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# Set to Surge: APAC moves from IoT Laggard to Global Pioneer

APAC offers great potential for IoT applications, but fragmentation presents complex challenges for businesses in the region. The region has been lagging behind the rest of the world, but there's a silver lining; no other region shows the same capacity for massive growth.



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# Executive Summary



To fully capture the opportunities of a connected future, enterprises need to focus on the key areas presented in this report, and be aware of the underlying trends and drivers shaping IoT adoption in the region.

Looking at APAC as a region, the digital transformation of enterprises has been slower than the rest of the world. Despite often being an innovator for new IoT projects (e.g. smart city initiatives), the region lags behind the Rest of the World right now for 'Full IoT Deployment' within enterprises (38% for APAC versus 42% in Rest of the World). However, with spending on the rise, APAC will soon accelerate fast, pushing the adoption of IoT into unprecedented growth. No other region has the same growth capacity – over 38.9 billion IoT devices are forecast to be in circulation by 2030, and cellular IoT modules revenue continues to grow (22% growth 2021 to 2026, compared to a 1% decrease in the Rest of the World).

This is no longer driven by just the desire to improve business processes, but by a critical mass of external factors from economic, social, and technological viewpoints. Alibaba, Tencent, and Baidu are among the tech giants driving China's rapid adoption of the IoT. Consequently, the IoT has branched out and grown across other industries including manufacturing, healthcare, and retail.

Not all countries in the region are as mature as China. Digital development in APAC is fragmented with some countries at the forefront of global developments, while others are still at early stages. However, no matter the stage of development, if we zoom out there are two major factors driving growth throughout APAC: industrial automation and widespread access to the internet.

*"APAC will soon accelerate fast, pushing the adoption of IoT into unprecedented growth."*

Telecom service providers, enterprises, application developers, and device manufacturers, are the main players in APAC's IoT ecosystem today. All are jostling for position, keen to dominate a larger role in the market and region. This competition is creating complexity as well as a growing need for collaboration and partnerships. In addition to a fragmented ecosystem, both IoT enterprises and service providers face several other challenges in the region. These include operational complexity, digital transformation, interoperability issues, as well as global coverage and connectivity challenges. Cybersecurity remains a top concern in the region, whilst a lack of local and internal IoT expertise is a challenge in IoT implementation.

To be successful in an increasingly connected future requires digitalization and IoT, and access to expertise using key partners. The good news for enterprises is that they can draw on the wealth of experience, knowledge and learning experience from IoT projects already deployed in both APAC and globally, from experienced partners such as Telenor.

This whitepaper explores the drivers and differentiating factors of IoT deployment, as well as examples of customer success stories from three key verticals: automotive, transportation, and logistics, as well as energy, utilities, and resources.

# Introduction

## Background

The Internet of Things (IoT), Artificial Intelligence (AI), and big data analytics have long been considered ‘emerging technologies’, as enterprises seek to revolutionise their future operations. Indeed, thousands more use cases are still being developed, but in many instances these technologies have already “emerged” and are playing vital roles for enterprises to compete in this current digital era.

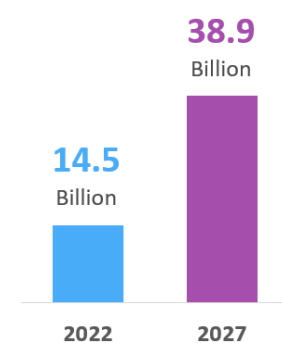
In APAC, the combined growth of developed IoT regions (such as South Korea, Japan, Australia, and China) and the emerging IoT regions (such as India, Pakistan, Bangladesh, Indonesia, and Thailand) are pushing the 14.5 billion IoT devices in circulation today to a forecasted 38.9 billion in 2030 . This rapid expansion of the IoT ecosystem in the region is pushed by a range of social, economic, and technological factors, where the COVID-19 pandemic has also served as a catalyst to accelerate change. With IoT enabled solutions being introduced in various verticals and applications ranging from transportation and logistics to energy and utilities; digitalisation and IoT have become the only path towards a connected future.

In the event of this growing trend, Telenor partnered with the technology research and consulting firm Omdia to identify and highlight the trends and growth of the IoT ecosystem within APAC across different verticals.

*“Digitalisation and IoT have become the only path towards a connected future.”*



IoT devices in circulation in APAC



## Digitalisation is a necessity, not an option

### APAC’s megacities demand smart solutions

The IoT can help solve some of the most important challenges and opportunities that come with rapid urbanisation, digitalisation, and ageing populations.

APAC is home to some of the world’s fastest growing cities. If these sprawling megacities are to become places where you can breathe the air and move around smoothly in a secure way, they need to beat the negative effects of mass urbanisation e.g. traffic congestion, pollution, ineffective waste management, and so on. Smart solutions, and importantly IoT offer the answer.

Similarly, aging populations are accelerating the need for digital health solutions and even the digitalisation of the entire health industry while low-cost sensors, lower costs of data and 5G technologies are fuelling the growth of IoT

To take advantage of these technology trends the public and private sectors would need to work together to create the necessary infrastructure. This creates an urgent opportunity and means digital transformation cannot remain in the great factory of proof-of-concept. The time is now.

