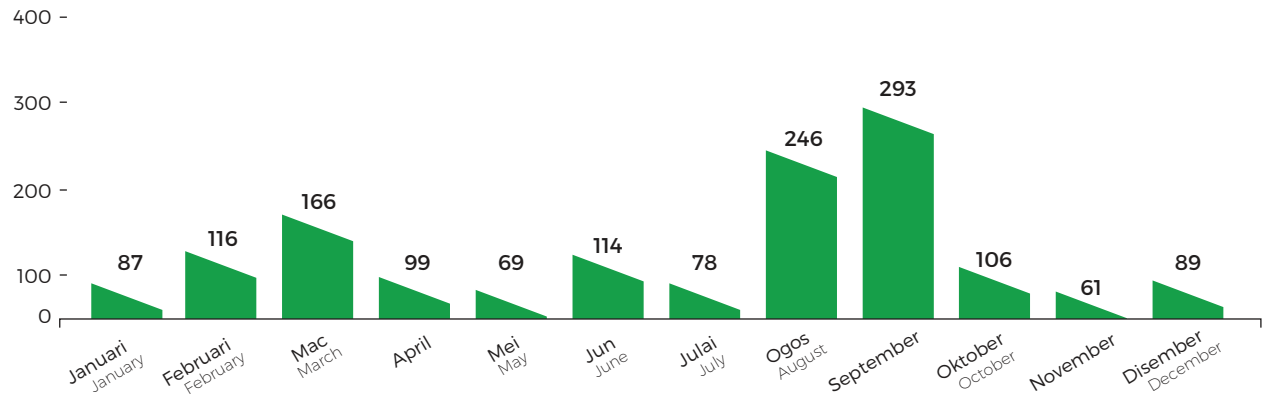
The three (3) main focus that can be resolved are:

a) Investigation and resolution of complaints to the Commission.
   - *Complaints to the Commission are acted upon and resolved in accordance with the Commission's Customer Charter.*

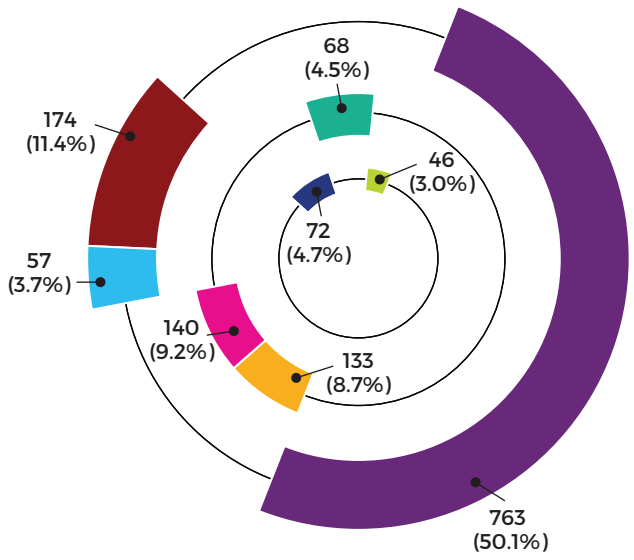
b) Improving service levels and reducing the volume of complaints to the Commission.
   - *Development of the Commission's Aduan ST mobile application.*
   - *Data from complaints is analysed and reviewed to identify local concerns that are frequently raised.*

c) Improving the complaint process to avoid repetition of complaint.
   - *Provide information on Frequently Asked Questions (FAQs) regarding frequently received complaints for the consumers' reference.*
   - *Hold briefing sessions for information sharing between officers in the Regional Offices to resolve the same issue.*

Bilangan Aduan Bulanan, 2021
Number of Monthly Complaints, 2021



Bilangan dan Peratusan Aduan mengikut Kategori
Number and Percentage of Complaints by Category



- Bil, Caj & Tarif Elektrik
  Electricity Billing, Charges & Tariffs
- Pemeteran Elektrik
  Electricity Metering
- Gangguan Bekalan Elektrik
  Electricity Supply Disruptions
- Perkhidmatan Pengguna (Pemegang Lesen)
  Consumer Services (Licensees)
- Keselamatan Elektrik
  Electrical Safety
- Kontraktor, Orang Kompeten Elektrik & Pengurus Tenaga Elektrik
  Contractors, Electrical Competent Persons & Electrical Energy Managers
- Perkhidmatan Pengguna (Suruhanjaya Tenaga)
  Customer Services (Energy Commission)
- Lain-lain
  Others

KAJIAN KEPUASAN PELANGGAN (CSI) ST
CUSTOMER SATISFACTION INDEX (CSI) ST

Kajian Kepuasan Pelanggan (CSI) ST telah dijalankan bagi mengukur tahap kepuasan pelanggan terhadap perkhidmatan yang disediakan oleh ST, di samping menambah baik kualiti perkhidmatan yang meliputi:

- Perkhidmatan
- Kemudahan
- Layanan
- Masa
- Kawal Selia

CSI ini telah dijalankan pada bulan Oktober dan November 2021, di mana borang secara dalam talian bagi soal selidik ini telah diedarkan. Seramai 566 responden yang mempunyai data lengkap telah dianalisa.

Secara keseluruhannya peratus tahap kepuasan pelanggan ST bagi 2021 adalah 91.82%.

A Customer Satisfaction Index (CSI) was conducted by the Commission to measure the level of customer satisfaction with the services provided by the Commission, as well as to improve the quality of services which include:

- *Services*
- *Facilities*
- *Treatment*
- *Time*
- *Regulatory*

This CSI was conducted in October and November 2021, where online forms for this questionnaire were distributed. A total of 566 responses with complete data were analysed.

The overall percentage of the Commission's customer satisfaction for 2021 is 91.82%.

PENAMBAHBAIKAN TERHADAP AKTA-AKTA DAN PERATURAN-PERATURAN ST
IMPROVEMENTS TO THE COMMISSION'S ACTS AND REGULATIONS

Bagi memastikan perundangan pembekalan dan keselamatan tenaga di bawah bidang kuasa ST sentiasa relevan dengan peredaran masa dan perkembangan industri, beberapa sesi kajian semula dan semakan terhadap terhadap Akta dan Peraturan telah dijalankan untuk menilai skop dan keperluan untuk pindaan-pindaan yang sewajarnya.

Kajian Semula Dan Pindaan Kepada Akta Bekalan Elektrik 1990 [Akta 447] Dan Akta Suruhanjaya Tenaga [Akta 610]

ST telah meluluskan cadangan bagi memulakan proses Kajian Semula dan Pindaan kepada Akta Bekalan Elektrik 1990 [Akta 447] secara menyeluruh. Kajian awal telah dilaksanakan bagi mengenal pasti kelompangan dalam pelaksanaan atau pemakaian peruntukan sedia ada di bawah Akta 447.

To ensure that the energy supply and security legislation under the Commission's jurisdiction is always relevant to the changing times and developments of the industry, several sessions to review the Acts and Regulations have been conducted to assess the scope and need for appropriate amendments.

Review And Amendments Of Electricity Supply Act 1990 [Act 477] And The Energy Commission Act 2001 [Act 610]

The Commission has approved the proposal to start the comprehensive Review and Amendment to the Electricity Supply Act 1990 [Act 447] . A preliminary study has been carried out to identify gaps in the implementation or application of existing provisions under Act 447.

Kajian menyeluruh ini akan dilaksanakan selaras dengan langkah-langkah untuk meningkatkan ketelusan dan kecekapan dalam industri pembekalan elektrik negara, yang memberikan penekanan terhadap cadangan penambahbaikan ke atas industri bekalan elektrik negara yang lebih mesra rakyat, tidak memberi implikasi kewangan kepada Kerajaan serta memberi fokus kepada persediaan industri untuk menghadapi cabaran daripada kemunculan teknologi disruptif. Pada masa yang sama, kajian juga akan mengambil kira perakuan dasar yang akan dimuktamadkan di bawah Dasar Tenaga Negara oleh Unit Perancang Ekonomi (EPU), Jabatan Perdana Menteri (JPM).

Kajian tersebut akan bermula pada 2022 dan akan dilaksanakan secara rundingan dengan mengadakan perbincangan dan mesyuarat (sesi libat urus) dengan semua pihak-pihak berkepentingan bagi mendapatkan pandangan dan input yang menyeluruh. Dalam hal ini, satu Kumpulan Kerja Induk dan 12 Kumpulan Kerja Kecil merangkumi 12 hal perkara dalam Akta 447 ditubuhkan bagi memastikan kelancaran dan keberkesanan pelaksanaan Kajian.

This comprehensive study will be implemented in line with steps to improve transparency and efficiency of the nation's electricity supply industry. This emphasises improving the industry to be more people-friendly, ensuring that the Government does not incur any financial constraints, and preparing the industry to face challenges from the emergence of disruptive technologies. At the same time, the study will also take into account the policy that will be finalised under the National Energy Policy by the Economic Planning Unit (EPU) of the Prime Minister's Department (JPM).

The said study will begin in 2022 and will be conducted through discussions and meetings (engagement sessions) with all stakeholders to obtain a more comprehensive view and input. In this regard, one Main Working Group and 12 Sub-Working Groups covering 12 matters in Act 447 have been established to ensure the smooth and effective implementation of the study.

Semakan Kepada Peraturan-Peraturan Elektrik 1994, Peraturan-Peraturan Bekalan Pemegang Lesen 1990 Peraturan-Peraturan Bekalan Gas 1997

Pindaan kepada Peraturan-Peraturan Elektrik 1994, Peraturan-Peraturan Bekalan Pemegang Lesen 1990 dan Peraturan-Peraturan Bekalan Gas 1997 juga telah dilaksanakan bagi memastikan undang-undang sentiasa ditambah baik dan dikemaskini mengikut peredaran masa dan perkembangan dalam industri elektrik dan gas.

Ketiga-tiga Peraturan-Peraturan Elektrik (Pindaan) 2022, Peraturan-Peraturan Bekalan Pemegang Lesen (Pindaan) 2022 dan Peraturan-Peraturan Bekalan Gas (Pindaan) 2022 telah digubal dan dimuktamadkan sewajarnya di peringkat dasar dan telah dikemukakan kepada pihak Kementerian bagi maksud kuat kuasa dan pewartaan ketiga-tiga Peraturan tersebut pada 2022.

Review Of The Electricity Supply 1994, Licensee Supply Regulations 1990 And Gas Supply Regulations 1997 Acts.

Amendments to the Electricity Regulations Act 1994, Licensee Supply Regulations Act 1990 and Gas Supply Regulations Act 1997 were also implemented to ensure legislations are always improved and updated according to the current developments in the electrical and gas industry.

The Electricity Regulations (Amendment) 2022, Licensee Supply Regulations (Amendment) 2022 and Gas Supply Regulations (Amendment) 2022 have been drafted and finalised accordingly at the fundamental level. They have been submitted to the Ministry to be gazetted and to come into force in 2022.

Bengkel Peraturan-Peraturan Bekalan Gas (Pindaan) 2021

Bengkel Peraturan-Peraturan Bekalan Gas (Pindaan) 2021 telah diadakan pada 9 dan 12 April 2021 dan turut dihadiri oleh Penasihat Undang-Undang EPU dan wakil pegawai daripada Bahagian Tenaga EPU.

Bengkel ini membincangkan cadangan pindaan kepada Peraturan bagi membolehkan penguatkuasaan dan pengawalseliaan pembekalan gas dapat dilaksanakan dengan teratur, selaras dengan pindaan yang telah dibuat kepada Akta Bekalan Gas 1993 [Akta 501] pada 2017.

Bengkel *Act-Venture* 447

Bengkel *Act-Venture* 447 bersama dengan pihak pelaksana (dasar dan teknikal) ST telah diadakan pada 24 hingga 26 November 2021.

Bengkel ini adalah untuk mengenal pasti isu undang-undang dan permasalahan yang berbangkit daripada pelaksanaan Akta 447 dimana isu-isu tersebut dibincangkan dan diperincikan kepada empat (4) perkara utama seperti yang berikut:

- Pelesenan
- Keselamatan
- Kes usikan pepasangan meter
- Penjualan dan pembelian elektrik

Hasil bengkel mengenalpasti isu-isu utama dan permasalahan pelaksanaan yang dihadapi oleh ST melibatkan pemakaian peruntukan sedia ada dalam Akta 447.

Gas Supply (Amendment) Regulations 2021 Workshop

The Gas Supply (Amendment) Regulations 2021 workshop was held on 9 and 12 April 2021 and was attended by the EPU's Legal Advisor and representatives from the Energy Division.

This workshop debated the proposed amendments for the Regulations to enable the enforcement and regulation of gas supply to be carried out in an orderly manner, in line with the amendments to the Gas Supply Act 1993 [Act 501] in 2017.

Act-Venture 447 workshop

The Act-Venture 447 Workshop together with the implementing party (policy and technical) of the Commission was held from 24 to 26 November 2021.

This workshop identified legal issues and problems stemming from the implementation of Act 447, which discussed and detailed into four (4) main issues which are as follows:

- *Licensing*
- *Safety*
- *Tampering of Electrical Meter Installations Cases*
- *Sale and Purchase of Electricity*

The workshop managed to identify the main issues and problems the Commission faces in implementing the existing provisions of Act 447.

INISIATIF AUDIT DALAMAN DAN INTEGRITI
INTERNAL AUDIT AND INTEGRITY INITIATIVES

Aktiviti Pengauditan Dalaman

Pada 2021, ST telah mengeluarkan enam (6) laporan audit dalaman, hasil daripada empat (4) audit operasi di Pejabat Kawasan ST, pengauditan ISMS 27001 bagi Pengurusan Teknologi Maklumat dan pengauditan pengurusan Kumpulan Wang Industri Elektrik (KWIE). Secara keseluruhannya, hasil pengauditan mendapati kawalan dalaman adalah berada pada tahap yang memuaskan bagi mengurangkan risiko-risiko yang telah dikenal pasti, selain beroperasi secara efektif dalam melindungi kepentingan ST.

Pemantapan Nilai-Nilai Integriti

Bagi memperkukuhkan fungsi Integriti di ST, Pelan Antirasuah Organisasi (OACP) ST telah dibangunkan dan diluluskan. Majlis Ikrar Bebas Rasuah selesai dilaksanakan di lima (5) Pejabat Kawasan ST, dengan kehadiran pegawai tertinggi Suruhanjaya Pencegahan Rasuah Malaysia (SPRM) Negeri sebagai saksi majlis menandatangani ikrar tersebut.

Internal Auditing Activities

In 2021, the Commission produced six (6) internal audit reports, which resulted from four (4) operational audits at the Commission's Regional Offices, the ISMS 27001 audit for Information Technology Management and the management audit of the Electricity Industry Fund (KWIE). The audits found that internal control was at a satisfactory level to mitigate identified risks, in addition to effectively protecting the interest of the Commission.

Strengthening Integrity Values

To reinforce the structural integrity at the Commission, the Organisational Anti-Corruption Plan (OACP) was developed and approved. The Corruption Free Pledge Ceremony was completed in five (5) of the Commission's Regional Offices, with the presence of the highest official of the State Malaysian Anti-Corruption Commission (MACC) as a witness to the signing of said pledge.

KERJASAMA STRATEGIK DAN LIBAT URUS BERSAMA PEMEGANG TARUH
STRATEGIC COOPERATION AND ENGAGEMENT WITH STAKEHOLDERS

Sesi Libat Urus Bersama Wakil Kerajaan Negeri Mengenai Pengenaan Fi Dan Caj Oleh Pihak Berkuasa Negeri Ke Atas Tarif Elektrik

Bagi memberikan pemahaman secara menyeluruh berkenaan mekanisme IBR dalam penetapan tarif elektrik negara, ST telah melaksanakan sesi libat urus bersama wakil Kerajaan dari 11 negeri di Semenanjung berhubung fi dan caj ke atas tarif elektrik di Putrajaya pada 12 April 2021.

Dengan penjelasan ini, pihak Kerajaan Negeri adalah diharapkan dapat mengkaji semula kenaikan caj dan fi yang dikenakan kepada pihak utiliti bagi mengelakkan kenaikan mendadak tarif elektrik negara serta isu-isu yang berkaitan.

Engagement Session With State Government Representative Concerning Fees And Charges Imposed By State Authorities On Electricity Tariffs

In order to provide a comprehensive understanding of the IBR mechanism in setting the national electricity tariffs, the Commission conducted an engagement session in Putrajaya with representatives from 11 State Governments in the Peninsula regarding fees and charges imposed on electricity tariffs on 12 April 2021.

With this explanation, the state Government is expected to be able to review the increase in charges and fees imposed on utilities to avoid a sudden increase in national electricity tariffs and other related issues.

Mesyuarat *Joint Regulatory Advisory Committee* (JRAC) *On Electrical And Electronic Equipment* 2021

Mesyuarat *Joint Regulatory Advisory Committee* (JRAC) pada tahun ini telah dipengerusikan oleh Filipina dan dihadiri oleh wakil anggota ekonomi daripada Australia, Canada, Chile, Hong Kong, China (HKC), Jepun, Korea, Malaysia, New Zealand, Peru, Filipina, Chinese Taipei, Singapura dan Thailand. Mesyuarat turut dihadiri oleh wakil daripada APEC Secretariat dan International Electrotechnical Commission (IEC).

Pada masa ini, 18 anggota ekonomi mengambil bahagian dalam Bahagian I EEMRA, lima (5) ekonomi anggota di Bahagian II, dan empat (4) ekonomi anggota di Bahagian III. Pecahan bahagian tersebut adalah seperti berikut:
Bahagian I: Perkongsian Maklumat
Bahagian II: Penerimaan Laporan Ujian
Bahagian III: Penerimaan Pensijilan Maklumat

Penglibatan Malaysia setakat ini adalah pada Bahagian I dan Bahagian II.

Bual Bicara Tenaga

The ILSAS International Conference on Learning & Development (ICLAD 2021)

ICLAD 2021 merupakan persidangan antarabangsa tahunan anjuran TNB Integrated Learning Solution Sdn. Bhd. (ILSAS) sejak 2017, dengan objektif untuk memperkasakan pembelajaran dan pembangunan dengan menjemput pakar mata pelajaran untuk berkongsi kepakaran dan pandangan berkaitan tema persidangan *"Towards Energy Transition: Harmonizing With The New Norm"*. ICLAD 2021 telah diadakan di Kuala Lumpur dari 16 hingga 18 November 2021.

Joint Regulatory Advisory Committee (JRAC) On Electrical And Electronic Equipment Meeting 2021

The Joint Regulatory Advisory Committee (JRAC) meeting this year was chaired by the Philippines and attended by representatives of economic members from Australia, Canada, Chile, Hong Kong, China (HKC), Japan, Korea, Malaysia, New Zealand, Peru, Philippines, Chinese Taipei, Singapore and Thailand. The meeting was also attended by representatives from the APEC Secretariat and the International Electrotechnical Commission (IEC).

Currently, 18 member economies participate in Part I of EEMRA, five (5) member economies in Part II, and four (4) member economies in Part III. The breakdown of the section is as follows:
Part I: Information Sharing
Part II: Acceptance of Test Reports
Part III: Acceptance of Certification

Malaysia's involvement to date is in Part I and Part II.

Energy Talk

The ILSAS International Conference on Learning & Development (ICLAD 2021)

The ICLAD is an annual international conference has been organised by TNB Integrated Learning Solution Sdn. Bhd. (ILSAS) since 2017, with the objective of empowering learning and development by inviting subject experts to share their expertise and views on the conference theme, "Towards Energy Transition: Harmonizing With The New Norm". The 2021 conference was held in Kuala Lumpur from 16 to 18 November 2021.

***International Forum on Global Energy Landscape* (IFGE 2021)**

Forum Antarabangsa ke-4 mengenai Landskap Tenaga Global (IFGE 2021) dengan tema *Global Energy Transition Towards Carbon Neutrality: Challenges, Opportunities, and Implications to Malaysia* telah diadakan pada 30 November 2021 dan membincangkan isu seperti ketidaktentuan harga pasaran dan tenaga, gelombang global terhadap sasaran neutraliti karbon, geopolitik tenaga, prospek untuk teknologi termaju dan inovatif seperti hidrogen, dan ketidakpastian masa depan tenaga.

YB Datuk Seri Takiyuddin Hassan, Menteri Tenaga dan Sumber Asli (KeTSA) berkata Malaysia perlu kembali ke landasan ke arah pembangunan mampan rendah karbon sambil mengimbangi pengurangan dan penyesuaian iklim. Pemulihan pasca-pandemik juga memberi peluang untuk menyelaraskan dasar awam berkaitan perubahan iklim, sekali gus mengurangkan risiko mengunci infrastruktur intensif karbon. Kerajaan sentiasa bersedia untuk menyediakan pakej rangsangan yang akan mempercepatkan peralihan ke arah neutraliti karbon dan meningkatkan daya tahan terhadap kejutan masa depan yang disebabkan oleh perubahan iklim.

Proses peralihan tenaga untuk memenuhi sasaran neutraliti karbon di Malaysia ditakrifkan sebagai penggunaan sumber tenaga yang lebih cekap, bersih dan boleh diperbaharui untuk menggantikan bahan api fosil. Dalam peralihan kepada ekonomi tenaga bersih, Kerajaan komited untuk meningkatkan kapasiti TBB kepada 31% pada 2025, dan 40% pada 2035.

International Forum on Global Energy Landscape (IFGE 2021)

The fourth (4th) International Forum on Global Energy Landscape, with its theme of "Global Energy Transition Towards Carbon Neutrality: Challenges, Opportunities, and Implications to Malaysia", was held on 30 November 2021 and discussed issues such as market and energy price uncertainty, the global trend towards carbon neutrality targets, the geopolitics of energy, the prospects for advanced and innovative technologies such as hydrogen, and the uncertainty of the future of energy.

YB Datuk Seri Takiyuddin Hassan, Minister of Energy and Natural Resources (KeTSA) said that Malaysia needs to get back on track towards low-carbon sustainable development while also balancing climate mitigation and adaptation. Post-pandemic recovery also provides an opportunity to align public policies related to climate change, which also reduces the risk of locking in carbon-intensive infrastructure. The Government is always ready to provide a stimulus package that will accelerate the transition towards carbon neutrality and increase resilience against future changes caused by climate change.

The energy transition process to meet Malaysia's carbon neutrality target is defined as the use of more efficient, clean and renewable energy sources to replace fossil fuels. In transitioning towards a clean energy economy, the Government is committed to increase the installed capacity of RE to 31% in 2025 and 40% in 2035.

HAB MAKLUMAT TENAGA MALAYSIA (MEIH) SEBAGAI SUMBER RUJUKAN INDUSTRI
MALAYSIAN ENERGY INFORMATION HUB AS THE INDUSTRY SOURCE OF REFERENCE

Portal MEIH

Portal MEIH merupakan pangkalan data utama bagi penyebaran data tenaga di Malaysia.

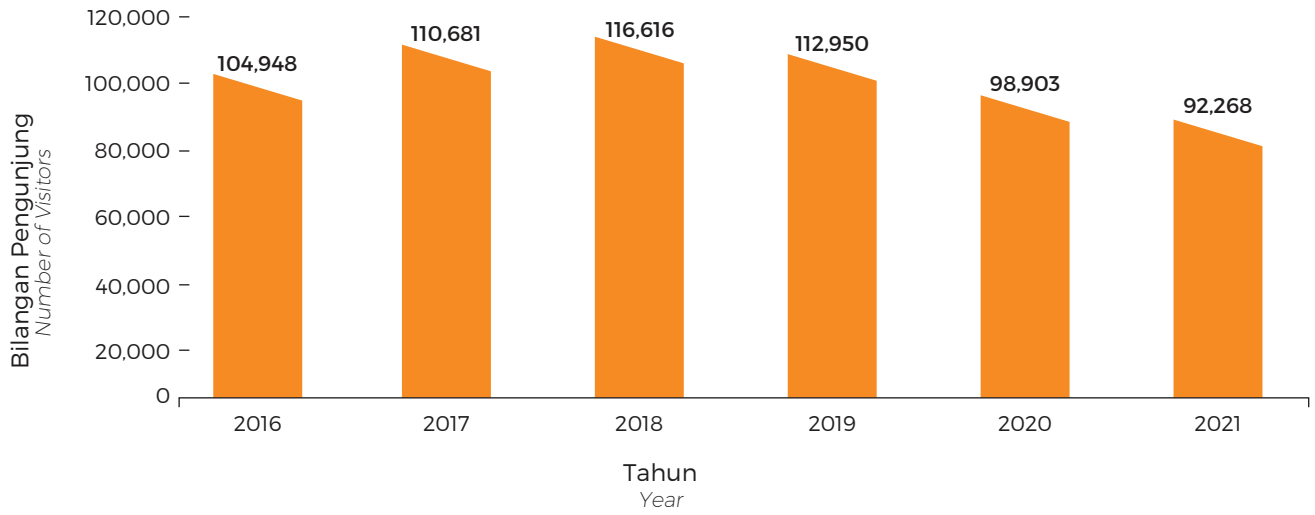
Terdapat perancangan bagi penambahbaikan portal MEIH sedia ada, dengan pembangunan semula agar selaras dengan perkembangan teknologi terkini serta lebih mesra pengguna. Sesi latihan juga sedang dan akan dijalankan kepada para pemberi data bagi tujuan pendedahan tentang keperluan data dan pelaporan yang tepat.

MEIH Portal

The MEIH Portal is the main database for the dissemination of energy data in Malaysia.

There are plans to improve the existing MEIH portal, and redevelop it to be in line with the latest technological developments and to be more user-friendly. Data providers will also undergo training sessions on data requirements and accurate reporting.

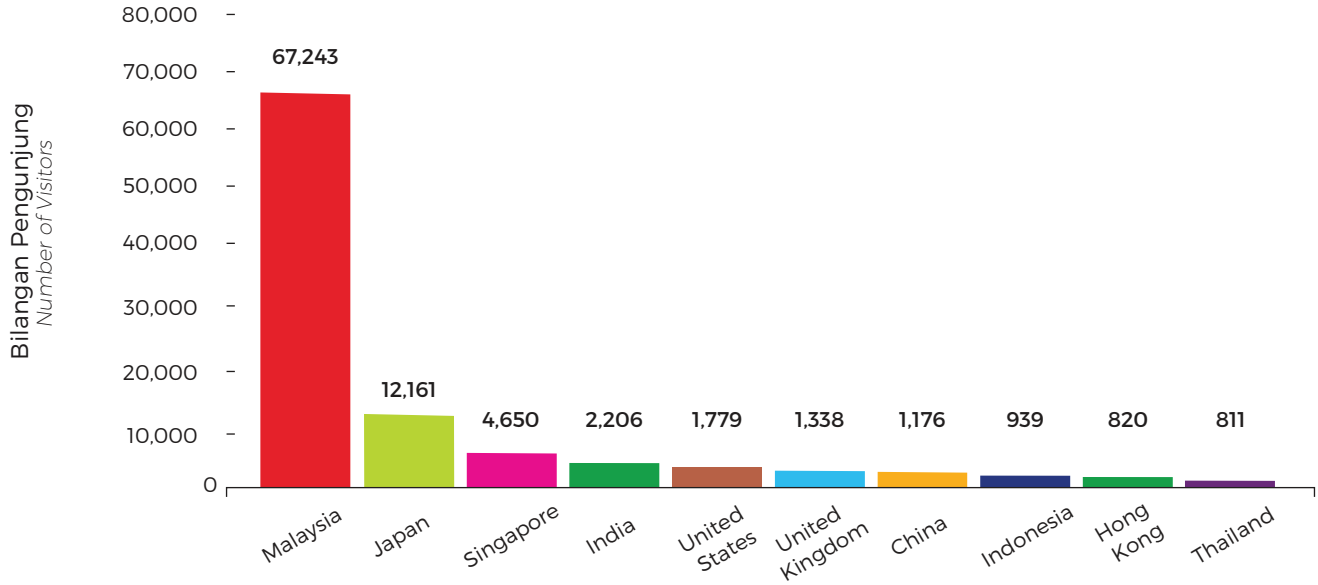
Bilangan Pengunjung Portal MEIH, 2016 - 2021
Number of MEIH Portal Visits, 2016-2021



Walaupun mencatatkan penurunan sebanyak 6.7% berbanding 2020, namun bilangan pengunjung yang masih berada pada paras yang tinggi menunjukkan portal MEIH masih relevan sebagai rujukan data tenaga di Malaysia.

