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INTERNATIONAL TRADE AND INDUSTRY

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ACKNOWLEDGEMENT

Numerous engagements and consultations were conducted throughout the development process of the National Automotive Policy 2020 (NAP 2020) with support from various ministries, agencies, academia, intellects, financial institutions, research and analysts' entities, associations and the industry players. The discussions established around topics that comprise future development targets and specific strategic plans towards Malaysia's potential and competitive advantage while addressing disruptors and capitalising opportunities in tandem with the forthcoming growth of the global automotive industry.

The range of stakeholder's involvement assisted in providing inputs and views of the entire automotive ecosystem in addressing challenges and identifying specific enablers under the policy.

GLOBAL BENCHMARKING

Visits to global automotive manufacturers production line and meeting international ministries and government agencies to understand the drive and future technology development plan to ensure Malaysia is aligned with other global strategies.

STAKEHOLDERS MEETINGS

Various engagements conducted by MITI either collectively or through individual meetings to deliberate and collect information on the direction of the industry players and the initiatives.

WORKSHOPS

Series of Workshops and Brainstorming sessions were held to analyze collective findings and set strategic goals, vision and objectives of the National Automotive Policy (NAP).

CONTRIBUTING ORGANISATIONS

INDUSTRY ASSOCIATIONS

- (i) Malaysia Automotive Association (MAA)
- (ii) Motorcycle & Scooter Assemblers and Distributors Association of Malaysia (MASAAM)
- (iii) Malaysia Automotive Component Parts Manufacturers (MACPMA)
- (iv) PROTON Vendor Association (PVA)
- (v) PERODUA Suppliers Association (P2SA)
- (vi) Persatuan Pengimport & Peniaga Kenderaan Melayu Malaysia (PEKEMA)
- (vii) Commercial Vehicles Rebuilders Association Malaysia (CVRAM)
- (viii) Federation of Automobile Workshop Owners Association of Malaysia (FAWOAM)
- (ix) Federation of Engineering & Motor Parts Traders Association of Malaysia (FEMPTAM)
- (x) Persatuan Pengusaha Industri-industri Bengkel Malaysia (PPIBM)
- (xi) Malaysia Automotive Recyclers Association (MAARA)
- (xii) Automotive Technician of Malaysia Society (ATOMS)
- (xiii) Malaysia Tyre Traders Society (MATRADS)
- (xiv) Association of Banks Malaysia (ABM)
- (xv) General Insurance Association of Malaysia (PIAM)

AUTOMOTIVE MANUFACTURERS

- (i) Perusahaan Otomobil Nasional Bhd. (PROTON)
- (ii) Perusahaan Otomobil Kedua Nasional Sdn. Bhd. (PERODUA)
- (iii) Kumpulan NAZA
- (iv) Mercedes Benz Sdn. Bhd
- (v) Volvo Car Manufacturing Sdn. Bhd
- (vi) BMW Group Malaysia Sdn. Bhd
- (vii) Ford Malaysia
- (viii) UMW Toyota Motor Sdn. Bhd
- (ix) Honda Motor Sdn. Bhd
- (x) Edaran Tan Chong Motor Sdn. Bhd. (Nissan)
- (xi) Tan Chong Motor Holdings Berhad
- (xii) DRB-HICOM Berhad

- (xiii) Inokom Corporation Sdn. Bhd
- (xiv) Motosikal dan Enjin Nasional Sdn. Bhd. (MODENAS)
- (xv) Hong Leong Yamaha Motor Sdn. Bhd.
- (xvi) Boon Siew Honda Sdn. Bhd.

MINISTRIES AND AGENCIES

- (i) Ministry of Finance
- (ii) Ministry of Economic Affairs
- (iii) Ministry of Education
- (iv) Ministry of Transport
- (v) Ministry of Communication and Multimedia
- (vi) Ministry of Entrepreneur Development and Cooperatives
- (vii) Ministry of Domestic Trade and Consumer Affairs
- (viii) Ministry of Works
- (ix) Ministry of Primary Industries
- (x) Ministry of Energy, Science, Technology, Environment and Climate Change
- (xi) Malaysian Industry-Government Group on High Technology
- (xii) Road Transport Department
- (xiii) Malaysia Investment Development Authority
- (xiv) Malaysia Industrial Development Finance Berhad
- (xv) Malaysia External Trade Development Corporation
- (xvi) Malaysia Palm Oil Board
- (xvii) Department of Standards Malaysia
- (xviii) Department of Environment
- (xix) Malaysia Green Technology Corporation
- (xx) SIRIM Berhad
- (xxi) Malaysian Institute of Road Safety Research

FOREWORD

BY YAB PRIME MINISTER OF MALAYSIA



“The NAP 2020 will continue to promote participation of local companies in the domestic and global supply chain, encourage R&D and engineering activities, build capabilities and capacity of local workforce, support national car projects as well as enhancing exports, investments and local production volume.”

The automotive industry has been one of the major contributors to Malaysia’s economy ever since the launching of our first national car in 1983.

The automotive industry stimulates the development of other industrial sectors such as Electrical & Electronics, plastics, steel and rubber. It give rise to a talented pool of designers, engineers, technicians and others that would be able to work in other industrial sectors.

Today, we have the benefit of many visionary manufacturers who have been creating environmental-friendly vehicles and continuously researching on new technologies in the field. Vehicle technology trends such as Electrification, Autonomous Driving, Internet of Things (IoT), Cooperative-Intelligent Transportation System (C-ITS) and Artificial Intelligence (AI) in vehicles are critical development focus for today’s global carmakers that enhance vehicle safety as well as making the vehicle more intelligent and environmental friendly.

The rise of these new disruptive technologies is set to transform the competitive landscape of the automotive sector providing new opportunities for growth.

The introduction of the National Automotive Policy (NAP) 2020 which is developed by the Ministry of International Trade and Industry will focus on ensuring that the domestic industry continues to be competitive by enhancing current policy measures and introducing new advance technology elements namely Next Generation Vehicle, Mobility as a Service and Industrial Revolution 4.0 and in other areas.

The NAP 2020 will continue to promote participation of local companies in the domestic and global supply chain, encourage R&D and engineering activities, build capabilities and capacity of local workforce, support national car projects as well as enhancing exports, investments and local production volume.

I believe the NAP 2020 will be the guiding policy for coordinated efforts by both the Government and private sectors to transform Malaysia into a regional centre for automotive research and development, manufacturing and sustainable development technologies. It must aim at being a supplier to the world market and not just the domestic market.

I wish to congratulate all stakeholders for their valuable inputs and support toward formulating the NAP 2020.

Thank you.

YAB TUN DR. MAHATHIR BIN MOHAMAD
Prime Minister of Malaysia

FOREWORD

BY YB MINISTER OF INTERNATIONAL TRADE AND INDUSTRY, MALAYSIA

“NAP 2020 encourages new growth areas through integration of technology such as Next Generation Vehicle (NxGV), Mobility as a Service (MaaS), and Industrial Revolution 4.0 (IR4.0) which are in line with the development of future technologies.”

The advent of new disruptions within the global automotive markets necessitates a paradigm shift in the Malaysian automotive sector. The NAP 2020 is the outcome of collective views and inputs from both government and industry stakeholders.

For the first time, the National Automotive Vision becomes the cornerstone for the NAP 2020, to ensure long term coherence for industry stakeholders in addressing challenges in the automotive sector.

NAP 2020 encourages new growth areas through integration of technology such as Next Generation Vehicle (NxGV), Mobility as a Service (MaaS), and Industrial Revolution 4.0 (IR4.0) which are in line with the development of future technologies.

In addition to promoting the development of Next Generation Vehicle, components and systems, the NAP 2020 is a holistic policy that covers the comprehensive development of value chain, human capital, indigenous technologies, aftermarket, exports, infrastructure, standards/regulations and others.



Since the establishment of PROTON, the first national car, the local automotive industry now has more than 20 manufacturing and assembly plants in the country producing passenger and commercial vehicles, as well as motorcycles and scooters. The industry contributes about RM40 billion or 4% of Malaysia's GDP, with a workforce close to 700,000 people, an estimated 53,000 aftermarket establishments, and more than 600 parts and components suppliers.

The success of NAP 2020 depends on the implementation through its 7 roadmaps and blueprints. There is a need to carefully plan and execute each detail of the NAP 2020, as most of these measures will require further consultations with stakeholders and will be developed under respective roadmaps and blueprints.

Therefore, I urge all stakeholders to view the NAP 2020 objectively to ensure the local automotive industry continues to grow and remain competitive.

Thank you.

YB DATUK IGNATIUS DARELL LEIKING
Minister of International Trade and Industry, Malaysia

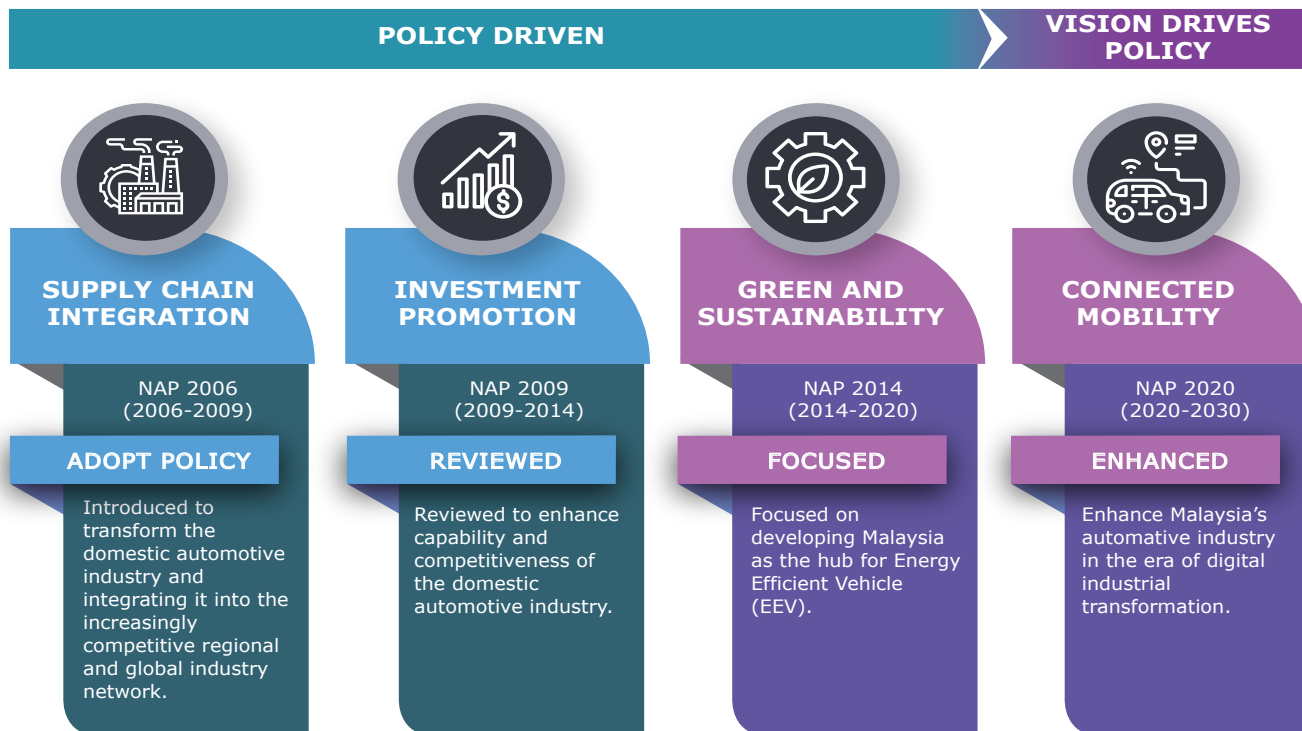


BACKGROUND

| AGILITY TOWARDS DIGITAL TRANSFORMATION

The automotive industry plays a significant role in transforming Malaysia into an industrialised nation, which translate into high-value economic activities, improving standards of living as well as creating higher-paying jobs. The sector creates an important impact on the development of upstream industries, such as steel and chemicals, as well as downstream industries, including IT and maintenance services.

The National Automotive Policy (NAP) was first introduced in 2006 under the Third Industrial Masterplan (IMP3) 2006-2020 to transform the automotive industry as one of the important contributors of our economy, It outlined key directions and strategies in preparing the local automotive players towards a more competitive and sustainable automotive industry. In 2009, the second version of the policy was introduced, to focus on enhancing the capabilities of the domestic automotive industry and to create a more conducive environment for investments.



A third version was introduced in 2014, named NAP 2014 which placed emphasis on green initiatives, market expansion, as well as enhancement of the entire automotive ecosystem through development of technology, human capital and supply chain. The ultimate objective of the NAP2014 was to establish Malaysia as a regional Energy Efficient Vehicle (EEV) hub by the year 2020.

The fourth version - the NAP 2020 envisions to enhance Malaysia's automotive industry in the era of digital industrial transformation from 2020 to 2030, thus enabling Malaysia to realise Connected Mobility.

The Malaysian automotive industry is expected to begin a challenging phase from 2020 onwards with the new technology invasion and shockwaves created across global market and emerging trends. The automotive industry has evolved significantly over the years since the National Automotive Policy (NAP) was introduced. Innovative products and disruptive technologies have played a vital role in this evolution. Manufacturers, the vendor community, associations, financial institutions, sales and services have invested in major business practices to enhance manufacturing capabilities, technology know-how, capacity build-up, talent and resources to stay relevant in the quest towards becoming the regional leader in the automotive industry. Moving beyond Energy Efficient Vehicle (EEV), the concept of mobility will now influence the direction and product development from what was used to be powertrain-based to adding intelligence and connectivity features in the vehicles.

Automotive, Mobility and Connected technology have become more essential in building the fundamentals towards the advancement of vehicles. Global trends such as autonomous vehicle, electrification, Big Data Analytics (BDA), Internet of Things (IoT), Artificial Intelligence (AI) and alternative fuel powertrains have changed the landscape of the industry as they bring new aspects and offerings to vehicle development.

KEY ACHIEVEMENTS OF NAP 2014

The key objective of NAP 2014 was to transform the Malaysian automotive industry towards becoming the ASEAN hub for Energy Efficient Vehicle (EEV) through development of research and development capabilities for right hand drive (RHD) vehicles and related technologies, such as fuel efficiency, light material, telematics, tooling and component design. Major achievements of the industry from 2014 to 2018:

RM48.6 BIL WORTH OF GDP CONTRIBUTION



598, 714 UNITS OF TOTAL INDUSTRY VOLUME (TIV)



RM10.05 BIL TOTAL INVESTMENTS



564, 971 UNITS OF TOTAL PRODUCTION VOLUME (TPV)



244, 941 EMPLOYMENTS IN AUTOMOTIVE INDUSTRY



RM2.08 BIL WORTH OF CBU VEHICLE EXPORTS



RM58.7 BIL LOCAL CONTENTS USED



RM523.1 MIL WORTH OF REMANUFACTURED AUTOMOTIVE PARTS AND COMPONENTS



RM12.1 BIL COMPONENTS EXPORTED IN 2018



ESTABLISHMENT OF THREE SPECIALISED DESIGN AND ENGINEERING CENTERS (MALAYSIA TECHNOLOGY CENTRE, NATIONAL EMISSION TEST CENTRE (NETC), AUTOMOTIVE DESIGN CENTRE



405 VENDORS CAPABLE TO BE OEMS SUPPLIERS IN 2018

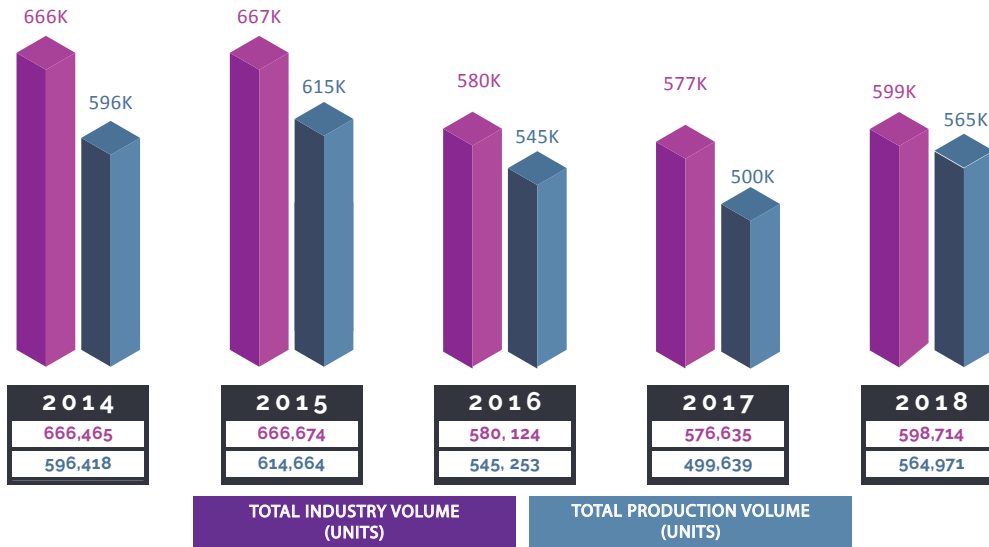
• LEVEL 5: 55 COMPANIES • LEVEL 4: 130 COMPANIES • LEVEL 3: 405 COMPANIES



SOURCE: MAA, MASAAM, MIDA, MATRADE, DOSM, MARKLINES & MARIi INTERNAL ANALYSIS

| TOTAL INDUSTRY VOLUME (TIV) AND TOTAL PRODUCTION VOLUME (TPV)

Passenger And Commercial Vehicles

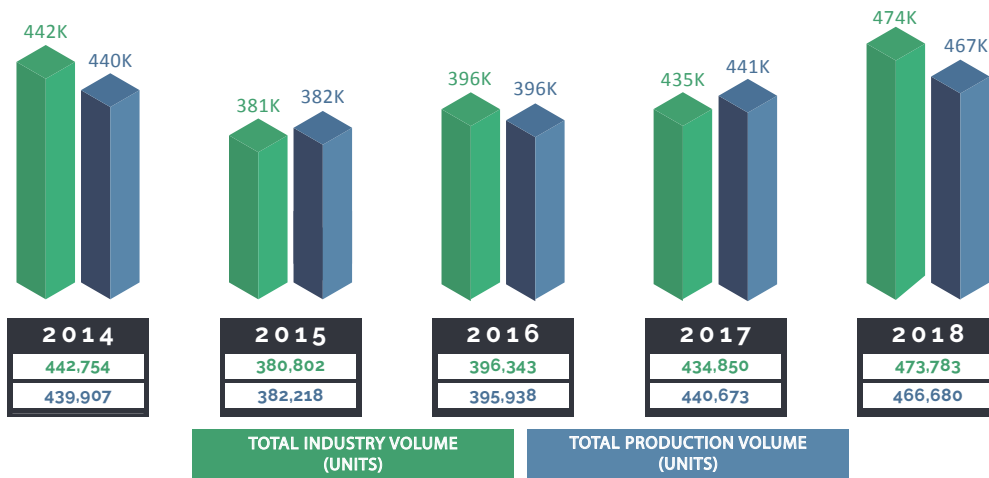


In 2018, both TIV and TPV have increased compared to 2017.

