Strengthening Infrastructure to Support Economic Expansion

Introduction

Past Performance, 2016-2017

Performance of Selected Outcomes

Performance of Focus Area

Issues and Challenges

Conclusion

6

Introduction

In the Eleventh Malaysia Plan, 2016-2020, infrastructure development continues to be given emphasis to support economic growth and enhance the wellbeing of the *rakyat*. During the review period, 2016-2017, greater investment in infrastructure has improved access to better road network, affordable public transport as well as adequate coverage of digital infrastructure and utilities. Despite the progress, there remain issues and challenges that need to be addressed. Limited maintenance due to inadequate financial resources has affected the quality of infrastructure. Financial constraints also hampered development of new and upgrading of infrastructure. In addition, high cost and low returns from investment on public transport development and telecommunication network made investment less attractive to service providers. Limited supply of raw water and fuel sources also pose a challenge in ensuring reliable and sustainable service delivery.

Past Performance, 2016-2017

During the review period, network expansion of essential infrastructure such as road, rail, water and electricity were undertaken to support economic growth and ensure the wellbeing of the *rakyat*. At the same time, priority was given to delivering high quality and better services such as provision of modern transport and logistic services, broadband connectivity, implementation of digital terrestrial television (DTT) and promotion of renewable energy. In this regard, various initiatives were implemented through the five focus areas as follows:

Performance of Selected Outcomes

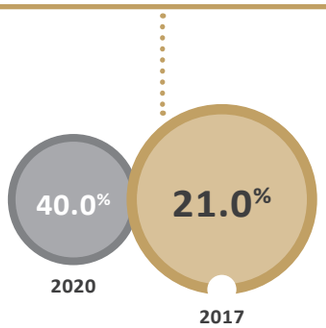
In the Plan period, 13 selected outcomes were identified, of which two outcomes surpassed the Plan targets, eight were on track while three faced challenges. The performance of the selected outcomes and key results of the five focus areas is as shown in *Exhibit 6-1*.

Exhibit 6-1

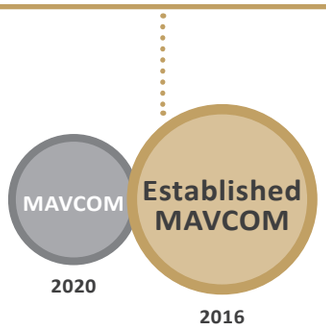
Highlights

Eleventh Malaysia Plan: Selected Outcomes and Performance

Building an integrated need-based transport system

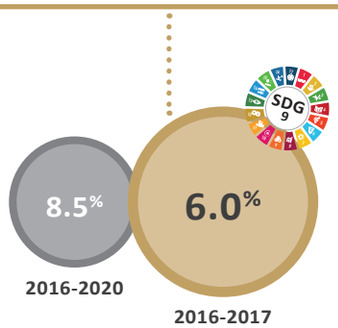


Public transport modal share in GKL/KV

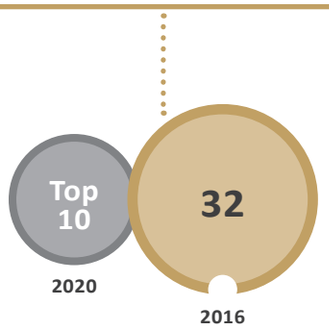


Malaysia Aviation Commission (MAVCOM) as newly established regulator on 1 March 2016