Despite recording a decrease of 6.7% compared to 2020, the number of visitors is still at a high level. This shows that the MEIH portal is still relevant as the reference for energy data in Malaysia.

10 Negara Teratas yang Mengunjungi MEIH, 2021
Top 10 Countries that Visits MEIH, 2021



Aplikasi *Mobile MyEnergyStats*

Melalui aplikasi *mobile* MyEnergyStats, pengguna dapat mengakses lapan (8) modul daripada *Malaysia Energy Statistics Handbook*, iaitu *Energy Reserves, Energy Supply, Energy Transformation, Energy Consumption, Energy Indicator, Energy Prices, Electricity dan Natural Gas*.

Perkongsian Data Tenaga Bersama Organisasi Antarabangsa

Bagi mencapai aspirasi global dalam menangani isu perubahan iklim dunia, ST turut memainkan peranan dengan mengadakan sesi perbincangan dan perkongsian data tenaga sehingga ke peringkat antarabangsa berikut bagi bertukar idea, kepakaran teknologi dan berpengalaman:

- *United Nations Statistics Division (UNSD)*
- *International Energy Agency (IEA)*
- *International Renewable Energy Agency (IRENA)*
- *Asia Pacific Energy Research Centre (APERC)*
- *Joint Organisations Data Initiative (JODI)*
- *Economic Research Institute for ASEAN and East Asia (ERIA)*
- *ASEAN Centre for Energy (ACE)*

Selain itu, antara penerbitan dan kajian peringkat ASIA dan antarabangsa yang menggunapakai data-data tenaga MEIH termasuk:

- *ASEAN Energy Outlook*
- *APEC Energy Overview*
- *APEC Energy Demand and Supply Outlook*
- Kertas Kajian ERIA
- Laporan *United Nations Framework Convention on Climate Change* (UNFCCC)
- *Malaysia RE Outlook 2050* oleh *IRENA*

MyEnergyStats Mobile Application

Through the MyEnergyStats mobile application, users can gain access to eight (8) modules from the Malaysia Energy Statistics Handbook; namely Energy Reserves, Energy Supply, Energy Transformation, Energy Consumption, Energy Indicator, Energy Prices, Electricity and Natural Gas.

Energy Data Cooperation With International Organisations

The Commission also played a role in meeting global aspirations on climate change by exchanging ideas, technological expertise and experience. It was done by holding discussion sessions and sharing energy data at the following international bodies.

- *United Nations Statistics Division (UNSD)*
- *International Energy Agency (IEA)*
- *International Renewable Energy Agency (IRENA)*
- *Asia Pacific Energy Research Centre (APERC)*
- *Joint Organisations Data Initiative (JODI)*
- *Economic Research Institute for ASEAN and East Asia (ERIA)*
- *ASEAN Centre for Energy (ACE)*

Additionally, publications and studies at the Asian and international level that use MEIH energy data include:

- *ASEAN Energy Outlook*
- *APEC Energy Overview*
- *APEC Energy Demand and Supply Outlook*
- *ERIA Research Paper*
- *United Nations Framework Convention on Climate Change (UNFCCC) Reports*
- *Malaysia RE Outlook 2050 by IRENA*

PENYERTAAN ST DALAM MESYUARAT MENTERI-MENTERI ASEAN MENGENAI TENAGA (AMEM), MESYUARAT PEGAWAI-PEGAWAI KANAN ASEAN MENGENAI TENAGA (SOME) DAN MESYUARAT KUMPULAN KERJA DI BAWAH ASEAN

THE COMMISSION'S PARTICIPATION IN THE ASEAN MINISTERS' MEETING ON ENERGY (AMEM), THE ASEAN SENIOR OFFICIALS' MEETING ON ENERGY (SOME) AND THE WORKING GROUP MEETING UNDER ASEAN.

Menteri-menteri Tenaga ASEAN komited untuk melaksanakan peralihan tenaga ASEAN ke arah neutral karbon *(decarbonisation)* walaupun sektor tenaga dan ekonomi negara-negara tersebut menghadapi cabaran pandemik COVID-19. Mesyuarat sebulat suara bersetuju menggunapakai "Deklarasi Bersama Bandar Seri Begawan mengenai sekuriti tenaga dan peralihan tenaga". Perkara yang turut dibincangkan adalah Pelan Tindakan ASEAN Fasa II, 2021-2025 meliputi kecekapan tenaga, *ASEAN Power Grid, Trans-ASEAN Gas Pipeline* dan kerjasama-kerjasama dengan rakan dialog.

ASEAN Energy Ministers are committed in implementing ASEAN's energy transition towards carbon neutrality (decarbonisation) even though the energy sector and the economy of those countries are facing challenges caused by the COVID-19 pandemic. In the meeting, it was unanimously agreed to use the "Bandar Seri Begawan Joint Declaration on energy security and energy transition". Matters that were also discussed were the ASEAN Action Plan Phase II, 2021-2025 covering energy efficiency, ASEAN Power Grid, Trans-ASEAN Gas Pipeline and cooperation of dialogue partners.

PELANTIKAN ST SEBAGAI ANGGOTA FORUM *ASIA PACIFIC ENERGY REGULATOR (APER FORUM 2021)*

THE APPOINTMENT OF THE COMMISSION AS A MEMBER OF THE ASIA PACIFIC ENERGY REGULATORY FORUM. (APER FORUM 2021)

Forum *Asia Pacific Energy Regulator* (APER) merupakan satu platform bagi badan-badan kawal selia dari negara Asia Pasifik untuk membincangkan isu-isu berkenaan kawal selia tenaga serta berkongsi pengetahuan dan amalan baik dalam aktiviti kawal selia antara satu sama lain.

Pada forum APER 2021 ini juga, Malaysia dengan rasminya telah dilantik menjadi anggota APER menjadikan kesemua anggota APER berjumlah 14 buah negara.

The Asia Pacific Energy Regulator Forum (APER Forum 21) is a platform that allows regulatory bodies from Asia Pacific countries to discuss energy regulatory issues, exchange knowledge and good practices in regulatory activities with each other.

In this same forum, Malaysia was officially appointed as a member of APER which made up a total of 14 member countries for APER.

SESI DIALOG ST DAN *ENERGY MARKET AUTHORITY* (EMA) SINGAPURA

THE COMMISSION'S DIALOGUE SESSION AND THE ENERGY MARKET AUTHORITY (EMA) SINGAPORE

Sesi dialog secara maya ini diadakan pada 3 Mei 2021, bertujuan untuk membincangkan cabaran-cabaran dan impak COVID-19 terhadap sektor tenaga di Singapura dan Malaysia.

Sesi dialog ini merupakan aktiviti pertama diadakan di bawah Memorandum Persefahaman (MoU) antara ST dan EMA yang telah ditandatangani pada 28 Oktober 2020.

This online dialogue session was held on 3 May 2021, for the purpose of discussing the challenges and impact of the COVID-19 pandemic on the Singaporean and Malaysian energy sectors.

This dialogue session is the first activity that was held under the Memorandum of Understanding (MoU) between The Commission and EMA that was signed on 28 October 2020.

PELAKSANAAN PROJEK TRANSFORMASI DIGITAL ST
THE COMMISSION'S DIGITAL TRANSFORMATION PROJECT

Projek Transformasi Digital ST bertujuan untuk meningkatkan keberkesanan penyampaian perkhidmatan ST secara dalam talian kepada pihak-pihak berkepentingan, selain memastikan pematuhan kepada Akta, Peraturan dan prosedur operasi standard selaras dengan keperluan di bawah ISO 9001. Berkonsepkan nilai-nilai Pematuhan, Integriti, dan Ketersediaan, pelbagai aktiviti telah disusun bagi mengukuh dan memperkasakan penyampaian perkhidmatan ST termasuk:

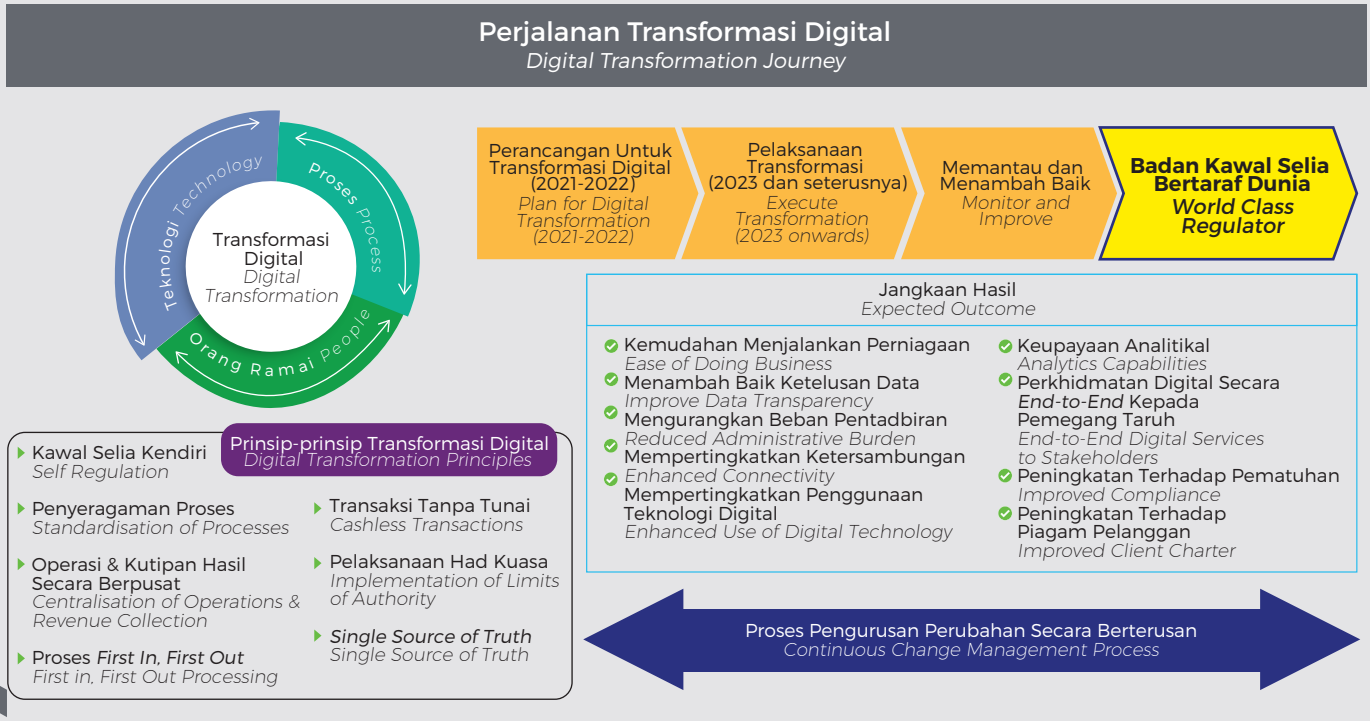
- Penyediaan Pelan Transformasi Digital bagi perkhidmatan dalam talian.
- Kajian dan penambahbaikan proses kerja.
- Pembangunan sistem perkhidmatan dalam talian yang bersepadu.
- Pengenalan kepada teknologi baharu serta penggunaannya.
- Pemerkasaan terhadap sistem penyampaian perkhidmatan.

Pada 2021, Mesyuarat Permulaan Projek dan sesi temubual *as-is* bersama warga kerja telah dijalankan bagi memahami proses kerja semasa selain mengenalpasti cabaran bagi setiap proses tersebut. Bengkel *Digital Strategy Plan and ICT Roadmap Current State (As Is)* juga telah diadakan bagi memperhalusi hasil sesi temubual *as-is* dan kajian soal selidik tersebut.

The Commission's Digital Transformation Project is aimed at improving the Commission's online service delivery to stakeholders, while ensuring compliance to Acts, Regulations and standard operating procedures in line with the ISO 9001 needs. Various activities under the Compliance, Integrity and Readiness values have been planned to strengthen the Commission's service delivery including:

- *Preparation of a Digital Transformation Plan for online services.*
- *Study and improvement of work processes.*
- *Development of an integrated online system.*
- *Introduction of new technologies and the usage.*
- *Strengthening service delivery systems.*

In 2021, Project Kickoff Meetings and as-is interview sessions with employees were carried out to understand their current workflow and identify challenges they face for every process. A Digital Strategy Plan and ICT Roadmap Current State (As Is) Workshop was also carried out to refine the as-is interview sessions and questionnaire study.



AUDIT PENSIJILAN SEMULA ISO 9001:2015
RECERTIFICATION AUDIT ISO 9001:2015

Pada 2021, Audit Pensijilan Semula ISO 9001:2015 telah dijalankan di Ibu Pejabat dan tiga (3) Pejabat Kawasan ST bagi menilai tahap pematuhan Sistem Pengurusan Kualiti (SPK) ST terhadap ISO 9001:2015.

Hasil dari lawatan audit tersebut, ST telah memperoleh Pensijilan Semula dari *Lloyds Register Quality Assurance* (LRQA) atas kejayaan dalam melaksana dan mengekalkan SPK secara efektif dan mematuhi keperluan standard yang telah ditetapkan.

In 2021, the ISO 9001:2015 Recertification Audit was conducted at the Head Office and three (3) of the Commission's Regional Offices to assess the Commission's level of Quality Management System (QMS) compliance with ISO 9001:2015.

As a result of the audit visit, the Commission obtained recertification from the Lloyds Register Quality Assurance (LRQA) for successfully implementing and maintaining QMS effectively and for complying with the standard requirements that have been set.

PELANCARAN *NATIONAL ENERGY BALANCE* 2019
THE NATIONAL ENERGY BALANCE 2019 LAUNCH

ST telah mengadakan sesi taklimat kepada media pada 13 Disember 2021 berhubung laporan Imbangan Tenaga Nasional (*National Energy Balance - NEB*) 2019, iaitu laporan tahunan yang berfungsi sebagai rujukan data tenaga rasmi untuk Malaysia. NEB meliputi tiga (3) bidang utama iaitu Pembekalan Tenaga, Transformasi Tenaga dan Penggunaan Tenaga untuk semua jenis bahan api termasuk gas asli, gas asli cecair (LNG), minyak mentah, produk petroleum, arang batu dan kok, bekalan elektrik dan TBB. Data dikumpul daripada lebih 60 pembekal data.

Semua maklumat dalam laporan ini dilaporkan dalam unit *kilo tonne of equivalent* (ktoe).

The Commission held a media briefing session on 13 December 2021 regarding the 2019 National Energy Balance (NEB) report, which is an annual report that serves as the official energy data reference for Malaysia. NEB covers three (3) main fields, namely Energy Supply, Energy Transformation and Energy Use for all types of fuel. This includes natural gas, liquefied natural gas (LNG), crude oil, petroleum products, coal and coke, electricity supply and RE. The data is compiled from over 60 data providers.

All information in this report are in units of kilo tonnes of equivalent (ktoe).

06 PEMBANGUNAN KAPASITI DAN KEUPAYAAN
CAPACITY AND CAPABILITY BUILDING

SOROTAN UTAMA
MAIN HIGHLIGHTS

PROFIL DAN STATISTIK WARGA KERJA
EMPLOYEE PROFILES AND STATISTICS

Pembangunan kapasiti tenaga kerja merupakan agenda asas yang dititikberatkan dalam pelan pembangunan korporat ST bagi memastikan ST berupaya menjalankan fungsi dan tanggungjawab sebagai badan kawal selia industri tenaga negara.

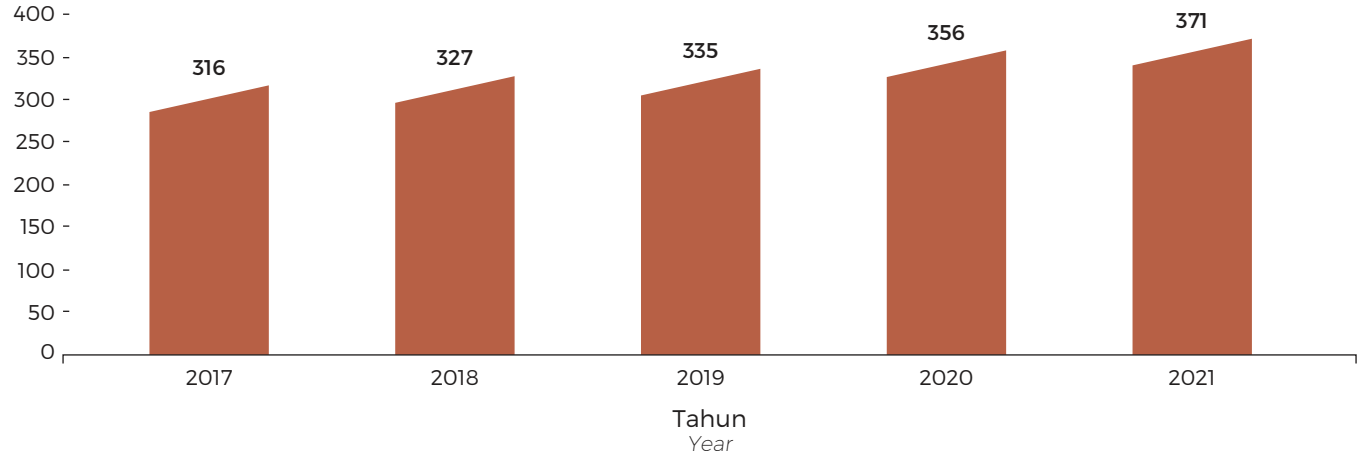
Workforce capacity building is a fundamental component emphasised in the Commission's corporate development plan to ensure that the Commission is able to carry out its functions and responsibilities as the national regulator of the energy industry.

Menjelang akhir 2021, ST mempunyai kekuatan tenaga kerja seramai 260 warga kerja eksekutif yang merangkumi kumpulan pengurusan rendah (48%), kumpulan pengurusan pertengahan (19%) dan kumpulan pengurusan tertinggi (3%), manakala baki seramai 111 (30%) warga kerja di kumpulan bukan eksekutif, menjadikan jumlah keseluruhan warga kerja seramai 371 orang.

As of the end of 2021, the Commission's workforce has a total of 260 Executives consisting of Junior Management (48%), Middle Management (19%) and Top Management (3%). The remaining 111 staff of Non-Executives constitutes 30% of the total workforce. This brings the total number of employees to 371.

Statistik Warga Kerja
Employee Statistics

Bilangan Warga Kerja, 2017-2021
Number of Employees, 2017-2021



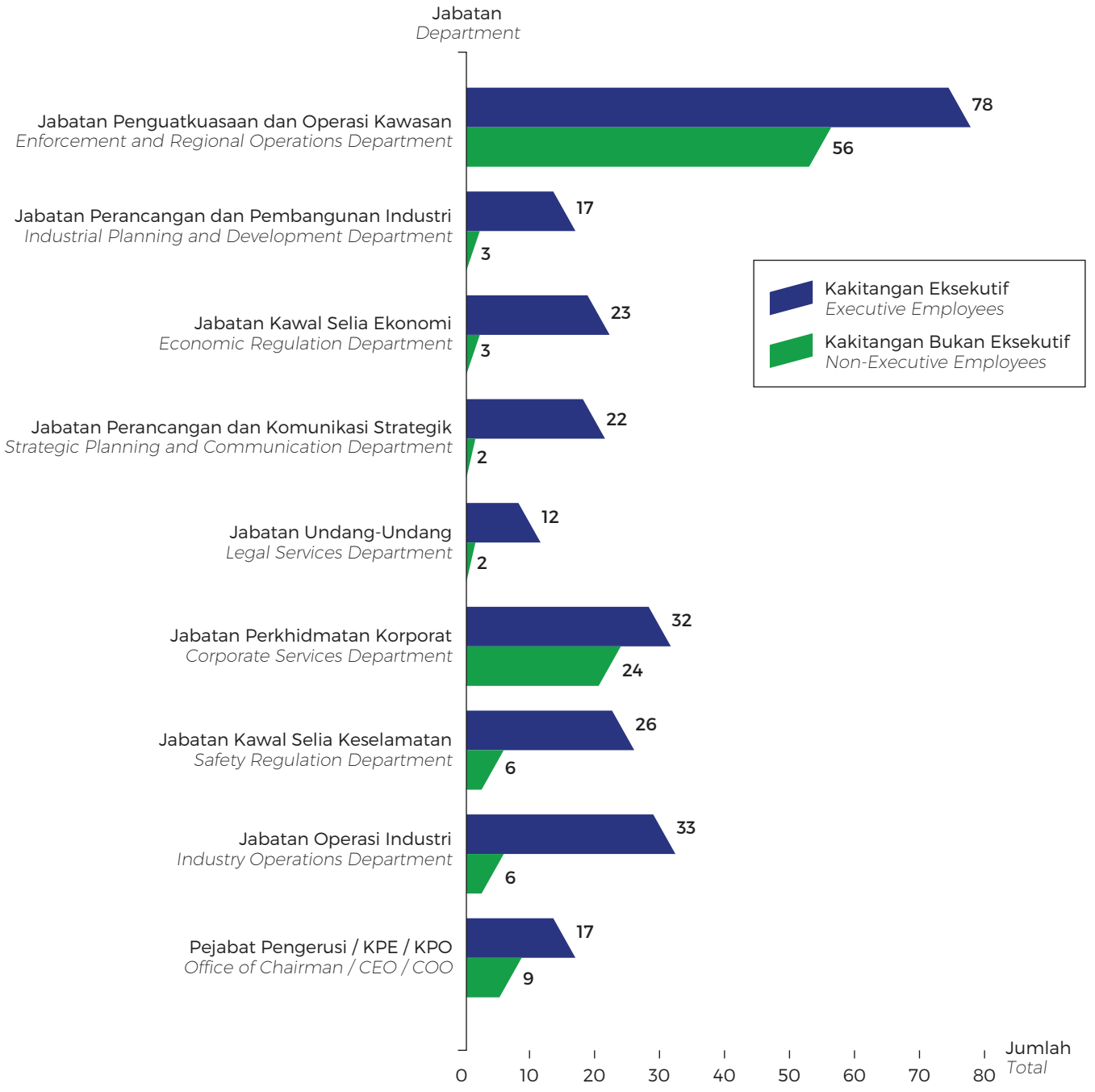
Sebahagian besar komposisi warga kerja di ST merupakan graduan kejuruteraan (71%) manakala selebihnya (29%) merupakan graduan dari pelbagai jurusan lain seperti undang-undang, ekonomi, kewangan, perakaunan, pengurusan perniagaan, sains komputer dan komunikasi massa.

The majority of employees at the Commission are engineering graduates (71%), while the remaining (29%) are graduates from various other majors such as law, economics, finance, accounting, business management, computer science and mass communication.

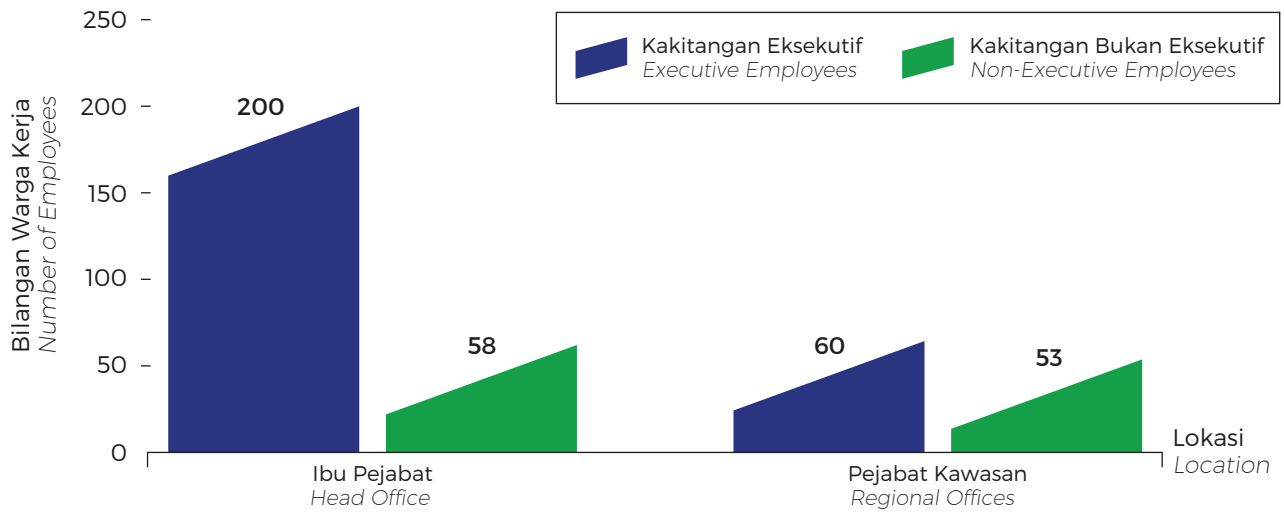
Memandangkan salah satu fungsi ST adalah aktiviti siasatan dan penguatkuasaan terhadap pematuhan yang memerlukan tugasan di lapangan, Jabatan Penguatkuasaan dan Operasi Kawasan mempunyai jumlah tenaga kerja terbesar iaitu seramai 36% dari keseluruhan warga kerja ST.

One of the Commission's functions includes investigation and enforcement on compliance which requires field assignments. Due to this reason, the Enforcement and Regional Operations Department consists of the largest number of personnel (36%) from the ST workforce. in total.

Komposisi Warga Kerja mengikut Jabatan
Composition of Employees by Department



Komposisi Warga Kerja mengikut Lokasi
Composition of Employees by Location



PEMBANGUNAN KEUPAYAAN WARGA KERJA
EMPLOYEE CAPABILITY DEVELOPMENT

Warga kerja merupakan aset penggerak utama dalam melaksanakan fungsi dan mandat ST. ST juga percaya bahawa peluang yang berterusan untuk meraih ilmu dan peningkatan potensi diri dapat membantu ST mengekalkan bakat sedia ada dan juga menarik bakat baharu di pasaran. Oleh itu, ST terus fokus dalam menyediakan pengalaman pembelajaran dan laluan pembangunan diri yang menarik, untuk menyerlahkan potensi diri setiap warga kerja, dari segi produktiviti dan prestasi.

Pelaburan Dalam Pembelajaran dan Pembangunan

Setiap tahun, ST menyediakan peruntukan yang sewajarnya untuk aktiviti latihan dan pembangunan warga kerja bagi meningkatkan skil, pengetahuan dan tingkah laku, serta kompetensi semua warga kerja ST. Pada 2021, ST telah membelanjakan secara puratanya RM3,865 bagi setiap warga kerja untuk aktiviti latihan dan pembangunan, termasuk pembiayaan skim biasiswa pascaijazah dan juga pembayaran fi peperiksaan bagi pensijilan kursus-kursus profesional.