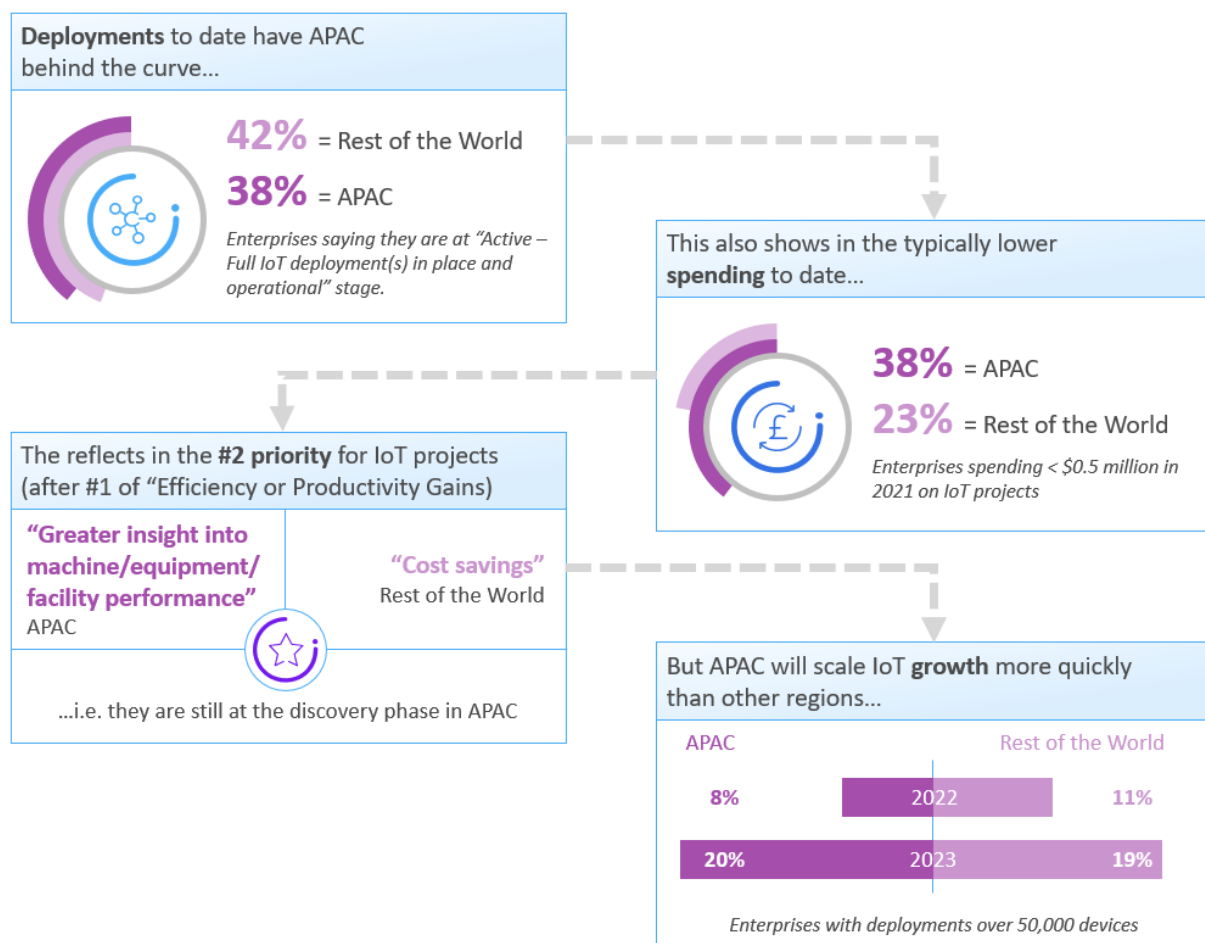


### APAC to give IoT scale like never before

Following the pandemic-driven changes, enterprises are now opting for IoT-led, digital approaches as part of their go-to strategies for technology. Remote/hybrid operations have become common, requiring fast and stable network coverage. Countries such as China, Singapore, South Korea, and Japan had kickstarted their digital journey long before the global pandemic, but with rapid acceleration in adoption and cross-country collaborations, countries such as Thailand, Malaysia, and Indonesia are now picking up the pace.

APAC has always been an innovator in new technology concepts, such as smart cities, metaverse, and digital twins\*, as well as the increasing rollout of 5G connectivity and use cases - for example, Seoul deploying sensor-enabled smart poles and buildings, as well as drones to monitor fine dust emissions as part of smart city initiatives.

Figure 1. APAC versus the Rest of the World on IoT



Source: Omdia

\*Smart cities: Technologically integrated urban areas to modernize services (e.g.traffic control, lighting, carbon emission).  
Metaverse: Immersive virtual experience/environment enabled by technology such as augmented/ virtual reality.  
Digital twins: Virtual representation of physical environment where processes such simulation, testing, and integration can be performed with real-world data.

However, as APAC moves out of the pandemic, the coming 12 months will see a huge and rapid transition as IoT deployments move from theory to practice on a scale not yet seen.

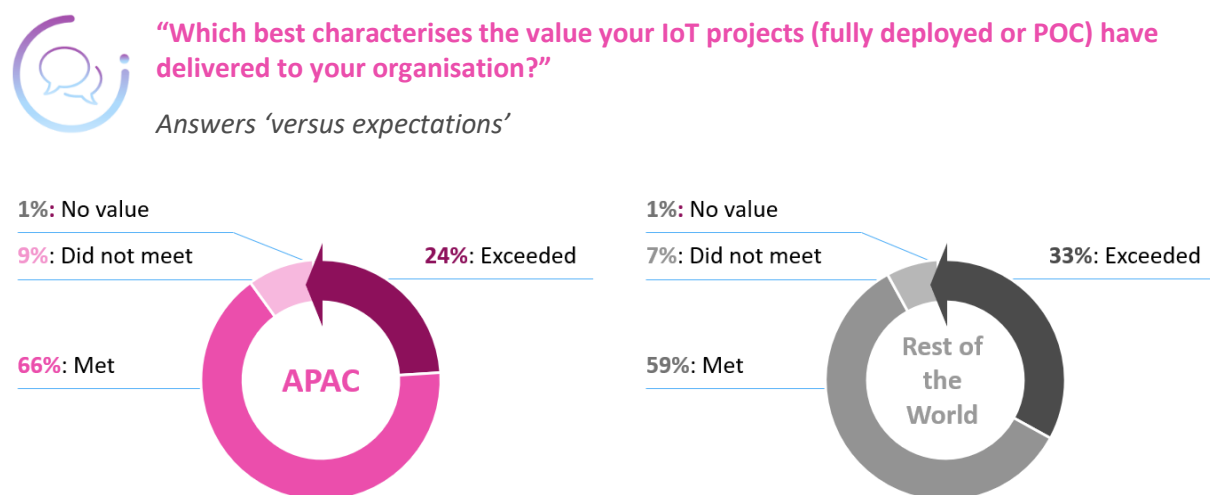
Whilst APAC may have been behind the curve on IoT deployment to date (see figure above), huge deployment at scale is poised to take place in the coming years – not least as enterprises can take advantage of the learnings and best practice of the Rest of the World's IoT activity to date.