Unleashing growth of logistics and enhancing trade facilitation

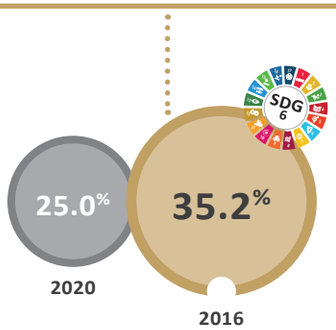


Growth of transport and storage subsector

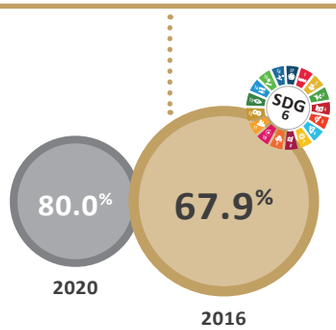


World Bank Logistics Performance Index ranking

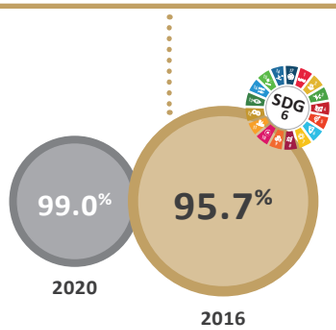
Continuing the transition to a new water services industry framework



Non-revenue water

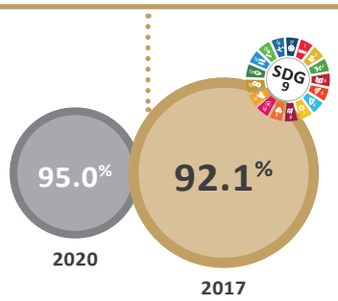


Sewerage connected services coverage, especially in main cities

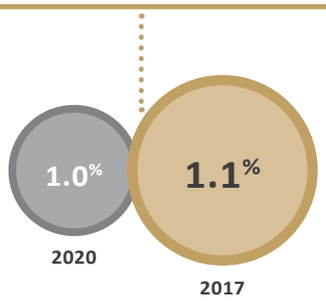


Population served by clean and treated water

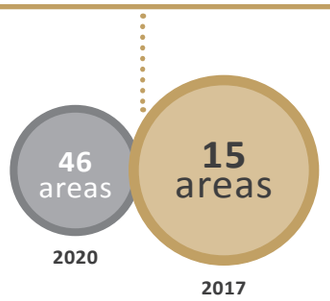
Improving coverage, quality and affordability of digital infrastructure



Populated areas covered by broadband infrastructure

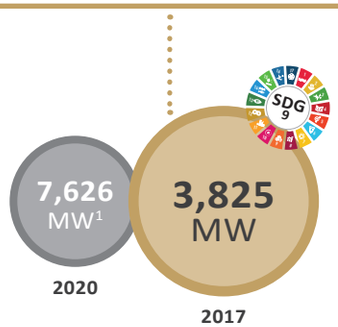


GNI per capita for fixed broadband cost

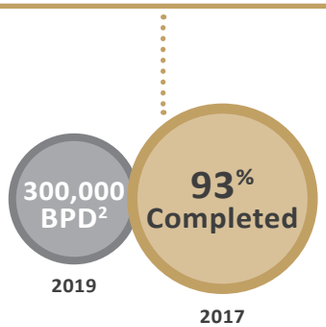


Digital terrestrial television (DTT) roll-out

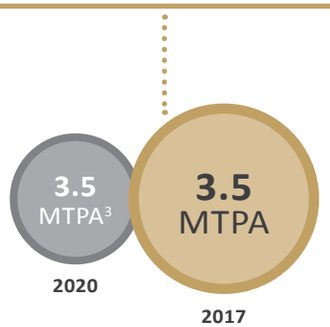
Encouraging sustainable energy use to support growth



New power generation installed capacity in Peninsular Malaysia



Additional oil refining capacity upon completion of plant, currently at 93%



Additional LNG[4] import capacity through Regasification Terminal 2 in Pengerang, Johor

Notes: [1] MW – megawatts
[2] BPD – barrels per day
[3] MTPA – million tonnes per annum
[4] LNG – liquefied natural gas

Original Target Performance

Performance of Focus Area

During the review period, achievements were made in terms of expansion of transport network, access to clean and treated water, installation of new power plants as well as increase in coverage, affordability and quality of broadband. The highlights of key results by focus area are as follows:

Focus Area	Key Result, 2016-2017
 **Building an Integrated Need-Based Transport System**	• Completion of Mass Rapid Transit 1 and Light Rail Transit 2 enabling easier movement of people and provide connectivity within Klang Valley • Upgrading of Langkawi International Airport to increase airport capacity and passenger comfort from 1.5 million passengers per annum (mppa) currently to 3 mppa in 2019 • Channel deepening and capacity expansion works at Northport, Westports and Pelabuhan Tanjung Pelepas to cater for bigger vessels with carrying capacity of 19,000 to 22,000 twenty-foot equivalent units (TEUs) • Established the Malaysian Aviation Commission in 2016 to regulate economic and commercial aviation matters • The 18 km Duta-Ulu Kelang Expressway (DUKE) Phase 2 consist of Tun Razak Link and Sri Damansara Link started operation in October 2017, catering almost 39,400 average traffic daily • 4 expressways in Klang Valley are under construction and expected to be completed by 2020 • The Central Spine Road and Kota Bharu-Kuala Krai Highway are under construction and expected to be completed by 2025 • The Pan Borneo Highway in Sabah and Sarawak are under construction and expected to be completed by 2022 and 2021, respectively

During the review period, development of highways was mainly focused in areas outside of Klang Valley such as the Central Spine Road from Bentong, Pahang to Kuala Krai, Kelantan and connected further with Kota Bharu-Kuala Krai Highway to enhance connectivity between corridors and major towns. In addition, the Pan Borneo Highway initiated in 2015 provides road connectivity from Sindumin to Tawau, in Sabah and Telok Melano to Limbang in Sarawak. Several highways are also in various stages of construction within Klang Valley, namely the Sungai Besi-Ulu Kelang Elevated Expressway (SUKE), Damansara-Shah Alam Elevated Expressway (DASH), East Klang Valley Expressway (EKVE) and Setiawangsa Pantai Expressway (SPE). These highways, once completed, will improve road connectivity and alleviate traffic movement, especially during peak hours.

Two main rail projects were successfully completed during the review period, namely Mass Rapid Transit 1 (MRT 1) and Light Rail Transit 2 (LRT 2). The MRT 1 stretches from Sungai Buloh to Kajang, involving 51 km of rail network and connecting 31 stations. The current ridership for MRT 1 is 180,000 commuters per day, which is far from the projected ridership of 400,000 commuters per day. The LRT 2 line extension from Kelana Jaya and Seri Petaling to Putra Heights, completed the loop between Kelana Jaya and Ampang lines. Despite the completion of these projects, the public transport modal share was only 21% in 2017, posing a challenge to achieve the 40% target by 2020. The low public transport modal share was attributed to several factors such as inadequate connectivity, accessibility and reliability of the public transport services.

The Malaysian Aviation Commission (MAVCOM) established in 2016, regulates national aviation industry, improves capacity of operators and manages competitions through issuance of licences and allocation of routes. MAVCOM introduced the new Passenger Service Charge (PSC) regulation with effect from 1 January 2017, to ensure pricing of PSC takes into account passenger needs and airport operator cost to reduce financial burden of the Government. In addition, the efficiency and effectiveness of the aviation industry has improved further through the upgrading of airport infrastructure and improvement of the system. The ongoing upgrading of Langkawi International Airport, Kedah is expected to enhance airport services capacity and aircraft movements once completed in 2019.

The trend in shipping line focuses on pursuing greater economies of scale to generate lower unit cost by using mega vessels with high carrying capacity of up to 22,000 TEUs. Accessibility and capacity of ports were improved by undertaking channel deepening to at least 18 meters and capacity expansion works to accommodate mega vessels. Capacity expansion works undertaken include building additional berths and wharfs at Northport and Westports in Port Klang, Selangor as well as Pelabuhan Tanjung Pelepas (PTP) in Gelang Patah, Johor.