Employees are the Commission's most important assets to fulfill the Commission's functions and mandates. The Commission also believes that continuous opportunity to gain knowledge and develop self-potential will help retain existing talent and attract new ones. As such, the Commission is focused on providing interesting learning and development path, which aimed to bring the best in them, in terms of productivity and performance.

Investment in Learning and Development

Each year, the Commission's budget allocation process provides an amount per training category for learning and development activities to support skill, knowledge and attributes, and competencies enhancement for all levels of employees. In 2021, the Commission invested an average of RM3,865 on each employee for learning and development initiatives including funding post-graduate scholarships scheme and also professional certifications fees and examinations.

Purata Hari Menjalani Latihan, 2021
Average Days of Training, 2021

13 hari *days*

Kakitangan Eksekutif
Executive Employees

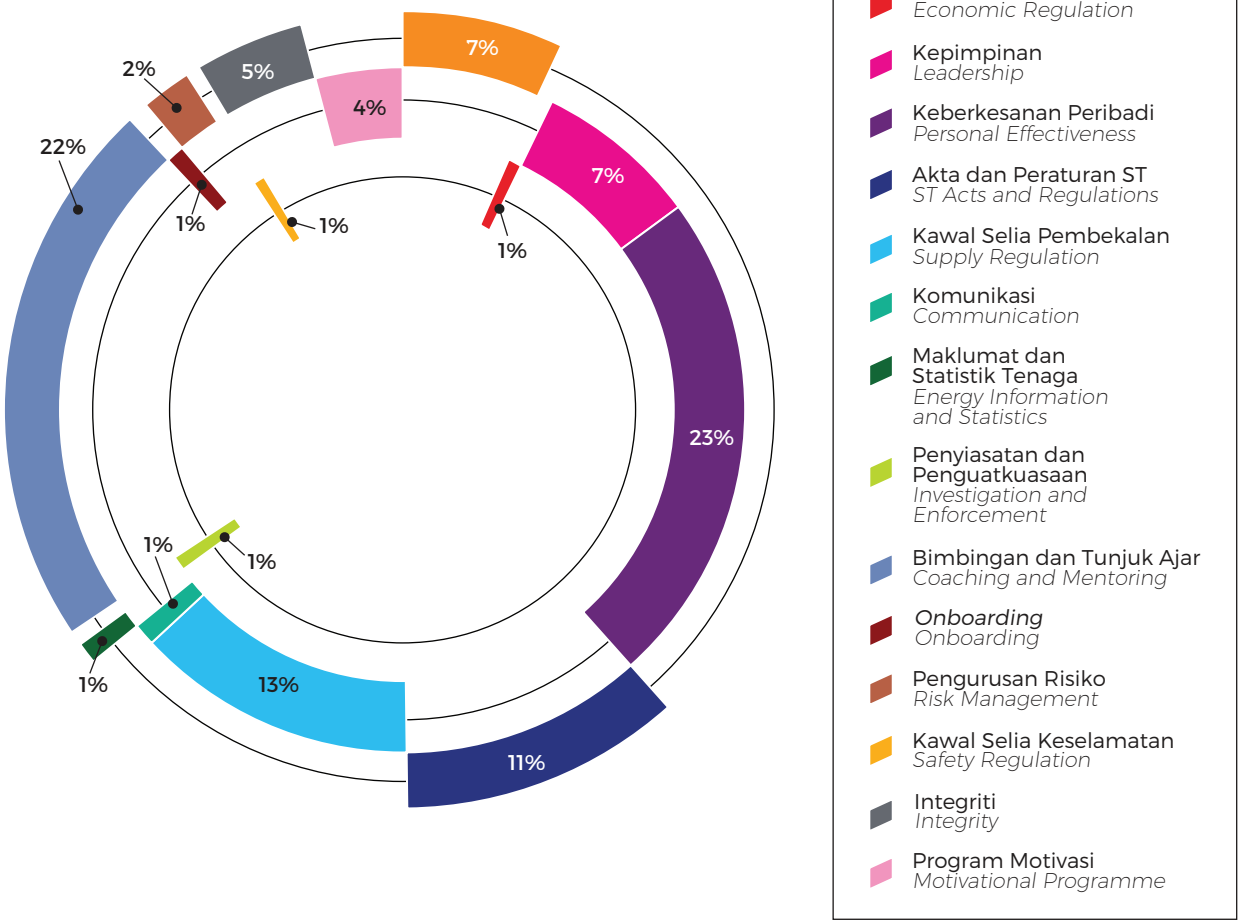
5.5 hari *days*

Kakitangan Bukan Eksekutif
Non-Executive Employees

Walaupun terdapat kekangan pergerakan pada 2021, ST masih berjaya menganjurkan sebanyak 201 jumlah latihan secara keseluruhannya, mengikut 15 kategori latihan yang telah dikenal pasti.

Despite the movement restrictions in 2021, the Commission managed to organise a total of 201 training programmes in 15 identified categories.

Kursus Latihan yang Dijalankan, 2021
Training Courses Organised, 2021



Meningkatkan Pengetahuan di Dalam Bidang Kawal Selia Teknikal dan Ekonomi

Selaras dengan fungsi dan peranan ST yang semakin berkembang dalam sektor tenaga yang bergerak pantas, penting bagi ST untuk melengkapkan warga kerjanya dengan ilmu dan skil yang relevan dan terkini, terutama dari segi kawal selia teknikal dan ekonomi, dalam ketiga-tiga bidang pembekalan elektrik dan gas berpaip iaitu penjanaan, penghantaran dan pembahagian.

Untuk 2021, ST telah menganjurkan 45 sesi Bimbingan dan Tunjuk Ajar oleh pakar dalaman dan luaran dan 29 program *ST Lecture Series* bagi meningkatkan kepakaran warga kerja ST di dalam bidang-bidang skop kawal selia ST. Sejak tahun lalu juga, ST telah mula menghantar beberapa Eksekutif terpilih ke *Florence School of Regulations, Italy*, untuk menyertai program latihan berkaitan fungsi kawal selia termasuk *Regulation of the Power Sector* dan *Executive Course to Master Electricity Markets*.

Topik Tenaga Boleh Baharu (TBB) dan *Demand Side Energy Management* turut diberi perhatian untuk pembangunan keupayaan di ST, dan merupakan antara fokus latihan teknikal bagi 2021. ST juga telah menghantar pegawai ST untuk menyertai program latihan bidang tenaga berprestij yang dikendalikan oleh Kerajaan negara Jepun melalui kolaborasi bersama *Japanese International Cooperation Agency (JICA)* dan *Waseda University Advanced Collaborative Research Organisation for Smart Cities* pada bulan Oktober hingga November 2021.

Memperluaskan Program Pembangunan Kepimpinan

Untuk 2021, program Pembangunan Kepimpinan di ST diperluaskan kepada penyertaan Anggota Suruhanjaya, bagi topik-topik Tadbir Urus Korporat, Pengurusan Kewangan dan juga Pengurusan Risiko. Selain itu, peningkatan skil komunikasi di kalangan warga kerja ST turut menjadi fokus utama pembangunan warga kerja pada 2021, di mana ST telah berkolaborasi bersama *Dale Carnegie Institute Malaysia* untuk meningkatkan skil komunikasi warga kerja Eksekutif dari segi penyampaian pembentangan yang berimpak tinggi.

Improving Knowledge in Technical and Economic Regulations

In line with the Commission's ever expanding functions and roles in the rapidly transforming energy sector, it is vital for the Commission to equip the employees with relevant and up-to-date knowledge and skills, especially in the technical and economic regulations that covers all areas of electricity and piped gas supply which includes generation, transmission and distribution.

In 2021, the Commission has organised 45 Coaching and Mentoring sessions by internal and external subject matter experts and 29 Lecture Series programmes to enhance regulatory expertise of its employees. Since last year, the Commission has sent a few selected Executives to the Florence School of Regulations, Italy to enrol into their regulatory-function courses such as Regulation of the Power Sector as well as the Executive Course to Master Electricity Markets.

Renewable Energy (RE) and Demand Side Energy Management topics were also given attention in the Commission's capability enhancement, which was the focus of technical training for 2021. The Commission also managed to send an officer to one of the most reputable energy knowledge enhancement programmes by the Japanese Government through a collaborative effort between the Japanese International Cooperation Agency (JICA) and Waseda University Advanced Collaborative Research Organisation for Smart Cities programmes from October to November 2021.

Expansion of Leadership Development Programme

In 2021, the Commission's Leadership Development Programme was extended to the Commission members covering topics concerning Corporate Governance, Financial Management and Risk Management. Apart from that, upgrading of communication skills has also been a priority in employee development in 2021, where the Commission had initiated an in-house programme with the Dale Carnegie Institute Malaysia to enhance its Executives communication skills in terms of delivering high impact presentations.

Dalam usaha untuk menekankan kepentingan integriti dalam perkhidmatan, program bersiri Pengukuhan Integriti telah diadakan sebanyak empat (4) sesi, serta lima (5) program sampingan berteraskan integriti telah dilaksanakan sepanjang 2021.

In emphasising the importance of integrity in service, four (4) Integrity Reinforcement programmes were carried out, while another five (5) integrity courses were carried out in 2021.

PEMBANGUNAN KERJAYA WARGA KERJA
EMPLOYEE CAREER DEVELOPMENT

ST sentiasa komited dalam memastikan pembangunan kerjaya setiap warga kerja adalah selaras dengan keperluan semasa organisasi terutamanya dalam bidang ekonomi, industri pasaran tenaga, serta kejuruteraan elektrik dan gas berpaip.

Bilangan kepakaran tenaga kerja ST pada 2021 meningkat sebanyak 13% dengan pelantikan 10 pakar teknikal bagi menyumbang kepakaran dan pengetahuan industri tenaga kepada warga kerja ST.

The Commission remains committed to ensuring the career development of every employee is in line with the current needs of the organisation, especially in the fields of economics, energy market industry, as well as electrical and piped gas engineering.

The number of professional experts employed in the Commission in 2021 increased by 13% with the appointment of 10 technical experts contributing their expertise and knowledge in the energy industry to the Commission's workforce.

INISIATIF PENAMBAHBAIKAN PENYAMPAIAN PERKHIDMATAN
SERVICE DELIVERY IMPROVEMENT INITIATIVES

Penambahbaikan Sistem Dalam Talian

Di samping berfokus terhadap pelaksanaan Projek Transformasi Digital pada 2021, sistem dan aplikasi lain turut dibangunkan serta ditambah baik untuk memberi perkhidmatan yang cekap dan cepat kepada pemegang taruh dan warga kerja ST.

Improvement of Online Systems

While focusing on the Digital Transformation Project in 2021, other systems and applications are also being developed and added to provide efficient and timely service to stakeholders and the Commission's employees.

Sistem dan Aplikasi yang Dibangunkan dan Ditambah Baik, 2021
Systems and Applications Developed and Enhanced, 2021

PEMEGANG TARUH
STAKEHOLDERS

- Sistem Perakaunan KWIE
- *KWIE Accounting System*
- Sistem Aduan ST
- *Aduan ST System*
- Aplikasi Mobil Aduan
- *Mobile Complaint Application*
- Aplikasi Integrasi OAS SIRIM atau e-MAS
- *Integrated OAS SIRIM Application or e-MAS*

WARGA KERJA
EMPLOYEES

- Sistem ST Services
- *ST Services System*
- Sistem e-Leave
- *e-Leave System*
- Aplikasi *Smart Attendance*
- *Smart Attendance Application*
- Aplikasi Media Sosial #TeamST
- *#TeamST Social Media Application*

Perkongsian Maklumat Melalui Aplikasi #TeamST

Selaras dengan arus perkembangan teknologi komunikasi massa terkini, ST telah membangun dan melancarkan aplikasi media sosial khusus untuk warga kerja ST iaitu #TeamST, sebagai platform perkongsian maklumat dan memudahcara komunikasi sesama warga ST di Ibu Pejabat atau di Pejabat Kawasan.

Sharing of Information through the #TeamST Application

In line with the latest technological advancement in mass communication, the Commission developed and launched #TeamST – a social media application specifically for its employees, to be used as a platform for sharing information and to facilitate communication among the Commission's employees at the Head Office and Regional Offices.

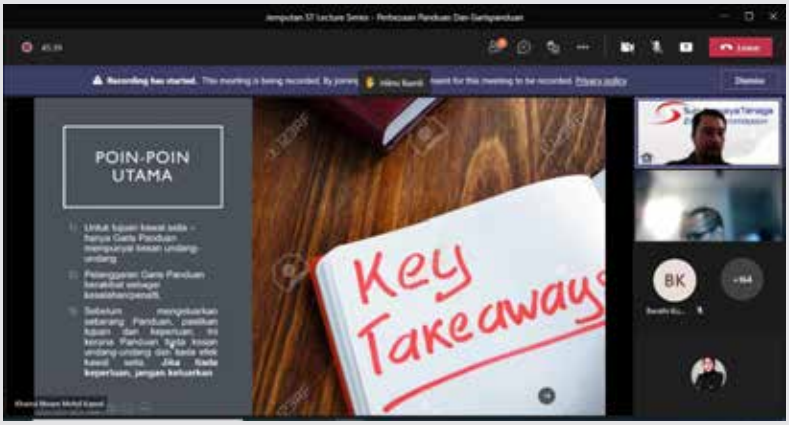
Program Kesedaran Undang-undang
Legal Awareness Programme

Penekanan turut diberikan untuk program-program pembangunan pengetahuan dalam bidang undang-undang pembekalan tenaga melalui sesi-sesi perbincangan dan perkongsian ilmu dengan pakar undang-undang di ST, serta penyertaan warga kerja ST ke program-program latihan berkaitan penguatkuasaan undang-undang yang dikendalikan oleh agensi luar seperti Institut Latihan Kehakiman dan Perundangan (ILKAP) dan Suruhanjaya Pencegahan Rasuah Malaysia (SPRM). Pada 2021, ST telah menganjurkan 19 Program Kesedaran Undang-Undang melalui sesi *ST Lecture Series* dan lima (5) lagi program berkaitan undang-undang bagi objektif tersebut.

Knowledge in legislation pertaining to energy supply is emphasised through knowledge sharing and discussion sessions with legal experts in the Commission. Apart from that, knowledge sharing is also achieved through the Commission's employees participating in training programmes related to law enforcement carried out by external agencies such as the Judicial and Legal Training Institute (ILKAP) and the Malaysian Anti-Corruption Commission (MACC). In 2021, the Commission organised 19 Legal Awareness Programmes through the Commission's ST Lecture Series and five (5) more programmes related to legal issues for the same objective.

Sesi Mendampingi Pejabat Kawasan juga merupakan satu inisiatif baharu pada 2021 bertujuan khusus untuk mendalami isu-isu perundangan yang dihadapi di Pejabat-Pejabat Kawasan ST. Pada 2021, ST telah melaksanakan sesi ini di kesemua tujuh (7) Pejabat Kawasan ST di Semenanjung, dan sesi di Pejabat-Pejabat Kawasan ST di Sabah akan dilaksanakan pada 2022.

New intiatives to study and understand legal issues faced at Regional Offices were also carried out in 2021. The Commission carried out these sessions in all seven (7) Regional Offices in the Peninsula, while the same sessions for Regional Offices in Sabah will be carried out in 2022.



Program *Coffee with Director*
The Coffee with Director Programme

Program *Coffee with Director* merupakan inisiatif merapatkan jurang antara warga kerja dan pihak pengurusan ST, di samping memberi peluang kepada warga ST untuk memberi pandangan dan perkongsian pendapat serta cadangan penambahbaikan hal-hal berkaitan dengan proses kerja. Sepanjang 2021, lapan (8) sesi telah diadakan melibatkan semua Pengarah Jabatan ST.

The Coffee with Director Programme is an initiative to bridge the gap between employees and the Commission's management, while giving opportunities to employees to provide views as well as share opinions and suggestions to improve workflow. In 2021, eight (8) sessions involving all of the Commission's Department Directors were carried out.

PENINGKATAN USAHA *OUTREACH*
ENHANCING OUTREACH INITIATIVES

KEMPEN #JADILAH BIJAK TENAGA
#BE ENERGY SMART CAMPAIGN

Dalam usaha meningkatkan kesedaran orang ramai mengenai ST dan peranannya sebagai badan kawal selia sektor tenaga negara serta isu-isu berkaitan sektor tenaga, ST meneruskan usaha promosi melalui pelbagai saluran media massa termasuk saluran TV, radio, media cetak dan media dalam talian untuk kempen JADILAH BIJAK TENAGA.

The BE ENERGY SMART campaign was promoted through a variety of media channels in an effort to improve public awareness on energy sector issues and the role of the Commission as the national energy sector regulatory body. These include TV, radio, print and online media.

Sesi Temubual Media

Sepanjang 2021, ST terus aktif menjalankan sesi temubual radio dan rancangan TV di saluran BERNAMA Radio, Kelantan FM dan rancangan Selamat Pagi Malaysia di TV1.

Selain topik am keselamatan elektrik termasuk Tips Ketika Musim Banjir dan Kecekapan Tenaga, topik-topik temubual turut diperluaskan kepada Kepentingan Khidmat Orang Kompeten, Pembelian Kelengkapan Elektrik yang Selamat Secara Dalam Talian, Keselamatan Gas Berpaip serta Bahaya Penggunaan Pagar Elektrik yang Tidak Menepati Garis Panduan ST.

Di samping itu juga, ST turut mengambil kesempatan melalui slot temubual ini untuk mewar-warkan acara anjuran ST seperti *Product Safety Award 2021 dan EE Challenge 2021*.

Media Interviews

Throughout 2021, the Commission has actively conducted radio and TV interview sessions on BERNAMA Radio, Kelantan FM and the Selamat Pagi Malaysia show on TV1.

Besides the general topic of electrical safety such as Tips During the Flood Season and Energy Efficiency, interview topics were also expanded to cover The Importance of Competent Persons, Purchase of Approved Electrical Equipment Online, Piped Gas Safety and The Dangers of Using Electric Fences That Are Non-Compliant with the Commission's Guidelines.

Moreover, these interview sessions also serve as a platform for the Commission to promote its events such as the Product Safety Award 2021 and EE Challenge 2021.

Tarikh *Date*	**Tajuk** *Topic*	**Saluran Media** *Media Channel*
14 Januari *14 January*	Tips Keselamatan Elektrik di Musim Banjir *Electrical Safety Tips During the Flood Season*	Selamat Pagi Malaysia, TV1
15 Mac *15 March*	Promosi Program *EE Challenge* 2021 dan *Product Safety Award 2021* *Promotion on the EE Challenge 2021 and Product Safety Award 2021 programmes*	BERNAMA Radio
14 Julai *14 July*	Amalan Menggunakan Tenaga Dengan Cekap *Energy Efficient Practices*	BERNAMA Radio
28 Julai *28 July*	Keselamatan Gas Berpaip di Premis Dobi dan Rumah *Piped Gas Safety at Launderettes and Residential Premises*	BERNAMA Radio
11 Ogos *11 August*	Keselamatan Elektrik *Electrical Safety*	BERNAMA Radio
25 Ogos *25 August*	Pembelian Kelengkapan Elektrik yang Selamat Secara Dalam Talian *Purchase of Approved Electrical Equipment Online*	BERNAMA Radio
8 September *8 September*	Khidmat Orang Kompeten *Appointment of Competent Persons*	BERNAMA Radio

Artikel Akhbar Bulanan

Mempercayai akhbar masih mempunyai khalayaknya yang tersendiri, ST buat pertama kalinya mengambil inisiatif untuk mengeluarkan artikel bulanan di akhbar Harian Metro, bagi meningkatkan pengetahuan orang ramai mengenai keselamatan elektrik. Topik-topik yang dipilih adalah Kelengkapan Elektrik, Orang Kompeten, Sistem Perlindungan Kilat, Pemanas Air, Keselamatan Dobi serta Keselamatan Elektrik di Musim Banjir. Artikel-artikel ini turut disiarkan di laman web Harian Metro.

Monthly Newspaper Articles

Considering that newspapers still hold their own audience, the Commission for the first time, took the initiative to publish monthly articles in the Harian Metro newspaper, to increase electrical safety awareness to the general public. Chosen topics were Electrical Equipment, Competent Persons, Lightning Protection System, Water Heater, Safety at Launderettes and Electrical Safety During the Flood Season. These articles are also available on the Harian Metro website.

JANGAN BELI BAHAYA!

Kelengkapan elektrik tanpa kelulusan ST berisiko tinggi untuk digunakan

31 Julai – Artikel kepentingan menggunakan kelengkapan elektrik yang diluluskan oleh ST.
31 July – Article on the importance of using Commission-approved electrical equipment.

Pengendali perlu ada tauliah

Perakuan Kekompetenan oleh Suruhanjaya Tenaga pastikan keselamatan sektor elektrik, gas

31 Ogos – Artikel mengenai kepentingan melantik Orang Kompeten yang berdaftar untuk kerja-kerja elektrik.
31 August – Article on the importance of appointing registered Competent Persons for any electrical work.


SISTEM PERLINDUNGAN KILAT UNTUK BANGUNAN

ST keluar arahan standard

30 September – Artikel mengenai sistem perlindungan kilat untuk bangunan.
30 September – Article on lightning protection systems for buildings.


lokal

Keselamatan elektrik ketika musim banjir

ST mengingatkan orang ramai memutuskan semua peralatan elektrik daripada punca bekalan kuasa sekiranya ditenggelami air

24 Disember – Artikel mengenai aspek-aspek keselamatan yang perlu diambil berat ketika musim banjir.
24 December – Article on crucial electrical safety precautions to be taken during the flood season.


PEMANAS AIR MANDIAN

Apa anda perlu tahu

28 Disember – Artikel mengenai pemanas air mandian dan ciri-ciri keselamatan yang patut dilaksanakan bagi memastikan keselamatan seisi rumah.
28 December – Article on the safety features of shower water heaters that should be implemented to ensure safety for the entire household.


KESELAMATAN DAN KEPERLUAN UNDANG-UNDANG KENDALI DOBI LAYAN DIRI

Pemilik perlu miliki LGP

29 Disember – Artikel mengenai aspek-aspek keselamatan dan keperluan undang-undang berkenaan dobi layan diri.
29 December – Article on self-service launderettes safety aspects and legal requirements.

Artikel di Media

Selain itu, ST juga telah mengeluarkan artikel melalui BERNAMA, di mana artikel-artikel ini turut diguna pakai oleh media-media lain. Topik artikel adalah berkenaan dengan Kecekapan Tenaga dan P*roduct Safety Award 2021*, iaitu majlis anugerah yang dianjurkan sempena Sambutan Ulang Tahun Penubuhan ke-20 ST.

Media Articles

The Commission also produced articles through BERNAMA, which were also published by other medias. The topics discussed were Energy Efficiency and the Product Safety Award 2021, an award ceremony organised in conjunction with the Commission's 20th Anniversary Celebration.

Media Digital

Sebagai variasi kepada kaedah promosi, dan bagi mendekati generasi muda khususnya, ST turut mengambil peluang untuk menggunakan saluran promosi terkini iaitu media digital. Melalui portal Siakap Keli, ST telah mengeluarkan dua (2) artikel bertajuk "Walaupun Kelam Kabut, Nasib Baik Selamat – Lelaki Kongsi Tindakan Pantas yang Dia Lakukan Waktu Air Naik" yang memfokuskan tips-tips untuk keselamatan ketika banjir, serta "Boleh Didenda Sehingga RM100,000? Ini Info yang Para Pengusaha Dobi Kena Ambil Tahu" yang menerangkan mengenai keselamatan di pusat dobi layan diri. Artikel-artikel ini turut disiarkan di laman sosial Facebook dan Instagram, yang telah dikongsi oleh ramai pengguna.

Inisiatif-inisiatif berkaitan promosi yang dijalankan pada 2021 adalah selaras dengan hasrat ST bagi menghasilkan masyarakat celik dan bijak tenaga. Pelbagai saluran dan kaedah promosi dilakukan bagi mendekati setiap lapisan masyarakat dari pelbagai peringkat usia. Usaha ini diharapkan dapat meningkatkan kesedaran rakyat mengenai tugas dan tanggungjawab ST sebagai badan kawal selia sektor tenaga, dan isu-isu mengenai sektor tenaga secara amnya.

Digital Media

The Commission took to promoting through digital media to diversify promotion avenues as well as to better reach the younger generation. Through the Siakap Keli portal, the Commission produced two (2) articles, titled "Walaupun Kelam Kabut, Nasib Baik Selamat – Lelaki Kongsi Tindakan Pantas yang Dia Lakukan Waktu Air Naik" which focused on safety tips during the floods, and "Boleh Didenda Sehingga RM100,000? Ini Info yang Para Pengusaha Dobi Kena Ambil Tahu" which explains on safety precautions at self-service launderettes. These articles are also broadcasted on Facebook and Instagram and shared by many users.

These promotional initiatives are in line with the Commission's aspiration to build an energy smart community. Many channels and promotional methods were used to attract people from various segments and age groups. This effort is hoped to improve public awareness on the Commission's roles and functions as the regulator of the energy sector as on well as issues related to the energy sector in general.

PROGRAM *TOUCHPOINT*
TOUCHPOINT PROGRAMME

Program *Touchpoint* adalah sebahagian daripada inisiatif Tanggungjawab Sosial Korporat (CSR) ST dalam usaha meningkatkan kesedaran orang awam terhadap kepentingan penggunaan tenaga elektrik secara cekap dan selamat.

Pemilihan lokasi seperti sekolah tahfiz, pusat kemasyarakatan dan kediaman adalah berdasarkan keadaan semasa keselamatan elektrik di setiap premis tersebut. Kelengkapan elektrik seperti kipas, lampu, dan suis yang rosak atau usang turut ditukar kepada yang lebih selamat dan cekap tenaga.

Peranti Arus Baki (PAB) turut ditukar dalam memastikan premis dan penghuninya adalah selamat dari risiko renjatan mahupun kebocoran arus.

Sepanjang 2021, sebanyak 22 jumlah program *Touchpoint* telah dijalankan di seluruh Semenanjung dan Sabah, melibatkan 116 premis.

The Touchpoint programme is part of the Commission's Corporate Social Responsibility (CSR) initiative to raise awareness on the importance of the efficient and safe use of energy.

Locations such as Tahfiz schools, community centres and residential areas were chosen based on the premises' current state of electrical safety. Damaged or obsolete electrical equipment such as fans, lights and switches were exchanged to safer and energy efficient ones.

Residual Current Devices (RCD) were also replaced to ensure premises and its occupants are safe from risks of electrical shock or current leakage.

Throughout 2021, a total of 22 Touchpoint programmes were conducted across the Peninsula and Sabah, involving 116 premises.