- Tax holiday between June and Sept 2018 contributed to increased sale

SOURCE: MARKLINES & MARIi INTERNAL ANALYSIS

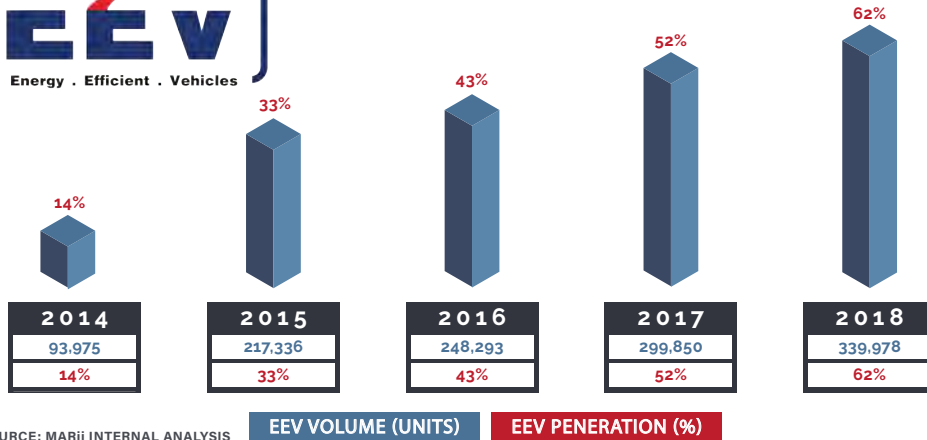
Motorcycles



Despite a drop in sales and production in 2015 compared with 2014, the motorcycle industry managed to recover and has shown an increasing trend in TPV and TIV since 2016.

SOURCE: MARKLINES & MARIi INTERNAL ANALYSIS

| EEV PENETRATION



EEV penetration has seen a continuous year-on-year increase since the NAP 2014 was launched.

14% to 62%
(2014-2018)
EEV Penetration

SOURCE: MARIi INTERNAL ANALYSIS

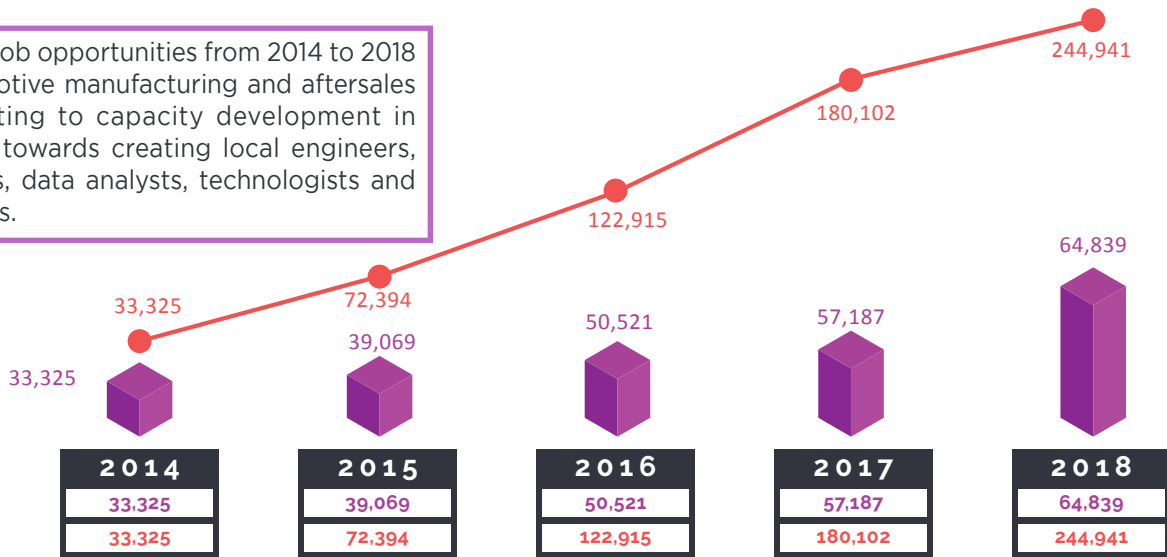
EEV VOLUME (UNITS)

EEV PENETRATION (%)

| JOB CREATION

TOTAL JOB CREATION FOR MANUFACTURING AND AFTERMARKET

244,941 job opportunities from 2014 to 2018 in automotive manufacturing and aftersales contributing to capacity development in Malaysia towards creating local engineers, designers, data analysts, technologists and specialists.

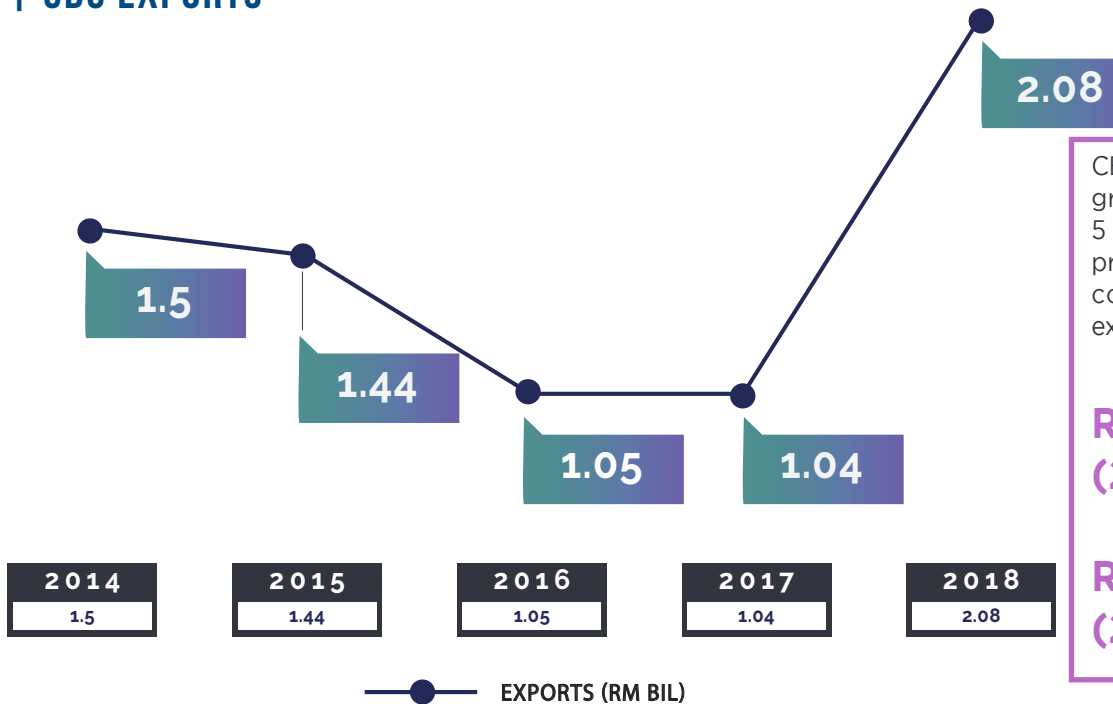


SOURCE: MARIi INTERNAL ANALYSIS

TOTAL JOB CREATION

CUMMULATIVE

| CBU EXPORTS



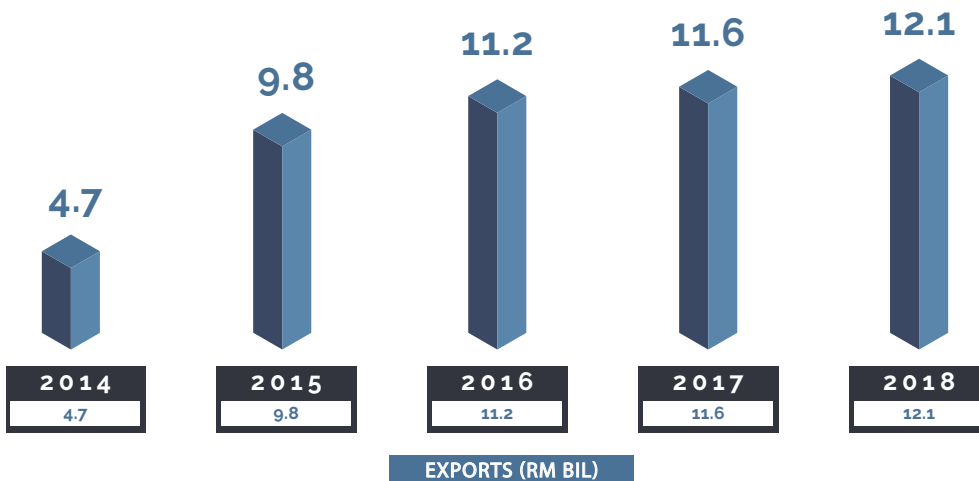
CBU Exports have shown growth in value in last 5 years. An increase in premium model exports contributed to higher export value.

RM2.08bil
(2018)

RM1.5bil
(2014)

SOURCE: MARIi INTERNAL ANALYSIS

| PARTS & COMPONENT EXPORTS



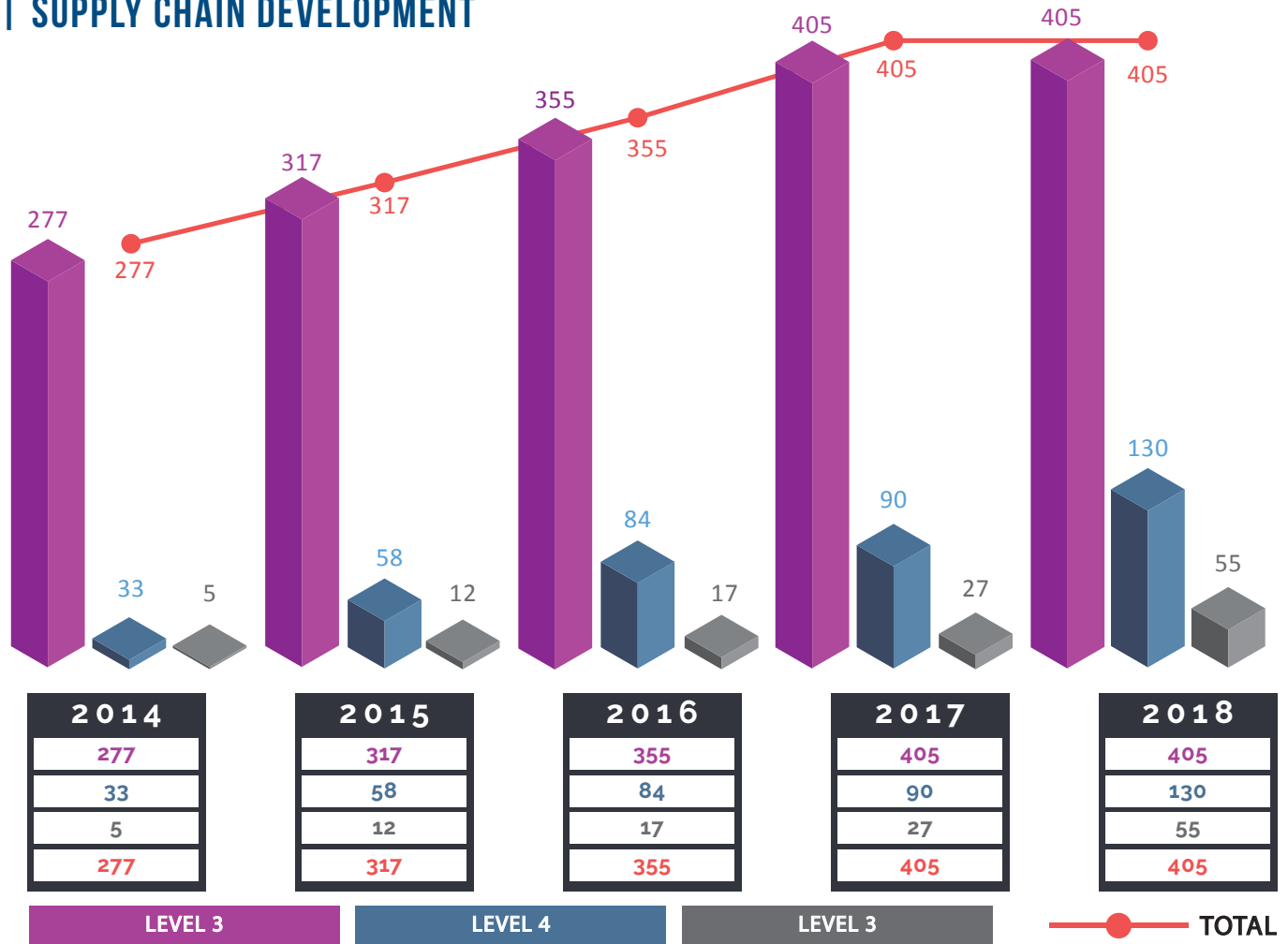
Export of parts and components increased in value from 2014 to 2018.

RM12.1bil
(2018)

RM4.7bil
(2014)

SOURCE: MARIi INTERNAL ANALYSIS

| SUPPLY CHAIN DEVELOPMENT



SOURCE: MARIi INTERNAL ANALYSIS

Supplier Competitiveness Level (SCL) of local vendors in Malaysia increased from 2014 to 2018 and has achieved:

Level 3: 405 vendors
 Level 4: 130 vendors
 Level 5: 55 vendors

| ESTABLISHMENT OF CENTRES OF EXCELLENCE (COE) - TECHNOLOGY CENTRES

| MALAYSIA TECHNOLOGY CENTRE

The Malaysia Technology Centre is a technology commercialisation centre to undertake technology transfer, validation and adoption of automation practices. The academy is also a one stop centre or hub for Industry 4.0 Human Capital Development in automotive and connected mobility ecosystem, bridging industry players, academia, training institutions, students and government agencies.

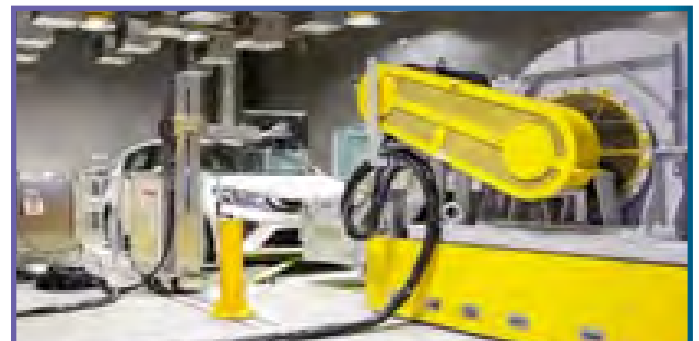
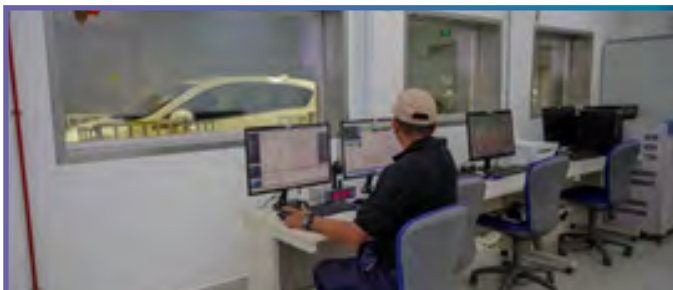


| NATIONAL EMISSION TEST CENTRE (NETC)



National Emission Test Centre (NETC) is an independent entity and recognised as a national laboratory. It is owned by Malaysia Automotive Robotics and IoT Institute (MARii), an agency under the Ministry of International Trade and Industry (MITI).

