Ministry of Industry

Indonesia's Industry Fourth Revolution

Making Indonesia 4.0

7 May 2018

Indonesia has successfully built economic virtuous cycle, bringing Indonesia to one of the global leading economies

Economic Cycle Improvement

Labor Total Earnings

The world **# 4** working population and added **~30 Million workers** in 15yrs. Wages surged to **x2** in 10 yrs[1]

Consumer Spending

Household expenditure contributes **55%** of GDP which expanded by **x8** in 15yrs

Economic Virtuous Cycle

Investment

Gross capital formation increased by **x13** (from 22% to 34 % of GDP) in 15 yrs

Corporate Activities

Market capitalization of Indonesia Stock Exchange became **USD 500 Bn**, increased to **x15** in 15yrs

Social Foundation

Political Stability | Education level | Safety

Global GDP ranking[1] (Nominal)

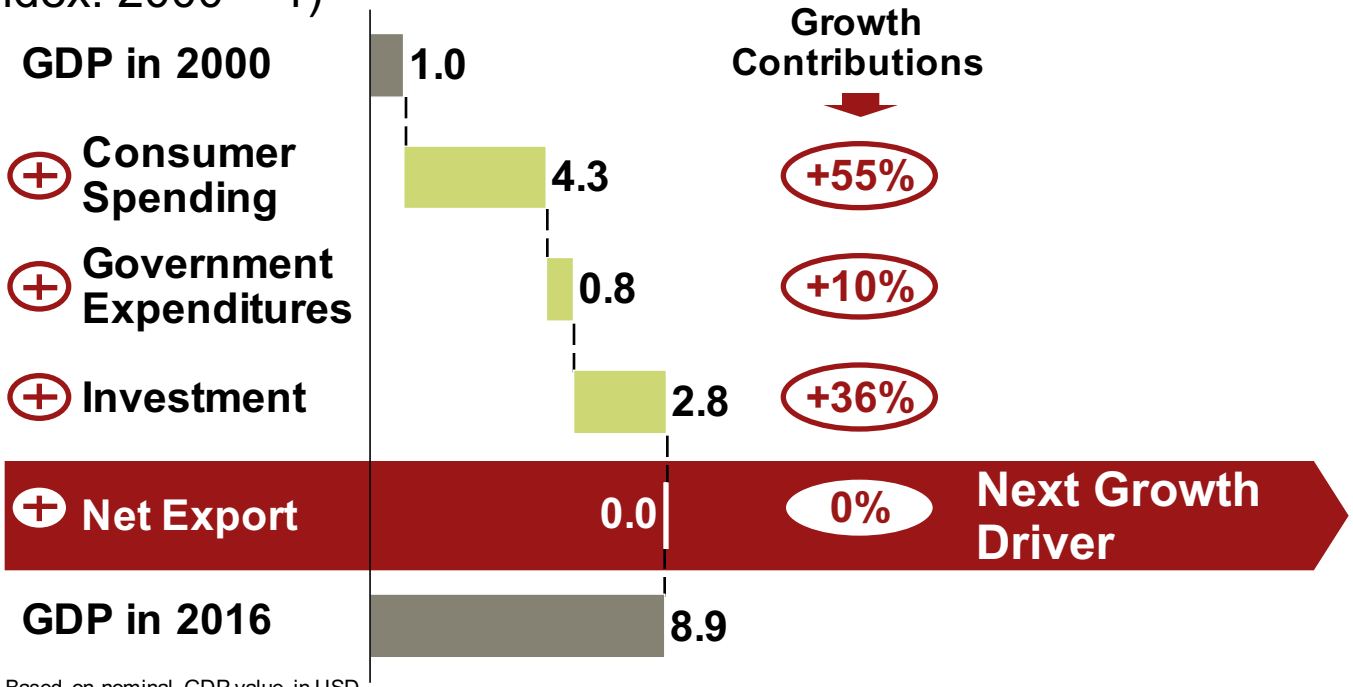
1		USA
2		China
3		Japan
4		Germany
:		
16		Indonesia in 2016
:		
27		Indonesia in 2000

1. Based on data from ILO, average Indonesian's earnings increased by 115% between the period 2004-2015
Source: The World Bank; IMF; A.T. Kearney

Indonesia has an aspiration to be global top 10 economy by 2030; next growth engine must be net export

Factors contributing to Indonesia's GDP growth

(Index: 2000 = 1)