Senarai Program *Touchpoint* yang Dilaksanakan, 2021
List of Touchpoint Programmes Implemented, 2021

Lokasi Program *Touchpoint* *Touchpoint Programme Location*	**Kerja-Kerja yang Dijalankan** *Work Carried Out*
45 kediaman orang kurang berkemampuan di Kukup, Pontian, Johor *45 underprivileged homes in Kukup, Pontian, Johor*	Pembaikan sistem pendawaian. *Wiring system repair.*
Maahad Tahfiz Miftahul Huda, Ketereh, Kelantan Maahad Tahfiz Al-Quran Al-Ridha, Telipot, Kota Bharu, Kelantan Maahad Tahfiz Darussalam Taman Tahfiz Al-Quran, Kota Bharu, Kelantan Surau Kampung Kebayau, Telipok, Sabah Dewan Kampung Tebobon, Menggatal, Sabah Dewan Kampung Gudon, Menggatal, Sabah Tabika Kemas Kampung Malidang, Keningau, Sabah Tabika Kemas Kampung Tuntumulud, Keningau, Sabah 20 kediaman penduduk miskin tegar di Mukim Bingkor, Mukim Tuarid Taud, Mukim Apin-apin dan Mukim Merampong, Keningau, Sabah *20 poverty-stricken homes in Mukim Bingkor, Mukim Tuarid Taud, Mukim Apin-apin and Mukim Merampong, Keningau, Sabah* Surau Kiyai Haji Husin in Kampung Batu Puteh, Paya Dalam, Melaka	Pembaikan atau pemasangan sistem pendawaian baharu serta kelengkapan cekap tenaga. *Repair or installation of new wiring systems and energy efficient appliances.*
Pusat Sumber Komuniti Paya Dalam, Melaka	Pemasangan kotak pembumian, pembaikan atau pemasangan sistem pendawaian baharu serta kelengkapan cekap tenaga. *Installation of an earthing box, repair or installation of new wiring systems and energy efficient appliances.*
Balai Raya Kampung Paya Dalam, Melaka Surau Kampung Seboi, Temerloh, Pahang Sekolah Agama Rakyat Kampung Paya Sok, Temerloh, Pahang Sebuah kediaman dengan anak OKU di Kampung Kuala Mai, Kuala Krau, Temerloh, Pahang *A home with a special needs child in Kampung Kuala Mai, Kuala Krau, Temerloh, Pahang* 10 kediaman keluarga pelajar asnaf dari lima (5) buah sekolah di Pendang, Kedah *10 family homes of asnaf students from five (5) schools in Pendang, Kedah*	Pembaikan sistem pendawaian dan penggantian kelengkapan rosak. *Wiring system repair and replacement of faulty equipment.*

Lokasi Program *Touchpoint* *Touchpoint Programme Location*	**Kerja-Kerja yang Dijalankan** *Work Carried Out*
10 kediaman golongan asnaf di Kuala Kangsar, Enggor dan Sungai Siput, Perak *10 homes from the asnaf groups in Kuala Kangsar, Enggor and Sungai Siput, Perak*	Pemasangan PAB dengan kadaran yang sesuai dan pembaikan sistem pendawaian. *Installation of RCD with the appropriate rating and wiring system repair.*
Masjid Kampung Teluk Mufrad, Sungai Air Tawar, Selangor	Penukaran dan penyusunan semula beban di kotak agihan, pemasangan PAB dengan kadaran yang sesuai, pembaikan sistem pendawaian serta pemasangan lampu kecemasan. *Change and rearranging load in distribution boxes, installation of RCD with the appropriate rating, wiring system repair and emergency lights installation.*
Masjid Annaim, Sungai Air Tawar, Selangor	Pembaikan sistem pendawaian. *Wiring system repair.*
Madrasah Al Ihsaniah Islamiah , Sungai Air Tawar, Selangor	Pembaikan sistem pendawaian dan penggantian kelengkapan elektrik kepada kelengkapan elektrik cekap tenaga. *Wiring system repair and replacement of electrical appliances to energy saving appliances.*
14 kediaman orang kurang berkemampuan di Kampung Batu Putih, Batu 7, Sandakan, Sabah *14 underprivileged homes in Kampung Batu Putih, Batu 7, Sandakan, Sabah*	Pemasangan PAB dengan kadaran yang sesuai dan pembaikan sistem pendawaian. *Installation of RCD with the appropriate rating and wiring system repair.*

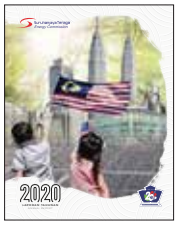
PENERBITAN INDUSTRI TENAGA
ENERGY INDUSTRY PUBLICATIONS

Maklumat sektor tenaga juga disalurkan melalui pelbagai penerbitan merangkumi laporan pencapaian dan pelan pembangunan di ST, sehingga maklumat landskap industri tenaga tempatan, serantau mahupun global.

Information on the energy sector is also channeled through a variety of publication ranging from the Commission's achievements and development plan, to the regional and global industry landscape.

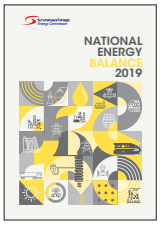
Laporan Tahunan 2020 Dan Laporan Kumpulan Wang Industri Elektrik 2020

Annual Report 2020 and Electricity Industry Fund (KWIE) Report 2020



Maklumat dan Statistik Sektor Tenaga

Energy Sector Information and Statistics

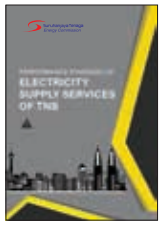


Majalah *Energy Malaysia*

Energy Malaysia Magazine

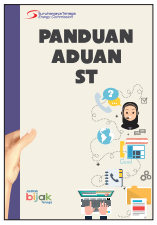
Garis Panduan Industri Elektrik dan Gas Berpaip

Electricity and Piped Gas Industry Guidelines



Rujukan Pengguna

Consumer Reference



Rujukan Dalaman

Internal Reference

LAPORAN PENCAPAIAN PETUNJUK PRESTASI UTAMA (KPI) 2021

KEY PERFORMANCE INDICATOR (KPI) ACHIEVEMENT REPORT FOR 2021

Inisiatif dan Sasaran

Dalam usaha meningkatkan lagi keberkesanan ST sebagai sebuah badan kawal selia, set Petunjuk Prestasi Utama Korporat (KPI) telah diguna pakai di mana pada 2021, sebanyak 13 KPI telah dilaksanakan oleh Jabatan-Jabatan di ST.

Initiatives and Targets

In 2021, the Commission's Departments implemented 13 Corporate Key Performance Indicators (KPIs) as part of efforts to enhance the Commission's effectiveness as a regulatory body.

Objektif Strategik 1: Memastikan Daya Harap Bekalan Tenaga dan Kualiti Perkhidmatan Industri

- Catatan SAIDI elektrik di Semenanjung adalah sebanyak 45.25 minit/pelanggan/tahun, dan Sabah 332.14 minit/pelanggan/tahun.
- Catatan SAIDI sistem bekalan gas berpaip untuk sektor bukan tenaga di Semenanjung adalah sebanyak 1.4393 minit/pelanggan/tahun.
- Jumlah margin rizab adalah sebanyak 42% untuk kapasiti terpasang di Semenanjung, dan 19% untuk kapasiti boleh harap di Sabah.

Objektif Strategik 2: Mengutamakan Keselamatan dan Penguatkuasaan

- Sehingga 2021, jumlah perakuan kekompetenan elektrik yang telah dikeluarkan adalah sebanyak 150,399 perakuan manakala untuk pemegang perakuan kekompetenan gas adalah sebanyak 1,165 perakuan.
- *Product Safety Award* (PSA) julung kali diadakan bagi membudayakan keselamatan elektrik di kalangan penggiat industri.

Objektif Strategik 3: Memperkukuhkan Keberterusan Bekalan dan Kemampanan Tenaga

- Penjimatan tenaga elektrik tahunan sehingga 2021 di bawah NEEAP adalah sebanyak 6,089 GWj.

Strategic Objective 1: Ensuring Reliability of Energy Supply and Industry Service Quality

- *SAIDI Electricity records in the Peninsula was at 45.25 minutes/customer/year, and in Sabah was at 332.14 minutes/ customer/year.*
- *SAIDI piped gas supply system for the non-energy sector in the Peninsula was at 1.4393 minutes/customer/year*
- *Total reserve margin was at 42% for installed capacity in the Peninsula and 19% for dependable capacity in Sabah.*

Strategic Objective 2: Prioritising Safety and Enforcement

- *Until 2021, total number of electrical certificates of competency that have been issued are 150,399 while total number of gas certificates of competency that have been issued are 1,165.*
- *The Product Safety Award (PSA) was held for the first time to cultivate electrical safety among industry players.*

Strategic Objective 3: Strengthening Energy Security and Sustainability

- *Annual electricity savings under NEEAP was 6,089 GWh until 2021.*

- Pembangunan kapasiti berjumlah 823.06 MW di bawah program bidaan kompetitif projek LSS@MEnTARI.
- Pengenalan inisiatif baharu di bawah NEM 3.0 iaitu NEM Rakyat, NEM GOMEn dan NOVA.
- Penambahan kuota sejumlah 300 MW untuk NOVA.
- Pencapaian penjimatan tenaga sebanyak 55.17 GWj di bawah program SAVE 2.0.
- Pelancaran program baharu iaitu *Green Electricity Tariff* (GET) di Semenanjung.

Objektif Strategik 4: Meningkatkan Kecekapan Ekonomi dan Kemampuan

- Penetapan kadar purata tarif asas elektrik di Semenanjung berdasarkan parameter utama mengikut amalan-amalan terbaik untuk IBR TNB RP3 (2022-2024).
- Pelarasan tarif elektrik dan gas asli di bawah mekanisme ICPT yang mencerminkan harga sebenar kos bahan api di pasaran.
- Peralihan proses liberalisasi pasaran gas asli di segmen pengagihan gas secara berperingkat.
- Penetapan harga dan pembekalan gas asli kepada sektor elektrik bagi tempoh RP3 ditetapkan berdasarkan kaedah harga dua (2) peringkat atau *two tier pricing.*
- Pelaksanaan pemberian diskaun bil elektrik di bawah pakej PERMAI 2021, PEMERKASA, PEMERKASA+ dan PEMULIH.

Objektif Strategik 5: Menambah Baik Kualiti Kawal Selia dan Pelaksanaan Perkhidmatan

- Peratus tahap kepuasan pelanggan melalui Kajian Kepuasan Pelanggan (CSI) ST adalah sebanyak 91.82%.
- Penerimaan Pensijilan Semula ISO 9001:2015 dari *Lloyds Register Quality Assurance* (LRQA).
- Pelaksanaan kajian *Business Process Regineering* di bawah Projek Transformasi Digital ST untuk meningkatkan keberkesanan penyampaian perkhidmatan ST secara dalam talian.

Objektif Strategik 6: Pembangunan Kapasiti dan Keupayaan

- Program Pembangunan Kepimpinan diperluaskan dan sebanyak 201 sesi latihan dilaksanakan mengikut 15 kategori program latihan.
- Bilangan kepakaran tenaga kerja meningkat dengan pelantikan 10 pakar teknikal.

- *Total capacity development under the competitive bidding project, the LSS@MEnTARI was at 823.06 MW.*
- *Introduction of new initiatives under NEM 3.0, which is NEM Rakyat, NEM GOMEn and NOVA.*
- *Quota addition of 300 MW for NOVA.*
- *Energy savings achievement was at 55.17 GWh under the SAVE 2.0 programme.*
- *Launch of the new Green Electricity Tariff (GET) programme in the Peninsula.*

Strategic Objective 4: Enhancing Economic Efficiency and Affordability

- *Setting an average electricity base tariff rate in the Peninsula based on main parameters according to the best practices for IBR TNB RP3 (2022-2024).*
- *Adjustment of electricity and natural gas tariffs under the ICPT mechanism that reflects the actual fuel price in the market.*
- *Transition of the natural gas liberalisation process in the gas distribution segment by stages.*
- *The pricing and supply of natural gas to the electricity sector for the RP3 is set based on the two (2) tier pricing method.*
- *Implementation of electricity bill discounts under the PERMAI 2021, PEMERKASA, PEMERKASA+ and PEMULIH.*

Strategic Objective 5: Improvement of Regulatory Quality and Service Delivery

- *The percentage of customer satisfaction through the Customer Satisfaction Index (CSI) for the Commission stood at 91.82%.*
- *Received the ISO 9001:2015 Recertification from Lloyds Register Quality Assurance (LRQA)*
- *Implementation of the Business Process Reengineering study under the Commission's Digital Transformation Project to increase the effectiveness of the Commission's service delivery online.*

Strategic Objective 6: Capacity and Capability Building

- *The Leadership Development Programme was expanded and a total of 201 training sessions were carried out according to 15 categories of training programmes.*
- *The number of experts increased with the appointment of 10 technical experts.*

SAMBUTAN ULANG TAHUN KE-20 SURUHANJAYA TENAGA (SUTERA20)
ENERGY COMMISSION'S 20TH ANNIVERSARY CELEBRATION (SUTERA20)

SAMBUTAN ULANG TAHUN KE-20 SURUHANJAYA TENAGA (SUTERA20)
ENERGY COMMISSION'S 20TH ANNIVERSARY CELEBRATION (SUTERA20)

ST telah menyusun beberapa program untuk diadakan sepanjang 2021 yang melibatkan semua warga kerja #TeamST sempena Sambutan Ulang Tahun ST yang ke-20.

The Commission organised several programmes to be held throughout 2021 involving all #TeamST employees in conjunction with the Commission's 20th Anniversary Celebration.

Pertandingan Mencipta Logo dan Slogan

Logo akhir bagi pertandingan ini terdiri daripada tiga (3) elemen utama iaitu Bangunan Berlian yang merupakan Ibu Pejabat ST, angka 20 serta sekuntum bunga raya. Slogan yang dipilih pula ialah "**Berpadu Tenaga ke Persada Dunia**", bersesuaian dengan Visi ST ke arah badan kawal selia sektor tenaga yang bertaraf dunia.

Logo and Slogan Creation Competition

*The final logo for this competition consists of three (3) main elements being the Diamond Building which is the Commission's headquarters, the number 20 and a hibiscus flower. The slogan; "**Berpadu Tenaga ke Persada Dunia**" was the chosen slogan in line with the Commission's Vision towards becoming a world-class energy regulator.*

ST - *Malaysia Book of Records Steps Challenge*

Buat julung kalinya, ST bekerjasama dengan *Malaysia Book of Records* (MBR) untuk mencipta rekod baharu di bawah kategori *Human Achievement: Most Number of Steps Collected in a Programme. ST-MBR Steps Challenge* menetapkan sasaran 200 juta langkah oleh warga kerja dan Anggota ST mulai 1 Disember 2020 hingga 28 Februari 2021.

Energy Commission - Malaysia Book of Records Steps Challenge

For the first time, the Commission in collaboration with the Malaysia Book of Records (MBR) created a new record under the category of Human Achievement: Most Number of Steps Collected in a Programme. The ST-MBR Steps Challenge sets a target of 200 million steps by the employees and Members of the Commission's from 1 December 2020 to 28 February 2021.

Selepas tiga (3) bulan penyertaan cabaran ini, jumlah langkah keseluruhan yang berjaya direkodkan telah melebihi sasaran awal iaitu sejumlah 264,736,340 langkah. Pencapaian ini telah diiktiraf secara rasminya oleh pihak MBR melalui penyampaian sijil pengiktirafan kepada ST.

After three (3) months of participation in this challenge, the total number of steps successfully recorded exceeded the initial target set, which is a total of 264,736,340 steps. This achievement was officially recognised by the MBR through the presentation of a certificate of recognition to the Commission.

Pertandingan Menghasilkan Video oleh Pejabat Kawasan

Video-video yang dihasilkan oleh warga kerja di seluruh Pejabat Kawasan ST bertujuan untuk menyampaikan kesedaran tentang keselamatan elektrik dan penggunaan tenaga yang cekap kepada para penonton.

Regional Office Video Competition

The videos produced by employees throughout the Commission's Regional Offices aimed to raise awareness on electrical safety and the efficient use of energy to the audience.

Anugerah Lama Berkhidmat 2021

Anugerah Lama Berkhidmat, yang telah diadakan pada 24 Disember 2021, diperkenalkan bagi menghargai #TeamST yang telah berkhidmat selama 10 tahun dan ke atas.

2021 Long Service Award

The Long Service Award, which was held on 24 December 2021, was introduced to honour #TeamST who have served for 10 years and above.

Monumen NEON20 dan Kapsul Masa ST

Bertemakan 'Dari Aspirasi, Menjadi Kenyataan', NEON20 turut berfungsi untuk menyimpan Kapsul Masa ST yang terkandung segala harapan, visi dan aspirasi warga ST di masa hadapan.

NEON20 Monument and the Commission's Time Capsule

Themed "From Aspiration, To Reality", NEON20 also serves to capture the Commission's Time Capsule that contains all the hopes, visions and aspirations of the Commission's employees for the future.

Product Safety Award (PSA) 2021

Product Safety Award (PSA) 2021 diadakan buat julung kalinya untuk mempromosi dan menggalakkan pengilang dan pengimport kelengkapan elektrik untuk memberikan komitmen yang tinggi bagi membudayakan keselamatan elektrik di kalangan

Product Safety Award (PSA) 2021

The inaugural Product Safety Award (PSA) 2021 aims to promote and encourage manufacturers and importers of electrical equipment to demonstrate high commitment in cultivating electrical safety in the industry. The programme also serves as

industri. Program ini juga merupakan satu pengiktirafan ST kepada pihak industri di atas usaha dan kerjasama baik yang telah diberikan oleh mereka dalam memastikan produk-produk kelengkapan elektrik yang dikilangkan atau diimport ke negara ini memenuhi ciri-ciri keselamatan yang ditetapkan oleh ST bagi manfaat rakyat.

the Commission's recognition to the industry for the efforts and cooperation given in ensuring that electrical equipment manufactured or imported into this country meet the safety features required by the Commission for the benefit of the people.

Senarai Pemenang *Product Safety Award* (PSA) 2021
List of Product Safety Award (PSA) Winners 2021

Kategori *Category*	**Anugerah** *Award*	**Pemenang** *Winners*
Pengilang *Manufacturers*	***Platinum***	**Eco Breeze Technologies (M) Sdn. Bhd**
	Gold	Thermo Integra Sdn. Bhd.
	Silver	Khind-Mistral Industries Sdn. Bhd.
Pengimport *Importers*	***Platinum***	**Panasonic Malaysia Sdn. Bhd.**
	Gold	Daikin Malaysia Sales & Service Sdn. Bhd.
	Silver	Nexusled Green Technology Sdn. Bhd.
Anugerah Khas Institusi Bertauliah *Special Award for Accredited Institutions*	***Platinum***	**Institut Kemahiran MARA, Lumut, Perak**
	Gold	Institut Latihan Perindustrian, Jitra, Kedah
	Silver	Kolej Kemahiran Tinggi MARA, Pasir Mas, Kelantan

Program *Energy Efficiency (EE) Challenge*

YB Datuk Seri Takiyuddin Hassan, Menteri Tenaga dan Sumber Asli telah menyempurnakan Majlis Penyampaian Hadiah EE Challenge 2021 (*#StayAtHomeEdition*) di mana empat (4) kategori dipertandingkan; *#posterchallenge*, *#video4challenge*, *#articlechallenge* dan *#promote2challenge*. Format pertandingan ini juga disesuaikan dengan situasi penularan pandemik COVID-19, dimana fokusnya ialah mempromosikan kecekapan tenaga kepada orang awam di rumah.

Energy Efficiency (EE) Challenge Programme

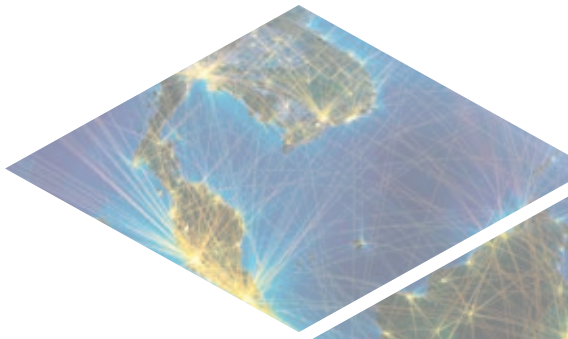
YB Datuk Seri Takiyuddin Hassan, Minister of Energy and Natural Resources officiated the EE Challenge 2021 (#StayAtHomeEdition) where four (4) categories were contested; #posterchallenge, #video4challenge, #articlechallenge and #promote2challenge. The format of the competition was also adapted to cater to the COVID-19 pandemic, which focused on promoting energy efficiency to the public at home.

Cabaran BeSTme

Cabaran BESTme memupuk budaya hidup sihat dan cabaran mendapatkan Indeks Jisim Badan (BMI) yang ideal di kalangan warga #TeamST. Pertandingan Perahu Naga Antara Jabatan juga dianjurkan sebagai intipati program ini.

BeSTme Challenge Programme

The BeSTme Challenge programme encourages #TeamST members to adopt a healthy lifestyle and take on the challenge of reaching the ideal Body Mass Index (BMI). The Inter-Department Dragon Boat Race 2021 was one of the events organised under this programme.



PENYATA KEWANGAN

SIJIL KETUA AUDIT NEGARA
MENGENAI PENYATA KEWANGAN
SURUHANJAYA TENAGA
BAGI TAHUN BERAKHIR 31 DISEMBER 2021

Sijil Mengenai Pengauditan Penyata Kewangan

Pendapat

Saya telah memberikan kuasa kepada firma audit swasta di bawah Subseksyen 7 (3) Akta Audit 1957 [*Akta 62*] untuk mengaudit Penyata Kewangan Suruhanjaya Tenaga. Penyata kewangan tersebut merangkumi Penyata Kedudukan Kewangan pada 31 Disember 2021 Suruhanjaya Tenaga dan Penyata Prestasi Kewangan, Penyata Perubahan Aset Bersih/Ekuiti, Penyata Aliran Tunai serta Penyata Prestasi Bajet bagi tahun berakhir pada tarikh tersebut dan nota kepada penyata kewangan termasuklah ringkasan polisi perakaunan yang signifikan seperti yang dinyatakan pada muka surat 1 hingga 31.

Pada pendapat saya, penyata kewangan ini memberikan gambaran yang benar dan saksama mengenai kedudukan kewangan Suruhanjaya Tenaga pada 31 Disember 2021 dan prestasi kewangan serta aliran tunai bagi tahun berakhir pada tarikh tersebut selaras dengan Piawaian Perakaunan Sektor Awam Malaysia (MPSAS) dan keperluan Akta Suruhanjaya Tenaga 2001 [*Akta 610*] serta Akta Suruhanjaya Tenaga (Pindaan) 2010 [*Akta A1371*].

Asas Kepada Pendapat

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

Kebebasan dan Tanggungjawab Etika Lain

Saya adalah bebas daripada Suruhanjaya Tenaga dan telah memenuhi tanggungjawab etika lain berdasarkan International Standards of Supreme Audit Institutions.

Maklumat Lain Selain Daripada Penyata Kewangan dan Sijil Juruaudit Mengenainya

Anggota, Suruhanjaya Tenaga bertanggungjawab terhadap maklumat lain dalam Laporan Tahunan. Pendapat saya terhadap Penyata Kewangan Suruhanjaya Tenaga tidak meliputi maklumat lain selain daripada penyata kewangan dan Sijil Juruaudit mengenainya dan saya tidak menyatakan sebarang bentuk kesimpulan jaminan mengenainya.

Tanggungjawab Anggota Suruhanjaya Tenaga Terhadap Penyata Kewangan

Anggota Suruhanjaya Tenaga bertanggungjawab terhadap penyediaan Penyata Kewangan Suruhanjaya Tenaga yang memberi gambaran benar dan saksama selaras dengan Piawaian Perakaunan Sektor Awam Malaysia (MPSAS) dan keperluan Akta Suruhanjaya Tenaga 2001 [*Akta 610*] serta Akta Suruhanjaya Tenaga (Pindaan) 2010 [*Akta A1371*]. Anggota Suruhanjaya Tenaga juga bertanggungjawab terhadap penetapan kawalan dalaman yang perlu bagi membolehkan penyediaan Penyata Kewangan Suruhanjaya Tenaga yang bebas daripada salah nyata yang ketara, sama ada disebabkan fraud atau kesilapan.

Semasa penyediaan Penyata Kewangan Suruhanjaya Tenaga, Anggota Suruhanjaya Tenaga bertanggungjawab untuk menilai keupayaan Suruhanjaya Tenaga untuk beroperasi sebagai satu usaha berterusan, mendedahkannya jika berkaitan serta menggunakannya sebagai asas perakaunan.

Tanggungjawab Juruaudit Terhadap Pengauditan Penyata Kewangan

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

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

a. mengenal pasti dan menilai risiko salah nyata ketara dalam Penyata Kewangan Suruhanjaya Tenaga, sama ada disebabkan fraud atau kesilapan, merangka dan

melaksanakan prosedur audit yang responsif terhadap risiko berkenaan serta mendapatkan bukti audit yang mencukupi dan bersesuaian untuk memberikan asas kepada pendapat saya. Risiko untuk tidak mengesan salah nyata ketara akibat daripada fraud adalah lebih tinggi daripada kesilapan kerana fraud mungkin melibatkan pakatan, pemalsuan, ketinggalan yang disengajakan, representasi yang salah, atau mengatasi kawalan dalaman;

b. memahami kawalan dalaman yang relevan untuk merangka prosedur audit yang bersesuaian tetapi bukan untuk menyatakan pendapat mengenai keberkesanan kawalan dalaman Suruhanjaya Tenaga;

c. menilai kesesuaian dasar perakaunan yang diguna pakai, kemunasabahan anggaran perakaunan dan pendedahan yang berkaitan oleh Anggota Suruhanjaya Tenaga;

d. membuat kesimpulan terhadap kesesuaian penggunaan asas perakaunan untuk usaha berterusan oleh Anggota Suruhanjaya Tenaga dan berdasarkan bukti audit yang diperoleh, sama ada wujudnya ketidakpastian ketara yang berkaitan dengan peristiwa atau keadaan yang mungkin menimbulkan keraguan yang signifikan terhadap keupayaan Suruhanjaya Tenaga sebagai satu usaha berterusan. Jika saya membuat kesimpulan bahawa ketidakpastian ketara wujud, saya perlu melaporkan dalam Sijil Juruaudit terhadap pendedahan yang berkaitan dalam Penyata Kewangan Suruhanjaya Tenaga atau, jika pendedahan tersebut tidak mencukupi, pendapat saya akan diubah. Kesimpulan saya dibuat berdasarkan bukti audit yang diperoleh sehingga tarikh Sijil Juruaudit. Bagaimanapun, peristiwa atau keadaan pada masa hadapan berkemungkinan menyebabkan Suruhanjaya Tenaga tidak lagi berupaya meneruskan operasi secara usaha berterusan; dan

e. menilai persembahan secara keseluruhan, struktur dan kandungan Penyata Kewangan Suruhanjaya Tenaga, termasuk pendedahannya, dan sama ada penyata kewangan tersebut telah melaporkan asas-asas urus niaga dan peristiwa-peristiwa yang memberikan gambaran saksama.

Anggota Suruhanjaya Tenaga telah dimaklumkan, antaranya mengenai skop dan tempoh pengauditan yang dirancang serta penemuan audit yang signifikan termasuk kelemahan kawalan dalaman yang dikenal pasti semasa pengauditan.

Hal-hal Lain

Sijil ini dibuat untuk Anggota Suruhanjaya Tenaga berdasarkan keperluan Akta Suruhanjaya Tenaga 2001 [*Akta 610*] serta Akta Suruhanjaya Tenaga (Pindaan) 2010 [*Akta A1371*] dan bukan untuk tujuan lain. Saya tidak bertanggungjawab terhadap pihak lain bagi kandungan sijil ini.