NETC provides testing facilities in measuring vehicle emission pollutants and fuel consumption. NETC is the most advanced emission testing facility in the ASEAN region (measures up to Euro 6d Emission Standard - WLTP).

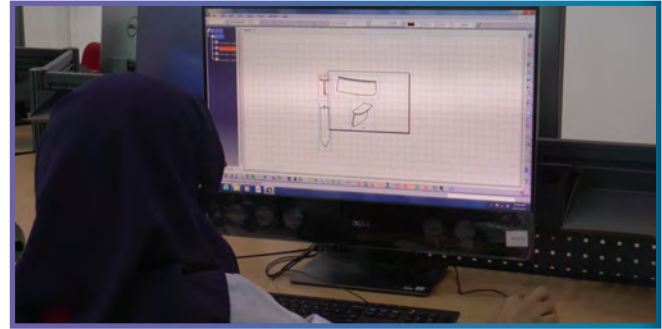


| AUTOMOTIVE DESIGN CENTRE

The Automotive Design Centre is established with the purpose of enhancing the implementation of Industry 4.0 in the Malaysian automotive industry specifically in the areas of design engineering, simulation and prototyping.

It is an open sharing Industry 4.0 platform, whereby any OEM and vendor from various tiers can leverage on the hardware and software available, such as Fused Deposited Modelling (FDM) and Selective Laser Sintering (SLS) for additive manufacturing, Augmented Reality, High Performance Computing Server and more.

The Centre also enables the automotive industry to conduct simultaneous engineering between the OEMs and their vendors during the product development stage. This will assure quality and improved productivity of new model development, thus ensuring good user-experience in the finished product.



16
TOTAL
PROJECTS

RM
18.07
MIL
PROJECTS
VALUE

9
PROJECTS
READY TO BE
COMMERCIALISED

LIST OF TECHNOLOGY DEVELOPMENT PROJECTS

Development of Advanced
Electrode and Electrolytes for
Lithium-Ion Battery (LiB)

Battery Charge, Mechanical and
Thermal Management System
Development

Lithium Ion Battery Module
Packaging and Testing

Next Generation Battery
Technology Roadmap
Development

Lightweight Plastic Glazing for the
Automotive Industry

Lithium-ion Battery Material
Manufacturing Scale up and
Process Optimization

Modular Electric Bus Driveline
Systems

Bus Tracking Systems

Market Intelligence and
Technology Assessment (MITA)
2030

ATM Diecasting Demonstration
Trials

Plastic Injection Mould Process

Optimisation
Plastic Injection Mould Design
Optimisation

Flexible Roll Forming of a
Component Section from AHSS

Tool Wear Prediction Model on the
Stamping of AHSS and UHSS

3R's Recyclability, Recoverability,
Reusability

Automotive Composites
Manufacturing Capability and
Quality

GLOBAL AND ASEAN AUTOMOTIVE INDUSTRY PERFORMANCE



GLOBAL OVERVIEW OF THE AUTOMOTIVE INDUSTRY

| GLOBAL AUTOMOTIVE PERFORMANCE

The performance of the global automotive sector is monitored on the surface based on sales and production of vehicles.

Vehicles sold in the world markets have recorded a positive growth with an increase of 7.7% sales volume from 85.3 million units in 2014 to 91.9 million units in 2018. From this value, green vehicles sales account for 2% of the global vehicles sales in 2014 and 4% in 2018 respectively.

Meanwhile, the global production statistics also showed an increase from 87.6 million units in 2014 to 95.2 million units in 2018.

The automotive industry has evolved significantly over the past decade. The year 2018 marked a record year for the sale of battery-powered electric vehicles in the global market. Passenger electric cars recorded 1.26 million sales throughout the year, up by a huge 74%. It was one of the highest increments among all car categories in the global markets followed by the sales of hybrid and plug-in hybrid vehicles.

A number of factors contributed to the record sales. Firstly, Chinese demand for EVs soared throughout 2018, as the segment gained more visibility among consumers, due to the promotion by local governments for their positive environmental impact.

Secondly, Tesla's Model 3 became the world's best-selling EV, boosted by sales in North America where it first became available. Finally, the diesel crisis in Europe also helped to raise awareness among consumers about the benefits of driving electric cars.

SUVs were still very much in demand and the trend continued to appeal to consumers around the globe. Toyota, Hyundai-Kia, Volkswagen Group, and Renault-Nissan recorded almost 12% of global market share.

Global vehicle sales:

**8% growth
(2014 vs 2018)**

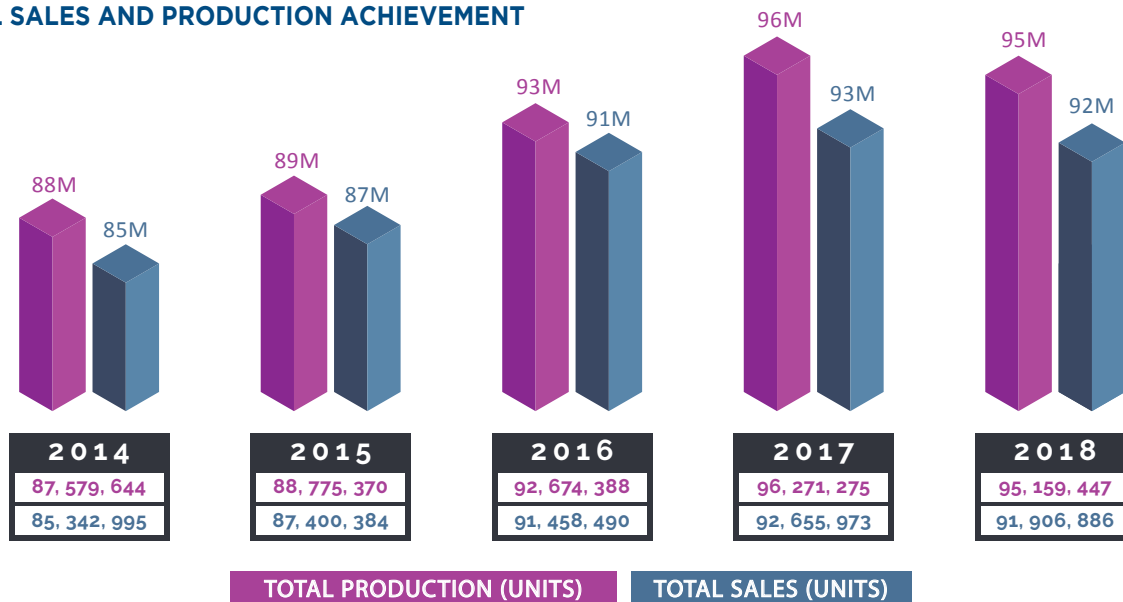
Global vehicle production:

**8% growth
(2014 vs 2018)**

Green vehicles sales from
total global vehicles sales :

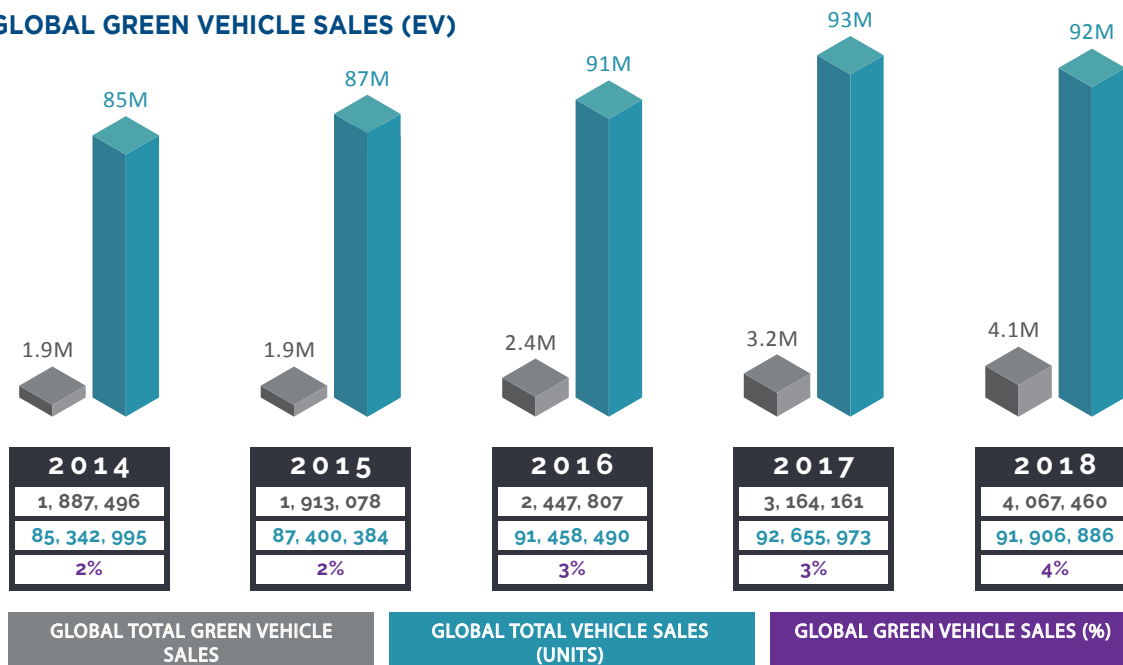
**2% to 4% growth
(2014 vs 2018)**

GLOBAL SALES AND PRODUCTION ACHIEVEMENT



SOURCE: MARKLINES & MARIİ INTERNAL ANALYSIS

TOTAL GLOBAL GREEN VEHICLE SALES (EV)



SOURCE: MARKLINES & MARIİ INTERNAL ANALYSIS

DRIVEN BY MULTIPLE FACTORS

The global automotive technology development created a rise in trends towards Next Generation Vehicle (NxGV), Mobility as a Service (MaaS) and Industrial Revolution 4.0 (IR4.0), which are applied by automotive leaders such as the United States, United Kingdom, Germany, China and Japan.

Vehicle technology trends such as Electrification, Autonomous Driving, Internet of Things (IoT), Cooperative-Intelligent Transportation System (C-ITS) and Artificial Intelligence (AI) in vehicles are critical development focuses for today's global carmakers as well as enhancing vehicle safety, making vehicles more intelligent and environmentally friendly.

Numerous cities around the world are making public transportation and alternative modes of transportation more convenient for the public, and automobile manufacturers are being encouraged to do their part and produce cleaner, more environmentally friendly vehicles.

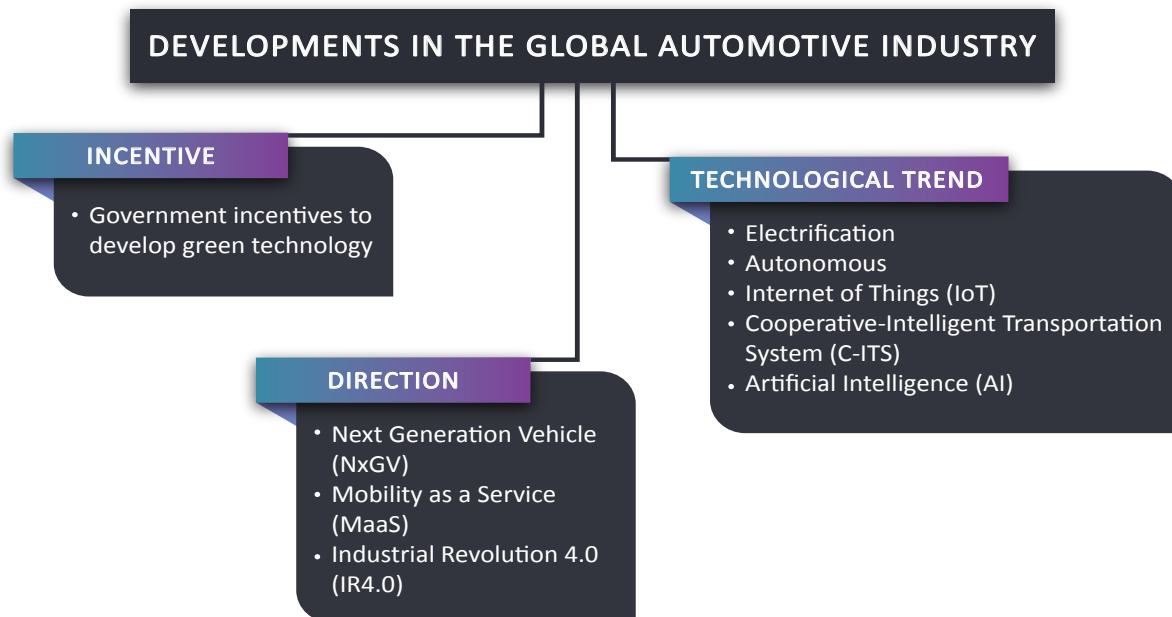
For example, Tesla currently has 15 stores around the globe, and has created new electric vehicles without sacrificing

premium performance, in an effort to reduce its overall carbon footprints.

Renault, Nissan, Daimler, and BMW, along with several other organisations have created a €42 million initiative known as 'Green eMotion' in Europe. This initiative supports the research and development of transportation solutions, utilizing renewable energy sources and energy efficiency technologies.

Japanese automobile manufacturer Nissan initiated the Green Program to address issues of carbon dioxide emissions, in an effort to preserve the air and water, and recycling of resources.

State governments across all nations provide a support mechanism to compel green technology development. One of that is the financial support offered by the government and financial institutions. The incentives are aimed at promoting investment, in green technology with the potential to minimise the degradation of the environment, reduce greenhouse gas emission, promote a healthy environment for life, and promote the use of renewable energy and natural resources.

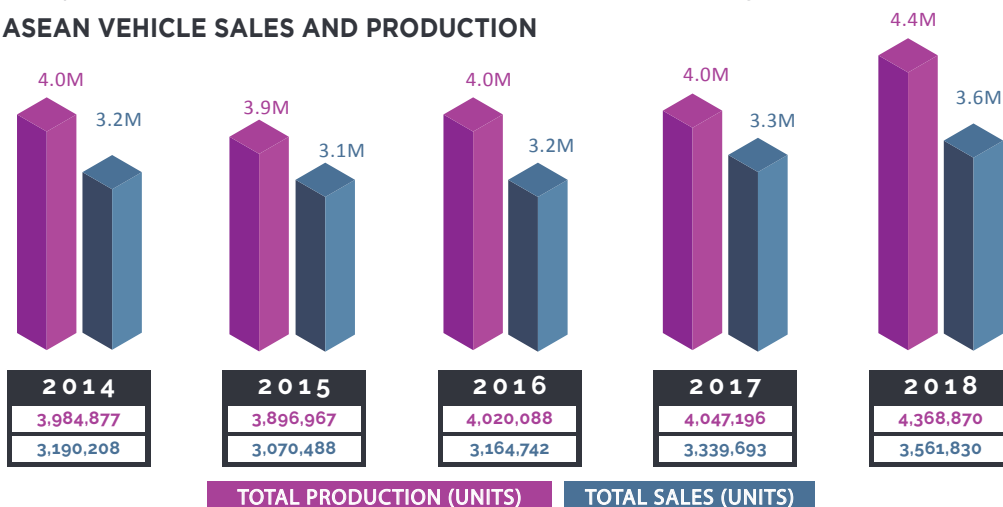


ASEAN AUTOMOTIVE PERFORMANCE

The automotive industries within ASEAN countries recorded positive growth in sales and production of vehicles from 2014 to 2018 with 12% growth for vehicle sales and 10% for vehicle production respectively. The green vehicle sales in ASEAN, meanwhile, achieved 32% penetration in 2018.