According to Omdia's IoT Enterprise Survey Regional Report – Asia and Oceania 2022, 88% of industry respondents said that IoT was either core to their digital transformation process or is being deployed across multiple areas in their organizations.

The survey also shows a gradual increase in enterprises' confidence in deploying IoT solutions within APAC, where 55% have deployed more than one IoT project, and 29% are deploying more than five projects.

The direction is clear – IoT growth in APAC is on the edge of explosive and transformational growth.

Figure 2. IoT Project Value – APAC versus Rest of the World



Source: Omdia IoT Enterprise Survey Report –2022

In proving a Return on Investment (ROI), 90%+ projects pass the grade – but are less likely to exceed expectations in APAC (24%) than in the Rest of the World (33%). Many APAC projects driven by small/medium businesses, the price sensitivity and need for quick ROI is strong – especially as earlier, more foundational technology is established – meaning these owners can be harder to impress at first.

With 93% of respondents saying they expect to see an ROI within the first 24 months, the pressure is on for both enterprises and their partners to deliver.

### The IoT sustainability charge

Accountability around environmental, social, and governance (ESG) issues is also growing within APAC, especially with developing/revamping of many government policies and regulations forcing the issue, including:



- The **Singapore** Green Plan 2030 focuses on five pillars: nature, energy reset, sustainable living, green economy, and resilient future. Key targets include quadrupling solar energy by 2025, 20% of carbon neutral schools by 2030, and reducing 30% of waste sent to landfill by 2030.



- The **South Korea** 2050 carbon neutrality roadmap ranges from restricting LNG and coal consumptions for power generation, to replacing internal combustion engine vehicles with battery-based and hydrogen-powered electric vehicles.



- Part of **China's** 14th Five-Year-Plan (2021 – 2025) focuses on energy and climate, with targets including 18% reduction of CO2 emissions per unit of GDP, and 13.5% reduction of energy consumption per unit of GDP).



This renewed focus increasingly means sustainability is a goal from the outset of projects. Omdia's survey showed 24% of APAC enterprises saw/expect to see improved energy efficiency through IoT projects, and 19% expect energy and waste reductions – figures marginally ahead of the global curve – but based largely around projects already into deployment.

*"Today's strategy is driving tomorrow's IoT deployment – and the growing focus on sustainability is only set to increase..."*

In considering their future IoT strategies, a much higher 44% of enterprises say their IoT deployments are being targeted at certain aspects of their sustainability goals, and 40% say IoT is crucial for their larger sustainability goals.

Today's strategy is driving tomorrow's IoT deployment – and the growing focus on sustainability is only set to increase for both public and private buy-in for future projects.

# Connectivity and Cybersecurity – Common APAC Challenges

## Connectivity is a sum greater than the parts

Diversity in the scope, aims and challenges for IoT deployments exist in every use case and vertical – but the region brings its own unique factors from social, economic, and technological sides that all impact connectivity choices. No other region has such diversity and influence in the following areas:



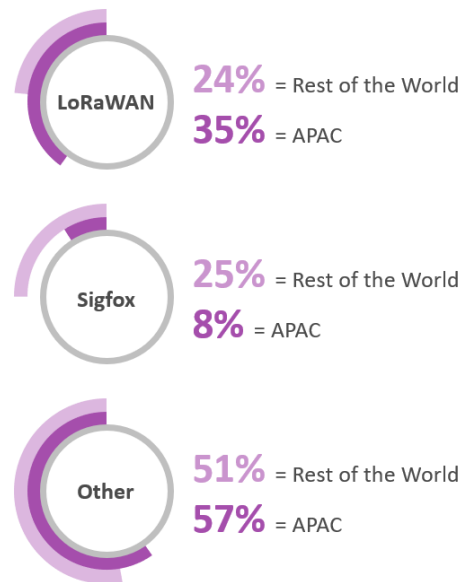
- **Megacities versus remote communities** - Many individual islands make up nations such as Indonesia, Thailand, and Vietnam, alongside the large number of megacities in the region with highly focused populations, with energy and transport needs. One single connectivity technology cannot possibly fit all the local nuance and requirements to dominate the IoT space.
- **National government backed technologies/initiatives** – The clearest example is the China push towards NB-IoT which heavily influences the overall APAC view (see technology shares below), but examples also include the move towards 6G. Whilst 5G networks are still rolling out in some markets, Singapore has launched a Future Communications Connectivity Lab to research and develop 6G technology. South Korea is the region's leader on 6G (having pushed strongly for 5G adoption previously), aiming to commercialize services by 2030, whilst discussing partnerships with countries such as United States, Finland, and Indonesia around 5G, 6G, and the metaverse. Local governments can also influence connectivity through smart city initiatives – for example where the Seoul Metropolitan Government is deploying a 421-kilometre long LoRa-based trunk network as part of a public IoT network.
- **The early market needs of new and managed connectivity** – Whilst long term solutions such as NB-IoT or LTE-M may pick up pace now, initial IoT projects occurred in regions without good incumbent connectivity solutions to displace, and with enterprises short on IoT deployment and management experience. Solutions such as LoRa therefore makes an attractive proposition to first-time IoT-deploying enterprises, especially when combined with a managed connectivity service as vendors could be independent from Telecom Network Operators. However, the cost sensitive nature of APAC markets means pre-built solutions (e.g. LTE-M) is likely to growing quickly once established.