Focus Area	Key Result, 2016-2017
 **Unleashing Growth of Logistics and Enhancing Trade Facilitation**	• Amendment of the Land Public Transport Act 2010 to include regulation and monitoring of off-dock depots • Processing time for Customs advance ruling for Harmonised Commodity Description and Coding System (HS Code) reduced from 150 to 90 days • Halal certification approval time at main ports and airports reduced from 50 to 10 days • Processing time for charter flights landing permits reduced from 7 to 3 days and number of documents reduced from 10 to 3 • Process improvement initiative under Digital Free Trade Zone (DFTZ) reduced processing time for air cargo clearance from 6 to 3 hours for the pilot project in KLIA

The transport and storage subsector, which is a component of the services sector, grew at 6.0% in 2017 compared to 5.8% in 2015. In 2017, the subsector contributed about 3.6% or RM42 billion to gross domestic product (GDP), and 6.6% to the services sector. Despite the higher growth, the share of transport and storage subsector to GDP remains unchanged from 2016 to 2017 mainly due to slow global economic growth, stiff competition from neighbouring countries as well as inefficient and complicated cargo clearance procedures. Furthermore, major cargo ship liners have upgraded to vessels with larger capacity greater than 19,000 TEUs and posed challenges to ports such as Port Klang and PTP, which currently can only handle vessels up to 12,000 TEUs. In addition, the formation of strategic alliances including mergers among shipping lines has posed challenges to Malaysian ports. In particular, a merger between two shipping lines has bypassed Port Klang and PTP as a preferred hub, due to pricing and less attractive services in terms of technology, cargo handling and clearance facilities.

The ranking for Malaysia in the World Bank Logistics Performance Index 2016 dropped from 25th in 2014 to 32nd in 2016 due to a drop in all six indicators, namely clearance process, infrastructure, logistics services, tracking and tracing, pricing and timeliness. Meanwhile, the National Logistics Task Force (NLTF) established in 2015 aimed to foster growth, meet new industry demands and provide a platform to deliberate and propose policies affecting the logistics industry. However, NLTF was ineffective in coordinating and collaborating with respective stakeholders to address crucial issues, such as on regulatory barriers, complicated cargo clearance, last mile connectivity in Port Klang and low adoption of technology.

Focus Area	Key Result, 2016-2017
Improving Coverage, Quality and Affordability of Digital Infrastructure	• All states in Peninsular Malaysia except Federal Territories[1] have gazetted the amended Uniform Building By-Laws (UBBL) which requires the installation of communication infrastructure in all new commercial and residential development • 480,084 High Speed Broadband 2 (HSBB 2) ports and 366,294 Suburban Broadband (SUBB) ports deployed. The national broadband penetration rate for both fixed and mobile services increased from 99.7 per 100 inhabitants in 2015 to 117.3 in 2017 • Mandatory Standards on Access Pricing (MSAP) reviewed to reduce the fixed broadband price effective January 2018 in order to increase affordability • Mandatory Standards on Quality of Services (QoS) improved to increase quality of network services and enhance consumer protection • Digital terrestrial television (DTT) infrastructure completed in 15 new areas, extending nationwide coverage from 85.9% in 2015 to 91.2% in 2017

Notes: [1] The gazetting of amended UBBL for Federal Territories is in progress.

The international bandwidth connectivity to last mile connections improved with the completion of six submarine cables[1] coupled with the expansion of the High Speed Broadband 2 (HSBB 2), Suburban Broadband (SUBB) and wireless broadband nationwide. However, the broadband coverage remains inadequate in rural areas, primarily due to high deployment cost and low return on investment (ROI). Meanwhile, the fixed broadband cost of gross national income (GNI) per capita is competitive and comparable to other Southeast Asian countries. Nevertheless, the broadband cost is relatively higher in terms of per megabits per second in the region. As for DTT migration, the analogue switch off (ASO) was rescheduled in line with the completion of ASO within the ASEAN region in 2020, allowing stakeholders to be more prepared for digital broadcasting environment. This will offer new value added and interactive services, which includes e-Learning applications, e-Shopping, interactive and online games as well as web TV, to enhance users' experience.

