INDUSTRY 4.0 IN INDONESIA

Market Opportunities, Future Trends and Challenges
Indonesia is today one of the top 10 largest manufacturing nations in the world, defined by output. The manufacturing sector employs more than 25 million workers and accounted for ~20% of Indonesia’s GDP in 2017, totaling roughly USD 203 billion. The sector has seen 6-7% growth annually for several years and is the backbone of the Indonesian economy.

To boost the growth of the manufacturing sector further, the Indonesian government has adopted a number of reforms which include establishing industrial zones and providing tax holidays. It has also made efforts to reduce cumbersome and stifling bureaucracy. Additionally, the Indonesian government has adopted an Industry 4.0 implementation roadmap.

The roadmap aims to improve the flow of goods, empower SMEs, increase foreign investments, strengthen the national digital infrastructure and sharpen the quality of human resources.

Implementing the roadmap will generate new opportunities in automation and robotics, IoT, advanced production methods, human machine interface and AI, to name just a few areas.

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<th>What you need to know about the Indonesian Manufacturing Sector…</th>
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<td>203 Billion USD output in 2017</td>
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<td>25 Million Workers</td>
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<td>20% GDP Contribution</td>
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<td>6 - 7% Annual Growth</td>
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Focused Technologies In The Indonesia Industry 4.0 Roadmap

- Internet of Things
- Robotics and Automation
- Big Data and Cloud Computing
- Human Machine Interface
- Advanced Production Methods
What are the key activities that will be prioritized by the government to speed up the implementation of industry 4.0?

There are some measures and initiatives by the Indonesian government which aim to speed up the industry 4.0 implementation. These include funding and subsidies, as well as tax holiday programs. To ensure maximum impact by the roadmap, a wide range of stakeholders are being involved. Leading industry companies, industry associations, tech companies, as well as research and educational organizations are some of the stakeholders being engaged by the government.

As a first step, the government has established a committee with responsibility for the implementation of the different measures in the roadmap. Furthermore, it has been tasked with designing a program for quick wins.

The committee consists of several representatives from various government departments, such as ministry of finance, and ministry of trade, but also ministry of energy, and ministry of technology, to name a few.

Additionally, members of the Indonesian Chamber of Commerce and Industry (KADIN) as well as the Indonesian Investment Coordinating Board (BKPM) are represented.

“As a first step, the government has established a committee with responsibility for the implementation of the different measures in the roadmap. Furthermore, it has been tasked with designing a program for quick wins”

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<th>Prioritized Activities To Expedite The Implementation of Industry 4.0</th>
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<td>1. Enhance domestic raw material processing</td>
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<td>2. Redesign industrial zones by building a nationwide industry zoning roadmap</td>
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<td>3. Increased involvement in global sustainability trends such as Electric Vehicles and Renewable Energy</td>
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<td>4. Empower SMEs with new technologies</td>
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<td>5. Develop national scale digital infrastructure</td>
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<td>6. Engage top global manufacturers to accelerate knowledge transfer</td>
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<td>7. Upskill human resources by redesigning education curriculum</td>
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<td>8. Collaborate with universities and private sector to establish innovation ecosystems</td>
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<td>9. Prepare incentives for technology investments</td>
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<td>10. Realign relevant regulation and policies to support the roadmap</td>
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SOURCE: MINISTRY OF INDUSTRY, PRESS RELEASE, BUSINESS SWEDEN ANALYSIS
Almost 75% of the Indonesian manufacturing output in 2017 came from six main industries. Indonesia’s largest industry is still food and beverage which accounted for almost one-third of the country’s manufacturing output last year. This was followed by an 11% contribution from petroleum related products, around 9% came from the automotive-, chemical- and electronic industry respectively, while the textile and apparel industry accounted for 6% of the total output.
What are the key drivers and challenges for Industry 4.0 implementation in Indonesia?

Key Drivers of Industry 4.0 Implementation

Population
Large population and growing middle class driving up domestic demand.

Economy
Indonesia is the largest economy in ASEAN with robust economic growth for close to two decades.

Government Initiatives
Sound reforms and ambitions initiatives from the government to boost the growth of the manufacturing sector.

Key Challenges of Industry 4.0 Implementation

Infrastructure
Lack of necessary digital infrastructure, such as high-speed fiber optics and cloud solutions to support new technologies.

Labor
Lack of skilled labor combined with low productivity causes Indonesia to lose a competitive edge.

Local SMEs
The manufacturing sector is dominated by local SMEs with limited technological adoption.

Labor Cost
Competitive labor cost within the manufacturing sector attracts foreign investors. On the other hand, if labor costs rise to sharply, investments to increase automation are to be expected.

Natural Resources
Indonesia is rich in natural resources to support the growth of the domestic raw material processing facilities.

Funding
Government funding will likely continue to be insufficient to meet the increasing need to invest in new technologies and infrastructure.