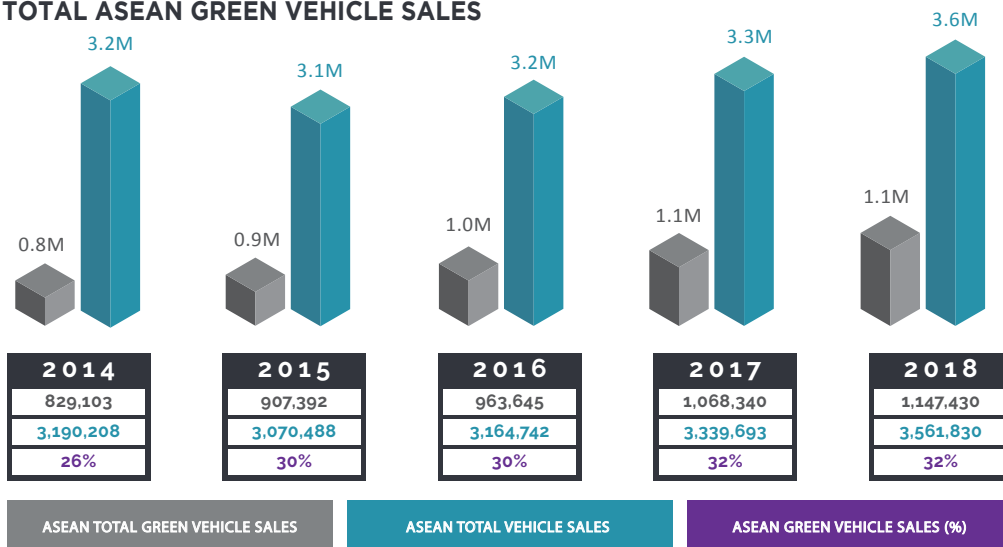
The growing automobile industry in ASEAN member countries offers vast opportunities for investments for manufacturers and distributors of automobile components. Presently, Japanese OEMs in general have strong dominance over the manufacturing and market segments in ASEAN.

ASEAN VEHICLE SALES AND PRODUCTION



SOURCE: MARKLINES & MARIi INTERNAL ANALYSIS

TOTAL ASEAN GREEN VEHICLE SALES



SOURCE: MARKLINES & MARIi INTERNAL ANALYSIS

ASEAN vehicle sales:
12% growth
 (2014 vs 2018)

ASEAN vehicle production:
10% growth
 (2014 vs 2018)



CHALLENGES IN THE AUTOMOTIVE INDUSTRY

DEMUR OF THE LOCAL INDUSTRY

Malaysia is now one of the region's largest auto markets with vibrant production activities. However, to sustain the success and to move forward progressively, any liberalisation initiatives will need to consider the prescribed desirable industrialisation parameters which are beneficial to Malaysia.

Malaysia began its trade liberalisation initiatives at the turn of the century, and aggressively pursued the liberalisation agenda ever since. While the economic liberalisation has brought benefits to Malaysia, the Government also acknowledges it has posed some challenges to local automakers.

CHALLENGES OF THE AUTOMOTIVE INDUSTRY

| | |
|------------------------------------|--|
| REGIONAL ARRANGEMENTS | <p>The ecosystem for the supply chain of vehicle components has been established in another country and with that gives a larger economies of scale for a vehicle producing brand to export.</p> <p>This has impacted the plan for localisation of local components which will only be at the level of assembly and not at the level of product R&D and tooling.</p> |
| TERRITORY RIGHTS | <p>Vehicle producing brands based in Malaysia can only focus on domestic market sales and are not allowed to export.</p> <p>This has directly prevented them from pursuing the plans to export vehicles from Malaysia.</p> |
| NON-TARIFF BARRIERS | <p>There are still constraints in the form of non-tariff barriers in the ASEAN region, especially from countries with high demand (high population) which force vehicle producing brands to setup assembly plants in that country and resulting in reduced opportunities for exports from Malaysia.</p> |
| CONSOLIDATION TREND | <p>Consolidation trend of vehicle producing brands at the global level has made it more difficult for vehicle producers in Malaysia to make business decisions as there will be interference from new shareholders.</p> |
| PRODUCTION OF LUXURY BRANDS | <p>For luxury vehicle producing brands, the imposition of very high standards and quality as well as high investment costs have made localisation activities to be difficult because of low production volume.</p> |

Given the significant challenges faced by the automotive industry, in particular globalisation, economic liberalisation and increasing competition, the Malaysian government felt that there is a need to review the strategic direction and policy framework for the domestic automotive sector. New challenges call for new approaches to revitalise our automotive sector. One significant measure is the introduction of NAP 2020, a re-engineered document from the previous NAP 2014.

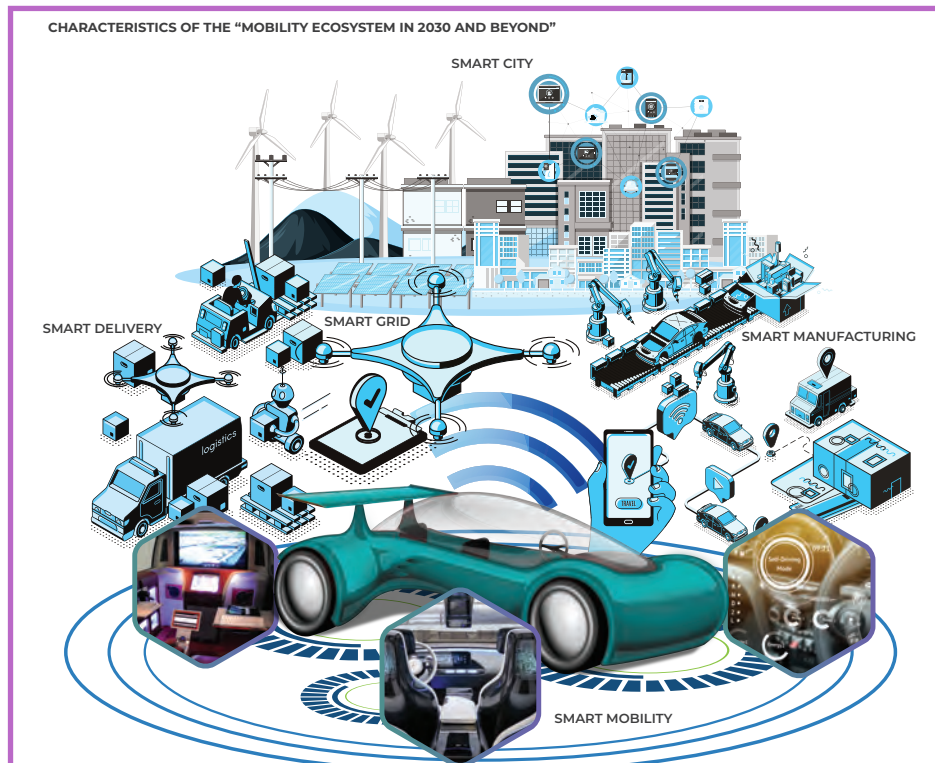
THE POLICY (NAP 2020)

NATIONAL AUTOMOTIVE POLICY

| A POLICY THAT ENCOURAGES INVESTMENT, TECHNOLOGY ADVANCEMENT AND SUSTAINABLE DEVELOPMENT

Over the past half-decade, the nation has witnessed a rapid transformation of the automotive industry as mobility technologies and Industry 4.0 became imperative to global competitiveness. The new era of automotive technologies must be adapted into the industry to ensure business sustainability and future competitiveness. The emergence of the Internet-of-Things (IoT) and Big Data Management has opened doors to numerous opportunities like self-driving vehicles and collaborative product and process development.

The NAP 2020 is an enhancement of NAP 2014, aiming to make Malaysia a regional leader in manufacturing, engineering and technology as well as to ensure a sustainable development of the local automotive industry. This will facilitate the required revolution and optimal integration of the local automotive industry into regional and global industry networks. The Vision also aims for the local automotive industry to continue to be aligned with the latest global technological trends through the application of IR4.0 technologies towards moving into connected mobility phase of development in Malaysia.



AT A GLANCE

| THE VISION

- Malaysia envisions to become a regional leader in manufacturing, engineering, technology and sustainable development in the automotive sector.
- The NAP 2020 supports the development of existing or new Malaysian Vehicle Project as well as the participation of any vehicle producing company in realising the National Automotive Vision.

| THE OBJECTIVES

- develop the NxGV technology ecosystem to make Malaysia as a Regional Hub for the production of NxGV;
- expand the participation of domestic automotive industry in the sector of MaaS which not only focuses on the development of technology, but also the overall transportation ecosystem;
- ensure the domestic automotive industry is better equipped with new paradigm in the automotive sector closely related to the development of IR4.0;
- ensure the overall ecosystem including consumers, domestic industry, and the Government receive maximum benefit from the spin off from the overall implementation of NxGV; and
- reduce carbon emission from vehicles by improving fuel economy level in Malaysia by 2025 in line with the ASEAN Fuel Economy Roadmap of 5.3 Lge / 100km.

| MALAYSIAN VEHICLE PROJECT

- The new Malaysian Vehicle Project will be implemented in line with the future direction and strategies of the Malaysian automotive industry including to fulfil the National Automotive Vision.
- Malaysian Vehicle Project will focus on the development of manufacturing capabilities in a holistic manner as it involves the entire value chain and the automotive industry ecosystem.



THE FRAMEWORK

NAP 2020 maintains and enhances the NAP 2014 framework through three (3) directional thrusts and three (3) strategies that introduce three (3) new technological elements namely NxGV, MaaS and IR4.0.

STRATEGIES AND DIRECTION

| DIRECTION | | | STRATEGIES | | |
|--|--|--|---|--|--|
| Technology & Engineering | Investment | Market Expansion | Value Chain Development | Human Capital Development | Safety, Environment and Consumerism |
| To expand the EEV technology and engineering of the automotive sector to NxGV, MaaS and IR4.0 in unison. | To introduce initiatives that can attract strategic investments and high technology adaptations in line with NAP 2020's technology thrust to ensure the sustainability of the automotive industry's competitiveness in tandem with the development of global technology. | To focus the market expansion of local automotive industry including companies in the aftersales and service sector. | To enhance supply chain competitiveness and become more competitive in the pursuit of high quality products that meet the standards of vehicle manufacturer and consumer needs. | To develop human capital in tandem with the development of current and future automotive technology. | <p>To promote the adoption of a new, more environmental friendly elements of technologies that will address the issue of pollution.</p> <p>To emphasise on the safety of vehicles and consumers.</p> <p>To include consumerism element to protect consumer rights.</p> |
| Next Generation Vehicle | | | | | |
| Mobility as a Services | | | | | |
| Industrial Revolution (IR) 4.0 | | | | | |

THE ROADMAPS AND BLUEPRINTS

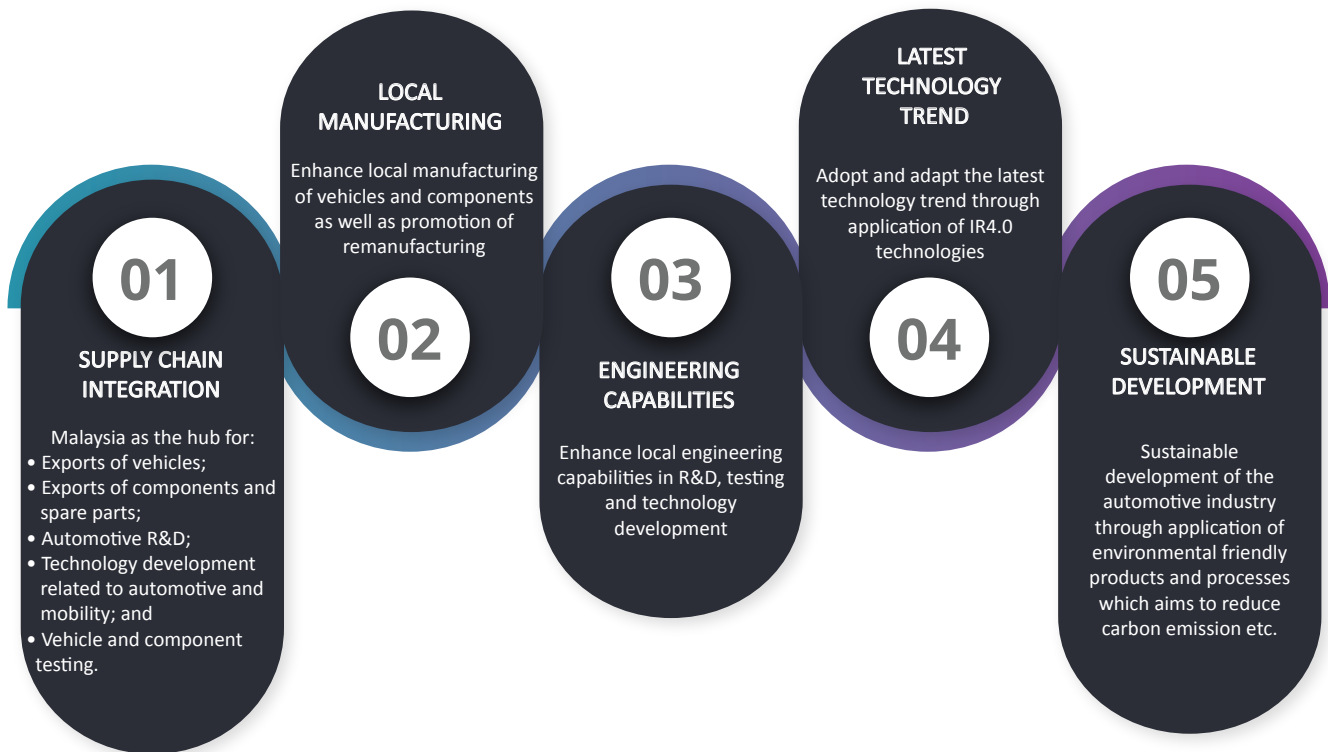
1. National Roadmap for Automotive & Mobility Value Chain (NRAMVC)
2. National Roadmap for Automotive & Mobility Technology (NRAMT)
3. National Roadmap for Automotive & Mobility Talent (NRAMTa)
4. National Roadmap for Automotive Aftermarket (NRAA)
5. National Blueprint for Automotive Mobility as a Service (NBAMaaS)
6. National Blueprint for Automotive Robotics (NBAR)
7. National Blueprint for Automotive Internet of Things (IoT) (NBAlot)

THE NATIONAL AUTOMOTIVE VISION

In line with the global trends outlined before, the National Automotive Vision highlights the major factors that are impacting the future of automotive industry in Malaysia.

The National Automotive Vision is to make Malaysia a hub for:

- exports of vehicles;
- exports of components and spare parts;
- automotive research and development (R&D);
- development of automotive and mobility related technologies; and
- vehicle and component testing.



This vision is aimed at promoting local manufacturing activities in vehicles and components which will reduce imports of vehicles and components as well as spare part.

The National Automotive Vision aims to implement the transformation of the automotive sector to enhance local engineering capabilities which in turn will create opportunities in the services sector for R&D, testing and technology development activities.

The National Automotive Vision ensures sustainable development in the local automotive industry through the use of environmental friendly products and processes that will reduce carbon emission.

In addition, the Vision also aims to set the local automotive industry to continue to be aligned with the latest global technological trends through applications of IR4.0 technologies which will be able to realise connected mobility.

The NAP 2020 supports the development of existing or new Malaysian Vehicle Project as well as the participation of any vehicle producing company in realising the National Automotive Vision.

THE OBJECTIVES OF NAP 2020

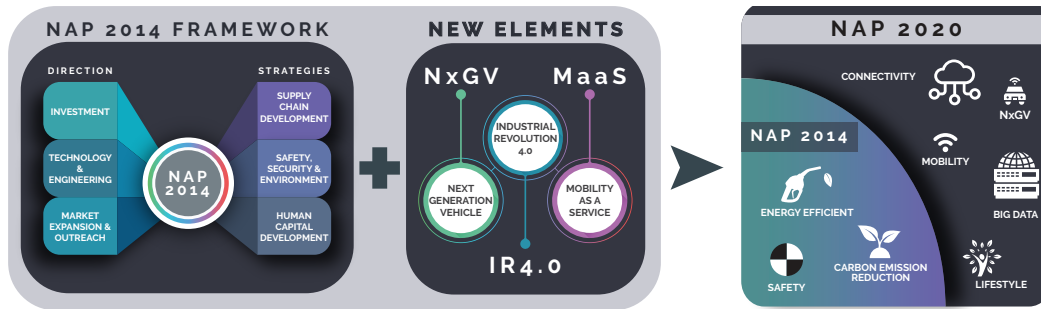
The Malaysian Government will continue to pursue the objectives of NAP 2014, namely:

- (i) develop a competitive and capable domestic automotive industry;
- (ii) develop Malaysia as the regional automotive hub in EEV;
- (iii) increase value-added activities in a sustainable way while continuously developing domestic capabilities;
- (iv) increase exports of vehicles, automotive components, spare parts and related products in the manufacturing and aftermarket sector;
- (v) increase the participation of competitive Bumiputera companies in the domestic automotive industry, including in the aftermarket sector;
- (vi) enhance the ecosystem of the manufacturing and aftermarket sector of the domestic automotive industry; and
- (vii) safeguard consumer interests by offering safer and better-quality products at competitive price.