Focus Area	Key Result, 2016-2017
Continuing the Transition to a New Water Services Industry Framework	• Water services sector in Kelantan migrated to an asset-light business model to improve the operator's financial situation and services efficiency • Joint-billing piloted in Federal Territory of Labuan has shown improvement in collection of sewerage charges by 33.4% • Upgrading of 4 existing water treatment plants has increased the production capacity by 221 million litres per day • Implementation of holistic Non-Revenue Water Reduction Programme aimed to further reduce loss of treated water to 25% of total treated water produced by 2020 • Completion of 181 public sewerage treatment plants has improved coverage of sewerage services

Delivery of water services to the *rakyat* was continuously enhanced through improvements in the operations and services of water operators. In this regard, in 2016, Kelantan joined the six states, namely, Johor, Melaka, Negeri Sembilan, Perak, Perlis and Pulau Pinang, which have already restructured the water services. Meanwhile, Kedah and Selangor are in the process of finalising the restructuring exercise. The restructuring, among others, provides alternative financing of assets by the Pengurusan Aset Air Berhad for operators opting an asset-light business model. States that have migrated to the new water regime are also entitled to receive grants from the Federal Government for the development of water resources, such as construction of dams and reservoirs.

[1] The international submarine cable landing stations are located in Kuala Muda, Kedah; Pengkalan Balak, Melaka; Kuantan and Cherating, Pahang; Kuala Kurau, Perak; and Kota Kinabalu, Sabah; whereas the domestic submarine cable landing stations are located in Mersing, Johor; Kuching, Bintulu and Miri, Sarawak; Kota Kinabalu, Sabah; and Cherating, Pahang.

The joint-billing for water and sewerage services piloted in Federal Territory of Labuan witnessed a 33.4% increase in sewerage charges collection within the first year of implementation in 2016. In addition, a holistic Non-Revenue Water (NRW) Reduction Programme was introduced nationwide in 2017 to further reduce the level of NRW. The programme also involved the replacement of old pipes, tanks and water meters. Concurrently, the development of geographical information system was initiated to map water distribution pipes for accurate detection of pipe locations.

Efforts were also undertaken to improve the resources and services infrastructure capacity by upgrading existing or constructing new and integrated water treatment plants (WTPs). Focus was given to high density areas or areas with water reserve margin below 10%. Through these efforts, 221 million litres per day was added to the existing capacity through upgrading of four WTPs in Negeri Sembilan, Perak, Pulau Pinang and Sarawak. The population served with piped water has also increased from 95.5% in 2015 to 95.7% in 2016. In addition, alternative water supply systems such as tubewell and gravity water were provided in areas with limited access to piped water. Meanwhile, the urban sewerage coverage was improved through the completion of 181 public sewerage treatment plants (STPs), contributing to 67.9% of population equivalent (PE) coverage in 2016 as compared to 65% in 2015. The Pantai 2 STP with a design capacity of 1.4 million PE, completed in 2017, is the largest underground STP in the Asia Pacific region. This underground plant enabled 12 hectares of land to be converted into recreational and sports facilities for the local communities.

Focus Area	Key Result, 2016-2017

Encouraging Sustainable Energy Use to Support Growth	• Commissioning of world's first PETRONAS floating liquefied natural gas offshore Bintulu, Sarawak and Regasification Terminal 2 in Pengerang, Johor
	• Construction of Refinery and Petrochemical Integrated Development (RAPID) with the capacity of 300,000 barrels per day in Pengerang, Johor
	• Implementation of Third Party Access (TPA) under the Gas Supply Act 1993 as amended in 2016
	• Commissioning of 6 new power plants with an additional installed capacity of 3,825 megawatts in Peninsular Malaysia
	• Reduction in the number of interruption incidences as measured by the System Average Interruption Duration Index (SAIDI) in 2017 as compared to 2015:
	  ◦ Peninsular Malaysia, 55 minutes per customer per year compared to 60 minutes per customer per year
	  ◦ Sabah, 289 minutes per customer per year compared to 424 minutes per customer per year
	  ◦ Sarawak, 110 minutes per customer per year compared to 144 minutes per customer per year