These factors continue to shape the IoT connectivity picture in APAC – where China drives NB-IoT to be the most popular LPWAN connectivity overall, and LoRa is the most popular unlicensed LPWAN network. With the sunsetting of 2G and 3G in many markets, enterprises are increasingly looking towards higher bandwidth IoT solutions that embrace 5G and LTE-M – a big factor in the 22% growth in cellular IoT module revenue expected from 2021 (\$1.9 billion) to 2026 (\$2.4 billion) in APAC, compared to a 1% drop in the Rest of the World.

Managed connectivity also remains a go-to solution for enterprises in the region to ensure reliable and stable networks - where network connectivity services are outsourced to a service provider, typically composed of aspects such as service agreements, hardware, and network support. This service provides benefits such as reduced network integration complexity, reliable uptime, and potential cost savings in acquiring both hardware and talent.

**LoRa v Sigfox IoT deployments to date**  
Omdia Network Deployments Tracker

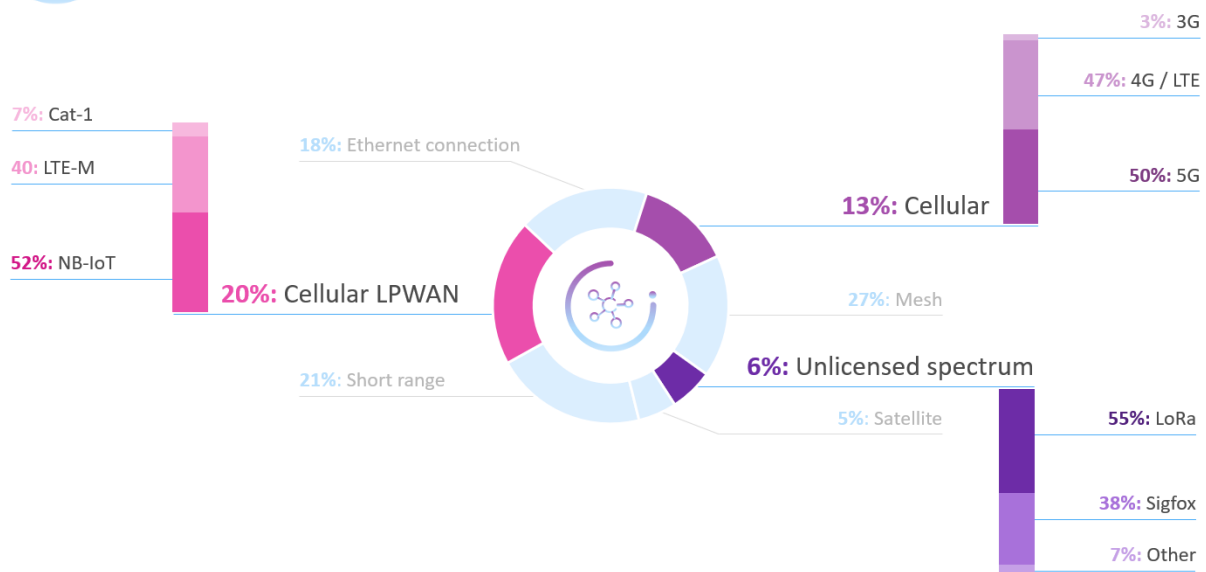


**Figure 3. APAC IoT future connectivity choices**



**“What type of connectivity is being/will be used for your IoT solutions?”**

‘Select all that apply’, normalised to 100%



Source: Omdia

In fact, APAC enterprises are more heavily reliant than usual on their partners in supporting their IoT deployments overall. Whilst “Lack of Internal IoT Experience” only ranks as the #8 biggest challenge to IoT deployment in the Rest of the World, this is the #4 challenge in APAC – almost equal with the top three challenges of “Ensuring data, network, and device security”, “Ensuring data privacy or governance”, and “Complexity of integrating with business processes/OT”.

#### Introducing Telenor...

*One example is Telenor’s Managed Connectivity service, where enterprises can access local mobile network as well as over 500 mobile networks across the globe (approximately 200 countries) through a single point of contact. This is a customizable solution ranging from connecting devices in the tens to millions with the tools and support of IoT experts. In addition, Telenor’s Global IoT SIM cards allow solution standardization, and can be pre-integrated to simplify installation, rollout, and lifecycle management. Enterprises can leverage integration of local and global access to develop and deliver international IoT solutions without having to handle multiple suppliers and various technical solutions.*

## Security and privacy are top of mind

Cybersecurity concerns – both real and perceived – will always slow IoT adoption. This heightened through the pandemic as huge workloads and processes were digitalized and shifted to the internet, but the unprepared nature created challenges (e.g. poor patch management, careless users) which make information easy targets for malicious actors. Indeed, increased remote working may push more businesses to consider zero trust as an option, despite potential issues in terms of accessibility and ease of use.