Additional objectives under NAP 2020:

- (i) develop the NxGV technology ecosystem to make Malaysia as a Regional Hub for the production of NxGV;
- (ii) expand the participation of domestic automotive industry in the sector of MaaS which not only focuses on the development of technology, but also the overall transportation ecosystem;
- (iii) ensure the domestic automotive industry is better equipped with new paradigm in the automotive sector closely related to the development of IR4.0;
- (iv) ensure the overall ecosystem including consumers, domestic industry and the Government receive maximum benefit from the spin off from the overall implementation of NxGV; and
- (v) reduce carbon emission from vehicles by improving fuel economy level in Malaysia by 2025 in line with the ASEAN Fuel Economy Roadmap of 5.3 Lge / 100km.

NAP 2020 FRAMEWORK



NAP 2020 maintains and enhances the NAP 2014 framework through three (3) directional thrusts and three (3) strategies that introduce new technological elements which will assist the development of local automotive industry, in line with global automotive industry trends.

Three (3) directional thrusts are:

- (i) Technology and Engineering;
- (ii) Investment; and
- (iii) Market expansion.

Whereas, the three (3) strategies are:

- (i) Value chain development;
- (ii) Human capital development; and
- (iii) Safety, Environment and Consumerism

The competitive nature of the domestic industry could be adversely affected with the advent of latest trends and technologies in the automotive sector, namely, Big Data Analytics, IoT, robotics and Artificial Intelligence.

Due to the increase in the usage of wearable devices in IoT, there will be large amount of machine generated data for enterprises to analyse and manage. More enterprises and organisations will access the opportunities and the large amount of data, analysing how they can manage such data with human-generated information is key in order to get valuable insights.

The industry has become increasingly fraught with uncertainties due to global scenarios. Hence, through the review of NAP 2020, the Government has transcended the issues and identified crucial plans to focus on growth and investments towards technology development and industry transformation in Malaysia.

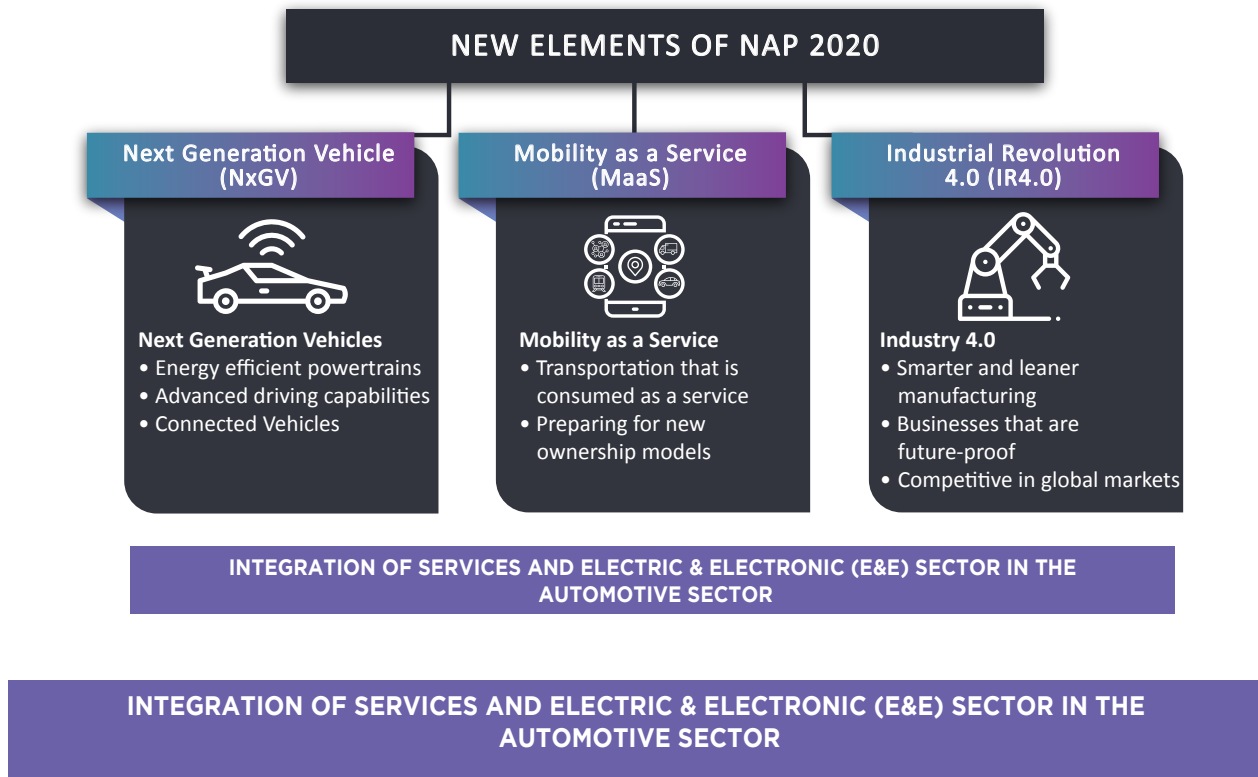
New elements are also added to NAP 2020 focusing on Next Generation Vehicle (NxGV), Mobility as a Service (MaaS) and Industrial Revolution 4.0 (IR4.0).

NEW ELEMENTS

WILL SHAPE THE FUTURE OF MALAYSIAN AUTOMOTIVE INDUSTRY

The Government has carried out a strategic benchmarking study of automotive policies at the global level to identify current and future global automotive industry development trends. This strategic study benchmarked existing policies of vehicle producing countries with respect to energy, taxation, trade, specification, mobility and technology.

NAP 2020 enhances the existing NAP by introducing new elements of technology such as Next Generation Vehicle (NxGV), Mobility as a Service (MaaS), and Industrial Revolution (IR4.0) which are in line with the development of future technologies.



Based on the input output analysis that has been conducted, Malaysia has an advantage in the services, and Electrical & Electronics (E&E) sectors related to the mobility industry. The services and E&E sectors need to be integrated into the automotive industry in order to continue the development of the automotive industry that is leading towards the mobility industry.

The sectors integration can be realised by focusing on:

- (i) Improvement of NAP 2014 by strengthening vendor development in the manufacture of components and parts, and improving export performance;
- (ii) Full implementation of Industry4wrld technology for the purpose of transformation in the automotive sector;
- (iii) Promoting local content utilisation and market penetration of Next Generation Vehicle (NxGV) in Malaysia; and
- (iv) Creation of a new ecosystem known as Mobility as a Service (MaaS) to further strengthen and improve the automotive industry.

NEXT GENERATION VEHICLE (NXGV)

CLASSIFICATION

- NxGV is classified as a vehicle that meets the definition of **EEV classifications and is enhanced with Intelligent Mobility applications with minimum of Level 3 Vehicle Automation** i.e. Conditional Automation. NxGV vehicle technology is classified according to five levels of Autonomous/Automated and Connected Vehicle (AACV)
- Development of standards by 2021 to ensure market penetration by 2025.

5 LEVELS OF VEHICLE AUTONOMY



Today, it is apparent that connectivity has changed our lifestyles, which started with increased flexibility and connection speeds on our mobile phones. Mobility-based services, such as food delivery and ride sharing, have now become a norm.

The emergence of national level discussions surrounding the connectivity demonstrates the depth of penetration and dependence on new connectivity technologies and a significant rise in awareness among Malaysians.

Although there are issues to address and room for improvement, the fact that national attention has been given to these services means that the landscape for mobility as a service is changing rapidly in the country, and also is gaining traction in the automotive sector. For example, many drivers are now bypassing their built-in infotainment equipment and connecting their services directly to their phones, using applications such as GPS navigation, music libraries and audio book readers directly from the Internet.

Many vehicle makers are introducing new built-in infotainment models that cater to this at the point of sales, making vehicle connectivity an almost seamless experience. New vehicles in the premium market have also introduced more connective features in the vehicle packages they offer.

Reduction of latency is a key requirement in vehicle connectivity as real-time decisions when a car is in motion must be performed in fractions of a second — it paves the way for the development of Next Generation Vehicle, which will eventually lead to complete vehicle autonomy.

The connectivity ecosystem development requires a critical mass of highly skilled talent, in fields such as mechanical, electronics, manufacturing and chemical engineering, as well as experts and entrepreneurs in new fields that expand the utilisation and application of such technologies. These disciplines form the basis to establish a healthy connectivity ecosystem to form the space and grounds for new opportunities to flourish.

STANDARDS TO BE DEVELOPED FOR NxGV

Autonomous, Automated and Connected Vehicles (AACV) Development

- Establishment of AACV in specifying its safety requirements for AACV testbed
- Covering few vehicle categories in Malaysia with regards to the intelligent mobility and automation level features

Electric Vehicle Interoperability Centre (EVIC)

- EV Charging Protocol
- Energy management system for EV ecosystem
- Safety usage of the critical components

Energy Efficient Vehicle (EEV) and Next Generation Vehicle (NxGV) specifications

- Revise definition of EEV and NxGV for wider scope - all vehicle categories
 - i) Passenger Vehicle
 - ii) Commercial Vehicle
 - iii) Motorcycle

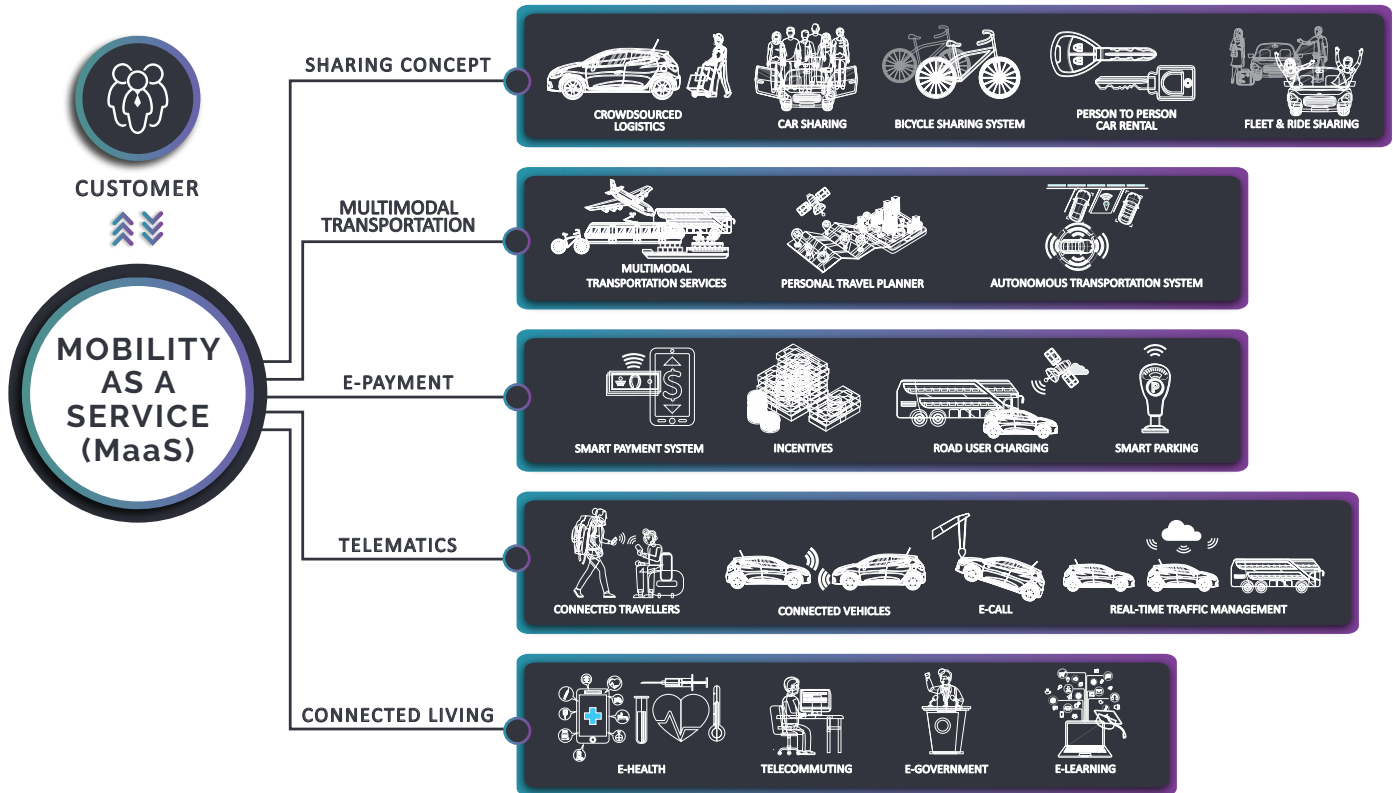
Standards development will become highly important to ensure the industry abides by the safety requirements and protocols for high precision systems and processes.

NxGV standards for all vehicles will be developed by year 2021 to ensure NxGV market penetration by year 2025.

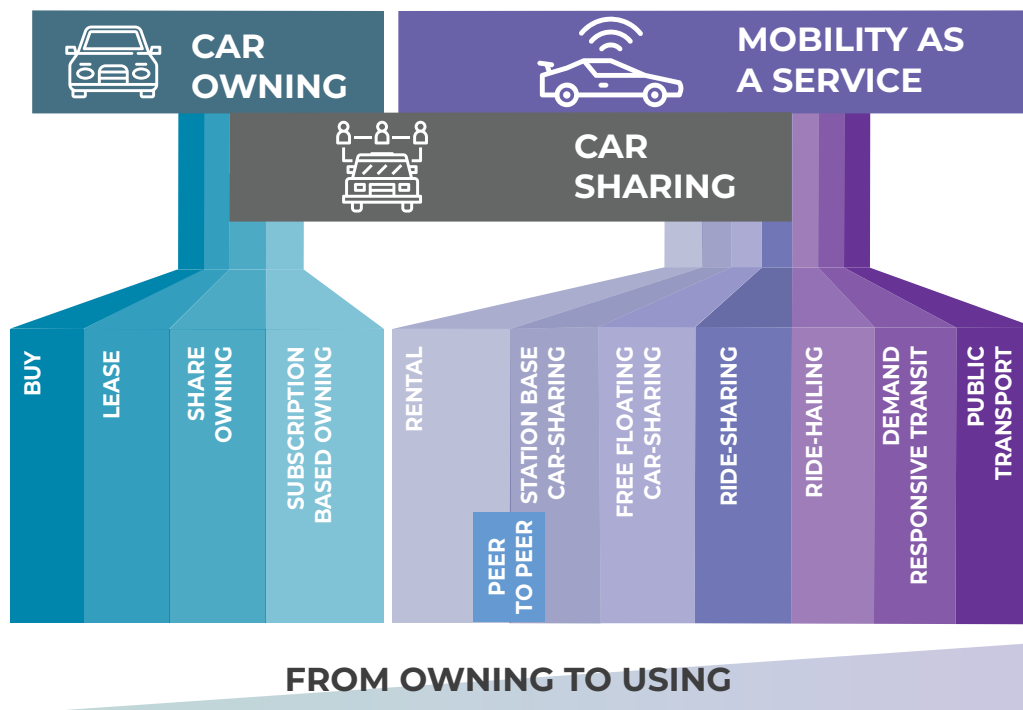
MOBILITY AS A SERVICE (MAAS)

CLASSIFICATION

- MaaS is a concept created to integrate various types of services and transport modes into an efficient and centralised mobility service.
- MaaS provides a wide range of transportation options such as a combination of public transport services and private vehicles, besides enabling users to enjoy other services such as optimised product delivery services, online health diagnostics and others.



The automotive, transport and wider mobility markets are undergoing a transformational phase, fundamentally changing the way people and products transit between point A and point B. Many sectors beyond automotive and transport, are also facing disruptions, either new markets are emerging or existing markets are converging while other sectors are possibly declining and perhaps vanishing. New entrants and start-ups face challenges and they in turn will look into leveraging on their experience and resources to build sustainable market position.



Amidst continued population growth, urbanisation and environmental concerns, new forms of mobility are critical to support tomorrow's population hubs and economic activity. Today's mobility systems suffer from congestion, inefficiency and high prices, but the future promises convenience, safety and economic mobility, with less impact on health and the environment.

Mobility as a Service (MaaS) is an evolving concept in which consumers and businesses move away from vehicle ownership towards service based transportation. In this sense, MaaS includes multi modal aggregation of transport modes as well as on demand mobility, i.e a concept of integrating various types of transport services towards centralised mobility services. The rise of mobility as a service will revolutionise how people move from point A to point B, as it leverages on the digital platforms that integrate end-to-end trip planning, booking, payment services and solutions across all modes of transportation.