The country's energy security was further strengthened through continuous investments in the oil and gas upstream infrastructure, which increased the monetisation of the discovered resources. The extracted resources were delivered to customers via the world's first PETRONAS floating liquefied natural gas facility offshore Bintulu, Sarawak as well as the Regasification Terminal 2 and Refinery and Petrochemical Integrated Development (RAPID) projects in Pengerang, Johor. The project has attracted an equity investment of US$7 billion from a Saudi Arabia oil company, the single largest foreign investor in RAPID. The Third Party Access (TPA) regime introduced in 2016 allowed third party players to use gas supply infrastructures such as regasification terminals, transmission and distribution pipelines.

Electricity generation has been enhanced with the additional installed capacity of 3,825 megawatts (MW) through the commissioning of six new power plants in 2017. Continuous effort to strengthen generation as well as transmission and distribution network has improved performance as indicated by the reduced number of interruption incidences measured by the System Average Interruption Duration Index (SAIDI), particularly in Sabah. In September 2017, Malaysia, Lao People's Democratic Republic (Lao PDR) and Thailand concluded an agreement on the importation of 100 MW of hydropower from Lao PDR as part of the Lao PDR-Thailand-Malaysia-Singapore Power Integration Project (LTMS-PIP). This initiative is to further enhance energy security in Malaysia.

Issues and Challenges

Road maintenance are currently done on the basis of corrective maintenance instead of on a regular interval basis. This has led to poorly maintained roads which limit mobility, raise vehicle operating costs and increase accident rate. Alternatively, preventive road maintenance is being implemented on a trial basis to evaluate the effectiveness in reducing maintenance cost as compared to the conventional road maintenance practice. However, the preventive maintenance programme, which uses advanced materials and innovative technology, is costlier and should be weighed against the expected benefits. Moreover, despite improvement of road conditions and blackspots, reckless behaviour and attitude of road users contributed 81% of road fatalities. In addition, there is still unmet demand for road infrastructure among others, due to resource constraint and priorities.

Public transport modal share remains low despite the heavy investment in urban rail and bus services due to a number of factors including poor ridership, preference for own vehicles, lack of demand management measures as well as inadequate connectivity. Over estimation by operators during project planning phase led to unachievable ridership target. In addition, public mindset and reluctance to switch to public transport mode has contributed to the low usage of public transport. Meanwhile, poor provision of travel services by the operators as well as inadequate first and last mile connectivity are among the causes for low ridership.

Capacity expansion for **ports** remains a challenge as port operators are constrained by huge capital investment and lack of land bank. Limited accessibility to ports, poor hinterland connectivity and bad condition of road networks hamper the movement of cargo vehicles. In addition, the lack of an integrated port community system hinders flow of information and data exchange, which causes delays in movement of goods. These issues compounded the inefficiency of port operations.

Planning and development of the **airports** is carried out on ad-hoc basis. This is due to the absence of an overarching masterplan to set the strategic direction for airport development. Lack of clear priority for airport development and expansion has led to inefficient allocation of financial resources and difficulty in assessing proposals from state government to build and expand existing airports. In addition, there are also constraints in terms of operations and infrastructure of rural air services which may affect the safety and security of the short take-off and landing airstrips.