Ultimately, IoT security vulnerabilities and stolen information risk major damage to an enterprise’s business operations. Recent attacks have only raised these concerns:

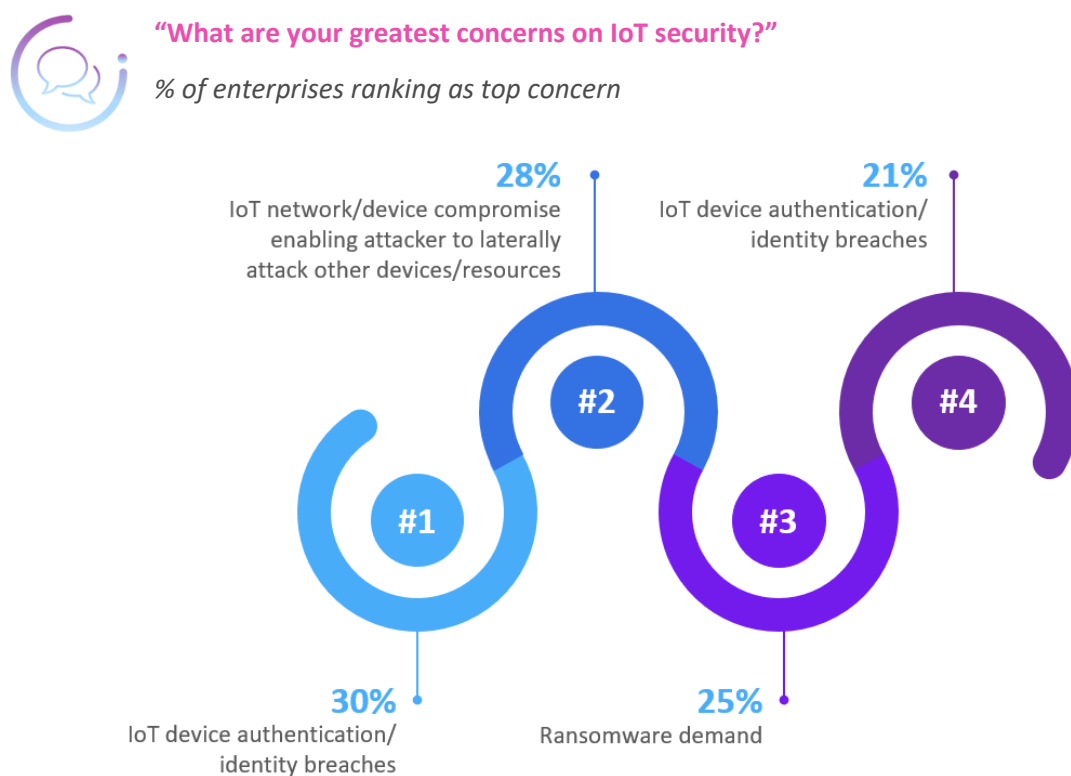
*“2021 witnessed a record number of data breaches and APAC was the most targeted region”*

- 2021 witnessed a record number of data breaches and APAC was the most targeted region, suffering over 26% of all cyberattacks globally according to IBM’s “Cost of a Data Breach 2021” report.
- In Q1 2022, Indonesia alone suffered more than 11 million attacks, reflecting a 22% increase from the previous year, according to Kaspersky. Kaspersky also claims to have blocked a total of 11,260,643 phishing links across APAC, with the majority of them traced to attackers in Vietnam, Indonesia, and Malaysia.
- IoT technologies have also fallen victim to cyberattacks in previous years; for example, the infamous Mirai Botnet in September 2016, where IoT devices such as network routers, medical devices, and home appliances were infected and turned into “zombies” (remotely controlled bots) used to collectively launch distributed denial of service (DDoS) attacks. Indeed, numerous variants spawned from Mirai’s original source code such as Satori, Katana, Okiru, and Masuta, each having their own destructive natures. Recent large-scale ransomware attacks also include an eye clinic in Singapore, web hosting services in Malaysia, and insurance companies across Thailand, Malaysia, Hong Kong, and the Philippines.

Enterprises are therefore wary of the digital technologies they implement. Tensions around security are keenly felt in APAC, amid major tussles between countries such as China, India, Indonesia, and Pakistan – meaning cybersecurity is always a priority for any IoT deployment in the region.

According to Omdia’s survey, security concerns remain one of the biggest pain points for enterprises in their IoT implementation journey, where 30% of respondents in APAC indicated that ensuring data, network, and device security are important to them. Security therefore needs to be forefront of new vendor solutions and enterprise projects to create a level of confidence for enterprises to utilize their offerings.

Figure 4. APAC IoT cybersecurity concerns



Source: Omdia Enterprise IoT Survey

As with sustainability, the introduction/revamping of regulations and policies on cybersecurity is also driving change. For example:

*“...it’s the provision of secure, trusted, and stable IoT and connectivity technology that make the backbone of any IoT solution.”*



- **Singapore** has introduced the Cybersecurity Labelling Scheme to improve IoT device security general cyber hygiene, encouraging device manufacturers to be more security oriented. The scheme was initially aimed at Wi-Fi routers and smart home hubs but soon expanded to devices such as smart door locks, smart lights, and smart printers.



- The **Korea** Internet & Security Agency (KISA) released guidelines that emphasizes privacy-by-design principles to IoT device manufacturers; also including tips on personal information protection, such as conducting data breach risk checks before launching new services.



- **Japan’s** Ministry of Economy, Trade and Industry (METI) has introduced an international standard to facilitate development and maintenance of IoT services/products, based on the country’s IoT Safety/Security Guidelines. In addition, Japan also launched a campaign to hack its citizen’s IoT devices to measure security levels.

Beyond data security, enterprises also require secure data privacy and governance. Data from a single endpoint may not carry significant weight, but data received from multiple sources likely means the creation of a database holding sensitive information. Omdia expects service providers to establish effective governance to safeguard these data and to not openly share this information with other parties with the purpose of gaining profits.