(FARIZAH BINTI BERAM)
b.p. KETUA AUDIT NEGARA

PUTRAJAYA
23 JUN 2022

PENYATA PENGERUSI DAN SEORANG ANGGOTA SURUHANJAYA TENAGA

Kami Dato' Azian bin Osman dan Dato' Ir. Dr. Shaik Hussein bin Mydin yang merupakan Pengerusi dan salah seorang Anggota Suruhanjaya Tenaga dengan ini menyatakan bahawa, pada pendapat Anggota Suruhanjaya Tenaga, Penyata Kewangan yang mengandungi Penyata Kedudukan Kewangan, Penyata Prestasi Kewangan, Penyata Perubahan Aset Bersih/Ekuiti, Penyata Aliran Tunai dan Penyata Prestasi Bajet Suruhanjaya Tenaga yang berikut ini berserta dengan nota-nota kepada Penyata Kewangan di dalamnya, adalah disediakan untuk menunjukkan pandangan yang benar dan saksama berkenaan kedudukan Suruhanjaya Tenaga pada 31 Disember 2021 dan hasil kendaliannya serta perubahan kedudukan kewangannya bagi tahun berakhir pada tarikh tersebut.

Bagi pihak Anggota,

Dato' Azian bin Osman
Pengerusi

Tarikh: 22 Jun 2022

Tempat: Suruhanjaya Tenaga
Presint 2, Putrajaya

Bagi pihak Anggota,

Dato' Ir. Dr. Shaik Hussein bin Mydin
Anggota

Tarikh: 22 Jun 2022

Tempat: Suruhanjaya Tenaga
Presint 2, Putrajaya

PENGAKUAN OLEH PEGAWAI UTAMA YANG BERTANGGUNGJAWAB KE ATAS PENGURUSAN KEWANGAN SURUHANJAYA TENAGA

Saya, Ts. Abdul Razib bin Dawood, Ketua Pegawai Eksekutif yang bertanggungjawab ke atas pengurusan kewangan dan rekod-rekod perakaunan Suruhanjaya Tenaga, dengan ikhlasnya mengakui bahawa Penyata Kedudukan Kewangan, Penyata Prestasi Kewangan, Penyata Perubahan Aset Bersih/Ekuiti, Penyata Aliran Tunai dan Penyata Prestasi Bajet Suruhanjaya Tenaga dalam kedudukan kewangan yang berikut ini berserta dengan nota-nota kepada Penyata Kewangan di dalamnya mengikut sebaik-baik pengetahuan dan kepercayaan saya, adalah betul dan saya membuat ikrar ini dengan sebenarnya mempercayai bahawa ia adalah benar dan atas kehendak-kehendak Akta Akuan Berkanun 1960.

Sebenarnya dan sesungguhnya)
diakui oleh penama di atas)
di PUTRAJAYA)
WILAYAH PERSEKUTUAN
pada) 22 JUN 2022

.....

Di hadapan saya,

PESURUHJAYA SUMPAH
W762
MOHD YUSRI ISMAIL
01.01.2021 - 31.12.2023
MALAYSIA

.....

D-3-2 Ayer@8, Jalan P8G,
Precinct 8,
62250 Putrajaya

PESURUHJAYA SUMPAH

PENYATA KEDUDUKAN KEWANGAN
Pada 31 Disember 2021

	Nota	2021 RM	2020 RM
ASET			
Aset Semasa			
Tunai dan Kesetaraan Tunai	4	123,159,269	103,237,329
Pelaburan Jangka Pendek		407,321,072	398,228,632
Pelbagai Akaun Belum Terima, Deposit dan Pendahuluan	5	669,336	677,286
Pendapatan Faedah Belum Terima	6	2,255,183	2,142,746
Cukai Terdahulu		1,234,293	–
Jumlah Aset Semasa		534,639,153	504,285,993
Aset Bukan Semasa			
Hartanah, Kelengkapan dan Peralatan	7	76,659,616	78,835,634
Jumlah Aset		**611,298,769**	**583,121,627**
LIABILITI			
Liabiliti Semasa			
Pelbagai Akaun Belum Bayar dan Perbelanjaan Terakru	8	17,734,463	15,507,437
Peruntukan Manfaat Pekerja Jangka Pendek	9	3,735,555	3,040,731
Kumpulan Wang Khas	10	5,706,219	5,747,479
Peruntukan Cukai		–	4,105,545
Jumlah Liabiliti Semasa		27,176,237	28,401,192
Liabiliti Bukan Semasa			
Peruntukan Manfaat Pekerja Jangka Panjang	9	13,620,258	14,041,195
Jumlah Liabiliti		**40,796,495**	**42,442,387**
Aset Bersih		**570,502,274**	**540,679,240**
ASET BERSIH/ EKUITI			
Dana Terkumpul		**570,502,274**	**540,679,240**

Nota-nota yang disertakan dari muka surat 6 hingga 31 adalah sebahagian daripada Penyata Kewangan ini.

SURUHANJAYA TENAGA
Ditubuhkan di bawah Akta Suruhanjaya Tenaga 2001 (Akta 610) dan Akta Suruhanjaya Tenaga (Pindaan) 2010 (Akta A1371)

PENYATA PRESTASI KEWANGAN
Bagi Tahun Berakhir 31 Disember 2021

	Nota	2021 RM	2020 RM
PENDAPATAN			
Hasil Daripada Urus Niaga Bukan Pertukaran			
Yuran dan Caj	11	112,745,167	107,080,874
Hasil Daripada Urus Niaga Pertukaran			
Faedah		10,616,965	13,947,835
Lain-lain Pendapatan		40,395	1,032,506
JUMLAH PENDAPATAN		123,402,527	122,061,215
PERBELANJAAN			
Gaji, Elaun dan Manfaat Pekerja	12	63,412,490	59,441,002
Perjalanan dan Sara Hidup		455,733	795,472
Perhubungan dan Utiliti		2,426,535	2,395,658
Sewaan		2,698,690	2,578,870
Hospitaliti		233,121	385,673
Bekalan Pejabat		947,733	847,502
Penyenggaraan	13	6,110,333	6,235,067
Perkhidmatan Ikhtisas	14	10,431,437	8,216,185
Susutnilai Hartanah, Kelengkapan dan Peralatan		2,924,624	2,967,062
Perbelanjaan Lain		831,714	440,856
JUMLAH PERBELANJAAN		(90,472,410)	(84,303,347)
Lebihan Sebelum Cukai		32,930,117	37,757,868
Cukai	15	(3,107,083)	(4,105,545)
Lebihan Bersih Semasa		29,823,034	33,652,323

Nota-nota yang disertakan dari muka surat 6 hingga 31 adalah sebahagian daripada Penyata Kewangan ini

PENYATA PERUBAHAN ASET BERSIH / EKUITI
Bagi Tahun Berakhir 31 Disember 2021

	Jumlah
	RM
2020	
Baki pada 1 Januari	506,637,313
Pelarasan Tahun Sebelum	389,604
Lebihan bagi tahun	33,652,323
Baki pada 31 Disember	540,679,240
2021	
Baki pada 1 Januari	540,679,240
Lebihan bagi tahun	29,823,034
Baki pada 31 Disember	570,502,274

Nota-nota yang disertakan dari muka surat 6 hingga 31 adalah sebahagian daripada Penyata Kewangan ini.

SURUHANJAYA TENAGA
Ditubuhkan di bawah Akta Suruhanjaya Tenaga 2001 (Akta 610) dan Akta Suruhanjaya Tenaga (Pindaan) 2010 (Akta A1371)

PENYATA ALIRAN TUNAI
Bagi Tahun Berakhir 31 Disember 2021

	Nota	2021 RM	2020 RM
ALIRAN TUNAI DARIPADA AKTIVITI OPERASI			
Lebihan Pendapatan Sebelum Cukai		32,930,117	37,757,868
Pelarasan Untuk Perkara Yang Tidak Melibatkan Tunai:			
Pendapatan Faedah Diterima		(10,616,965)	(13,947,835)
Susutnilai Hartanah, Kelengkapan dan Peralatan		2,924,624	2,967,062
Pelupusan Hartanah, Kelengkapan dan Peralatan		10	540
Peruntukan Manfaat Pekerja		3,103,377	3,481,646
Keuntungan Operasi Sebelum Perubahan Modal Kerja		28,341,163	30,259,281
Perubahan Dalam Modal Kerja dan Kumpulan Wang Khas:			
(Peningkatan)/Penurunan di dalam Pelbagai Akaun Belum Terima dan Faedah Belum Terima		(104,487)	3,287,709
Peningkatan di dalam Pelbagai Akaun Belum Bayar dan Tanggungan Terakru		2,227,026	4,170,447
Faedah Kumpulan Wang Khas		57,400	64,814
Pindahan Semula Dana		–	(595,276)
Perbelanjaan Kumpulan Wang Khas		(98,660)	(79,362)
Tunai Dijana Daripada Aktiviti Operasi		30,422,442	37,107,613
Bayaran Cukai		(8,446,921)	(4,341,377)
Bayaran Manfaat Pekerja		(2,829,490)	(2,365,356)
Aliran Tunai Bersih Dijana Daripada Aktiviti Operasi		**19,146,031**	**30,400,880**
ALIRAN TUNAI DARIPADA AKTIVITI PELABURAN			
Pelaburan Jangka Pendek		(9,092,440)	(58,032,545)
Pembelian Hartanah, Kelengkapan dan Peralatan		(748,616)	(1,014,757)
Pendapatan Faedah Diterima		10,616,965	13,947,835
Aliran Tunai Bersih Daripada/(Digunakan) Untuk Aktiviti Pelaburan		**775,909**	**(45,099,467)**
Penurunan Bersih Dalam Tunai Kesetaraan Tunai		19,921,940	(14,698,587)
Tunai dan Kesetaraan Tunai Pada Awal Tahun		**103,237,329**	**117,935,916**
Tunai dan Kesetaraan Tunai Pada Akhir Tahun	4	**123,159,269**	**103,237,329**

Nota-nota yang disertakan dari muka surat 6 hingga 31 adalah sebahagian daripada Penyata Kewangan ini

PENYATA PRESTASI BAJET
Bagi Tahun Berakhir 31 Disember 2021

Sebenar 2020	Perihal	Sebenar 2021	Bajet Akhir 2021	Bajet Asal 2021	Perbezaan Bajet Akhir dengan Sebenar
RM		RM	RM	RM	RM
	HASIL				
107,080,874	Hasil Operasi	112,745,167	116,565,767	116,565,767	(3,820,600)
14,980,341	Pendapatan Faedah, Keuntungan Hibah dan Lain-lain Pendapatan	10,657,360	8,579,000	8,579,000	2,078,360
122,061,215	**Jumlah Hasil**	**123,402,527**	**125,144,767**	**125,144,767**	**(1,742,240)**
	PERBELANJAAN				
59,441,002	Emolumen	63,412,490	64,871,000	64,871,000	1,458,510
795,472	Perjalanan dan Sara Hidup	455,733	5,000,000	5,000,000	4,544,267
2,395,658	Perhubungan dan Utiliti	2,426,535	3,750,000	3,750,000	1,323,465
2,578,870	Sewaan	2,698,690	3,300,000	3,300,000	601,310
385,673	Hospitaliti	233,121	750,000	750,000	516,879
847,502	Bekalan Pejabat	654,046	2,000,000	2,000,000	1,345,954
5,876,226	Penyenggaraan	4,933,816	8,500,000	8,500,000	3,566,184
9,312,526	Perkhidmatan Ikhtisas	8,655,488	28,835,300	28,835,300	20,179,812
440,856	Perbelanjaan Lain	831,714	1,525,000	1,525,000	693,286
915,156	Aset	211,017	1,600,000	1,600,000	1,388,983
82,988,941	**Jumlah Perbelanjaan**	**84,512,650**	**120,131,300**	**120,131,300**	**35,618,650**
39,072,274	**Lebihan**	**38,889,877**	**5,013,467**	**5,013,467**	**(37,360,890)**

Nota-nota yang disertakan dari muka surat 6 hingga 31 adalah sebahagian daripada Penyata Kewangan ini.

SURUHANJAYA TENAGA
Ditubuhkan di bawah Akta Suruhanjaya Tenaga 2001 (Akta 610) dan Akta Suruhanjaya Tenaga (Pindaan) 2010 (Akta A1371)

Nota-nota kepada Penyata Kewangan

1. Kegiatan Utama

Suruhanjaya Tenaga adalah sebuah badan berkanun yang beroperasi di No.12, Jalan Tun Hussein, Presint 2, 62100 Putrajaya.

Suruhanjaya Tenaga merupakan agensi pengawal selia tunggal bagi pengawalseliaan dan pembangunan sektor tenaga. Suruhanjaya Tenaga mempunyai tanggungjawab langsung bagi menyelia dan mengawasi kegiatan penjanaan tenaga termasuk mengawal selia setiap individu yang berlesen bawah Akta Suruhanjaya Tenaga 2001 (Akta 610) dan Akta Suruhanjaya Tenaga (Pindaan) 2010 (Akta A1371).

Penyata Kewangan ini telah diluluskan dan diperakukan oleh Suruhanjaya Tenaga untuk ditandatangan pada 22 Jun 2022.

2. Asas Penyediaan Penyata Kewangan

Pelaporan penyata kewangan Suruhanjaya Tenaga telah disediakan pada asas akruan mengikut Piawaian Perakaunan Sektor Awam Malaysia (MPSAS). Penyata kewangan ST disediakan berasaskan konvensyen kos sejarah dan amalan perakaunan yang diterima umum di Malaysia. MPSAS 33 membenarkan pengguna kali pertama untuk mengiktiraf dan mengukur Aset dan Liabiliti tertentu dalam tempoh satu (1) hingga tiga (3) tahun.

Suruhanjaya Tenaga menggunakan piawaian MPSAS bermula pada 1 Januari 2020 dengan tarikh peralihan pada 1 Januari 2019 seperti berikut:

MPSAS 1:	Pembentangan Penyata Kewangan
MPSAS 2:	Penyata Aliran Tunai
MPSAS 3:	Dasar Perakaunan, Perubahan dalam Anggaran Perakaunan dan Kesilapan
MPSAS 4:	Kesan Perubahan Kadar Pertukaran Asing
MPSAS 9:	Hasil daripada Urus Niaga Pertukaran
MPSAS 14:	Peristiwa Selepas Tarikh Pelaporan
MP SAS 17:	Hartanah, Loji dan Peralatan
MPSAS 19:	Peruntukan, Liabiliti Luar Jangka dan Aset Luar Jangka
MPSAS 20:	Pendedahan Pihak Berkaitan
MPSAS 21:	Penjejasan Nilai Aset Tidak Menjana Tunai
MPSAS 22:	Pendedahan kepada Maklumat Kewangan

Nota-nota kepada Penyata Kewangan...sambungan

2. Asas Penyediaan Penyata Kewangan...sambungan

MPSAS 23: Hasil daripada Urus Niaga Bukan Pertukaran (Cukai dan Pindahan)
MPSAS 24: Perbentangan Maklumat Bajet dalam Penyata Kewangan
MPSAS 25: Manfaat Pekerja
MPSAS 26: Penjejasan Nilai Aset Menjana Tunai
MPSAS 28: Instrumen Kewangan - Persembahan
MPSAS 29: Instrumen Kewangan - Pengukuran dan Pengiktirafan
MPSAS 30: Instrumen Kewangan - Pendedahan
MPSAS 33: Pemakaian Kali Pertama MPSAS Berasaskan Akruan

Penyediaan Penyata Kewangan memerlukan pengurusan untuk membuat pertimbangan, anggaran dan andaian yang mempengaruhi pemakaian polisi perakaunan dan laporan amaun aset, liabiliti, pendapatan dan perbelanjaan. Walaupun pertimbangan, anggaran dan andaian adalah berdasarkan kepada pengetahuan dan tindakan semasa pihak pengurusan yang terbaik, keputusan sebenar mungkin berbeza. Anggaran dan andaian disemak atas dasar berterusan. Semakan anggaran perakaunan diiktiraf dalam tempoh di mana anggaran disemak dan dalam mana-mana tempoh hadapan yang berkenaan.

3. Polisi Perakaunan

(I). Hartanah, Kelengkapan dan Peralatan

Hartanah, Kelengkapan dan Peralatan dinyatakan pada kos ditolak susutnilai terkumpul dan rosot nilai, jika ada.

Susutnilai bagi hartanah, kelengkapan dan peralatan dikira berdasarkan kaedah asas garis lurus ke atas anggaran jangka masa guna aset berkenaan.

Kadar tahunan susutnilai adalah seperti berikut:

Bangunan	2%
Kenderaan bermotor	20%
Perabot, kelengkapan, ubah suai dan peralatan pernguatkuasaan	20%
Peralatan pejabat (elektronik)	15%
Sistem aplikasi dan komputer	33 1/3%
Lekapan dan kelengkapan	20%

Tanah pada nilai kos adalah jenis pegangan untuk selama-lamanya dan tidak disusutnilaikan.

Nota-nota kepada Penyata Kewangan...sambungan

3. Polisi Perakaunan...sambungan

(I). Hartanah, Kelengkapan dan Peralatan...sambungan

Nilai sisa, jangka hayat dan kaedah susutnilai dikaji semula pada setiap akhir tahun kewangan bagi memastikan amaunnya, kaedah dan tahun susutnilai adalah selaras dengan anggaran sebelumnya serta corak penggunaan manfaat ekonomi hartanah dan peralatan tersebut.

(II). Aset Kewangan

Aset kewangan diiktiraf dalam Penyata Kedudukan Kewangan apabila Suruhanjaya menjadi pihak kepada peruntukan kontrak instrumen.

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

Selepas pengiktirafan awal, Aset Kewangan akan dikelaskan kepada salah satu daripada empat kategori Aset Kewangan iaitu Aset Kewangan diukur pada nilai saksama melalui lebihan atau kurangan, pinjaman dan belum terima, pelaburan dipegang hingga matang dan Aset Kewangan sedia unluk dijual.

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

Pihak Suruhanjaya mempunyai Kategori Aset Kewangan seperti berikut:

(a). Pinjaman dan Belum Terima

Pinjaman dan Belum Terima adalah Aset Kewangan bukan derivatif dengan bayaran tetap atau pembayaran yang tidak tersiar harga di dalam pasaran aktif. Selepas pengiktirafan awal, Aset Kewangan tersebut kemudiannya diukur pada nilai kos dilunaskan dengan menggunakan kaedah faedah berkesan dan ditolak rosot nilai. Kos dilunaskan dikira dengan mengambilkira apa-apa diskaun atau premium atas pembelian aset tersebut serta

Nota-nota kepada Penyata Kewangan...sambungan

3. Polisi Perakaunan...sambungan

(II). Aset Kewangan...sambungan

(a). Pinjaman Dan Belum Terima...sambungan

yuran atau kos yang merupakan sebahagian daripada kadar faedah berkesan. Kerugian yang timbul daripada kemerosotan nilai diiktiraf dalam lebihan atau kurangan. Pinjaman dan Belum Terima diklasifikasikan sebagai aset semasa kecuali Pinjaman dan Belum Terima di mana tarikh matang adalah melebihi 12 bulan selepas tarikh laporan yang diklasifikasikan sebagai aset bukan semasa.

(b). Aset Kewangan Pada Nilai Saksama Melalui Lebihan atau Kurangan

Bagi mana-mana derivatif terbenam yang tidak boleh dinilai dengan yakin secara berasingan sama ada pada tarikh pengambilalihan atau pada tarikh akhir tempoh laporan yang berikutnya, keseluruhan instrumen tersebut ditetapkan pada Nilai Saksama Melalui Lebihan atau Kurangan.

Walau bagaimanapun, jika keseluruhan instrumen tidak boleh dinilai dengan yakin, instrumen tersebut dinyatakan pada nilai kos selepas ditolak rosot nilai.

(c). Pelaburan Dipegang Hingga Matang

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

Suruhanjaya akan menyahiktiraf Aset Kewangan atau, jika berkenaan, sebahagian daripada Aset Kewangan atau sebahagian daripada sekumpulan Aset Kewangan apabila:

Nota-nota kepada Penyata Kewangan...sambungan

3. Polisi Perakaunan...sambungan

(II). Aset Kewangan...sambungan

(c). Pelaburan Dipegang Hingga Matang...sambungan

(i). Hak untuk menerima aliran tunai daripada aset telah luput atau dikecualikan;

(ii). Suruhanjaya telah memindahkan haknya untuk menerima aliran tunai daripada aset atau telah menerima obligasi untuk membayar aliran tunai yang diterima secara penuh tanpa kelewatan material kepada pihak ketiga; dan sama ada: (i) Suruhanjaya telah memindahkan sebahagian besar risiko dan ganjaran aset; atau (ii) Suruhanjaya tidak memindahkan atau mengekalkan sebahagian besar risiko dan ganjaran aset, tetapi telah memindahkan kawalan aset tersebut.

Sebarang perbezaan di antara nilai dibawa aset kewangan yang dinyahiktiraf dan pertimbangan diterima adalah diiktiraf di dalam Penyata Prestasi Kewangan dalam tempoh penyahiktirafan.

(d). Asel Kewangan Sedia Dijual

Aset Kewangan Sedia Dijual adalah Aset Kewangan yang ditetapkan sebagai sedia untuk dijual atau tidak diklasifikasikan dalam mana-mana kategori Aset Kewangan lain. Selepas pengiktirafan asal, Aset Kewangan sedia dijual dinyatakan pada nilai saksama. Keuntungan atau kerugian daripada perubahan nilai saksama Aset Kewangan tersebut diiktiraf melalui Penyata Aset Bersih, kecuali kerugian rosot nilai, kerugian dan keuntungan pertukaran mata wang asing atas instrumen kewangan dan faedah yang dikira di bawah kaedah faedah berkesan.

Pelaburan dalam instrumen ekuiti di mana nilai saksama tidak boleh dinilai dengan yakin dinyatakan pada nilai kos setelah ditolak kerugian rosot nilai.

Nota-nota kepada Penyata Kewangan...sambungan

3. Polisi Perakaunan...sambungan

(III). Liabiliti Kewangan

Liabiliti Kewangan diiktiraf dalam Penyata Kedudukan Kewangan apabila Suruhanjaya menjadi pihak kepada peruntukan kontrak instrumen.

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

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

Suruhanjaya mempunyai kategori Liabiliti Kewangan seperti berikut:

Pinjaman dan Belum Bayar

Selepas pengiktirafan awal, Pinjaman dan Belum Bayar adalah diukur pada kos dilunaskan menggunakan kaedah faedah berkesan. Keuntungan atau kerugian diiktiraf di dalam lebihan atau kurangan apabila Liabiliti Kewangan dinyahiktiraf atau dirosotnilai.

Liabiliti Kewangan dinyahiktiraf apabila obligasi yang dinyatakan dalam kontrak telah dilepaskan, dibatalkan atau tamat tempoh.

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

(IV). Pertimbangan Perakaunan Kritikal dan Ketidakpastian dalam Sumber Utama Anggaran

Tiada sebarang pertimbangan perakaunan kritikal dan ketidakpastian dalam sumber utama anggaran yang digunakan ketika menyediakan Penyata Kewangan Suruhanjaya yang mempunyai kesan ketara ke atas jumlah yang dilaporkan selain yang dinyatakan di bawah:

Nota-nota kepada Penyata Kewangan...sambungan

3. Polisi Perakaunan...sambungan

(IV). Pertimbangan Perakaunan Kritikal dan Ketidakpastian dalam Sumber Utama Anggaran...sambungan

(a). Elaun Rosot Nilai bagi Belum Terima

Suruhanjaya menilai pada setiap tarikh pelaporan sama ada terdapat sebarang bukti objektif bahawa Aset Kewangan terjejas. Untuk menentukan sama ada terdapat bukti objektif rosot nilai, Suruhanjaya menganggap faktor seperti ketidakmampuan bayar siberhutang dan keingkaran atau kelewatan pembayaran yang ketara. Jika terdapat bukti potensi hutang tak mampu dibayar, jumlah dan masa aliran tunai masa hadapan dianggarkan berdasarkan sejarah pengalaman kerugian untuk aset yang mempunyai ciri-ciri risiko kredit yang serupa.

(b). Perubahan Anggaran Jangka Hayat bagi Hartanah, Kelengkapan dan Peralatan

Semua Hartanah, Kelengkapan dan Peralatan disusutnilaikan mengikut kaedah garis lurus sepanjang jangka hayat aset tersebut. Perubahan dalam anggaran corak penggunaan aset dan pembangunan teknologi boleh memberi kesan kepada jangka hayat dan nilai sisa aset tersebut. Ini akan menyebabkan susut nilai aset pada masa hadapan akan disemak semula.

(c). Pengukuran Peruntukan

Suruhanjaya sentiasa menggunakan anggaran terbaik sebagai asas untuk mengukur suatu peruntukan itu. Anggaran itu dibuat berdasarkan kepada pengalaman lalu, lain-lain petunjuk atau andaian, perkembangan terkini dan peristiwa masa hadapan yang munasabah dalam menentukan suatu peruntukan.

Nota-nota kepada Penyata Kewangan...sambungan

3. Polisi Perakaunan...sambungan

(V). Penjejasan Aset Bukan Kewangan

(a). Penjejasan nilai aset menjana tunai

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

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

Kerugian kemerosotan diiktiraf sebagai perbelanjaan dalam Penyata Prestasi Kewangan serta merta apabila nilai dibawa aset melebihi amaun boleh pulihnya.

Kerugian kemerosotan nilai yang diiktiraf dalam tempoh terdahulu bagi sesuatu aset hendaklah dibalikkan jika, dan hanya jika terdapat perubahan dalam anggaran yang digunakan untuk menentukan amaun boleh pulih. Pembalikan tersebut diiktiraf dalam Penyata Prestasi Kewangan.

(b). Penjejasan nilai aset bukan menjana tunai

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

Kerugian kemerosotan diiktiraf sebagai perbelanjaan dalam Penyata Prestasi Kewangan serta merta apabila nilai dibawa aset melebihi jumlah perkhidmatan boleh pulihnya.

Nota-nota kepada Penyata Kewangan...sambungan

3. Polisi Perakaunan...sambungan

(V). Penjejasan Aset Bukan Kewangan...sambungan

(b). Penjejasan nilai aset bukan menjana tunai...sambungan

Dalam menentukan nilai dalam penggunaan, Suruhanjaya telah menggunapakai pendekatan kos penggantian yang disusutnilai. Di dalam pendekatan ini, nilai semasa baki potensi perkhidmatan aset ditentukan sebagai kos penggantian aset yang telah disusutnilai.

Kos penggantian yang disusutnilai akan diukur dengan mengambilkira kos penggantian aset ditolak susut nilai terkumpul yang dikira atas kos itu bagi mencerminkan potensi perkhidmatan aset yang telah digunakan atau sudah luput.

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

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

Nota-nota kepada Penyata Kewangan...sambungan

3. Polisi Perakaunan...sambungan

(VI). Tunai dan Kesetaraan Tunai

Tunai dan Kesetaraan Tunai merangkumi tunai di tangan dan baki bank, deposit di bank dan institusi kewangan lain serta pelaburan berjangka pendek yang mempunyai kecairan tinggi dengan tempoh matang 3 bulan dan kurang dari tarikh pembelian dan sedia ditukar dalam bentuk tunai dengan risiko perubahan nilai yang rendah.

Penyata Aliran Tunai disediakan menggunakan kaedah secara tidak langsung.

(VII). Pelaburan Jangka Pendek

Pelaburan Jangka Pendek merupakan deposit di bank dan institusi kewangan lain serta pelaburan berjangka pendek yang mempunyai kecairan tinggi dengan tempoh matang lebih 3 bulan dan sehingga setahun dari tarikh pembelian dan sedia ditukar dalam bentuk tunai dengan risiko perubahan nilai yang rendah.

(VIII). Kumpulan Wang Khas

Kumpulan Wang Khas merupakan peruntukan khas yang diterima daripada Akaun Amanah Industri Bekalan Elektrik (AAIBE) di bawah Kementerian Tenaga, Teknologi Hijau dan Air (KeTTHA) yang mana kini dikendalikan oleh Kementerian Tenaga dan Sumber Asli (KeTSA) dan Agensi Kerajaan bagi tujuan-tujuan yang khusus.