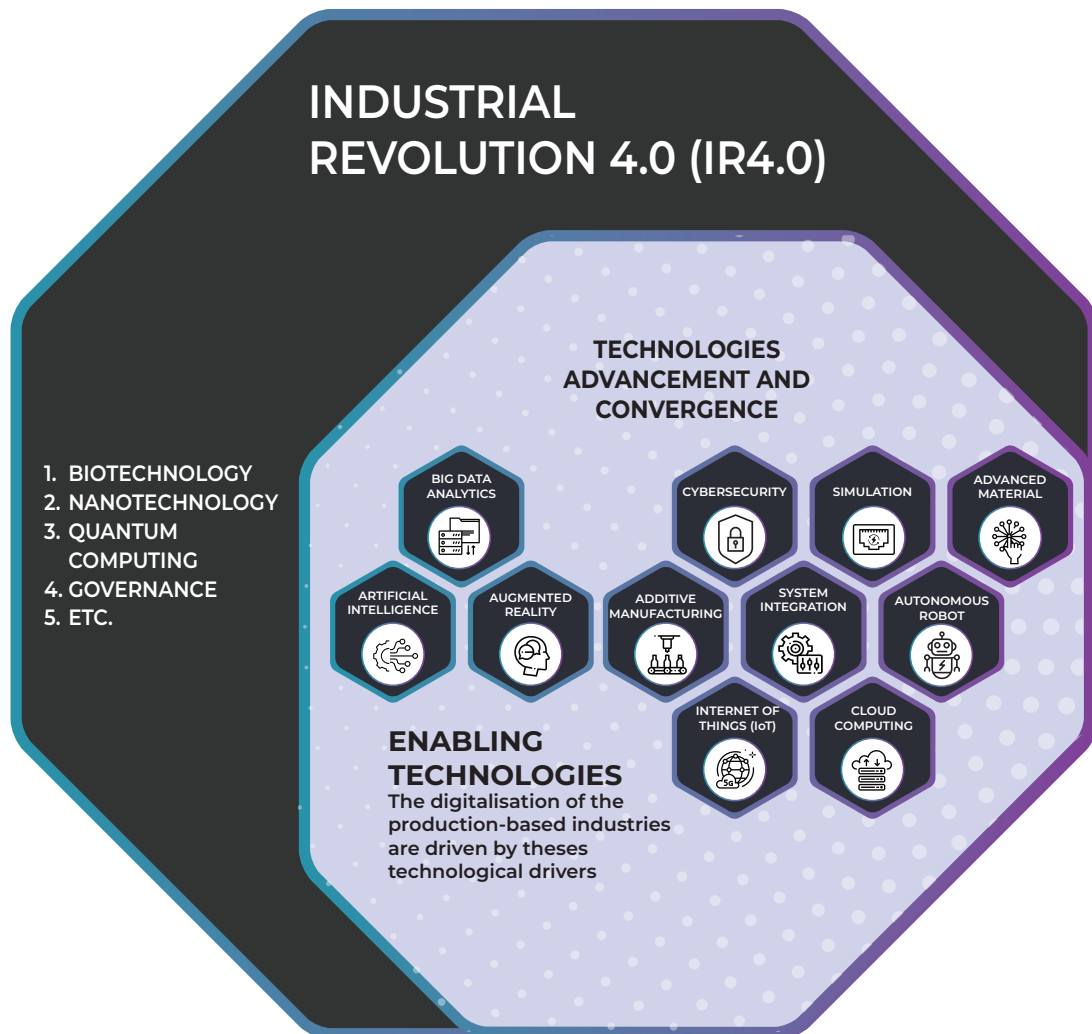
The movement towards MaaS is fueled by a myriad of innovative new mobility service providers such as ride-sharing and e-hailing services, bike-sharing programmes, scooter sharing systems and car-sharing services as well as on-demand "pop-up" bus services. This trend is motivated by the anticipation of self-driving cars, which puts into question the economic benefit of personal vehicle ownership.

Through MaaS, the future development of Autonomous vehicles would allow the public to use roads on a lower cost-per-kilometre, as self-navigating vehicles operate at a significantly lower cost than current taxi and ridesharing prices. The vehicles could have a large impact on the quality of life in urban areas and form a critical part of the future of transportation, while benefiting the traveler, the environment, and even other stakeholders.

INDUSTRIAL REVOLUTION 4.0 (IR4.0)

CLASSIFICATION

- IR4.0 refers to the application of digital technology beyond the technological elements under Industry4WRD.
- The use of IR4.0-related technology applications especially AI, Big Data Analytics (BDA) and IoT will enable the implementation of NxGV and MaaS.



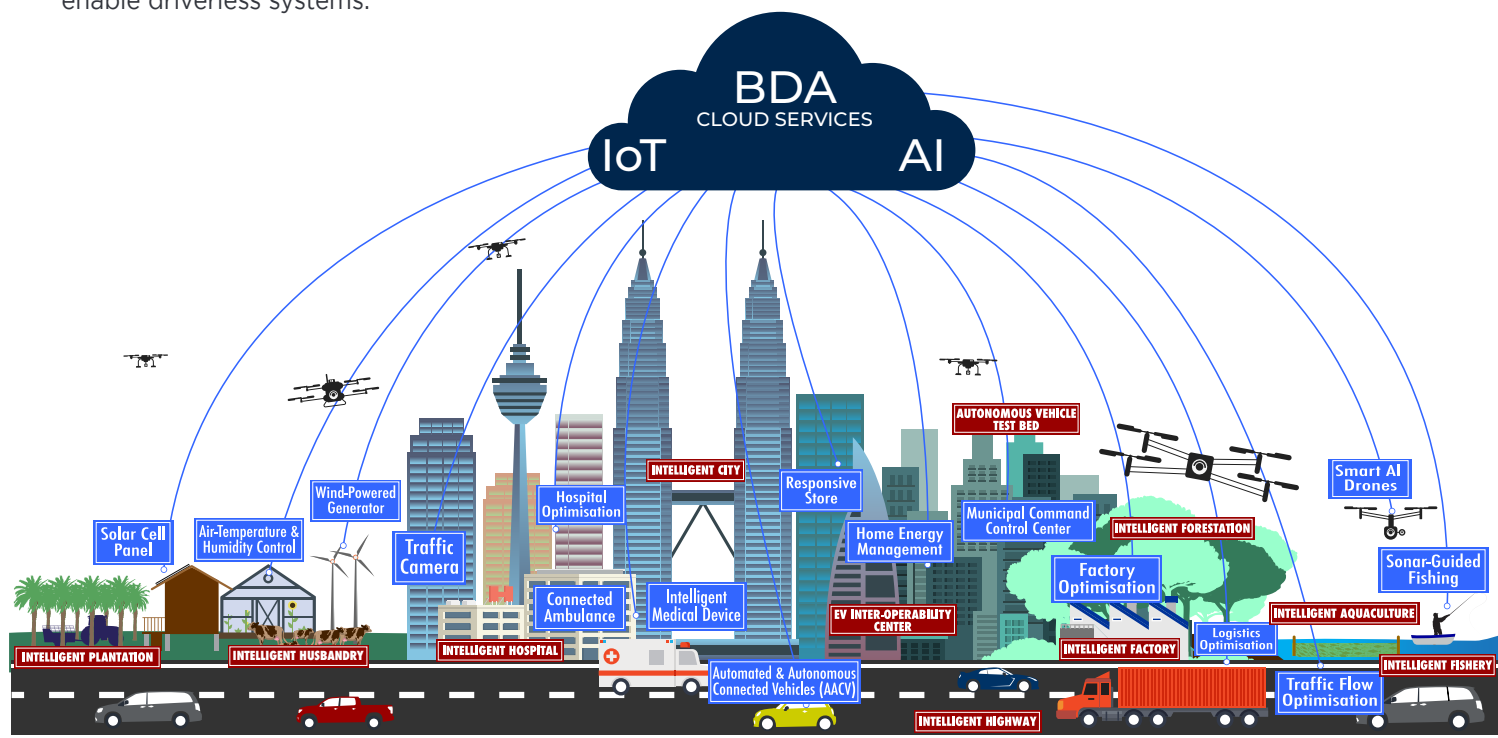
The adoption of digital technology has reached a point where the automotive industry is preparing for another radical change, the digital transformation of the industry or what we call Industry 4.0. The change is based on the adoption of new technologies for the progressive automation of the production process. It is about innovative growth of technologies whose application to the industry will be developed now on a daily basis.

The key enabling technologies such as additive manufacturing, collaborative robotics, production planning tools, Artificial Intelligence, virtual reality, gamification, process simulation, operational intelligence, IoT, and Big Data Analytics requires a system that operates and manages information and infrastructures towards creating a connected mobility ecosystem.

In Industry 4.0, automation and intercommunication are the basis for the optimisation of design and production processes in a Smart Factory, which allows manufacturing of highly customised, flexible and efficient products. It affects the entire lifecycle of a product, ensuring its vertical and horizontal integration.

Starting with research, design, prototyping, production, distribution and client management as well as linked services, it interconnects all involved elements to react through a process with higher agility. This leads to an increase in productivity and competitiveness as well as a significant reduction in costs.

The enabling technologies will soon drive the industry towards envisioning a connected and integrated environment, a system of vehicle-to-vehicle communications, cameras, variety of sensors (Radar, LIDAR, RFID, etc.) and other devices integrated with advanced algorithms that can monitor the road in a variety of road, weather and traffic conditions to enable driverless systems.



I INTEGRATION OF SERVICES AND ELECTRIC & ELECTRONICS (E&E) SECTOR IN THE AUTOMOTIVE SECTOR

The services sector is ranked evidently as the main contributor to the GDP year on year. Total revenue of services sector in 2018 valued at RM 1,673.8 bil increased by 8.4% as against 2017.

Meanwhile, in 2018, the E&E industry accounted for 45.6% of manufactured exports and 38.2% of total exports. This growth had emanated from foreign direct investments by multinational corporations (MNCs), which eventually led to the development of domestic support industries.

Malaysia has an advantage in the Services and E&E sectors in relation to the mobility industry. The Services and E&E sectors will play a pivotal role and should be well-positioned within the automotive industry in order to continue the development towards mobility. A healthy pace for growth in these two sectors will support IoT and BDA in multiple applications and increasing the use of wearable gadgets, smart home applications, and the use of Artificial Intelligence (AI) technologies in the automotive industry.

Malaysia's Services and E&E industries are able to leverage on these megatrends which offer strong demand for state-of-the-art hardware, along with the diversification into the areas of design and development (D&D), shared services covering human resource, finance and information technology as well as supply chain management for regional and global logistics hubs.

The NAP 2020 outlines the strategies on sectors integration that can be realised by focusing on:

Improvement of NAP 2014 by strengthening vendor development in the manufacturing of parts and components, and improving export performance.

The full implementation of Industry 4.0 technology for the purpose of quantum transformation in the automotive sector.

Promoting local content usage and Next Generation Vehicle (NxGV) market penetration in Malaysia.

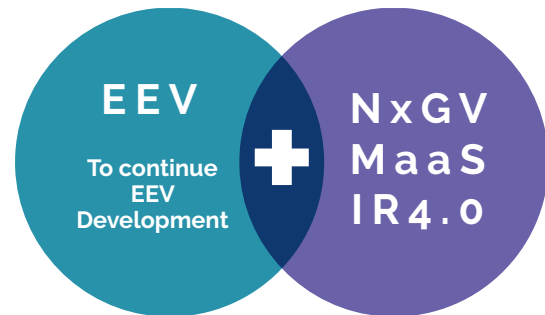
The creation of a new ecosystem known as Mobility as a Service (MaaS) to further strengthen and improve the automotive industry.

DIRECTIONS OF NAP 2020

| DIRECTION 1: TECHNOLOGY AND ENGINEERING

Considering the more dynamic development in the automotive industry, there is a need to expand the EEV technology and engineering of the automotive sector to NxGV, MaaS and IR4.0 in unison. This is to meet the needs of stakeholders as well as to have a positive impact on the overall ecosystem including safety and environment.

- Critical components & systems to be developed:
 - IR4.0 technologies
 - Hybrid, EV, Fuel Cell Vehicle
 - Autonomous, Automated and Connected Vehicle (AACV)
 - Light weight material technology



The Technology thrust outlines the general and specific measures as below:



SPECIFIC MEASURES

| MOTORCYCLES | COMMERCIAL VEHICLES | ELECTRIC VEHICLES | AUTONOMOUS TEST BED | AIR MOBILITY |
|--|--|--|---|---|
| <ul style="list-style-type: none"> • EEV specification for engine capacity above 250 cc • Develop standards for Battery Swapping technology • Develop standards for motorcycle NxGV • Conduct research and study to promote R&D in the aspect of motorcycle safety | <ul style="list-style-type: none"> • Interim EEV standards for Euro 5 engine for vehicle with Kerb Weight over 2,500 kg • New EEV standards will be developed by year 2021 • Upgrade green engine specification from Euro 2 to Euro 5 • Promote use of telematics and IoT technology for safety enhancement and efficient fleet management | <ul style="list-style-type: none"> • Promote manufacturing and application of local battery and battery pack together with development of Battery Management System (BMS) and Thermal Management System (TMS) • Develop standards to encourage battery swapping and wireless charging • Develop standards for recycling and disposal of battery • Conduct feasibility study on Hydrogen Fuel Cell technology • Develop EV Smart Grid Interoperability Centre • Apply well -to-wheel concept in the calculation of emission from EV | <ul style="list-style-type: none"> • Develop standards or code of practice for Autonomous Vehicle based on domestic conditions (propose for NxGV Standards with minimum of level 3 Autonomous Driving) • Establishment of Digitalised Testing Environment by leveraging IR4.0 (e.g. HD mapping) technology • Promote localization of master controller and critical components of AACV (e.g. sensors, V2X module, etc) | <ul style="list-style-type: none"> • The use of UAV and Air Mobility will be part of connected mobility in the future • There is a need to coordinate and develop regulations before mass utilisation |

Within the automotive electronics segments, Advanced Driver-Assistance System (ADAS), Connected Vehicles and electronic energy are considered as leading groundbreaking technologies, promising significant growth potentials and exerting a profound impact on the automotive industry chain. Lightweight materials, miniaturisation, intelligence and electrification are important technologies for Malaysia to take the lead in critical parts and components development.

This thrust will continue on the development of EEV technology and engineering in key strategic sectors outlined in NAP 2014. The NAP 2020 will have enhancement in the development of critical components and systems for technology and engineering of NxGV, MaaS and IR4.0. The development will be done in three phases from 2020 to 2030.

CRITICAL COMPONENT DEVELOPMENT

PHASE 1

Continuation of NAP 2014

- Engine transmission, control system
- Tool Die and Mould (TDM)
- Aluminium and other Non-Ferrous Casting
- Design engineering and prototyping
- Vehicle, sub-system and component testing
- Automotive grade steel
- Engineering Plastics

2020 - 2024

- Big Data Analytics
- Internet of Things (IoT)
- Additive Manufacturing
- Advanced Material
- Battery Management System (BMS)
- Thermal Management System (TMS)
- Battery Pack & Capacity
- Recycling Processes
- Light Detection and Ranging (LiDAR)
- Cloud Computing
- Cybersecurity
- System Integrator
- Artificial Intelligence 1
- On-board Charging
- Charging Infrastructure

PHASE 2

2025 - 2027

- Complex network of Radio Detection and Ranging (RADAR)
- Computing Vision Sensor
- Controller and Cloud-based Controller
- Recorder
- Advanced Communication Protocol
- Stimulation Digital Twin
- Autonomous Robot and Cobot
- Augmented Reality/Mixed Reality
- Artificial Intelligence 2

PHASE 3

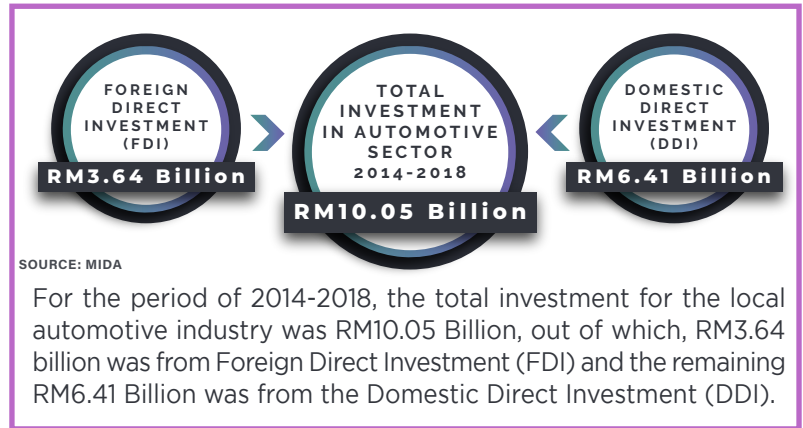
2028 - 2030

- Advanced tooling
- Machine Learning
- Powertrain (Fuel Cell)
- Nano- Material
- Charging Infrastructure - mass deployment of ultra fast charging
- Modular based Battery swapping technology
- Convert Inverter
- Driving motor
- Interoperability
- Vehicle to Everything (V2X) communication module

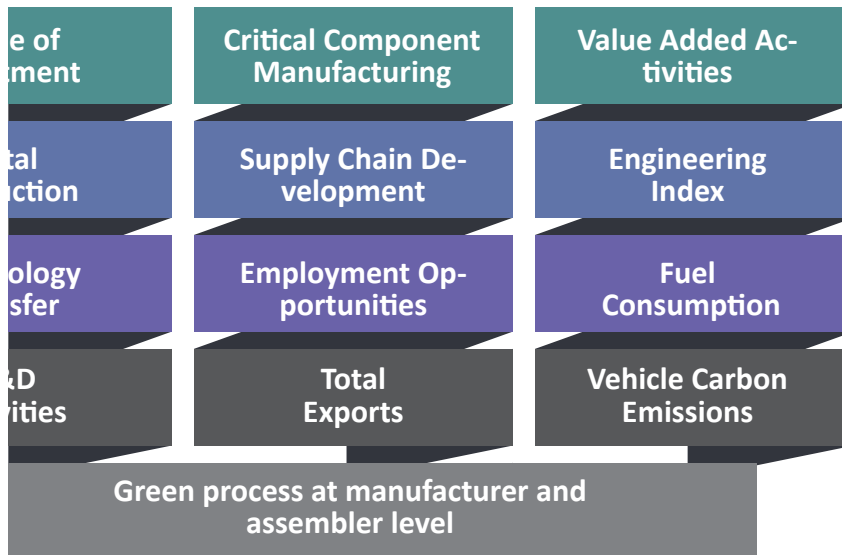
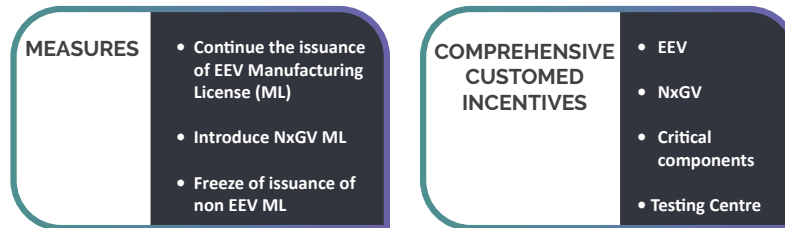


DIRECTION 2: INVESTMENT

- To introduce initiatives that can attract strategic investments and high technology adaptation in line with NAP 2020's technology thrust to ensure the sustainability of the automotive industry's competitiveness in tandem with the development of global technology.
- NAP 2020 offers more competitive investment opportunities including a more comprehensive mechanism for Customised Incentives and assistance to facilitate business operations.