In all cases, no matter which vertical or use case, it’s the provision of secure, trusted, and stable IoT and connectivity technology that make the backbone of any IoT solution.

# APAC's IoT of Unique Solutions

## Introducing the Vertical View

Despite broad similarities in the core needs for any IoT solution, every country has a different approach in their IoT implementation journey.

The individual social, economic and technological drivers in each country can affect the focus and funding for every type of project. For example, automation is not the immediate first application for IoT in countries with more abundant labour (such as Pakistan, Myanmar, and Bangladesh). Political instability in many regions can also lead to changes and uncertainty around policies for projects such as smart cities. However, this doesn't seem to be significantly slowing growth, as the number of IoT devices in circulation in APAC is forecast to ramp up from 14.5 billion today to 38.9 billion in 2030.

IoT implementations come in different forms, from the simple plug-and-play devices to deployments with higher complexities requiring experts to integrate with legacy systems. There is no single one-size-fits-all solution that can be easily applied and replicated. IoT applications have revamped traditional practices across the region. This is illustrated with three verticals: automotive, transportation and logistics; and energy, utilities, and resources.

### Automotive: The digital vehicle age

Automotive digitalization and IoT efforts are moving rapidly in APAC, from global/regional automotive manufacturers establishing electric and hybrid plants outside of their own countries, to governments investing and launching plans to support automotive technologies. For example:



- **Thailand** government incentives for electric vehicles (EVs), with a goal for 50% of its total auto production transformed to EVs by 2030, becoming a production base for cleaner vehicles within the region. These incentives include exemption of import duty as well as excise tax on a wide range of EV models.



- Mitsubishi Motors intend to invest IDR 10 trillion (approximately USD 653 million) in **Indonesia** over the next three years to expand manufacturing operations, including building a plant for hybrid and electric vehicle production.



- In **Vietnam**, the Danang Smart City app (DanaMap) has launched an ambulance supervision and management utility to allow the Health Department, municipal Emergency Centre, as well as residents to monitor ambulance operations within the city. This is part of a series of projects to digitalize operations in the city and will soon extend to the monitoring of garbage trucks and fire engines.



The IoT ecosystem has digitally reshaped the automotive sector, revamping the traditional way of interacting with automotive vehicles with IoT applications that are linked to various devices (ranging from sensors to GPS trackers), infusing the capability of collecting real-time data to create actionable insights for vehicle users, technology providers, and automotive manufacturers.

One prominent use case is fleet management and telematics, with implementations already underway according to 64% of fleet/transport respondents in APAC according to Omdia survey data. Vehicle-integrated sensors collect data including real-time location, fuel consumption, movements, and vehicle, which is then stored, processed, and analysed to identify possible trends/patterns. Fleet management operators access this through a centralized platform to create actionable insights, such as performing predictive maintenance to ensure continuous uptime of vehicles and detect potential failures in advance.

*“The IoT ecosystem has digitally reshaped the automotive sector, revamping the traditional way of interacting with automotive vehicles.”*

#### CASE STUDY: Providing reliable connectivity to Hitachi Construction Machinery on asset management

*Known to be Japan’s second largest and a top class global, large manufacturer with presence in over 140 countries, Hitachi Construction Machinery produces heavy machinery for mining, construction, and forestry industries. Many of their equipment operate in hard and remote locations, and information delay presents a major challenge in collecting information on equipment operations and gauging when to provide services to its customers. In 2000, Hitachi Construction Machinery applied M2M communication in its Japanese operations and saw a need to then scale this technology to help customers maximize the value of their machines, ensuring they could operate efficiently and effectively throughout their lifetime.*

*Hitachi Construction Machinery therefore engaged Telenor to provide reliable and scalable connectivity that is applicable globally, along with expert asset management. Through this engagement, Telenor built a global network that links all Hitachi Construction Machinery equipment through 2G/3G (GSM) SIMs embedded in M2M modules linked to sensors within the machines. This allows Hitachi Construction Machinery to automatically monitor aspects of its machinery such as movement, hours, location, power, and fuel consumption through its remote machine monitoring system, ConSite, where data is gathered and transmitted for analysis.*

*“ConSite and the continuous flow of information from the network of equipment greatly assists customers in more effectively using and servicing their machines, and to help reduce time and costs.”*

*With Telenor’s help, Hitachi Construction Machinery is now able to gather updates on machinery status and the services they require, with stable connectivity for its entire supply chain via the machine-mounted SIMs as well as M2M modules. ConSite accumulates the data to be used for analysis and allows swift communication with local operators and Hitachi Construction Machinery dealers through Hitachi Construction Machinery’s Global e-Service to quickly alert service crews with timely measures and actions to mitigate potential damages. This can also help customers save time and costs especially in remote areas, where it is costly to deploy parts and service teams.*

*Ultimately, this enhanced global remote fleet management and administration service that Telenor provides has helped Hitachi Construction Machinery smooth operations with the necessary data to predict the services needed, and to allow optimization and better planning of operations, regardless of location.*

#### CASE STUDY: Partnering with M2Cloud to provide safe and reliable supply chain management for Daewoong Pharmaceutical

*The South Korea-based Daewoong is a pharmaceutical manufacturer that utilizes cold-chain to transport biopharmaceutical products, such as insulin, botox and other medicines, securely and safely to clinics and hospitals.*

*During the pandemic, demand for pharmaceutical products and medicines skyrocketed. To build a reliable and trustworthy service whilst accelerating a faster time to market, Daewoong engaged Telenor and M2Cloud as supply chain management solution partners to facilitate pharmaceutical transportation.*

*M2Cloud is a local logistics and monitoring solutions provider that assists pharmaceutical manufacturers, wholesalers, and hospitals in their supply chain process.*