Up-Mid Stream Industry
Underdeveloped domestic raw material processing facilities, resulting in high dependency on imported raw materials for manufacturers.

SOURCE: MINISTRY OF INDUSTRY, PRESS RELEASE, BUSINESS SWEDEN ANALYSIS
What are the focus-sectors for industry 4.0 implementation in Indonesia?

Industry 4.0 Prioritization Matrix

Source: Ministry of Industry

Sector Prioritization

The Indonesian government has decided to focus on five main industries, selected based on two criteria.

The first criterion is the feasibility of implementation with respect to infrastructure conditions within the industry, as well as the manufacturers readiness to adopt new technologies.

The second criterion is based on the projected impact defined by contribution to GDP growth that the implementation of industry 4.0 reforms would have on the industry.

Based on these two criteria, food and beverage-, chemical-, automotive-, electronic- and the textile and apparel industries have been selected as the focus industries for the roadmap. Together, these industries accounted for almost two-thirds of the total manufacturing output in 2017.
Food and Beverage

With a total population of more than 260 million and a rapidly growing consumer class, as well as a strong agricultural sector, Indonesia is expecting strong growth in the food and beverage sector. The main objective of the Industry 4.0 roadmap with respect to the food and beverage industry, is to position Indonesia as a regional export hub.

There are several new technologies that are expected to be adopted by Indonesian manufacturers in the coming years to increase productivity. Automation and robotics in the production line are a few, but also new sensor technologies and improved data monitoring for warehouses.

Government Vision: Food and Beverage 4.0

Drivers and Barriers for Industry 4.0 implementation

Drivers

- Large population driving domestic demand
- Consumer shift towards products with modern packaging will create opportunities for companies with more advanced technologies
- Growing health awareness among Indonesia’s young population will result in new opportunities for nutritional and healthy food and drinks
- Rising food safety concerns across industries pushing manufacturers to improve their overall operational processes

Challenges

- The market is highly fragmented with local SMEs accounting for more than 80% of the total labor force. These SMEs have limited technological readiness
- Underdeveloped cold-chain infrastructure across country
- High dependency on imported raw material

SOURCE: MINISTRY OF INDUSTRY, PRESS RELEASE, BUSINESS SWEDEN ANALYSIS
Automotive

The automotive sector is an important industry in Indonesia. Of the other ASEAN members only Thailand outperforms Indonesia in output, with Indonesia producing almost two million four-wheelers and six million two-wheelers each year. Companies like Toyota, Honda, and Mitsubishi have all established production in Indonesia. Still, the automotive industry is much less developed compared to that of Thailand. The Indonesian government has therefore set up an ambitious target of making the country the leading automotive export hub as well as becoming a regional leader in electric vehicle production. Increased adoption of robotics and human/machine interface technologies will be necessary in order to achieve this goal.

Government Vision: Automotive 4.0

Drivers and Barriers for Industry 4.0 implementation

Drivers

- Low per capita car ownership ratio will change with the rapidly growing middle class.
- Massive infrastructure developments across Indonesia by the government and private sector will increase the number of roads and transportability.
- The demand for electric vehicles is increasing and will continue to do so as Indonesia tries to look for solutions to growing traffic congestion.

Challenges

- Compared to other neighboring countries, productivity is low in Indonesia, causing OEMs to invest in other countries.
- High logistics cost and long dwelling time
- Local manufacturers are producing low quantities of value-adding components and are dependent on imports.

SOURCE: MINISTRY OF INDUSTRY, PRESS RELEASE, BUSINESS SWEDEN ANALYSIS
Consumer electronics make up the largest share in the electronics industry. A fast developing middle class as a result of almost two decades of economic growth has led to a booming industry, as has urbanization and an expanding real estate market.

A few global electronic manufacturers have chosen Indonesia as their production base and the government is looking to encourage even more to do so. Various reforms have been made to increase investments in the area and the government is also pushing for domestic companies to increase their competitiveness. Advanced production methods such as 3D printing could be key to supporting domestic manufacturers improving their capabilities.

**Government Vision: Electronics 4.0**

Drivers and Barriers for Industry 4.0 implementation

**Drivers**
- Indonesians are fast adopters of new technologies and the growing middle class happily spends their disposable income on electronic products
- Indonesia is projected to become one of the largest economies in the world by 2030, supporting a the trend of the growing electronics industry

**Challenges**
- Limited number of local players that can compete with foreign companies
- High import duties for raw materials while zero tariffs for finished goods from other ASEAN countries
- Limited public capabilities to support the domestic industry in R&D and design

SOURCE: MINISTRY OF INDUSTRY, PRESS RELEASE, BUSINESS SWEDEN ANALYSIS
Chemical

The chemical sector is of vital importance to support some of Indonesia’s other key industries, such as food and beverages, automotive and the textile and apparel industries. With the increasing demand from these industries, the chemical sector has a hard time keeping up, even for basic chemical products. The government has recognized this challenge and is looking to address it in the new roadmap. Efficient resource management systems will be central to the chemical industry if it is to improve its productivity. Currently, the industry is heavily reliant on imports.