(IX). Percukaian

Cukai pendapatan ke atas untung atau rugi bagi tahun berkenaan ialah cukai semasa. Cukai semasa ialah amaun cukai pendapatan dijangka yang perlu dibayar atas untung boleh cukai bagi tahun berkenaan dan diukur dengan menggunakan kadar cukai yang digunakan pada tarikh Penyata Kedudukan Kewangan.

Nota-nota kepada Penyata Kewangan...sambungan

3. Polisi Perakaunan...sambungan

(IX). Percukaian...sambungan

Perbelanjaan cukai semasa adalah bayaran cukai yang dijangkakan ke atas pendapatan yang boleh dikenakan cukai bagi tahun semasa, dengan menggunakan kadar cukai yang diwartakan atau sebahagian besarnya diwartakan pada tarikh Penyata Kedudukan Kewangan, dan sebarang perubahan pada bayaran cukai untuk tahun terdahulu.

Cukai tertunda diperuntukkan dengan menggunakan kaedah tanggungan untuk semua perbezaan masa terhasil di antara kadar cukai aset dan tanggungan dan nilai di bawa dalam penyata kewangan. Perbezaan bersifat sementara tidak diiktiraf bagi muhibah, yang tidak dibenarkan bagi tujuan percukaian, dan pada permulaan pengiktirafan aset atau tanggungan dimana pada masa transaksi ianya tidak mempengaruhi keuntungan berkanun dan keuntungan yang boleh dikenakan cukai. Jumlah cukai tertunda yang diperuntukkan adalah berdasarkan kepada jangkaan cara realisasi atau penyelesaian bagi nilai di bawa aset dan tanggungan, menggunakan kadar cukai diwartakan atau sebahagian besarnya diwartakan pada tarikh Penyata Kedudukan Kewangan.

Aset cukai tertunda diiktiraf hanya pada mana ianya berkemungkinan keuntungan yang boleh dikenakan cukai di masa hadapan boleh diperolehi dari aset yang digunakan.

(X). Manfaat Pekerja

(a). Manfaat Pekerja Jangka Pendek

Upah, gaji dan bonus diiktiraf sebagai perbelanjaan dalam tahun di mana perkhidmatan dilaksanakan oleh pekerja-pekerja Suruhanjaya Tenaga. Cuti berganjaran terkumpul jangka pendek seperti cuti tahunan berbayar diiktiraf apabila perkhidmatan dilaksanakan oleh pekerja yang akan meningkatkan kelayakan pekerja ke atas cuti berbayar hadapan, dan cuti berganjaran jangka pendek tidak terkumpul seperti cuti sakit hanya diiktiraf apabila cuti berlaku. Kemudahan perubatan seperti kemudahan rawatan pesakit luar, kemudahan skim hospital dan pembedahan berkumpulan dan kemudahan bersalin adalah diberikan kepada semua kakitangan tetap dan kontrak berdasarkan peruntukan yang telah ditetapkan di dalam Terma dan Syarat Perkhidmatan Suruhanjaya Tenaga yang sedang berkuat kuasa.

Nota-nota kepada Penyata Kewangan...sambungan

3. Polisi Perakaunan...sambungan

(X). Manfaat Pekerja

(a). Manfaat Pekerja Jangka Pendek...sambungan

Manakala, manfaat pekerja seperti pemberian faedah persaraan berbentuk gratuiti dan subsidi bagi pinjaman perumahan, kenderaan dan peribadi yang akan dibayar dalam tahun kewangan akan datang akan diiktiraf secara akruan di dalam Penyata Prestasi Kewangan tahun semasa sebagai perbelanjaan dan di dalam Penyata Kedudukan Kewangan sebagai Liabiliti Semasa.

(b). Pelan Sumbangan Tetap

Mengikut undang-undang, majikan di Malaysia yang berkelayakan diwajibkan memberi sumbangan tetap ke atas Kumpulan Wang Simpanan Pekerja dan PERKESO. Sumbangan tersebut diiktiraf sebagai perbelanjaan di dalam Penyata Prestasi Kewangan. Tanggungan untuk pelan sumbangan tetap, diiktiraf sebagai perbelanjaan semasa di dalam Penyata Prestasi Kewangan.

(c). Manfaat Pekerja Jangka Panjang

Manfaat Pekerja Jangka Panjang ialah pemberian faedah persaraan berbentuk gratuiti kepada kakitangan-kakitangan tetap yang telah berkhidmat minimum 10 tahun dengan kadar pengiraan gratuiti seperti yang diluluskan oleh YB Menteri. lanya merupakan bayaran manfaat pekerja yang dibayar selepas bersara yang diiktiraf secara akruan dalam Penyata Prestasi Kewangan tahun semasa sebagai perbelanjaan dan di dalam Penyata Kedudukan Kewangan sebagai Liabiliti Bukan Semasa. Pengiktirafan dengan menggunakan *acturial valuation method.*

Nota-nota kepada Penyata Kewangan...sambungan

3. Polisi Perakaunan...sambungan

(XI). Pengiktirafan Pendapatan dan Perbelanjaan

Pendapatan dari yuran dan caj diambil kira mengikut asas tunai memandangkan tanggungjawab pembayaran tahunan adalah pada pemegang-pemegang lesen. Selain itu, pendapatan faedah bagi simpanan semasa di bank dikira berasaskan tunai manakala pendapatan faedah daripada simpanan tetap dan pelaburan jangka pendek serta semua perbelanjaan diambil kira mengikut asas akruan. Pendapatan pelbagai terdiri daripada jualan dokumen tender, jualan buku-buku berkaitan industri, jualan aset tetap dan caj/penalti yang dikenakan atas kegagalan melaksanakan projek. Pelbagai kos operasi merangkumi perbelanjaan sumbangan atau penajaan yang dibuat oleh Suruhanjaya Tenaga untuk penyelidikan dan pembangunan.

(XII). Pendedahan Pihak Berkaitan

Pihak-pihak yang dianggap berkaitan jika satu pihak mempunyai keupayaan untuk mengawal pihak lain atau melaksanakan pengaruh ke atas pihak lain, setakat mana ia menghalang pihak lain dari mengejar kepentingan sendiri yang berasingan dalam membuat keputusan kewangan dan operasi.

(XIII). Peruntukan

Peruntukan diiktiraf apabila Suruhanjaya Tenaga mempunyai obligasi semasa yang konstruktif dan dari segi undang-undang, kesan daripada peristiwa lalu dan berkemungkinan bahawa aliran keluar sumber yang melibatkan manfaat ekonomi akan diperlukan untuk menyelesaikan obligasi tersebut dan amaun obligasi itu boleh dianggarkan dengan pasti.

Peruntukan disemak pada setiap tarikh pelaporan dan diselaraskan untuk membayangkan anggaran semasa terbaik. Jika tiada lagi kemungkinan bahawa aliran keluar sumber ekonomi akan diperlukan untuk menyelesaikan obligasi itu, peruntukan tersebut akan dibalikkan. Sekiranya kesan nilai masa wang adalah ketara, peruntukan akan didiskaunkan menggunakan kadar sebelum cukai semasa yang menggambarkan, bila mana bersesuaian, risiko khusus kepada liabiliti tersebut. Apabila pendiskaunan digunakan, peningkatan dalam peruntukan yang disebabkan oleh peredaran masa diiktiraf sebagai kos kewangan.

Nota-nota kepada Penyata Kewangan...sambungan

3. Polisi Perakaunan...sambungan

(XIV). Tukaran Wang Asing

Urus niaga yang dibuat dengan menggunakan mata wang asing telah ditukarkan kepada Ringgit Malaysia dengan kadar yang ditetapkan pada masa urus niaga dilaksanakan.

4. Tunai dan Kesetaraan Tunai

	2021	2020
	RM	RM
Wang Tunai dan Baki di Bank	54,280,299	35,840,473
Deposit di Bank Berlesen	68,878,970	67,396,856
JUMLAH	**123,159,269**	**103,237,329**

Wang Tunai dan Baki di Bank adalah termasuk dana Kumpulan Wang Khas sebanyak RM5,706,219 (2020: RM5,747,479).

Nota-nota kepada Penyata Kewangan...sambungan

5. Pelbagai Akaun Belum Terima, Deposit dan Pendahuluan

	2021	2020
	RM	RM
Deposit Keahlian Kelab	92,000	92,000
Lain-lain Deposit dan Pendahuluan	577,336	585,286
JUMLAH	**669,336**	**677,286**

Lain-lain Deposit dan Pendahuluan adalah terdiri daripada deposit sewa pejabat kawasan, stor, dan tempat letak kenderaan serta deposit penggunaan fasiliti lain seperti deposit bagi perkhidmatan perubatan *(Third Party Administrator)*, ruang iklan pejabat kawasan, elektrik dan lain-lain.

6. Pendapatan Faedah Belum Terima

	2021	2020
	RM	RM
Hasil Faedah Terakru	2,255,183	2,142,746
JUMLAH	**2,255,183**	**2,142,746**

Pendapatan Faedah Belum Terima adalah faedah belum matang bagi simpanan tetap yang diambil kira sehingga 31 Disember setiap tahun.

Nota-nota kepada Penyata Kewangan...sambungan

7. Hartanah, Kelengkapan dan Peralatan

2021	Tanah	Bangunan	Kenderaan Bermotor	Perabot, Kelengkapan, Ubahsuai dan Peralatan Penguatkuasaan	Peralatan Pejabat (Elektronik)	Sistem Aplikasi dan Komputer	Lekapan dan Kelengkapan	Jumlah
	RM	RM	RM	RM	RM	RM	RM	RM
Kos								
Pada 1 Januari	8,299,405	79,205,160	4,144,439	7,052,286	5,358,021	5,167,648	1,580,140	110,807,099
Penambahan	–	–	–	180,115	173,590	389,911	5,000	748,616
Pelupusan/Pindahan	–	–	–	–	(195,880)	(4,999)	–	(200,879)
Pada 31 Disember	8,299,405	79,205,160	4,144,439	7,232,401	5,335,731	5,552,560	1,585,140	111,354,836
Susutnilai Terkumpul								
Pada 1 Januari	–	11,880,773	3,342,073	6,024,966	4,837,381	4,344,647	1,541,625	31,971,465
Susutnilai Tahun Semasa	–	1,584,103	223,421	394,144	181,454	531,418	10,084	2,924,624
Pelupusan/Pindahan	–	–	–	–	(195,871)	(4,998)	–	(200,869)
Pada 31 Disember	–	13,464,876	3,565,494	6,419,110	4,822,964	4,871,067	1,551,709	34,695,220
Nilai Buku Bersih								
Pada 31 Disember	**8,299,405**	**65,740,284**	**578,945**	**813,291**	**512,767**	**681,493**	**33,431**	**76,659,616**

Nota-nota kepada Penyata Kewangan...sambungan

7. Hartanah, Kelengkapan dan Peralatan...sambungan

2020	Tanah	Bangunan	Kenderaan Bermotor	Perabot, Kelengkapan, Ubahsuai dan Peralatan Penguatkuasaan	Peralatan Pejabat (Elektronik)	Sistem Aplikasi dan Komputer	Lekapan dan Kelengkapan	Jumlah
	RM	RM	RM	RM	RM	RM	RM	RM
Kos								
Pada 1 Januari	8,299,405	79,205,160	4,347,898	6,938,122	5,248,782	5,414,159	1,580,140	111,033,666
Penambahan	–	–	341,516	114,164	109,239	449,838	–	1,014,757
Pelupusan/Pindahan	–	–	(544,975)	–	–	(696,349)	–	(1,241,324)
Pada 31 Disember	8,299,405	79,205,160	4,144,439	7,052,286	5,358,021	5,167,648	1,580,140	110,807,099
Susutnilai Terkumpul								
Pada 1 Januari	–	10,296,670	3,689,144	5,624,827	4,597,545	4,505,377	1,531,624	30,245,187
Susutnilai Tahun Semasa	–	1,584,103	197,901	400,139	239,836	535,082	10,001	2,967,062
Pelupusan/Pindahan	–	–	(544,972)	–	–	(695,812)	–	(1,240,784)
Pada 31 Disember	–	11,880,773	3,342,073	6,024,966	4,837,381	4,344,647	1,541,625	31,971,465
Nilai Buku Bersih								
Pada 31 Disember	**8,299,405**	**67,324,387**	**802,366**	**1,027,320**	**520,640**	**823,001**	**38,515**	**78,835,634**

Nota-nota kepada Penyata Kewangan...sambungan

8. Pelbagai Akaun Belum Bayar dan Perbelanjaan Terakru

	2021	2020
	RM	RM
Akaun Belum Bayar	294,736	55,084
Akaun Belum Bayar Terakru	14,593,906	13,257,096
Peruntukan Cuti Kakitangan (GCR)	2,795,259	2,145,269
Kompaun Kumpulan Wang Disatukan di bawah KeTSA	–	2,500
Yuran Audit	50,562	47,488
JUMLAH	**17,734,463**	**15,507,437**

Akaun Belum Bayar dan Belum Bayar Terakru adalah tidak dikenakan faedah dan pada kebiasaannya diselesaikan atas terma 30 hari

Pengiraan Peruntukan Cuti Kakitangan (GCR) adalah berdasarkan kelulusan yang diperolehi daripada Menteri Tenaga, Air dan Komunikasi pada 24 Sepember 2004.

9. Peruntukan Manfaat Pekerja

	2021	2020
	RM	RM
Pada 1 Januari	17,081,926	15,965,636
Peruntukan bagi Tahun Semasa	3,103,377	3,481,646
Bayaran pada Tahun Semasa	(2,829,490)	(2,365,356)
Pada 31 Disember	**17,355,813**	**17,081,926**

Struktur kematangan Peruntukan Manfaat Pekerja adalah seperti berikut:

	2021	2020
	RM	RM
Matang dalam Tempoh 12 Bulan	3,735,555	3,040,731
Matang dalam Tempoh Melebihi 12 bulan	13,620,258	14,041,195
JUMLAH	**17,355,813**	**17,081,926**

Nota-nota kepada Penyata Kewangan...sambungan

9. Peruntukan Manfaat Pekerja...sambungan

Peningkatan Peruntukan Manfaat Pekerja dalam tahun 2021 adalah selaras dengan penambahan kakitangan dan pindaan Terma dan Syarat Perkhidmatan Suruhanjaya Tenaga yang berkuat kuasa pada 1 Mac 2019.

Andaian Aktuari yang digunakan untuk pengiraan Peruntukan Manfaat Pekerja bagi Gratuiti adalah menggunakan kadar purata kenaikan gaji tahunan iaitu 7.5% (2020: 7.5%) dan kadar purata diskaun iaitu 4.17% (2020: 4.17%).

10. Kumpulan Wang Khas

2021	Akaun Wang Khas PPKTL	Akaun Wang Khas MyPower	Akaun Wang Khas PR & PLL	Akaun Wang Khas SAIDI 100	Jumlah
	RM	RM	RM	RM	RM
Baki pada 1 Januari 2021	**156,960**	**1,975**	**5,588,544**	**–**	**5,747,479**
Pendapatan:					
Faedah Bank	1,587	3	55,822	–	**57,412**
	1,587	3	55,822	–	**57,412**
(-) Perbelanjaan:					
Caj bank	–	(10)	(2)	–	**(12)**
Perbelanjaan/Pelunasan dalam tahun	–	–	(98,660)	–	**(98,660)**
	–	(10)	(98,662)	–	**(98,672)**
Lebihan/(Kurangan)	1,587	(7)	(42,840)	–	**(41,260)**
Baki pada 31 Disember 2021	**158,547**	**1,968**	**5,545,704**	**–**	**5,706,219**

Nota-nota kepada Penyata Kewangan...sambungan

10. Kumpulan Wang Khas...sambungan

2020	Akaun Wang Khas PPKTL	Akaun Wang Khas MyPower	Akaun Wang Khas PR & PLL	Akaun Wang Khas SAIDI 100	Jumlah
	RM	RM	RM	RM	RM
Baki pada 1 Januari 2020	**729,167**	**1,979**	**5,611,865**	**14,292**	**6,357,303**
Pendapatan:					
Faedah Bank	8,656	6	56,042	122	**64,826**
	8,656	6	56,042	122	**64,826**
(-) Perbelanjaan					
Caj bank	(1)	(10)	(1)	–	**(12)**
Perbelanjaan/Pelunasan dalam tahun	–	–	(79,362)	–	**(79,362)**
Pindahan Semula Peruntukan/Dana	(580,862)	–	–	(14,414)	**(595,276)**
	(580,863)	(10)	(79,363)	(14,414)	**(674,650)**
Kurangan	(572,207)	(4)	(23,321)	(14,292)	**(609,824)**
Baki pada 31 Disember 2020	**156,960**	**1,975**	**5,588,544**	**–**	**5,747,479**

Kumpulan Wang Khas merupakan peruntukan khas yang diterima daripada Akaun Amanah Industri Bekalan Elektrik (AAIBE) di bawah Kementerian Tenaga, Teknologi Hijau dan Air (KeTTHA) yang mana kini dikendalikan oleh Kementerian Tenaga dan Sumber Asli (KeTSA) serta Agensi Kerajaan bagi tujuan-tujuan yang khusus. Butiran setiap akaun di bawah Kumpulan Wang Khas adalah seperti berikut:-

(i). **Akaun Wang Khas PPKTL:** bertujuan membiayai Projek Pelan Komunikasi Tenaga Lestari bagi mempromosi tenaga lestari yang merangkumi bidang kecekapan tenaga dan tenaga boleh baharu, serta memupuk kesedaran dan meningkatkan pengetahuan orang ramai terhadap kerangka perundangan dan kawal selia tenaga lestari.

(ii). **Akaun Wang Khas MyPower:** bertujuan membiayai pelaksanaan inisiatif bagi projek di bawah RMKe-10 iaitu *Stabilization Mechanism, Ring Fencing Single Buyer, Fuel Supply and Security* dan *Industry Structure*.

(iii). **Akaun Wang Khas PR & PLL:** bagi membiayai Projek Retrofit dan Pemasangan Lampu LED di bangunan kementerian terpilih yang mula dilaksanakan pada awal tahun 2015.

(iv). **Akaun Wang Khas SAIDI 100:** bertujuan untuk mengkaji dan mengenal pasti isu-isu berkaitan bekalan elektrik di negeri Sabah bagi mencapai sasaran kerajaan untuk menurunkan tahap Sistem Purata Tempoh Gangguan (SAIDI) bekalan elektrik kepada pengguna menjelang tahun 2020.

Nota-nota kepada Penyata Kewangan...sambungan

11. Yuran dan Caj

	2021	2020
	RM	RM
Pelesenan Awam dan Persendirian	80,184,691	76,157,449
Pendaftaran/Pembaharuan Fi Operasi	31,858,360	30,296,645
Lain-lain Fi Operasi	702,116	626,780
JUMLAH	**112,745,167**	**107,080,874**

12. Gaji, Elaun dan Manfaat Pekerja

	2021	2020
	RM	RM
Gaji dan Elaun Kakitangan	38,999,966	36,034,247
Elaun Anggota Suruhanjaya Tenaga	801,438	662,634
Sumbangan Berkanun	8,842,554	7,416,200
Faedah Kewangan Yang Lain	14,768,532	15,327,921
JUMLAH	**63,412,490**	**59,441,002**

Bilangan kakitangan Suruhanjaya Tenaga pada 31 Disember 2021 adalah seramai 372 orang. Manakala, bilangan kakitangan untuk tahun 2020 adalah seramai 357 orang. Bilangan Anggota Suruhanjaya Tenaga bagi tahun 2021 adalah seramai 10 orang manakala pada tahun 2020 adalah seramai 8 orang. Sumbangan Berkanun adalah merangkumi caruman kepada Kumpulan Wang Simpanan Pekerja (KWSP) berjumlah RM8,530,565 (2020: RM7,134,237), Pertubuhan Keselamatan Sosial (PERKESO) berjumlah RM293,918 (2020: RM281,963) dan Kumpulan Wang Persaraan (Diperbadankan) berjumlah RM18,071.

Nota-nota kepada Penyata Kewangan...sambungan

13. Penyenggaraan

	2021	2020
	RM	RM
Penyenggaraan Sistem Aplikasi	4,095,203	4,299,846
Penyenggaraan Alatan, Kenderaan dan Bangunan Pejabat	2,015,130	1,935,221
JUMLAH	**6,110,333**	**6,235,067**

14. Perkhidmatan Ikhtisas

	2021	2020
	RM	RM
Fi Audit	50,562	47,488
Fi Profesional dan Konsultan	8,778,550	7,051,820
Pembangunan Kompetensi dan Pengurusan Prestasi	1,035,863	678,682
Perbelanjaan-perbelanjaan lain	566,462	438,195
JUMLAH	**10,431,437**	**8,216,185**

Nota-nota kepada Penyata Kewangan...sambungan

15. Cukai

	2021 RM	2020 RM
Perbelanjaan Cukai		
Tahun Semasa	3,107,083	4,105,545
Penyesuaian Kadar Cukai Efektif		
Lebihan Pendapatan Sebelum Cukai	32,930,117	37,757,868
Cukai pada Kadar 30%	9,879,035	11,327,360
Pendapatan yang Dikecualikan Cukai	(6,771,952)	(7,221,815)
Perbelanjaan Cukai	**3,107,083**	**4,105,545**

Suruhanjaya Tenaga telah mendapat pengecualian cukai pendapatan di bawah Seksyen 127(3)b Akta Cukai Pendapatan 1967 yang diberikan oleh Kementerian Kewangan pada 19 Oktober 2004. Pengecualian cukai tersebut diberikan hanya ke atas pendapatan berkanun yang berikut:

(i). Pendapatan yang diterima daripada Kerajaan Persekutuan atau Kerajaan Negeri dalam bentuk suatu pemberian atau subsidi;

(ii). Pendapatan yang diterima berkenaan dengan suatu amaun yang boleh dikenakan ke atas atau dipungut daripada mana-mana orang mengikut peruntukan Akta yang mengawal selia pihak berkuasa berkanun; dan

(iii). Derma atau sumbangan yang diterima.

Nota-nota kepada Penyata Kewangan...sambungan

16. Maklumat Bajet

Bajet Suruhanjaya Tenaga diluluskan oleh Kementerian Tenaga dan Sumber Asli untuk meliputi tempoh fiskal bermula dari 1 Januari 2021 hingga 31 Disember 2021.

Berikut adalah perbezaan material di antara amaun Bajet Akhir dan Sebenar pada tahun 2021:

PERIHAL	Sebenar 2021	Bajet Akhir	Perbezaan
	RM	RM	RM
HASIL			
Hasil Operasi	112,745,167	116,565,767	(3,820,600)
PERBELANJAAN			
Perjalanan dan Sara Hidup	455,733	5,000,000	4,544,267
Bekalan Pejabat	654,046	2,000,000	1,345,954
Penyenggaraan	4,933,816	8,500,000	3,566,184
Perkhidmatan Ikhtisas	8,655,488	28,835,300	20,179,812
Aset	211,017	1,600,000	1,388,983

Pandemik COVID-19 yang melanda negara pada tahun 2020 dan masih berterusan secara tidak langsung memberi kesan kepada kutipan hasil dan perbelanjaan tahun 2021.

Pelaksanaan Perintah Kawalan Pergerakan telah membataskan kerja-kerja pengawalseliaan khususnya aktiviti penguatkuasaan di premis pelesen-pelesen dan menjejaskan prestasi kutipan hasil dan perbelanjaan bagi Perjalanan dan Sara Hidup.

Terdapat kerja-kerja penyenggaraan bangunan dan sistem aplikasi yang masih di dalam kemajuan menyebabkan pengurangan perbelanjaan Penyenggaraan tahun 2021.

Perbezaan material bagi Perkhidmatan Ikhtisas adalah kerana beberapa pengurusan acara dalaman dan luaran ST tidak dapat dilaksanakan kerana Pandemik COVID-19. Di samping itu, terdapat juga beberapa projek pembangunan yang belum selesai dilaksanakan dan direkodkan sebagai Komitmen bagi pakar runding yang telah dilantik pada tahun 2021.

Nota-nota kepada Penyata Kewangan...sambungan

17. Komitmen

	2021	2020
	RM	RM
Hartanah, Kelengkapan dan Peralatan	582,086	530,811
Perkhidmatan Ikhtisas	12,643,280	6,421,373
Utiliti, Bekalan Pejabat dan Penyenggaraan	2,689,532	2,486,228
Sumbangan	19,980	–
Emolumen	56,370	–
JUMLAH	**15,991,248**	**9,438,412**

Komitmen bagi tahun berakhir 31 Disember 2021 di bawah Hartanah, Kelengkapan dan Peralatan berjumlah RM582,086 adalah merupakan kos ubah suai ruang pejabat di dalam bangunan Ibu Pejabat serta perolehan aset-aset lain termasuk kelengkapan perabot dan peralatan elektronik. Perkhidmatan Ikhtisas adalah terdiri daripada perkhidmatan bagi Projek Transformasi Digital ST bernilai RM8,563,736 dan lain-lain perkhidmatan pakar runding dan konsultasi bernilai RM4,079,544.

Komitmen untuk Penyenggaraan bagi aktiviti menyenggara dan khidmat sokongan sistem rangkaian ICT serta penyenggaraan bangunan adalah berjumlah RM2, 111,266 manakala kos Bekalan Pejabat berjumlah RM578,266. Selain itu, terdapat juga Komitmen untuk Sumbangan sebanyak RM19,980 dan Emolumen RM56,370.

Jumlah Komitmen bagi tahun 2020 sebanyak RM9,438,412 meliputi kos berkaitan Hartanah, Kelengkapan dan Peralatan, Perkhidmatan Ikhtisas, Utiliti, Penyenggaraan dan Bekalan Pejabat.

Nota-nota kepada Penyata Kewangan...sambungan

18. Liabiliti Luar Jangka

Suatu Saman Pemula telah difailkan di Mahkamah Tinggi Kuala Lumpur terhadap Suruhanjaya Tenaga ("ST") dan Gas Malaysia Berhad ("GMB") oleh Perbadanan Pengurusan Solaris Dutamas ("Solaris") pada 12 Disember 2019 yang mendakwa tindakan ST mengenakan kewajipan kepada Solaris untuk memohon lesen peruncitan gas di bawah Akta Bekalan Gas 1993 [Akta 501] bagi membekalkan gas asli kepada kawasan pembangunan dan menyelenggara saluran paip pengguna adalah *ultra vires* Akta Pengurusan Strata 2013. Pada 27 Ogos 2020, Mahkamah Tinggi telah pada menolak Saman Pemula yang difailkan Solaris dengan kos. Solaris telah membuat rayuan kepada Mahkamah Rayuan dan Mahkamah Rayuan pada 1 Oktober 2021 telah membenarkan rayuan Solaris. Kes ini kini sedang dalam proses mendapatkan kebenaran untuk merayu di Mahkamah Persekutuan. Terdapat isu novel di dalam kes ini yang melibatkan risiko kepada ST berkaitan kawal selia terhadap lesen peruncitan gas yang telah dikeluarkan ST sebelum ini kepada Perbadanan Pengurusan/Badan Pengurusan Bersama.