*Telenor is providing 2G (GSM) connectivity, plus IoT gateways synergized with M2Cloud's supply chain management solution, providing traceability and transparency in the cold chain distribution process, adding an extra layer of safety and strict quality control during transportation.*

*Daewoong uses LTE-Cat-M1 communication technology for its biopharmaceutical delivery. Sensors in truck's fridges/freezers collect data (such as temperature and humidity) and send to an IoT gateway, which subsequently sends to a server via mobile (cellular) network. The server then monitors data fluctuations, alerting anomalies to allow preventive measures to be taken.*

*Through this unified solution, Daewoong is able to track the location and monitor real-time conditions (quality control) of its shipments and inventory, enabling early identification and mitigation of potential risks.*

#### Transportation and logistics: Digitalizing the supply chain



Two key shifts are revolutionizing the landscape: the increasing growth of e-commerce, and the COVID-19 pandemic that limited physical contact – both shifting consumer preferences towards online shopping and a corresponding volume spike in transportations. Amid this disruption, logistics service providers must streamline their processes to manage operations, including warehousing, supply chain, and transportation of goods.

IoT brings capabilities such as end-to-end tracking of transported goods, providing increased transparency on the progress, helping both management processes and improving customers' confidence levels as they track delivery status. Real-time condition monitoring of the goods also allows suppliers to perform preventive measures and immediate support should there be any risks – critical in methods such as cold chain logistics, where low temperature should be maintained, and any temperature or humidity fluctuations should immediately be flagged. Collected data can also be used to optimize future performance, such as identifying quicker and more efficient routes, allowing better supply chain planning and identification of pain points to address.

No wonder that 67% of logistics/supply chain enterprises in APAC say they are likely to implement a predictive maintenance IoT solution in the next 24 months. Omdia believes transportation and logistics providers should reach out to IoT service providers to implement effective solutions such as telematics and asset tracking. Service providers can offer end-to-end services, from building roadmaps to offering direct implementation support.

### Energy, utilities, and resources: The future of energy is technology-dependent

IoT technologies are also redefining the traditional ways of operations in the energy, utilities, and resources sector. The emergence of electric vehicles, smart cities, and a sustainability focus, IoT has become a fundamental part of the solution – particularly in APAC where 8 out of the top 10 most populous cities in the world are located. Cities in APAC have often served as innovators for pilots and smart city projects, but now is the time for this to scale more quickly.



In the case of energy management, the link to the sustainability agenda is clear, where collected and analysed data allows the grid to better balance and ultimately reduce the amount of electricity being generated. Grid operators are increasingly under pressure to manage a future network that includes solar, energy storage and electric vehicle charging, all whilst maintaining traditional services amidst increased financial pressure. For example, Electric Vehicle sales are expected to rise 51% across 2022 from 2021 to 7.2 million units, equal to roughly 9% of total light-vehicle volume, according to Wards Automotive. This trend is particularly strong in APAC, driven by huge volumes and investment in China. This is why “Asset and/or infrastructure monitoring (static/stationary)” and “Remote control and management of equipment” (i.e. distribution/transmission)” are the top two deployed IoT projects in APAC to date, according to Omdia survey data.

#### CASE STUDY: Collaboration with Ningbo Sanxing to connect 1 million smart meters with 5G future proof LPWA technology in Sweden

*Ningbo Sanxing (Sanxing) is an intelligent power distribution and utilization systems provider that offers products such as smart meters, electric vehicle chargers, and transformers. A Scandinavian energy supplier chose Sanxing as its prime contractor to deliver meters, communications, head-end software, and system integration in Sweden. Like APAC, the country's population spread is a key challenge, concentrated in larger coastal cities and the rest more dispersed. Future-proof smart meters therefore play a vital role in ensuring utilities reach people and industries in both urban and remote environments, whilst complementing next generation smart grids.*

*On behalf of an energy supplier, Sanxing signed a 12-year agreement with Telenor to connect 1 million smart meters with 5G future proof LPWA technology. Telenor will deliver communication services to connect the smart meters with a central application, with LTE-M as the primary technology and NB-IoT as a fall back to establish a stable coverage in challenging areas, including remote mountainous regions or the Swedish archipelago. Meter readings can be obtained once per minute, quicker than the legacy solution's once per day rate. Additional bandwidth allows more data transfer, with millisecond latency to help balance energy production with demand and optimizing the grid.*

*The solution's flexibility and scalability caters for future changes, whilst having a fast, robust secure two-way meter communication supports digital roadmaps in optimizing investments, effective operational data analytics, and better customer service. Software updates are also possible to introduce new services and functions in the future, whilst the managed service brings low predictable total cost of ownership. Customers also gain a better understanding on their energy consumption through detailed information, thus managing their energy usage and lowering their costs.*

*With the rollout of smart metering beginning to rise rapidly through both electrification efforts and grid modernization across APAC, this partnership approach with connectivity service providers such as Telenor Connexion can help enterprises scale and offer services even outside of their home country/region.*

Large-scale IoT deployments such as smart metering are therefore becoming critical next-step investments for APAC governments – but need to look to the best practice and learnings from similar projects elsewhere in the world, to be able to implement successfully.

Many APAC countries are now catching up with the global smart metering trend, in particular for the connectivity, software, management, and analytics beyond the hardware itself (one of the cited reasons for regional government delays in implementing the Indian smart meter rollout was a lack of focus beyond hardware).

IoT and digitalisation are therefore fundamental to the future utility – with IoT investment a critical priority rather than a choice for many utilities and operators.