The Investment thrust outlines the measures as below:



DIRECTION 3: MARKET EXPANSION

- New and specialised business opportunities arising from the introduction of the elements of technology and services in NAP 2020 will create both the MaaS and IR4.0 ecosystems that will provide opportunities to expand access to international markets.
- Focus should be given to local automotive industry market expansion including companies in the aftersales and services sector, as well as parts and components.



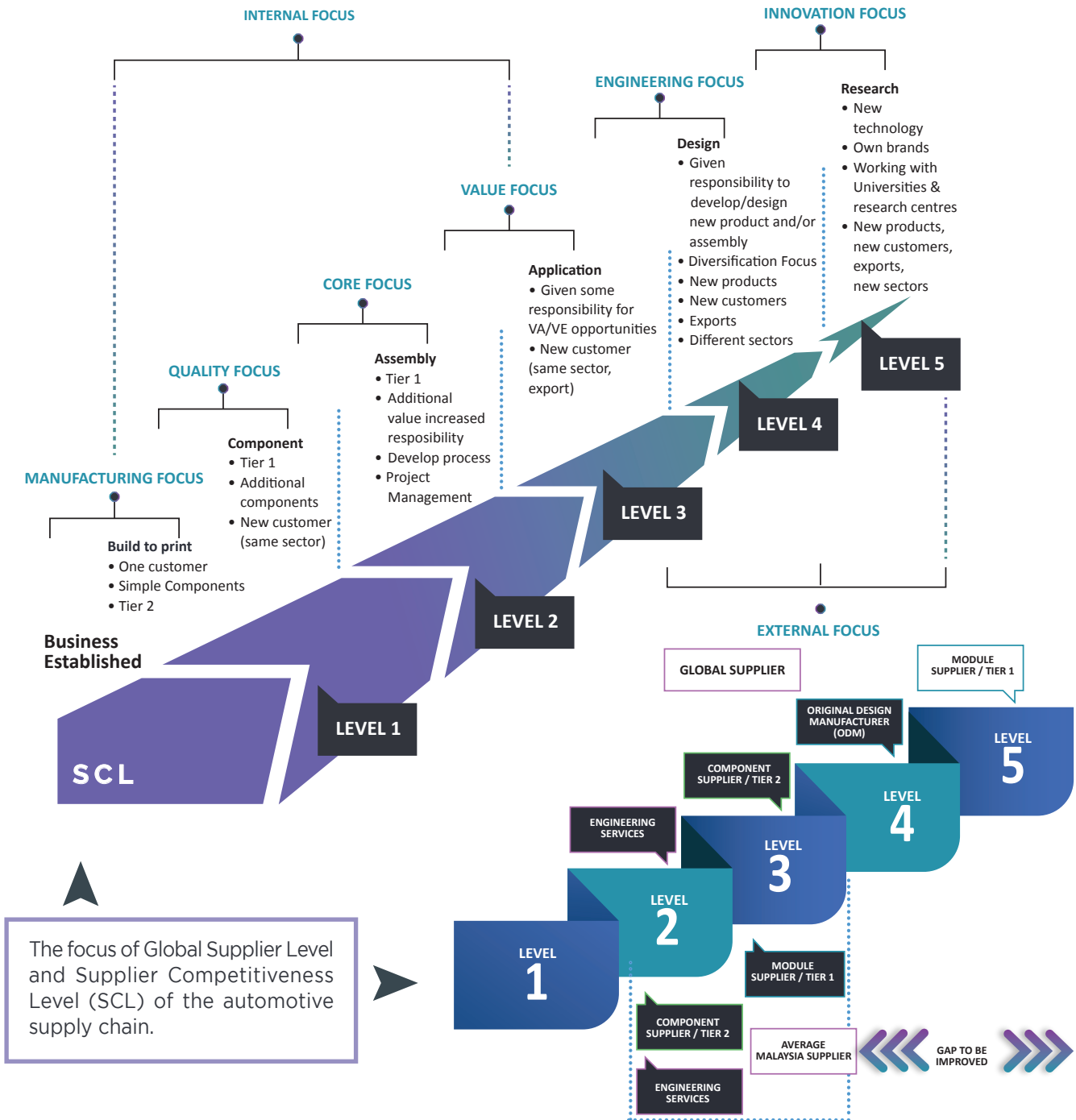
STRATEGIES OF NAP 2020

| STRATEGY 1: VALUE CHAIN DEVELOPMENT

- To enhance the value chain competitiveness in the pursuit of high-quality products that meet the standards of vehicle manufacturer and consumer needs.
- To overcome the high cost of producing components with the use of IR4.0 technology, especially additive manufacturing and Artificial Intelligence (AI).

The Value Chain Development thrust outlines the measures as below:

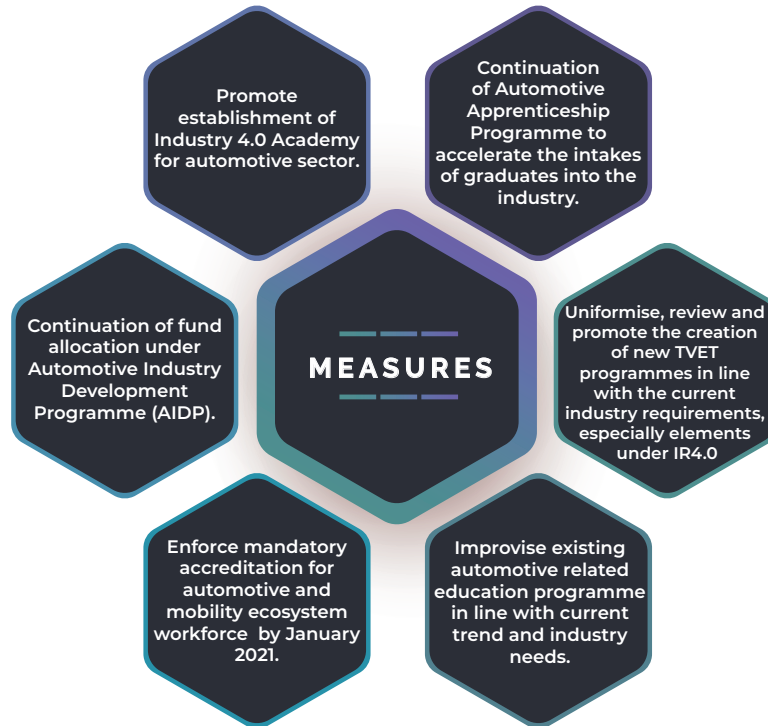




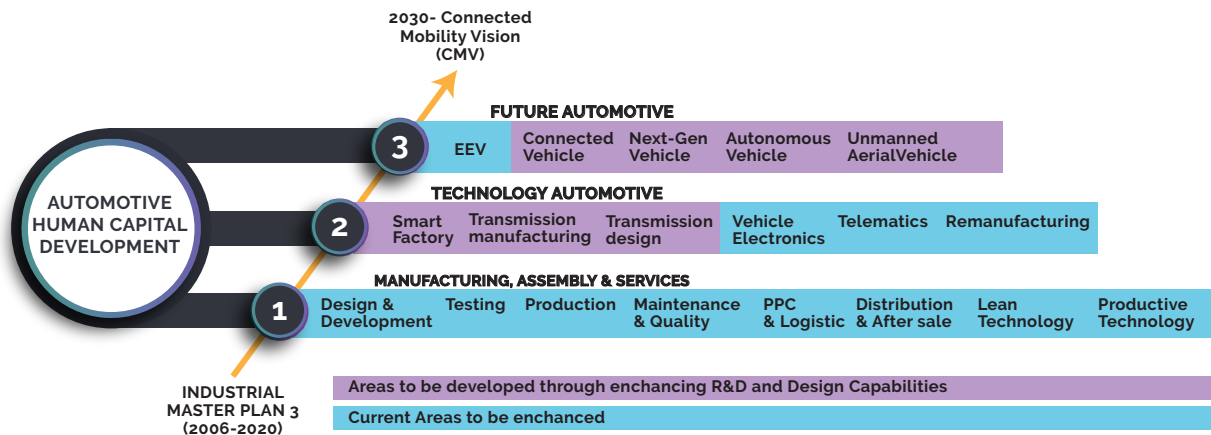
STRATEGY 2: HUMAN CAPITAL DEVELOPMENT

- Human capital development needs to move in tandem with the development of current and future automotive technology. This is important to ensure that the local automotive sector workforce continues to remain competitive.

The Human Capital Development thrust outlines the measures as below:



Areas identified to be developed in the human capital of the automotive industry:

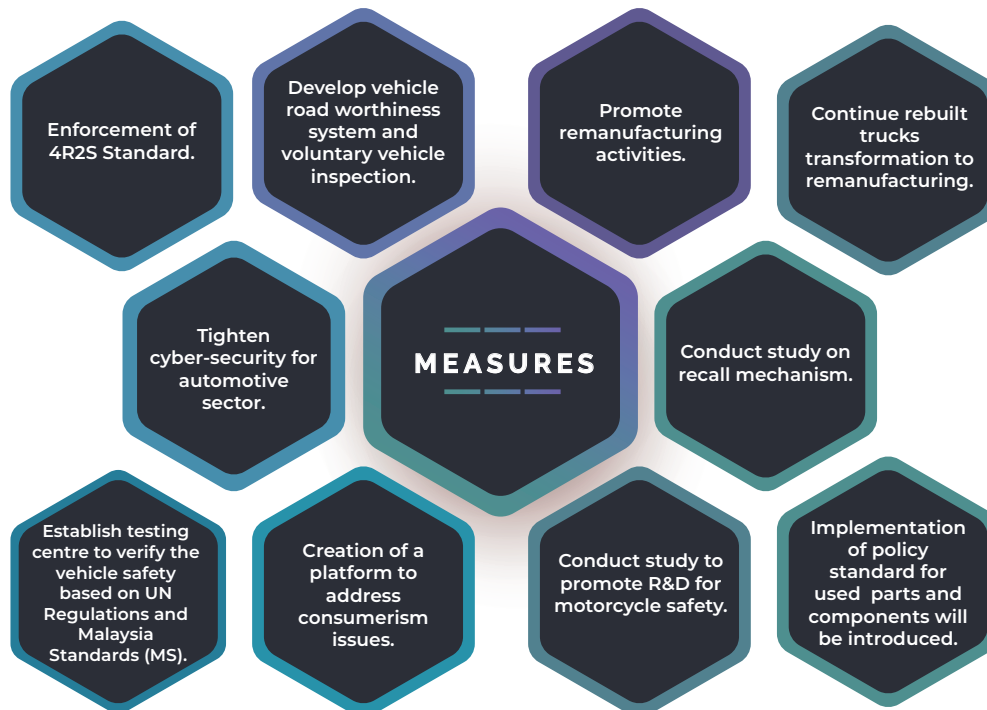


STRATEGY 3: SAFETY, ENVIRONMENT & CONSUMERISM

- NAP 2020 promotes the adoption of new, more environmentally friendly elements of technologies that will address the issue of pollution, emphasise on the safety of vehicles and consumers to reduce the rate of road accidents, and introduce consumerism elements to protect consumer rights related to spare parts and services including vehicle maintenance and automotive recall process.



The Safety, Environment & Consumerism thrust outlines the measures as below:



Malaysia introduced the B5 programme (5% blend of palm oil biodiesel with 95% petroleum diesel) in 2011. The programme was enhanced to B7 (7% blend of palm oil biodiesel with 93% petroleum diesel) in December 2014. Subsequently, the B10 (10% blend of palm oil biodiesel with 90% petroleum diesel) programme was implemented since February 2019.

National Biofuel Policy promotes the increase in blending of biodiesel as determined by Ministry of Primary Industries (MPI) as follows:

| USAGE OF PALM OIL-BASED BIODIESEL | | FUEL QUALITY | |
|---|---------------------|---|---------------------|
| <ul style="list-style-type: none"> • Palm oil-based biodiesel has been upgraded from level B7 to B10 • Will establish testing centre for biodiesel to be applied in the transportation sector. • Will be upgraded according to the National Biofuel Policy as follows: | | <ul style="list-style-type: none"> • Deliberation on more environmentally friendly fuel quality will be continued. • Mandatory specification for fuel quality for automotive sector as follows: | |
| Blending level | Implementation Year | Fuel Quality Specification | Implementation Year |
| B20 | 2020 | EURO4M RON97 PETROL | 1 SEPT 2015 |
| | | EURO4M RON95 PETROL | 1 JAN 2020 |
| B30 | 2025 or earlier | EURO5 DIESEL | 1 SEPT 2020 |
| | | EURO5 PETROL | 1 SEPT 2025 |

Source: Ministry of Primary Industry (MPI)

Source: Department of Environment

The following measures have been outlined to enhance the use of biodiesel:

- (i) coordinate comprehensive research to be conducted by industry and education institutions through the establishment of a testing centre on research and use of biodiesel;
- (ii) introduce a comprehensive validation system for biodiesel application in the transportation sector. The measure will be developed by Government together with industry and relevant government agencies;
- (iii) conduct a review of the ecosystem development of diesel vehicle to ensure smooth implementation and promotion of higher biodiesel grade; and
- (iv) empower technical research activities on the application of biodiesel in the automotive sector.

I BUMIPUTERA

NAP 2020 will also support and encourage participation of Bumiputera in the automotive sector through the participation in the supply chain and other new business activities including testing, remanufacturing, Authorised Automotive Treatment Facility (AATF), tool, dies and mould (TDM) and others.

The current facilities will continue for the purpose of domestic automotive development mainly for Bumiputera.

I IMPORT LICENSE (AP)

(i) New Open AP Policy

New Open AP Policy was announced on 23 December 2015 and has been implemented since January 2019. The New Policy provides opportunities to qualified Bumiputera automotive entrepreneurs to be involved in importation of used cars and motorcycles.

The fee for one unit of AP is maintained at RM10,000 for one unit of car approved under the Open AP system. This rate is applicable for the first 35,000 units of approved AP for all open AP companies under the validity period of AP provision of the current year. Fee for the subsequent approved AP unit is RM20,000 for each vehicle unit imported by Open AP companies.