Pada 18 Disember 2020, suatu tindakan sivil telah difailkan di Mahkamah Tinggi Kuala Lumpur terhadap ST oleh Strong Elegance Sdn Bhd ("SE") untuk deklarasi bahawa penarikan balik *Letter of Award* untuk projek *Large Scale Solar* bertarikh 2 Mei 2017 oleh ST adalah tidak sah dan menuntut ganti rugi bagi semua kos dan perbelanjaan yang ditanggung oleh SE akibat penarikan *Letter of Award* tersebut termasuk ganti rugi umum dan ganti rugi teladan untuk dinilai oleh Mahkamah.

FINANCIAL STATEMENTS

CERTIFICATE OF THE AUDITOR GENERAL ON THE FINANCIAL STATEMENTS OF ENERGY COMMISSION FOR THE YEAR ENDED 31 DECEMBER 2021

Certificate on the Audit of the Financial Statements

Opinion

I have authorised a private audit firm pursuant to Subsection 7 (3) of the Audit Act 1957 [*Act 62*] to undertake an audit of the Financial Statements of the Energy Commission. The financial statements comprise the Statement of Financial Position as at 31 December 2021 of the Energy Commission and the Statement of Financial Performance, Statement of Changes in Net Assets/Equity, Statement of Cash Flows and Statement of Budget Performance for the year then ended, and notes to the financial statements, including a summary of significant accounting policies, as set out on pages 1 to 28.

In my opinion, the accompanying financial statements give a true and fair view of the financial position of the Energy Commission as at 31 December 2021, and of its financial performance and its cash flows for the year then ended in accordance with the Malaysian Public Sector Accounting Standards (MPSAS) and the Energy Commission Act 2001 [*Act 610*] and Energy Commission (Amendment) Act 2010 [*Act A1371*] requirements.

Basis for Opinion

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

Independence and Other Ethical Responsibilities

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

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

The Members of the Energy Commission are responsible for the other information in the Annual Report. My opinion on the Financial Statements of the Energy Commission does not cover the other information than the financial statements and Auditor's Certificate thereon and I do not express any form of assurance conclusion thereon.

Responsibilities of the Members of the Energy Commission for the Financial Statements

The Members of the Energy Commission are responsible for the preparation of Financial Statements of the Energy Commission that give a true and fair view in accordance with the Malaysian Public Sector Accounting Standards (MPSAS) and the Energy Commission Act 2001 [*Act 610*] and Energy Commission (Amendment) Act 2010 [*Act A1371*] requirements. The Members of the Energy Commission are also responsible for such internal control as the Members of the Energy Commission determines are necessary to enable the preparation of the Financial Statements of the Energy Commission that are free from material misstatement, whether due to fraud or error.

In preparing the Financial Statements of the Energy Commission, the Members of the Energy Commission are responsible for assessing the Energy Commission's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting.

Auditor's Responsibilities for the Audit of the Financial Statements

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

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

a. identify and assess the risks of material misstatement of the Financial Statements of the Energy Commission, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to

provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control;

b. obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Energy Commission's internal control;

c. evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Members of the Energy Commission;

d. conclude on the appropriateness of the Members of the Energy Commission's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Energy Commission's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my Auditor's Certificate to the related disclosures in the Financial Statements of the Energy Commission or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of Auditor's Certificate. However, future events or conditions may cause the Energy Commission to cease to continue as a going concern; and

e. evaluate the overall presentation, structure and content of the Financial Statements of the Energy Commission, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

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

Other Matters

This certificate is made solely to the Members of the Energy Commission in accordance with the Energy Commission Act 2001 [*Act 610*] and Energy Commission (Amendment) Act 2010 [*Act A1371*] requirements, and for no other purpose. I do not assume responsibility to any other person for the content of this certificate.

(FARIZAH BINTI BERAM)
ON BEHALF OF AUDITOR GENERAL

PUTRAJAYA
23 JUNE 2022

STATEMENT BY CHAIRMAN AND A MEMBER OF THE ENERGY COMMISSION

We Dato' Azian bin Osman and Dato' Ir. Dr. Shaik Hussein bin Mydin, being the Chairman and one of the Members of the Energy Commission hereby declare, that in the opinion of the Energy Commission Members, the Financial Statements comprising the Statement of Financial Position, Statement of Financial Performance, Statement of Changes in Net Assets/Equity, Statement of Cash Flows, Statement of Budget Performance of the Energy Commission and the notes on the Financial Statements have been prepared so as to give a true and fair view of the state of affairs of the Energy Commission as at 31 December 2021 and of its results and changes in the financial position for the year ended on that date.

On behalf of the Commission Members,

.....

Dato' Azian bin Osman
Chairman

Date: 22 June 2022

Place: Energy Commission
Precinct 2, Putrajaya

On behalf of the Commission Members,

.....

Dato' Ir. Dr. Shaik Hussein bin Mydin
Member

Date: 22 June 2022

Place: Energy Commission
Precinct 2, Putrajaya

DECLARATION OF OFFICER PRIMARILY RESPONSIBLE FOR THE FINANCIAL MANAGEMENT OF THE ENERGY COMMISSION

I, Ts. Abdul Razib bin Dawood, Chief Executive Officer responsible for the financial management and accounting records of the Energy Commission, solemnly declare that the Statement of Financial Position, Statement of Financial Performance, Statement of Changes in Net Assets/Equity, Statement of Cash Flows and the Statement of Budget Performance of the Energy Commission in the following financial position and the notes on the Financial Statements, are, to the best of my knowledge and belief, correct, and that I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the Statutory Declaration Act 1960.

Subscribed and solemnly declared)
by the above-named)
at PUTRAJAYA WILAYAH PERSEKUTUAN)
on 22 JUN 2022)

.....

Before me,

PESURUHJAYA SUMPAH
MALAYSIA
W732
MOHD YUSRI ISMAIL
01.01.2021 - 31.12.2023

.....

COMMISSIONER OF OATH

D-3-2 Ayer@8, Jalan P8G,
Presint 8,
62250 Putrajaya

STATEMENT OF FINANCIAL POSITION
As At 31 December 2021

	Note	2021 RM	2020 RM
ASSETS			
Current Assets			
Cash and Cash Equivalents	4	123,159,269	103,237,329
Short Term Investment		407,321,072	398,228,632
Other Receivables, Deposit and Advance	5	669,336	677,286
Accrued Interest Income	6	2,255,183	2,142,746
Tax in Advance		1,234,293	–
Total Current Assets		534,639,153	504,285,993
Non-Current Assets			
Property, Fittings and Equipment	7	76,659,616	78,835,634
		611,298,769	**583,121,627**
Total Assets			
LIABILITIES			
Current Liabilities			
Other Payables and Accrued Expenses	8	17,734,463	15,507,437
Provision for Short Term Employee Benefits	9	3,735,555	3,040,731
Special Funds	10	5,706,219	5,747,479
Tax Provisions		–	4,105,545
Total Current Liabilities		27,176,237	28,401,192
Non-Current Liabilities			
Provision for Long Term Employee Benefits	9	13,620,258	14,041,195
Total Liabilities		**40,796,495**	**42,442,387**
Net Assets		**570,502,274**	**540,679,240**
NET ASSETS/EQUITIES			
Retained Profits		**570,502,274**	**540,679,240**

The attached notes from pages 6 to 28 are an integral part of this Financial Statement.

ENERGY COMMISSION
Established under the Energy Commission Act 2001 (Act 610) and
Energy Commission (Amendment) Act 2010 (Act A1371)

STATEMENT OF FINANCIAL PERFORMANCE
For The Year Ended 31 December 2021

	Note	2021 RM	2020 RM
INCOME			
Income from Non-Exchangeable Transactions			
Fees and Charges	11	112,745,167	107,080,874
Income from Exchangeable Transactions			
Interests		10,616,965	13,947,835
Other Income		40,395	1,032,506
TOTAL INCOME		123,402,527	122,061,215
EXPENSES			
Wages, Allowances and Employee Benefits	12	63,412,490	59,441,002
Travelling and Subsistence Allowances		455,733	795,472
Communications and Utilities		2,426,535	2,395,658
Rental		2,698,690	2,578,870
Hospitalities		233,121	385,673
Office Supplies		947,733	847,502
Maintenance	13	6,110,333	6,235,067
Professional Services	14	10,431,437	8,216,185
Depreciation of Property, Fittings and Equipment		2,924,624	2,967,062
Other Expenses		831,714	440,856
TOTAL EXPENSES		(90,472,410)	(84,303,347)
Profit Before Tax		32,930,117	37,757,868
Taxation Expense	15	(3,107,083)	(4,105,545)
Profit for The Year		29,823,034	33,652,323

The attached notes from pages 6 to 28 are an integral part of this Financial Statement.

STATEMENT OF CHANGES IN NET ASSETS / EQUITY
For The Year Ended 31 December 2021

	Total
	RM
2020	
Balance as at 1 January	506,637,313
Prior year adjustment	389,604
Surplus for the year	33,652,323
Balance as at 31 December	540,679,240
2021	
Balance as at 1 January	540,679,240
Surplus for the year	29,823,034
Balance as at 31 December	570,502,274

The attached notes from pages 6 to 28 are an integral part of this Financial Statement.

ENERGY COMMISSION
Established under the Energy Commission Act 2001 (Act 610) and
Energy Commission (Amendment) Act 2010 (Act A1371)

STATEMENT OF CASH FLOWS
For The Year Ended 31 December 2021

	Note	2021 RM	2020 RM
CASH FLOWS FROM OPERATING ACTIVITIES			
Surplus of Income Before Tax		32,930,117	37,757,868
Adjustments for Non-Cash Items:			
Income from Interest Received		(10,616,965)	(13,947,835)
Depreciation of Property, Fittings and Equipment		2,924,624	2,967,062
Disposal of Property, Fittings and Equipment		10	540
Provisions for Employee Benefits		3,103,377	3,481,646
Operating Surplus Before Changes in Working Capital		28,341,163	30,259,281
Changes in Working Capital and Special Funds:			
(Increase)/Decrease in Other Receivables and Accrued Interest Income		(104,487)	3,287,709
Increase in Other Payables and Accrued Liabilities		2,227,026	4,170,447
Bank Interest from Special Funds		57,400	64,814
Transfer of Special Funds		–	(595,276)
Expenditure of Special Funds		(98,660)	(79,362)
Cash Flows from Operating Activities		30,422,442	37,107,613
Tax Paid		(8,446,921)	(4,341,377)
Payment for Employee Benefits		(2,829,490)	(2,365,356)
Net Cash Generated from Operating Activities		**19,146,031**	**30,400,880**
CASH FLOWS FROM INVESTING ACTIVITIES			
Short Term Investment		(9,092,440)	(58,032,545)
Purchase of Property, Fittings and Equipment		(748,616.00)	(1,014,757)
Interest Income Received		10,616,965	13,947,835
Net Cash/(Used In) Investing Activities		**775,909**	**(45,099,467)**
Net Decrease in Cash and Cash Equivalents		19,921,940	(14,698,587)
Cash and Cash Equivalents at The Beginning of The Year		**103,237,329**	**117,935,916**
Cash and Cash Equivalents at The End of The Year	4	**123,159,269**	**103,237,329**

The attached notes from pages 6 to 28 are an integral part of this Financial Statement.

STATEMENT OF BUDGET PERFORMANCE
For The Year Ended 31 December 2021

Actual 2020	Details	Actual 2021	Final Budget 2021	Original Budget 2021	Differences between Final Budget and Actual
RM		RM	RM	RM	RM
	INCOME				
107,080,874	Income from Operation	112,745,167	116,565,767	116,565,767	(3,820,600)
14,980,341	Interests Income, Profits from *Hibah* and other Income	10,657,360	8,579,000	8,579,000	2,078,360
122,061,215	**Total Income**	**123,402,527**	**125,144,767**	**125,144,767**	**(1,742,240)**
	EXPENSES				
59,441,002	Emolument	63,412,490	64,871,000	64,871,000	1,458,510
795,472	Travelling and Subsistence Allowances	455,733	5,000,000	5,000,000	4,544,267
2,395,658	Communications and Utilities	2,426,535	3,750,000	3,750,000	1,323,465
2,578,870	Rental	2,698,690	3,300,000	3,300,000	601,310
385,673	Hospitality	233,121	750,000	750,000	516,879
847,502	Office Supplies	654,046	2,000,000	2,000,000	1,345,954
5,876,226	Maintenance	4,933,816	8,500,000	8,500,000	3,566,184
9,312,526	Professional Services	8,655,488	28,835,300	28,835,300	20,179,812
440,856	Other Expenses	831,714	1,525,000	1,525,000	693,286
915,156	Assets	211,017	1,600,000	1,600,000	1,388,983
82,988,941	**Total Expenses**	**84,512,650**	**120,131,300**	**120,131,300**	**35,618,650**
39,072,274	**Surplus**	**38,889,877**	**5,013,467**	**5,013,467**	**(37,360,890)**

The attached notes from pages 6 to 28 are an integral part of this Financial Statement.

ENERGY COMMISSION
Established under the Energy Commission Act 2001 (Act 610) and Energy Commission (Amendment) Act 2010 (Act A1371)

Notes on the Financial Statements

1. Principal Activities

The Energy Commission is a statutory body operating at No. 12, Jalan Tun Hussein, Presint 2, 62100 Putrajaya.

The Energy Commission is the sole regulatory agency for the energy sector's regulation and development. Under the Energy Commission Act 2001, the Energy Commission is directly responsible to supervise and monitor the energy generation activities, including regulating each licensed individuals under the Energy Commission Act 2001 (Act 610) and the Energy Commission (Amendment) Act 2010 (Act A1371).

The Financial Statements were approved and certified for signature by the Energy Commission on 22 June 2022.

2. Basis of Preparation of Financial Statements

The Energy Commission's Financial Statements were prepared in compliance with the Malaysian Public Sector Accounting Standards (MPSAS). The Financial Statements were prepared based on the historical cost convention and generally accepted accounting practices in Malaysia. MPSAS 33 allows first-time adopters to recognize and measure certain Assets and Liabilities within the period of one (1) to three (3) years.

The Energy Commission adopted the following MPSAS beginning 1 January 2020 with initial transition date on 1 January 2019:

MPSAS 1: Presentation of Financial Statements
MPSAS 2: Cash Flow Statements
MPSAS 3: Accounting Policies, Changes in Accounting Estimates and Errors
MPSAS 4: The Effect of Changes in Foreign Exchange Rates
MPSAS 9: Revenue From Exchange Transactions
MPSAS 14: Events After The Reporting Date
MPSAS 17: Property, Plant and Equipment
MPSAS 19: Provisions, Contingent Liabilities and Contingent Assets
MPSAS 20: Related Party Disclosure
MPSAS 21: Impairment of Non-Cash-Generating Assets
MPSAS 22: Disclosure of Financial Information
MPSAS 23: Revenue From Non-Exchange Transactions (Taxes & Transfers)

Notes on the Financial Statements...continued

2. Basis of Preparation of Financial Statements...continued

MPSAS 24: Presentation of Budget Information in Financial Statement
MPSAS 25: Employee Benefits
MPSAS 26: Impairment of Cash - Generating Assets
MPSAS 28: Financial Instruments - Presentation
MPSAS 29: Financial Instruments - Recognition and Measurement
MPSAS 30: Financial Instruments - Disclosure
MPSAS 33: First-Time Adoption of Accrual Basis MPSAS

The preparation of the Financial Statements requires management to make judgements, estimates and assumptions that affect the application of accounting policies and to report the amounts of assets, liabilities, income and expenses. Although judgements, estimates and assumptions are based on the best current knowledge and actions of the management, actual results may vary. Estimates and assumptions are reviewed on a continuous basis. A revised accounting estimates is recognized in the period in which the estimates is revised, and in any relevant future period.

3. Accounting Policies

(I). Property, Fittings and Equipment

Property, Fittings and Equipment are stated at cost less accumulated depreciation and impairment, if any.

Depreciation for property, fittings and equipment are calculated based on the straight line method over the estimated useful life span of the assets.

The annual depreciation rates are as follows:

Buildings	2%
Motor vehicles	20%
Furniture, equipment, renovations and enforcement instrumentation	20%
Office equipment (electronics)	15%
Application systems and computers	33 1/3%
Fixtures and equipment	20%

Freehold land is measured at cost and not depreciated.

Notes on the Financial Statements...continued

3. Accounting Policies...continued

(I). Property, Fittings and Equipment...continued

The residual value, useful lives and rate of depreciation are reviewed at the end of each financial year to ensure that the amounts, methods and year of depreciation are in line with previous estimates and expected economic benefits of utilising the property and equipment.

(II). Financial Asset

Financial Asset is recognised in Statement of Financial Position when the Commission become a party to the contractual provisions of the instrument.

On initial recognition, financial assets are measured at fair value, plus transaction costs for financial assets not at 'fair value through profit or loss'.

After initial recognition, financial assets are classified into one of four categories: financial assets at 'fair value through profit or loss', 'held-to-maturity' investments, loans and receivables and 'available-for-sale' financial assets. The Commission did not have any financial assets other than loans and receivables.

Regular purchases and sales of financial assets are recognised on the trade-date, the date on which Commission commits to purchase or sell the asset.

Financial Asset Categories by the Commission are as below:

(a). Loans and Receivables

Loans and Receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. After initial recognition, the Financial Asset are then measured at amortised cost using the effective interest method less any accumulated impairment losses. Amortized cost is calculated by taking into account any discounts or premiums on the purchase of the asset as well as fees or costs which form a part of the effective interest rate. Losses arising from impairment are recognised in profit or loss. Loans and Receivables are classified as current assets except Loans and Receivables which the maturity date is more than 12 months after the reporting date which are classified as non-current assets.

Notes on the Financial Statements...continued

3. Accounting Policies...continued

(II). Financial Asset...continued

(b). Financial Asset on Fair Value Through Surplus or Deficit

For any embedded derivatives that cannot be valued reliably separately either on the acquisition date or at the end date of the next reporting period, the entire instrument is designated at Fair Value Through Surplus or Deficit. However, if the entire instrument cannot be measured reliably, the instrument is stated at cost less impairment.

Investments in equity instruments which fair value cannot be measured reliably are stated at cost less impairment losses.

(c). Investment Held Until Maturity

Non-derivative Financial Assets with a fixed or determinable payment maturity period and remain classified as held to maturity when the Commission has the positive intent and ability to hold until maturity. After initial measurement, held-to-maturity investments are measured at amortized cost using the effective interest method and less impairment. Amortization cost is calculated by taking into account any discounts or premiums on acquisition and fees or costs that form part of the effective interest rate. Losses arising from impairment are recognized in the Statement of Financial Performance.

The Commission will derecognise a Financial Asset or, if applicable, part of a Financial Asset or part of a group of Financial Assets when:

(i). The right to receive cash flows from assets has expired or is excluded.

(ii). The Commission has transferred its right to receive cash flows from assets or has accepted an obligation to pay the cash flows received in full without material delay to a third party; and whether: (i) the Commission has transferred substantially all the risks and rewards of the assets; or (ii) the Commission has not transferred or retained substantially all the risks and rewards of the asset, but has transferred control of the asset.

Notes on the Financial Statements...continued

3. Accounting Policies...continued

(II). Financial Asset...continued

(c). Investment Held Until Maturity...continued

Any difference between the carrying amount of the derecognised Financial Asset and the consideration received is recognized in the Statement of Financial Performance in the period of derecognition.

(d). Available-for-Sale Financial Asset

Available-for-Sale Financial Asset is a Financial Asset that is designated as available for sale or is not classified in any other Financial Asset category. Subsequent to original recognition, available-for-sale Financial Assets are stated at fair value. Gains or losses on changes in the fair value of such Financial Assets are recognized through the Statement of Changes in Net Assets, except for impairment losses, gains and losses on foreign exchange upon financial instruments and interest calculated under the effective interest method.

Investments in equity instruments where fair value cannot be measured reliably are stated at cost less impairment losses.

(III). Financial Liabilities

Financial Liabilities are recognized in the Statement of Financial Position when the Commission becomes a party to the contractual provisions of the instrument.

On initial recognition, financial liabilities are measured at fair value, less transaction costs for financial liabilities not at 'fair value through profit or loss'.

Subsequent to initial recognition, Financial Liabilities are classified into one of two categories of Financial Liabilities which are Financial Liabilities measured at fair value through surplus or deficit, Loans and Receivables.

Notes on the Financial Statements...continued

3. Accounting Policies...continued

(III). Financial Liabilities...continued

The Commission has the following Financial Liabilities categories:

Loans and Receivables

Subsequent to initial recognition, Loans and Receivables are measured at amortized cost using the effective interest method. Gains or losses are recognized in surplus or deficit when the Financial Liabilities are derecognised or impaired.

Financial Liabilities are derecognised when the obligations specified in the contract are discharged, cancelled or expired.

Any difference between the carrying amount of the derecognised Financial Liabilities and the consideration paid is recognized in surplus or deficit in the period of derecognition.

(IV). Critical Accounting Judgements and Uncertainties in the Primary Sources of Estimates

There are no critical accounting judgements and uncertainties in the primary sources of estimates used in preparing the Commission's Financial Statements that have a material effect on reported amounts other than those set out below:

(a). Impairment Receivables Allowances

The Commission assesses at each reporting date whether there is any objective evidence that Financial Assets are impaired. To determine whether there is objective evidence of impairment, the Commission considers factors such as insolvency of the debtor and default or significant late payment. If there is evidence of potential insolvency debt, the amount and timing of future cash flows are estimated based on historical loss experience for assets with similar credit risk characteristics.

(b). Changes in Estimated Lifespan of Property, Fittings and Equipment

All Property, Fittings and Equipment are depreciated on a straight-line basis over the life span of the asset. Changes in estimated patterns of asset utilization and technological

Notes on the Financial Statements...continued

3. Accounting Policies...continued

(IV). Critical Accounting Judgements and Uncertainty in the Primary Sources of Estimates...continued

(b). Changes in Estimated Lifespan of Property, Fittings and Equipment...continued

development can affect the useful life and residual value of those assets. This will cause the depreciation of assets in the future to be reviewed.

(c). Allocation Measurement

The Commission always uses the best estimate as the basis for measuring a provision. The estimate is made based on past experience, other indications or assumptions, recent developments and reasonable future events in determining a provision.

(V). Impairment of Non-Financial Asset

(a). Impairment of Cash Generating Asset Value

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

In determining value in use future cash flows will be discounted to their present value using a pre-tax discount rate that reflects the current market value of the time value of money and the risks specific to the asset. In determining fair value less costs to sell, the latest market transactions will be taken into account, if any. If no recent market transactions occur, an appropriate valuation model should be used.

An impairment loss is recognized as an expense in the Statement of Financial Performance immediately when the carrying amount of the asset exceeds its recoverable amount.

Notes on the Financial Statements...continued

3. Accounting Policies...continued

(V). Impairment of Non-Financial Asset...continued

(a). Impairment of Cash Generating Asset Value...continued

Impairment losses recognized in prior periods for an asset are reversed if, and only if, there is a change in the estimates used to determine the recoverable amount. The reversal is recognized in the Statement of Financial Performance.

(b). Impairment of non-cash-generating assets

The Commission will assess at each reporting date, whether there is any indication that Non-Cash Generating Assets may be impared. If any indication exists, then the Commission will make an estimate of the amount of the asset's recoverable service. The asset's recoverable service amount is the highest amount of fair value less selling costs and value in use.

An impairment loss is recognized as an expense in the Statement of Financial Performance, immediately when the carrying value of the asset exceeds its recoverable amount.

In determining value in use, the Commission has adopted the depreciated replacement cost approach. In this approach, the present value of the asset's remaining service potential is determined as the replacement cost of the depreciated asset. Depreciated replacement cost is measured by taking into account the asset's replacement cost less accumulated depreciation calculated on that cost to reflect the service potential of the asset that has been used or has expired.

In determining the fair value less costs to sell, the price of the asset in the binding agreement is adjusted to determine the disposal price of the asset. If there is no binding agreement, but the asset is actively traded in the market, then the fair value less costs to sell is determined by reference to current market value less costs to dispose of. In the absence of a binding sale agreement or active market for the asset, the Board determines the fair value less costs to sell based on the best available information.

For each asset, an assessment is made at each reporting date as to whether there is any indication that a previously recognized impairment loss may no longer exist or has

Notes on the Financial Statements...continued

3. Accounting Policies...continued

(V). Impairment of Non-Financial Asset...continued

(b). Impairment of non-cash-generating assets

decreased. If such an indication exists, the Commission estimates the amount of the asset's recoverable service. A previously recognized impairment loss is reversed only if there has been a change in the assumptions used to determine the asset's recoverable amount of service since the last impairment loss was recognized. Reversals are limited to the extent that the carrying amount of the asset does not exceed the recoverable amount of service or does not exceed the carrying amount that would have been possible after accumulated depreciation as no impairment loss was recognized for the asset in the previous year. The reversal is recognized in the Statement of Financial Performance.

(VI). Cash and Cash Equivalents

Cash and Cash Equivalents consists of cash in hand and bank balances, deposits in banks and other financial institutions, and also high liquidity short term investments with a maturity period of three (3) months or less from the date of purchase and can be readily redeemed in the form of cash and with low risks of value fluctuations.

The Cash Flow Statements are prepared using the indirect method.

(VII). Short Term Investments

Short Term Investments are deposits in bank and other financial institutions, and also short term investments with high liquidity with maturity periods of three (3) months or up to a year from the date of purchase and which can be readily redeemed in the form of cash with low risks of value fluctuation.

(VIII). Special Funds

Special Funds are provisions received from the Electricity Supply Industries Trust Fund (AAIBE) under the Ministry of Energy, Green Technology and Water (KeTTHA), which is currently administered by the Ministry of Energy and Natural Resources (KeTSA), and Government agencies for specific purposes.

Notes on the Financial Statements...continued

3. Accounting Policies...continued

(IX). Taxation

Current tax is the taxation charged on the income surplus or deficit for the year. Current tax is the expected amount payable on taxable income for the year and is measured using rates applicable on the date of the Balance Sheet.

Current tax expenses are the expected tax payable on the taxable income for the year, using tax rates gazetted or substantially gazetted at the balance sheet date, and any adjustments to tax payable in respect of the previous year.

Provisions for deferred tax is made, by the liability method, for all timing differences between tax rates of assets and liabilities and their carrying amount in the financial statements. Temporary differences are not recognised for goodwill, is not deductible for taxation purposes, and the initial recognition of an asset or liability at the time of the transaction does not affect the statutory income surplus and taxable income surplus. The total provision for deferred tax is based on the expected manner of realisation or settlement of the carrying amount of the assets and liabilities, using tax rates gazetted or substantially gazetted on the date of the balance sheet.

Deferred tax assets are recognised only when it is probable that taxable income surplus can be derived in the future from the assets used.

(X). Employee Benefits

(a). Short Term Employee Benefits

Wages, salaries and bonuses are recognised as expenses in the current year services performed by employees of the Energy Commission. Short term accumulated compensations such as paid annual leave are recognised when employees render services that increase their entitlement for paid leave in the future, and short term non-

Notes on the Financial Statements...continued

3. Accounting Policies...continued

(X). Employee Benefits...continued

(a). Short Term Employee Benefits...continued

accumulative compensations such as paid sick leave are only recognised when such leave of absence occur. Medical facilities such as outpatient treatment facilities, hospitalization scheme and group surgery facilities and maternity facilities are provided to all permanent and contract personnel based on the provisions set out in the terms and conditions of the Energy Commission's service in force.

Meanwhile, employee benefits such as gratuity and subsidised pension benefits for mortgages, vehicles and personal loans payable in the next financial year will be recognised on an accrual basis in the current Statement of Income as an expense and in the Balance Sheet as Current Liabilities.