*“IoT and digitalisation are therefore fundamental to the future utility – with IoT investment a critical priority rather than a choice for many utilities and operators.”*

# Recommendations and Conclusions



APAC will not be behind the global adoption curve for long, with 20% of enterprises anticipating their IoT deployments to reach beyond 500,000 devices connected within the next 12 months, and over 38.9 billion IoT devices expected in total circulation by 2030.

Unique challenges drive this market in ways not seen in the rest of the world – population growth in megacities combined with a need to reach widely spread remote areas, the increasing pressures of urban mobility and energy demand, and the wider political landscape (including newly introduced/revamped policies or guidelines to steer deployment). This takes place in an IoT vendor market that is fragmented, with enterprises challenged by complexity and concerned by cybersecurity.

IoT and digitalization are no longer an option for enterprises in the region, but a necessity - as technology hardware, connectivity and software take centre stage in the digital future.

With such acceleration in deployment, enterprises should consider the following with their projects:

*“APAC will not be behind the global adoption curve for long, with 20% of enterprises anticipating their IoT deployments to reach beyond 500,000 devices connected within the next 12 months, and over 38.9 billion IoT devices expected in total circulation by 2030.”*

- **Consider connectivity from the country-level.**
  - Connectivity choices are key for any project, and no single size fits all. However, as enterprises scale their adoption, 36% of Omdia survey respondents in APAC highlight a need to seek support from IoT service providers. The ever-evolving connectivity landscape is driving new network concepts, such as 6G already under research in several countries such as Singapore and South Korea, even whilst technologies such as LoRaWAN remain very popular. Enterprises and vendors need to consider country-specific factors, from geographical landscape, to the economical wealth/strength to rollout networks such as 5G, and to the end-user’s knowledge on how to manage/leverage the networks being deployed. This is particularly true as the next wave of growth comes from beyond only established markets (South Korea, Japan, China, Australia), but from emerging markets such as Thailand, Pakistan, and Bangladesh.
- **Seek proven integrated IoT security solutions.**
  - IoT cybersecurity is critical to APAC enterprises, especially as more workloads are being managed online. Enterprises need IoT service providers with credible security services to mitigate potential risks such as IoT devices authentication breach or experience DDoS attacks.



- **Build in a sustainability-first approach.**

- APAC countries are increasingly investing, implementing, and revamping sustainability policies to achieve their respective goals. Omdia survey data shows increasing focus on sustainability from the outset of new projects, especially as sustainability improvement can help boost enterprises' reputation as a notable ESG initiator/contributor. Case studies such as Ningbo Sanxing show the benefits of bringing trusted, capable domain experts such as Telenor to implement projects that improve efficiency whilst ensuring a sustainability approach is met.

*“No other region is poised for IoT growth on the scale of APAC – as the region moves from global IoT laggard to digital transformation pioneer in the coming years.”*

- **Plan for the complexity of IoT integrations.**

- Complexity of integration is named by 30% of APAC enterprises as a major pain point for IoT, slightly higher than any other region, whilst the lack of internal expertise is a clear challenge. To move fast and access available knowledge enterprises should consider using trusted partners and/or learn from the rest of the world.

- **Choose the right partners.**

- Early moving enterprises can have IoT as a differentiator in APAC, but it is essential to choose the right technology partners to kickstart their digital transformation journey. Providers need to value future proof and sustainable solutions/services, and understand the importance of having a diverse approach when it comes to international and local preferences. Working with partners like Telenor could help improve an enterprise's customer experience across APAC countries – having been awarded the ISO 27001 certification on its information security management, and providing solutions from concept and design to monetization and operation, along with a 24/7 monitoring to support post-integration.

With these goals in mind, the IoT industry and partnership ecosystem in APAC allows enterprises the support on choosing the right solutions, whilst ensuring optimal data security and privacy. The combined efforts between domain/vertical specific provider and IoT technologists are then crucial in bringing the best transformative solutions across different locations/landscapes with the maximum value from the services provided, if the region is to truly spearhead the next wave of IoT adoption.

No other region is poised for IoT growth on the scale of APAC – as the region moves from global IoT laggard to digital transformation pioneer in the coming years.

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# Appendix

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## About Omdia

Omdia is a global technology research powerhouse, established following the merger of the research division of Informa Tech (Ovum, Heavy Reading, and Tractica) and the acquired IHS Markit technology research portfolio.

We combine the expertise of more than 400 analysts across the entire technology spectrum, covering 150 markets. We publish over 3,000 research reports annually, reaching more than 14,000 subscribers, and cover thousands of technology, media, and telecommunications companies.

Our exhaustive intelligence and deep technology expertise enable us to uncover actionable insights that help our customers connect the dots in today's constantly evolving technology environment and empower them to improve their businesses – today and tomorrow.

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## About Telenor IoT

Telenor IoT is the portfolio of IoT solutions from Telenor Group, one of the world's major mobile operators. With more than 20 years' experience of providing global IoT connectivity, cloud services and expert support to companies of all sizes, Telenor is one of the world's most advanced IoT solution providers.

Telenor IoT manages international IoT deployments for global customers in some 200 countries and today operates more than 20 million connected devices to enterprises such as Volvo, Scania, Hitachi, Verisure Securitas Direct and Husqvarna.

## Get in touch

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## Omdia consulting

Omdia is a market-leading data, research, and consulting business focused on helping digital service providers, technology companies, and enterprise decision-makers thrive in the connected digital economy. Through our global base of analysts, we offer expert analysis and strategic insight across the IT, telecoms, and media industries.

We create business advantage for our customers by providing actionable insight to support business planning, product development, and go-to-market initiatives.

Our unique combination of authoritative data, market analysis, and vertical industry expertise is designed to empower decision-making, helping our clients profit from new technologies and capitalize on evolving business models.

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We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Omdia's consulting team may be able to help your company identify future trends and opportunities.

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