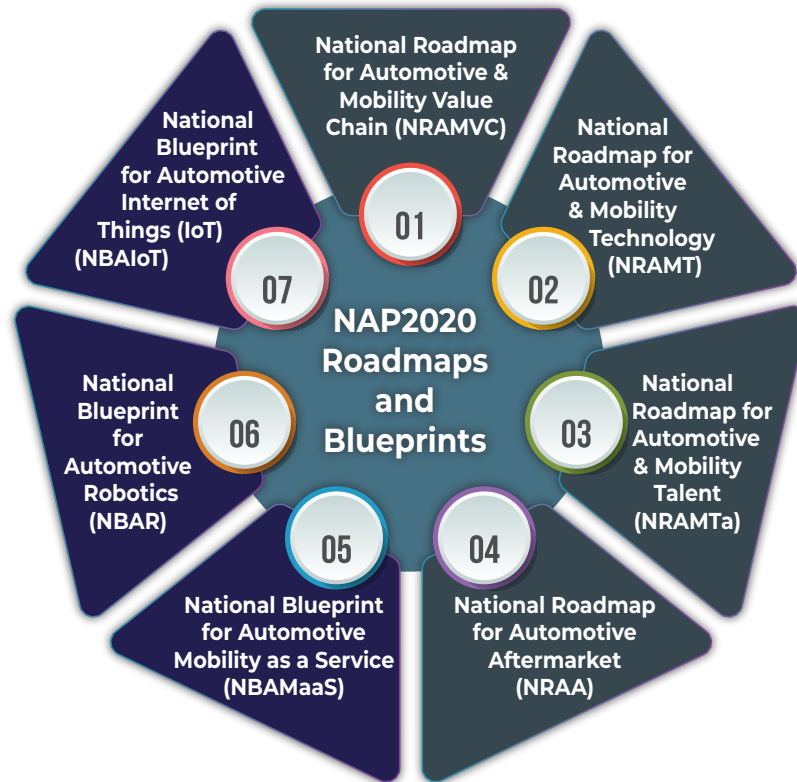
The New Open AP Policy also requires that company granted with the AP must provide buyers with at least one-year warranty and maintenance service or in cooperation with the Original Equipment Manufacturer (OEM) for the maintenance service.

(ii) Franchise AP Policy

Implementation of Franchise AP Policy will be continued for the purpose of monitoring and data collection. This policy will be implemented in line with the improvements proposed for the automotive industry as a whole, by promoting and opening larger opportunities for participation of Bumiputera in the automotive supply chain and not only focusing on being an importer.

NAP 2020 ROADMAPS AND BLUEPRINTS

NAP 2020 establishes four (4) Roadmaps and three (3) Blueprints for the period of 2020 to 2030. These documents are the enhancements of existing six (6) NAP 2014 Roadmaps. NAP 2020 Roadmaps and Blueprints are as follows:



i) National Roadmap for Automotive & Mobility Value Chain (NRAMVC)

The NRAMVC aims at developing and enhancing the competitiveness of components suppliers of automotive and mobility value chain to be able to supply either to regional or global markets. The NRAMVC outlines additional measures to enhance:

- value added activities in quality management, operation and business management; and
- product manufacturing and testing capabilities with the application and implementation of IR4.0 elements.

This roadmap will assist the development of parts and components supplier in Malaysia with the integration and implementation of informative technologies and smart manufacturing that will enable flexibility in physical process.

ii) National Roadmap for Automotive & Mobility Technology (NRAMT)

NRAMT charts the way forward on related technology development in the aspect of EEV, NxGV, smart mobility, Internet of Things (IoT) infrastructure and IR4.0 that support the development and manufacturing of automotive product and mobility ecosystem.

iii) National Roadmap for Automotive & Mobility Talent (NRAMTa)

The NRAMTa outlines improved plans for the development of a competitive workforce that is fit for industry demand at all levels of manufacturing, marketing, automotive services up to the integration of mobility ecosystem. This roadmap focuses on improving quality of existing programmes for technicians and operators at local training institutions. NRAMTa also includes plans to develop specific local talent in identified fields, and upgrading skills from basic to advance in the field of engineering and Big Data Analytics, simulation, visualisation, System Integrator, AI and machine learning. Improvements in syllabus for product automation and manufacturing of hybrid components manufacturing, electric, engine and transmission will ensure the availability of skilled workforce in areas related to IR4.0.

iv) National Roadmap for Automotive Aftermarket (NRAA)

The NRAA outlines detailed criteria through improvements of remanufacturing, standards and best practices that can be adopted by domestic automotive stakeholders to make Malaysia as an automotive remanufacturing hub in ASEAN. This roadmap also provides guidelines for optimizing the quality of recycling and reuse of components by emphasizing on the digital usage such as Big Data Analytics that could potentially increase revenue or enhance the effectiveness and efficiency of aftersales operations through customer and vehicle data analysis, maintenance and optimisation of logistics planning. NRAA also outlines the guidelines of AATF and remanufacturing.

v) National Blueprint for Automotive Mobility as a Service (NBAMaaS)

The NBAMaaS outlines core planning of transport services and mobility solutions that are specifically tailored to accommodate development needs of Malaysia automotive industry.

vi) National Blueprint for Automotive Robotics (NBAR)

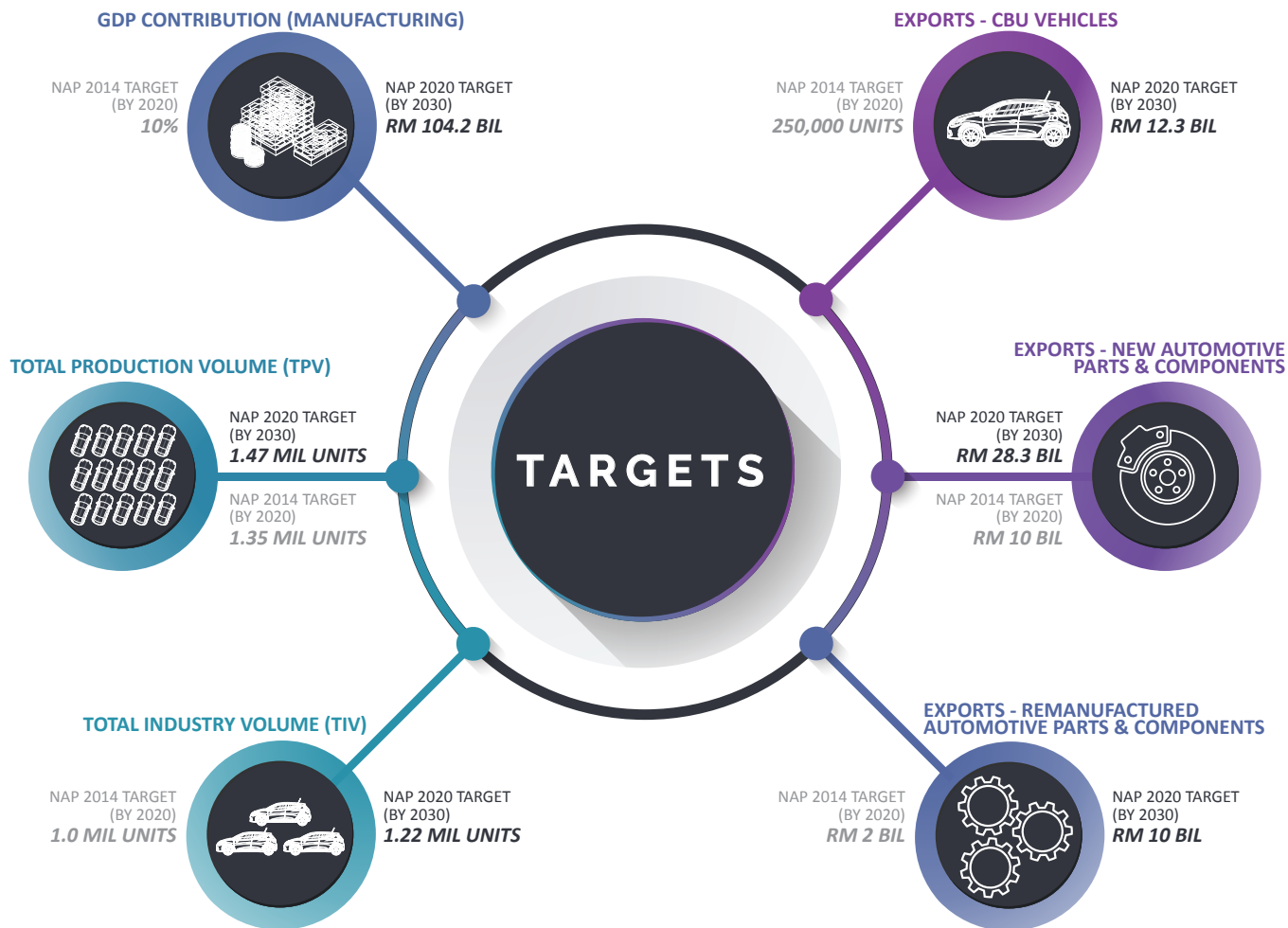
The NBAR outlines strategies in robotic technology towards providing solutions to the issues and challenges especially in the manufacturing sector. Through the introduction of Industry 4.0, Malaysia will drive enhanced capabilities in product design, equipment handling, operations, process, supply chain management and factory's green energy management by using Robotics Automation technology.

vii) National Blueprint for Automotive Internet of Things (NBAlIoT)

The NBAlIoT outlines the direction of connectivity revolution in automotive industry and marketing strategies of connected vehicles including Vehicle-to-Everything (V2X), Autonomous vehicles, safety aspect and regulations. The blueprint also outlines ways to address manufacturing challenges, vehicle life cycle and process development of a conducive IoT ecosystem.

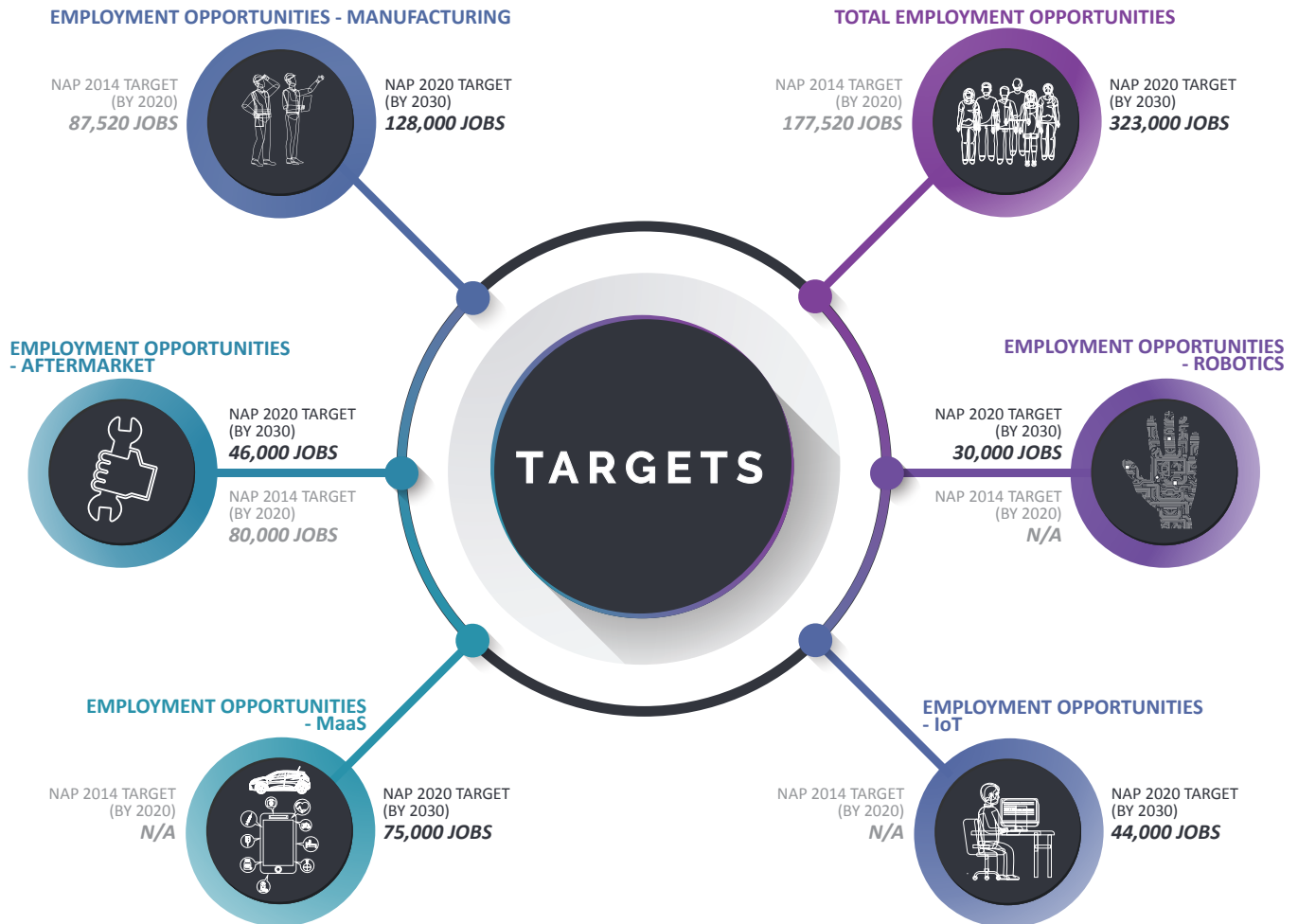
The roadmaps and blueprints will be used as the guiding principals and reference in implementing the measures and strategies in achieving the vision of NAP 2020.

TARGETS OF NAP 2020



SOURCE: MARIi INTERNAL ANALYSIS

TARGETS OF NAP 2020



SOURCE: MARIi INTERNAL ANALYSIS

TARGETS OF NAP 2020

SUPPLIER DEVELOPMENT - TOTAL AUTOMOTIVE SUPPLIERS

NAP 2014 TARGET
(BY 2020)
N/A



NAP 2020 TARGET
(BY 2030)
TOTAL - 1,285 SUPPLIERS
TIER 1 - 400 SUPPLIERS
TIER 2 & BELOW - 885 SUPPLIERS

SUPPLIER DEVELOPMENT - NEW SYSTEM INTEGRATOR (S.I)

NAP 2014 TARGET
(BY 2020)
N/A



NAP 2020 TARGET
(BY 2030)
350 ROBOTICS CO.
380 IoT CO.

SUPPLIER DEVELOPMENT - SUPPLIER COMPETITIVENESS LEVEL

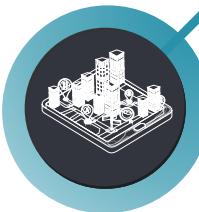


NAP 2020 TARGET
(BY 2030)
LEVEL 5 - 360 CO.
LEVEL 4 - 660 CO.
LEVEL 3 - 880 CO.

NAP 2014 TARGET
(BY 2020)
LEVEL 5 - 180 CO.
LEVEL 4 - 330 CO.
LEVEL 3 - 430 CO.

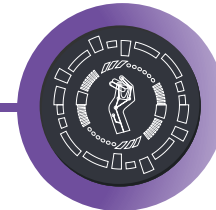
SUPPLIER DEVELOPMENT - INDUSTRY4WRD READINESS

NAP 2014 TARGET
(BY 2020)
N/A



NAP 2020 TARGET
(BY 2030)
LEADER - 280 CO.
EXPERIENCED - 500 CO.
LEARNER - 660 CO.

TECHNOLOGY DEVELOPMENT



- NAP 2014 TARGET
(BY 2020)
- Establish two automotive specialized design and engineering centers
 - Establishment of a full-fledged Vehicle Type Approval (VTA) testing centre
 - Establishment of Vehicle User Solution
 - Malaysia as the preferred destination (for investment, research, technology adoption and human capital development) in areas related to Green Powertrain Technology, Advanced Automotive Manufacturing and Low carbon manufacturing process.
- NAP 2020 TARGET
(BY 2030)
- Establishment of full-fledge Vehicle Type Approval (VTA) testing centre;
 - Establishment of Electric Vehicle Interoperability Centre (EVIC);
 - Establishment of Autonomous/Automatic Vehicle Test Bed;
 - Establishment of Virtual Design Centre;
 - Establishment of Additive Manufacturing Design Centre;
 - Establishment of Robotics & AI Centre;
 - Establishment of BDA Centre;
 - Establishment of Digital Twin Centre; and
 - Establishment of Technology Academy (Automotive & Overall Mobility).

SOURCE: MARIi INTERNAL ANALYSIS

MONITORING MECHANISM AND REPORTING

Efforts to develop the domestic automotive industry have been led by MITI, which is the custodian of NAP.

In this regard, monitoring and reporting of NAP 2020 implementation will continue via the Malaysian Automotive Council where YB MITI Minister as the chairman and to appoint the members.

CONCLUSION

The NAP is formulated to continue the development of local automotive industry and its overall ecosystem in order to ensure the realisation of the National Automotive Vision.

The introduction of new elements in technology in NAP 2020 is in line with global trends and is crucial in ensuring the local automotive industry continues to grow and remain competitive. With specific measures to promote technology development in NxGV, MaaS and IR4.0 in the domestic automotive sector, Malaysia will be able to market its automotive products at the global level.

In addition, the new technological advancement in NAP 2020 will create new opportunities that are not only focusing on the automotive sector but also the services sector which is made ready in the mobility ecosystem. The income of the nation and the people is also expected to increase if the local industry takes advantage of the new opportunities created.

The introduction of new high technology in NAP 2020 enables Malaysia to become a leader in automotive industry within the ASEAN region, hence strengthening international cooperation in the development of global automotive industry.



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