Government Vision: Chemical 4.0

Drivers and Barriers for Industry 4.0 implementation

Drivers

- Strong growth in the food and beverage sector, as well as other industries of big importance to Indonesia, has increased the demand from the chemical products and will continue to do so in the future.
- Abundant supply of agriculture product to support the chemical sector

Challenges

- Current capacity of local companies fall short of meeting domestic demand
- Over-dependence on imported raw materials
- Limited R&D capabilities among domestic companies

SOURCE: MINISTRY OF INDUSTRY, PRESS RELEASE, BUSINESS SWEDEN ANALYSIS
Textiles

The textile and apparel industry is one of Indonesia’s oldest industries and due to its labor intensive nature, is a significant source of employment. Today, Indonesia ranks as one of the top ten largest textile producing countries in the world and the government foresees continued growth for many years as the industry tries to meet both domestic and global demand.

Modernizing the industry and making real improvements towards industry 4.0 will be essential in order to meet this task. Sensor-based waste control systems and digital prototyping are key technologies that can be adopted by textile and apparel manufacturers in Indonesia to bring their capabilities to next level.

Government Vision: Textile 4.0

Drivers and Barriers for Industry 4.0 implementation

Drivers

- The increase in demand of functional apparel such as sports clothing will require more advanced production methods
- Abundant supply of agriculture products to support the chemical sector

Challenges

- Increasing labor and energy costs in the region
- Fragmented industry with local SMEs dominating the sector
- Rising competition from other ASEAN countries such as Vietnam and Cambodia

SOURCE: MINISTRY OF INDUSTRY, API, PRESS RELEASE, BUSINESS SWEDEN ANALYSIS
What are the key opportunities for Swedish Companies?

Conclusions

Efforts to advance Industry 4.0 implementation in Indonesia will bring massive opportunities for foreign companies. Several of Indonesia’s most important industries are in strong need of productivity improvements and the government’s ambitions to support these industries will be vital in the coming years.

A number of challenges to realize the government roadmap have been identified and the journey will not be frictionless, but for those companies that can address the central pain points and tailor their value proposition to their clients in Indonesia, big rewards await. Still, Indonesia’s push to modernize its industries will likely yield uneven results, with some industries being more prepared than others.

The food and beverage industry has perhaps come the farthest. Progress has been made in the automotive sector but Indonesia still trails some of its ASEAN neighbors. With so much happening on the horizon, Swedish companies need to begin immediately to position themselves and ensure that they are ready to be serious contenders in the Indonesian market. Listed here are some of the opportunities that Swedish businesses should pursue.

“…the journey will not be frictionless, but for those companies that can address the central pain points and tailor their value proposition to their clients in Indonesia, big rewards await”

► Food and Beverage: real time monitoring systems for agriculture products, warehouse management systems, sensory processing and automation of production lines.
► Automotive: human machine interface, advanced robotic systems, and digital platforms for logistic and warehouse systems.
► Electronic: R&D related products, digital prototyping, and automation systems.
► Chemical: asset- and resources management systems as well as advanced technologies relating to R&D in the chemical sector.
► Textiles: sensor-based waste control systems, digital prototyping, and real time productivity monitoring systems.

Besides the core technologies, supporting products and services related to high-speed internet and cloud offerings in order to speed up the digital infrastructure development of Indonesia will be important. These areas will undoubtedly present Swedish companies with a great number of exciting opportunities.
Business Sweden help Swedish companies grow global sales and international companies invest and expand in Sweden

EXPERTS ON GLOBAL SALES
Business Sweden offers hands-on support to Swedish companies with global ambitions. With over 50 offices across the globe, we have a strong presence in each of our four key regions: Europe, Americas, Middle East & Africa, and Asia-Pacific.

INVEST, INNOVATE AND EXPAND IN SWEDEN
Sweden is a global leader in innovation thanks to a collaborative environment and a highly skilled workforce with problem-solving minds. Invest in a stable but competitive economy where new ideas are welcome.

50 Worldwide Offices, One Team

50 LOCATIONS
We operate in 50+ markets, from Belgium to Brazil and from Canada to China. Our headquarters are located in Stockholm, Sweden, and China.

500 OUR PEOPLE
Our staff force of around 500 people across the globe consists of multinational teams rooted in local business culture.

45 SUCCESS STORY
We have more than 45 years’ experience in helping Swedish businesses succeed abroad and international companies succeed in Sweden.

17+10 SUSTAINABILITY
We work towards the UN’s 17 Sustainable Development Goals and the 10 principles of Global Compact, which address human rights, labour, the environment and anti-corruption.