For the **logistics** industry, despite the growth and potential of the industry, there are crucial issues that need to be addressed, including regulatory barriers and weak collaboration among

stakeholders. In addition, slow progress of the ubiquitous Customs (uCustoms[2]) system development hamper improvement of cargo clearance work processes. Although various initiatives have been implemented to improve the last mile connectivity to Port Klang, road transport remains the preferred mode of transport for goods as compared to rail, thus worsening road congestion. Furthermore, the industry lacks skilled workforce in areas such as supply chain network, integrated warehouse management and information technology applications. This was further aggravated by the outflow of locally trained and experienced talent to neighbouring countries, which offered higher salaries. Hence, the lack and outflow of skilled workforce affected the adoption of modern technology and productivity of the industry.

High cost and low ROI remains as major challenges in the deployment of **digital infrastructure**, attributing to inadequate broadband coverage, especially in rural areas. The deployment of digital infrastructure is also constrained by several issues including the issuance of the right of way and permits for communication infrastructure by the state governments and local authorities. This has led to variations in quality and cost due to the practice of some state governments imposing exclusivity in the deployment of digital infrastructure. In addition, inconsistent and complicated procedures at the local authority level have contributed to the delays in broadband roll-out.

The high level of NRW remains a major challenge in **water services** industry due to loss of treated water in distribution networks as a result of leakages in pipes and water reservoirs as well as unbilled treated water including water theft, partly contributed by lack of enforcement. This led to lower revenue collection by the water operators and subsequently affected maintenance of water assets which increased the risk of water supply disruptions. Meanwhile, ensuring accessibility of clean and safe water in rural areas, particularly in Sabah and Sarawak remains a challenge due to high cost of infrastructure. The water supply services are further constrained by insufficient supply of freshwater to the treatment plants due to pollution at water sources caused by human activities and environmental factors. In addition, the presence of multiple agencies involved in planning and management of water resources has contributed to inefficient service delivery. Water conservation efforts are also affected by low public awareness and participation. With regard to sewerage services, despite large investment in regional STPs, the reluctance and non-compliance among a large number of property owners, have resulted in low individual sewerage connectivity.

The presence of multiple agencies handling different aspects of **energy sector** such as oil and gas, electricity and regulatory matters has led to fragmented governance and coordination issues that hampered market reforms. This resulted in energy price distortion including natural gas for power and non-power sectors as well as other fuel thus incurring heavy subsidies borne by the government. Meanwhile, the issues confronting the domestic oil and gas subsector are in relation to security and reliability of supply as well as market distortions. With regard to natural gas price for Peninsular Malaysia in 2017, the regulated price was RM22.70 per million British thermal unit (MMBtu) for electricity subsector and RM24.55 per MMBtu for non-electricity subsector. These regulated prices were well below the market price of RM36 per MMBtu despite efforts to rationalise natural gas subsidies. As a result, the cumulative natural gas subsidies since the implementation of regulated gas price in May 1997 until end of 2017, amounted to RM247.8 billion.

The **electricity** subsector faced challenges in delivering reliable and affordable electricity supply to consumers. The electricity generation mix continues to rely heavily on fossil fuel, namely coal, natural gas and oil. Natural gas, being the cleanest fossil fuel, became the preferred fuel in the generation of electricity as it is heavily subsidised. However, the gradual removal of gas subsidies has made coal as the cheapest option to generate electricity and support economic growth but at a higher environmental cost. Nevertheless, the adoption of ultra-supercritical technology in coal-fired power plants has minimised carbon emission.

[2] uCustoms is a fully integrated, end-to-end customs modernisation paperless solution that delivers a single window for goods clearance. It will enable seamless movement of cargo, improve transparency, increase efficiency and reduce cost of doing business.

Conclusion

During the review period, progress was made, particularly in the provision of better road networks, more affordable and integrated public transport, wider coverage of digital infrastructure as well as reliable clean water and energy supply. However, there are challenges and issues that need to be addressed pertaining to governance structure, coverage of services and service efficiency. Efforts need to be intensified to improve various infrastructures in order to increase connectivity, efficiency and productivity as well as enhance service delivery to meet the growing demand and strengthen economic growth.