(b). Compulsory Contribution Plan

The law requires qualified Malaysian employers to make compulsory contributions to the Employees Provident Fund and Social Security Organisation (SOCSO). The contributions are recognised as expenses in the income statement. Liabilities for the compulsory contribution plans are recognised as current expenses in the income statement.

(c). Long-Term Employee Benefits

Long-Term Employee Benefits are the provision of retirement benefits in the form of gratuities to the permanent staff serving for a minimum of ten years with the gratuity calculation rate as per approved by the Minister. It is considered as an employee's benefit payment; paid upon retirement and is recognised as expenses and is stipulated as Non-Current Liabilities in the Balance Sheet. Recognition is by the use of actuarial valuation methods.

Notes on the Financial Statements...continued

3. Accounting Policies...continued

(XI). Recognition of Income and Expenditure

Income from fees and charges are accounted for on a cash basis as the annual payment obligation is on the licensees. In addition, interest income from fixed deposits and short-term investments as well as all expenses are accounted for on an accrual basis. Other income consists of sales of tender documents, sales of industry-related books, fixed asset sales and charges/penalties imposed on failure to execute projects. Other operating costs include entertainment expenses in relation to the Energy Commission's official affairs by authorised officers as well as contributions or sponsorships made for researches and developments.

(XII). Related Party Disclosures

The parties deemed to be related if one party has the ability to control the other party or exercise influence over another party, to the extent that it prevents others from pursuing separate personal interests in making financial and operating decisions.

(XIII). Provisions

Provisions are recognized when the Energy Commission has a legal current and constructive obligation, the effects of past events and a possible outflow of resources involving economic benefits is required to settle the obligation, and the amount of the obligation can be estimated with certainty.

Provisions are reviewed at each reporting date and adjusted to reflect the best current estimate. If there is no possibility that an outflow of economic resources will be required to settle the obligation, the provision will be reversed. If the effect of time value of money is significant, the provision will be discounted using the current pre-tax rate which reflects, where appropriate, the risks specific to the liability. Whenever discounting is used, the increase in provisions caused by time-pass is recognized as a finance cost.

(XIV). Foreign Exchange

Transactions made in foreign currencies are converted into Ringgit Malaysia based on the rate prescribed at the time of the transactions were executed.

Notes on the Financial Statements...continued

4. Cash and Cash Equivalents

	2021	2020
	RM	RM
Cash and Bank Balances	54,280,299	35,840,473
Deposits in Licensed Banks	68,878,970	67,396,856
TOTAL	**123,159,269**	**103,237,329**

Cash and Bank Balances includes the Special Fund of RM5,706,219 (2020: RM5,747,479).

5. Other Receivables, Deposit and Advance

	2021	2020
	RM	RM
Club Membership Deposits	92,000	92,000
Other Deposits and Receivables	577,336	585,286
TOTAL	**669,336**	**677,286**

Other Receivables, Deposit and Advance includes rental deposit for regional offices, stores, parking, other facilities used such as deposits for medical services (Third Party Administrator), advertisements spaces for regional offices, electricity, and others.

6. Accrued Interest Income

	2021	2020
	RM	RM
Accrued Interest Income	2,255,183	2,142,746
TOTAL	**2,255,183**	**2,142,746**

Accrued Interest Income is the immature benefit of fixed deposits which is accounted for as at 31 December each year.

Notes on the Financial Statements...continued

7. Property, Fittings and Equipment

2021	Land	Building	Motor Vehicle	Furniture, Fittings, Renovations and Enforcement Equipment	Office Equipment (Electronic)	Application Systems and Computer	Fixtures and Equipment	Total
	RM	RM	RM	RM	RM	RM	RM	RM
Cost								
At 1 January	8,299,405	79,205,160	4,144,439	7,052,286	5,358,021	5,167,648	1,580,140	110,807,099
Addition	–	–	–	180,115	173,590	389,911	5,000	748,616
Disposal/Transfer	–	–	–	–	(195,880)	(4,999)	–	(200,879)
At 31 December	8,299,405	79,205,160	4,144,439	7,232,401	5,335,731	5,552,560	1,585,140	111,354,836
Accumulated Depreciation								
At 1 January	–	11,880,773	3,342,073	6,024,966	4,837,381	4,344,647	1,541,625	31,971,465
Current Year Depreciation	–	1,584,103	223,421	394,144	181,454	531,418	10,084	2,924,624
Disposal/Transfer	–	–	–	–	(195,871)	(4,998)	–	(200,869)
At 31 December	–	13,464,876	3,565,494	6,419,110	4,822,964	4,871,067	1,551,709	34,695,220
Net Book Value								
At 31 December	**8,299,405**	**65,740,284**	**578,945**	**813,291**	**512,767**	**681,493**	**33,431**	**76,659,616**

Notes on the Financial Statements...continued

7. Property, Fittings and Equipment...continued

2020	Land	Building	Motor Vehicle	Furniture, Fittings, Renovations and Enforcement Equipment	Office Equipment (Electronic)	Application Systems and Computer	Fixtures and Equipment	Total
	RM	RM	RM	RM	RM	RM	RM	RM
Cost								
At 1 January	8,299,405	79,205,160	4,347,898	6,938,122	5,248,782	5,414,159	1,580,140	111,033,666
Addition	–	–	341,516	114,164	109,239	449,838	–	1,014,757
Disposal/Transfer	–	–	(544,975)	–	–	(696,349)	–	(1,241,324)
At 31 December	8,299,405	79,205,160	4,144,439	7,052,286	5,358,021	5,167,648	1,580,140	110,807,099
Accumulated Depreciation								
At 1 January	–	10,296,670	3,689,144	5,624,827	4,597,545	4,505,377	1,531,624	30,245,187
Current Year Depreciation	–	1,584,103	197,901	400,139	239,836	535,082	10,001	2,967,062
Disposal/Transfer	–	–	(544,972)	–	–	(695,812)	–	(1,240,784)
At 31 December	–	11,880,773	3,342,073	6,024,966	4,837,381	4,344,647	1,541,625	31,971,465
Net Book Value								
At 31 December	**8,299,405**	**67,324,387**	**802,366**	**1,027,320**	**520,640**	**823,001**	**38,515**	**78,835,634**

Notes on the Financial Statements...continued

8. Other Payables and Accrued Expenses

	2021	2020
	RM	RM
Payables	294,736	55,084
Accrued Payables	14,593,906	13,257,096
Provisions of Staff Leave (GCR)	2,795,259	2,145,269
Compounds for Consolidated Fund under KeTSA	–	2,500
Audit Fees	50,562	47,488
TOTAL	**17,734,463**	**15,507,437**

Payables and Accrued Payables are interest free and settlements made normally within 30-days term.

The calculation of Provisions of Staff Leave (GCR) is based on the approval of Minister of Energy, Water and Communication on 24 September 2004.

9. Provision for Employee Benefits

	2021	2020
	RM	RM
At 1 January	17,081,926	15,965,636
Current Year Provision	3,103,377	3,481,646
Current Year Payments	(2,829,490)	(2,365,356)
At 31 December	**17,355,813**	**17,081,926**

The maturity structure for Provisions for Employess Benefits are as follows:

	2021	2020
	RM	RM
Maturity within 12 months	3,735,555	3,040,731
Maturity exceeding 12 months	13,620,258	14,041,195
TOTAL	**17,355,813**	**17,081,926**

Notes on the Financial Statements...continued

9. Provision for Employee Benefits...continued

Increase in Provision for Employee Benefits for the year 2021 is in line with the increase in number of personnel and implementation of amendments to the Energy Commission's Terms and Conditions of Service effective 1 March 2019.

The Actuarial assumption used to calculate the Provision for Employee Benefits for Gratuity is the average of annual salary increment rate of 7.5% (2020: 7.5%) and the average discount rate of 4.17% (2020: 4.17%).

10. Special Funds

2021	PPKTL Special Funds Account	MyPower Special Funds Account	PR&PLL Special Funds Account	SAIDI 100 Special Funds Account	Total
	RM	RM	RM	RM	RM
Balance as at 1 January 2021	**156,960**	**1,975**	**5,588,544**	**–**	**5,747,479**
Income:					
Bank Interest	1,587	3	55,822	–	**57,412**
	1,587	3	55,822	–	**57,412**
(-) Expenditure:					
Bank Charges	–	(10)	(2)	–	**(12)**
Expenses/Repayment for The Year	–	–	(98,660)	–	**(98,660)**
	–	(10)	(98,662)	–	**(98,672)**
Surplus/(Deficit)	1,587	(7)	(42,840)	–	**(41,260)**
Balance as at 31 December 2021	**158,547**	**1,968**	**5,545,704**	**–**	**5,706,219**

Notes on the Financial Statements...continued

10. Special Funds...continued

2020	PPKTL Special Funds Account	MyPower Special Funds Account	PR&PLL Special Funds Account	SAIDI 100 Special Funds Account	Total
	RM	RM	RM	RM	RM
Balance as at 1 January 2020	**729,167**	**1,979**	**5,611,865**	**14,292**	**6,357,303**
Income:					
Bank Interest	8,656	6	56,042	122	**64,826**
	8,656	6	56,042	122	**64,826**
(-) Expenditure:					
Bank Charges	(1)	(10)	(1)	–	**(12)**
Expenses/Repayment for The Year	–	–	(79,362)	–	**(79,362)**
Transfer of Provisions/Funds	(580,862)	–	–	(14,414)	**(595,276)**
	(580,863)	(10)	(79,363)	(14,414)	**(674,650)**
Deficit	(572,207)	(4)	(23,321)	(14,292)	**(609,824)**
Balance as at 31 December 2020	**156,960**	**1,975**	**5,588,544**	**–**	**5,747,479**

Special Funds are special allocations received from the Electricity Supply Industries Trust Fund (AAIBE) under the Ministry of Energy, Green Technology and Water (KeTTHA), which is currently administered by the Ministry of Energy and Natural Resources (KeTSA) and government agencies for specific purposes. Details of each account under the Special Funds are as follows:-

(i). **PPKTL Special Funds Account:** to finance Sustainable Energy Communications Plan Project that aims to promote the use of sustainable energy encompassing the field of energy efficiency and renewable energy, and to foster greater awareness and enhance the public's knowledge on the legal framework and regulations related to sustainable energy.

(ii). **MyPower Special Funds Account:** to finance the implementation of project initiatives under the 10th Malaysia Plan namely the Stabilisation Mechanism, Ring Fencing Single Buyer, Fuel Supply and Security and Industry Structure.

(iii). **PR & PLL Special Funds Account:** to finance retrofitting projects and installation of LED lighting in selected ministry buildings beginning in early 2015.

(iv). **SAIDI 100 Special Funds Account:** to review and identify on eletrical issues in Sabah in reaching the target to lower the System Average Interruption Duration Index (SAIDI) of the electrical power utilities towards 2020.

Notes on the Financial Statements...continued

11. Fees and Charges

	2021	2020
	RM	RM
Public and Private Licenses	80,184,691	76,157,449
Registration/Operations Renewal Fees	31,858,360	30,296,645
Other Operating Fees	702,116	626,780
TOTAL	**112,745,167**	**107,080,874**

12. Wages, Allowances and Employee Benefits

	2021	2020
	RM	RM
Wages and Allowances	38,999,966	36,034,247
Energy Commission Members' Allowances	801,438	662,634
Statutory Contributions	8,842,554	7,416,200
Other Financial Benefits	14,768,532	15,327,921
TOTAL	**63,412,490**	**59,441,002**

The total number of Energy Commission's employees as at 31 December 2021 stands at 372 personnel. Meanwhile, the total number of employees in 2020 was 357 personnel. The number of Energy Commission members for the year 2021 is 10 personnel while in 2020 was 8 personnel. Included in the Statutory Contributions is the contribution made to the Employees Provident Fund (EPF) amounting to RM8,530,565 (2020: RM7, 134,237) and contributions to Social Security Organization (SOCSO) amounting RM293,918 (2020: RM281,963) and *Kumpulan Wang Persaraan (Diperbadankan)* (KWAP) amounting to RM 18,071.

13. Maintenance

	2021	2020
	RM	RM
Application System Maintenance	4,095,203	4,299,846
Equipment, Vehicle and Office Building Maintenance	2,015,130	1,935,221
TOTAL	**6,110,333**	**6,235,067**

Notes on the Financial Statements...continued

14. Professional Services

	2021	2020
	RM	RM
Audit Fees	50,562	47,488
Professional and Consultancy Fees	8,778,550	7,051,820
Development Cost of Competency and Management Performance	1,035,863	678,682
Other Professional Services Expenses	566,462	438,195
TOTAL	**10,431,437**	**8,216,185**

15. Taxation Expense

	2021	2020
	RM	RM
Tax Expenses		
Current Year	3,107,083	4,105,545
Reconciliation of Effective Tax Rate		
Surplus Income Before Tax	32,930,117	37,757,868
Tax at 30%	9,879,035	11,327,360
Tax-Exempted Income	(6,771,952)	(7,221,815)
Tax Expense	**3,107,083**	**4,105,545**

The Energy Commission is tax-exempted under Section 127(3)b Income Tax Act 1967 which was conferred by the Ministry of Finance on 19 October 2004. The tax exemption is applicable only to statutory income as follows:

(i). Income received from the Federal or State Government in the form of grants or subsidies;

(ii). Income received in connection with any amount chargeable or collectible from any person according to the provisions of the Act which regulates statutory authorities; and

(iii). Contributions and donations received.

Notes on the Financial Statements...continued

16. Budget Infomation

The Energy Commission's budget is approved by the Ministry of Energy and Natural Resources (KeTSA), encompassing fiscal period of 1 January 2021 to 31 December 2021.

The following are the material differences between the amount of Final Budget and Actual for the year 2021:

DETAILS	Actual 2021	Final Budget	Difference
	RM	RM	RM
INCOME			
Income from Operation	112,745,167	116,565,767	(3,820,600)
EXPENSES			
Travelling and Subsistence Allowances	455,733	5,000,000	4,544,267
Office Supplies	654,046	2,000,000	1,345,954
Maintenance	4,933,816	8,500,000	3,566,184
Professional Services	8,655,488	28,835,300	20,179,812
Assets	211,017	1,600,000	1,388,983

The COVID-19 that surge across the country in 2020 and are still ongoing had indirectly affected revenue collection and expenses in 2021.

The Movement Control Order has restricted regulatory work, especially enforcement activities at the premises of the licensees and affects the performance of revenue collection and Travelling and Subsistence Allowance expenses.

Building and application systems maintenance works which is still in progress resulted to lower spending in Maintenance for the year 2021.

Material difference for Professional Services is because many internal and external events cannot be carried out due to the COVID-19 Pandemic. In addition, there are some development projects that are still in progress, being recorded as a Commitment for consultants who have been appointed in year 2021.

Notes on the Financial Statements...continued

17. Commitments

	2021	2020
	RM	RM
Property, Fittings and Equipment	582,086	530,811
Professional Services	12,643,280	6,421,373
Utilities, Office Supplies and Maintenance	2,689,532	2,486,228
Contributions	19,980	–
Emolument	56,370	–
TOTAL	**15,991,248**	**9,438,412**

Included in the Commitments for the year ended 31 December 2021 under Property, Fittings and Equipment amounting to RM582,086 are the renovation costs for Energy Commissions' head office and assets procured including fittings and electronic equipment. Professional Services consists of services for the ST Digital Transformation Project amounting RM8,563,736 and other professional and consultancy services amounting RM4,079,544.

Commitments for system maintenance activities and support services of ICT network systems, as well as building maintenances are amounting to RM2,111,266, while cost for Office Supplies are amounting to RM578,266. Additionally, Commitments for Contributions are amounting to RM19,980 and Emolument amounting to RM56,370.

The Commitment costs for the year 2020 amounting to RM9,438,412 consists of costs related to Property, Fittings and Equipment, Utilities, Maintenance and Office Supplies.

Notes on the Financial Statements...continued

18. Contingent Liability

An Originating Summon was filed by Perbadanan Pengurusan Solaris Dutamas ("Solaris") on 12 December 2019 at the Kuala Lumpur High Court to Energy Commission ("ST") and Gas Malaysia Berhad ("GMB") claiming that ST's action of imposing an obligation on Solaris to apply for a retail gas license under the Gas Supply Act 1993 [Act 501] to supply natural gas to development areas and maintain consumer pipelines was *ultra vires* Strata Management Act 2013. The Originating Summon by Solaris was dismissed with cost by the High Court on 27 August 2020. Solaris has filed an appeal to the Court of Appeal and the appeal was allowed on 1 October 2021. The case is currently in the process of obtaining permission to appeal at the Federal Court. There is a novel issue in this case that involves risks to ST related to the regulation of retail gas licenses that ST has previously issued to the Management Corporation/Joint Management Body.

Meanwhile, in 2020, a civil action was filed by Strong Elegance Sdn. Bhd. ("SE") on 18 December 2020 at the Kuala Lumpur High Court against ST for a declaration that the withdrawal of the Letter of Award for a Large Scale Solar project dated 2 May 2017 by ST was null and void and has made a claim for all costs and expenses incurred by SE due to the withdrawal including general damages and punitive damages to be determined by the Court.

GLOSARI
GLOSSARY

ATI

Kelulusan untuk Memasang
Approval to Install

Kelulusan yang perlu diperolehi daripada ST sebelum mana-mana pihak memulakan kerja pada pepasangan gas baru atau tambahan.
Approval to be obtained from the Commission before any party begins work on new or additional gas installations.

ATO

Kelulusan untuk Mengendali
Approval to Operate

Kelulusan yang perlu diperolehi daripada ST sebelum mana-mana pihak boleh mengendalikan sesuatu pepasangan gas yang baharu.
Approval to be obtained from the Commission before any party begins operating new gas installation.

BESS

Battery Energy Storage System
Battery Energy Storage System

Teknologi yang membolehkan penyimpanan tenaga daripada sumber tenaga boleh baharu (TBB) seperti solar dan angin, dan kemudian digunakan mengikut keperluan.
A technology that enables energy from renewables such as solar and wind, to be stored and then released as needed.

COA

Perakuan Kelulusan
Certificate of Approval

Perakuan yang dikeluarkan sebagai kelulusan untuk mengilang, mengimport, mempamer, menjual dan mengiklan kelengkapan elektrik seperti yang dinyatakan di bawah Peraturan 97(1) Peraturan-Peraturan Elektrik 1994.
A certificate issued as an approval to manufacture, import, exhibit, sell and advertise any electrical equipment prescribed under sub regulation 97(1) of the Electricity Regulations 1994.

DFC

Demand Forecasting Committee
Demand Forecasting Committee

Jawatankuasa bagi pengumpulan input daripada pihak-pihak berkepentingan dan berkepakaran berhubung unjuran pertumbuhan ekonomi dan permintaan elektrik.
A committee that collects inputs from stakeholders and experts regarding economic growth and electricity demand forecasts.

EACG

Geran Audit Tenaga Bersyarat
Energy Audit Conditional Grant

Geran yang diperuntukkan bagi sektor komersial dan industri untuk bekerjasama dengan syarikat perkhidmatan tenaga yang berdaftar dengan ST untuk melaksanakan audit tenaga.
A grant allocated for commercial and industrial sectors to collaborate with local energy service companies (ESCOs) registered with the Commission to conduct energy audit.

FiT

Feed-in Tariff
Feed-in Tariff

Mekanisme yang membenarkan tenaga elektrik yang dijana daripada sumber tenaga boleh baharu (TBB) oleh penjana bebas dan individu dijual kepada syarikat utiliti bekalan elektrik (TNB) pada kadar tarif premium untuk satu tempoh yang telah ditetapkan oleh Kerajaan.
A mechanism that allows electricity generated from renewable energy sources by independent power producers and individuals sold to the electricity supply utility (TNB) at a premium rate for a period set by the Government.

GCPT

Pelepasan Kos Gas
Gas Cost Pass-Through

Mekanisme yang membolehkan semakan tarif gas bagi mencerminkan perbezaan antara kos unjuran dan kos sebenar yang berada di luar kawalan pihak utiliti.
A mechanism that allows tariff revisions to reflect the difference between the forecasted and actual gas cost which is beyond the control of utility.

GET

Green Electricity Tariff
Green Electricity Tariff

Program yang menawarkan pilihan kepada pengguna untuk membeli bekalan elektrik rendah karbon, bagi membolehkan pengguna mengurangkan jejak karbon mereka dalam penggunaan elektrik.
A programme that offers the consumers the option to purchase low carbon electricity supply , to enable the consumers to reduce their carbon footprint in electricity consumption.

GSL

Tahap Perkhidmatan Yang Dijamin
Guaranteed Service Level

Perkhidmatan-perkhidmatan yang dijamin oleh pihak utiliti di mana kegagalan mematuhinya akan menyebabkan pihak utiliti dikehendaki membayar penalti dalam bentuk rebat kepada pengguna.
Services guaranteed by the utility where failure to comply will result in the utility required to pay penalties in a form of rebate to the consumers.

GSO

Pengendali Sistem Grid
Grid System Operator

Badan yang bertanggungjawab untuk operasi masa nyata harian dan pengurusan sistem grid di Semenanjung, serta perancangan jangka pendek dan sederhana untuk rangkaian penghantaran dan kemudahan penjanaan.
An organisation responsible for the day-to-day real-time operation and the management of the Peninsula grid system, together with the short and medium term planning of the transmission network and generation facilities.

IBR

Kawal Selia Berasaskan Insentif
Incentive-Based Regulation

Rangka kerja bagi penetapan tarif yang berstruktur dan telus untuk industri tenaga, yang memastikan utiliti terus meningkatkan kecekapan dan ketelusan dalam membekalkan tenaga dengan pematuhan unjuran perbelanjaan sepenuhnya.
A structured and transparent tariff setting framework for the energy industry that ensures the utilities to continuously enhance their efficiencies and increase transparency in supplying energy in full compliance of the projected expenditures.

ICPT

Pelepasan Kos Tidak Berimbang
Imbalanced Cost Pass-Through

Mekanisme di bawah rangka kerja IBR yang membolehkan semakan semula tarif elektrik setiap enam (6) bulan bagi mencerminkan perubahan harga bahan api dan kos penjanaan yang lain, yang berada di luar kawalan pihak utiliti.
A technology that enables energy from renewables such as solar and wind, to be stored and then released as needed.

IPP

Penjana Bebas
Independent Power Producer

Entiti yang bukan merupakan pihak utiliti namun memiliki dan mengendalikan stesen jana kuasa untuk menjana elektrik untuk dijual kepada pihak utiliti dan pengguna akhir.
An entity that is not a public utility but develops and operates power plants to generate electricity for sale to utilities and end users.

JPPPET

Jawatankuasa Perancangan dan Pelaksanaan Pembekalan Elektrik dan Tarif
Planning and Implementation Committee of Electricity Supply and Tariff

Sebuah jawatankuasa yang bertujuan untuk merancang, menyelaras dan mengenal pasti keperluan bekalan elektrik bagi memenuhi permintaan elektrik di Semenanjung melalui mesyuarat tahunan.
A committee that aims to plan, coordinate and identify electricity supply requirements to meet electricity demand in the Peninsula through an annual meeting.

KWIE

Kumpulan Wang Industri Elektrik
Energy Industry Fund

Kumpulan wang yang ditubuhkan bagi menguruskan impak tarif elektrik terhadap pengguna atau apa-apa maksud lain yang berkaitan dengan industri elektrik sebagaimana yang disifatkan perlu oleh ST.
A fund established to manage the impact of electricity tariffs on consumers or any other purposes related to the electricity industry as deemed necessary by the Commission.

LNG

Gas Asli Cecair
Liquified Natural Gas

Gas asli dalam bentuk cecair yang menjadikannya selamat, mudah dan menjimatkan kos untuk diangkut dan disimpan. LNG tidak berwarna, tidak berbau, tidak toksik serta tidak menghakis.
Natural gas in liquid form which makes it safe, easy and cost effective to transport and store. LNG is colourless, odourless, non-toxic and non-corrosive.

LPG

Gas Petroleum Cecair
Liquified Petroleum Gas

Gas petroleum dalam bentuk cecair yang sangat mudah terbakar, dengan kegunaan utama termasuk menghidupkan peralatan pemanas dan peralatan memasak.
Liquefied form of petroleum gas that is highly flammable, with primary usages include powering heating appliances and cooking equipment.

LSS

Ladang Solar Berskala Besar
Large Scale Solar

Program bidaan kompetitif yang membolehkan penjanaan elektrik melalui ladang solar fotovoltaik untuk dijual kepada grid.
A competitive bidding programme that allows electricity generation via solar photovoltaic farm to be sold to the grid.

MEPS

Standard Prestasi Tenaga Minimum
Minimum Energy Performance Standards

Penarafan kecekapan tenaga yang perlu dipenuhi oleh peralatan elektrik tertentu sebelum dijual kepada pengguna.
Energy efficiency rating that needs to be met by certain electrical appliances before being sold to the consumers.

MSL

Tahap Perkhidmatan Minimum
Minimum Service Level

Tahap prestasi minimum yang ditetapkan bagi mengukur kecekapan utiliti dalam memberikan perkhidmatan kepada pengguna.
The minimum performance level set to measure the efficiency of the utility in providing service to the consumers.

NEDA

New Enhanced Dispatch Arrangement
New Enhanced Dispatch Arrangement

Program yang diwujudkan untuk meningkatkan kecekapan kos pasaran Pembeli Tunggal melalui persaingan jangka pendek (harian).
A programme designed to enhance cost efficiency of the Single Buyer market through short run (daily) competition.

NEEAP

Pelan Tindakan Kecekapan Tenaga Nasional
National Energy Efficiency Action Plan

Pelan yang menumpukan untuk menangani isu-isu yang berkaitan bekalan tenaga dengan menguruskan permintaan dengan cekap.
A plan focused to tackle issues pertaining to energy supply by managing demand efficiently.

NEM

Pemeteran Tenaga Bersih
Net Energy Metering

Mekanisme di mana pengguna yang layak memasang sistem solar fotovoltaik terutamanya untuk kegunaannya sendiri, manakala lebihan tenaga untuk dieksport ke grid dan diimbangi dengan tenaga yang disediakan oleh utiliti.
A mechanism where an eligible consumer installs a solar photovoltaic system primarily for his own use while the excess of energy to be exported to the grid and to be offset against the energy provided by the utility.

RE

Tenaga Boleh Baharu
Renewable Energy

Tenaga yang didapati daripada sumber boleh dibaharui dan tidak akan habis seperti solar dan angin.
Energy collected from renewable and undepletable sources such as solar and wind.

SAIDI

System Average Interruption Duration Index
System Average Interruption Duration Index

Purata gangguan elektrik dalam minit yang dialami oleh pelanggan dalam setahun.
Average electricity interruptions in minutes experience by customers in a year.

SB

Pembeli Tunggal
Single Buyer

Sebuah entiti yang diasingkan yang diamanahkan untuk menguruskan perancangan dan perolehan tenaga elektrik di Semenanjung.
A ring-fenced entity entrusted to manage planning and procurement of electricity in the Peninsula.

TBB

Tenaga Boleh Baharu
Renewable Energy

Tenaga yang didapati daripada sumber boleh diperbaharui dan tidak akan habis seperti solar dan angin.
Energy collected from renewable and undepletable sources such as solar and wind.

TPA

Akses Pihak Ketiga
Third Party Access

Sistem yang membolehkan pelbagai entiti mendapat akses dan menggunakan kemudahan gas yang terdapat di Malaysia pada terma dan syarat yang sama.
A system that allows multiple entities to have access to and utilise the gas facilities available in Malaysia on the same terms and conditions.

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