1. Based on nominal GDP value in USD

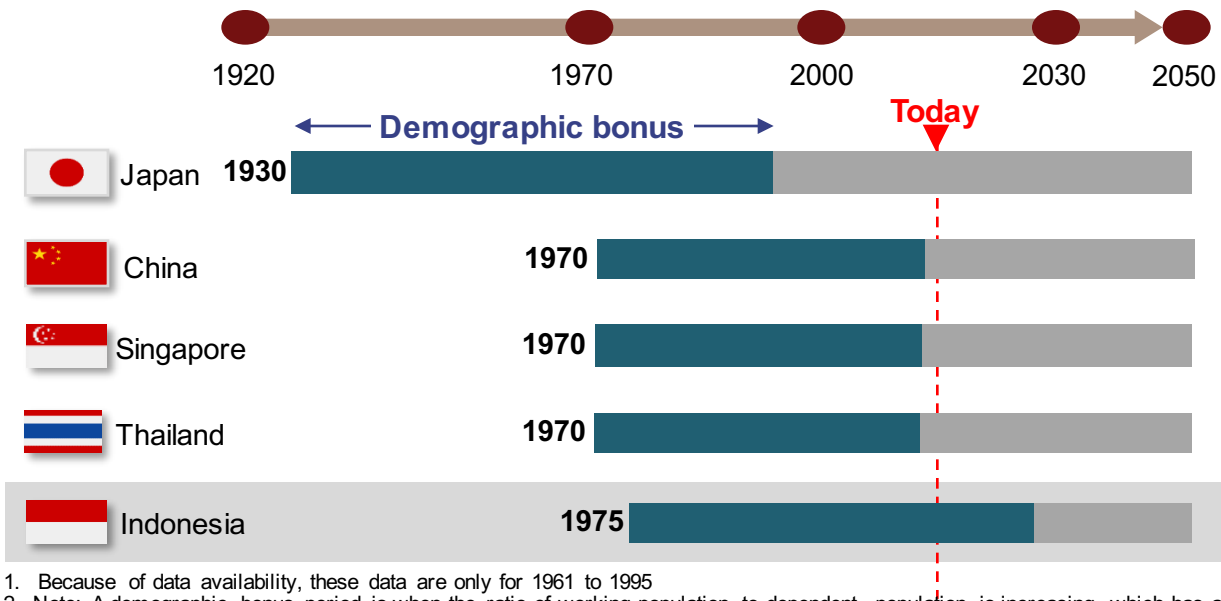
Source: World Bank, A.T. Kearney

Global GDP ranking[1] (Nominal)

1	USA
2	China
3	Japan
4	Germany
:	
10	Indonesia in 2030
:	
16	Indonesia in 2016

The next 15 years will be a “golden age” for Indonesia as it will enjoy a demographic bonus peak

Demographic bonus



Average GDP growth

	During demographic bonus	After demographic bonus
Japan	5.5%[1]	0.9%
China	9.2%	6.7%
Singapore	7.3%	2.0%
Thailand	5.8%	3.2%
Indonesia	5.4%	?

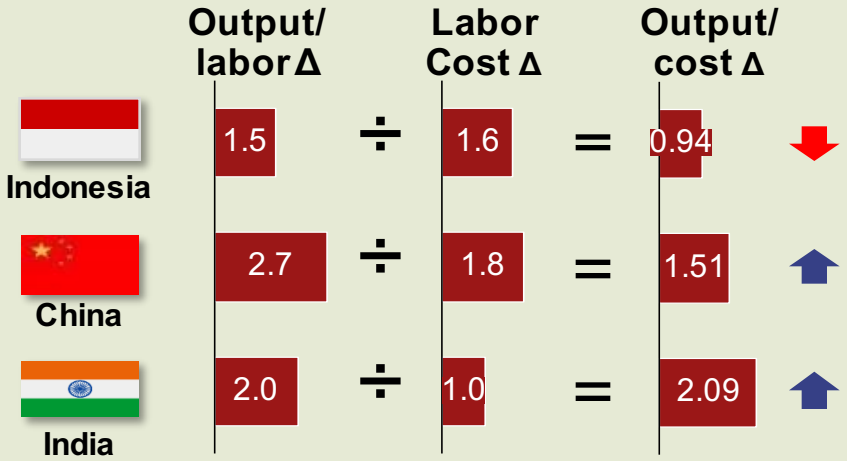
1. Because of data availability, these data are only for 1961 to 1995
2. Note: A demographic bonus period is when the ratio of working population to dependent population is increasing, which has a high correlation with a country’s economic growth. Average GDP growth for Indonesia is 1975 to 2016.

Source: The World Bank; A.T. Kearney

It is time to revive Indonesia's manufacturing sector (1/2)

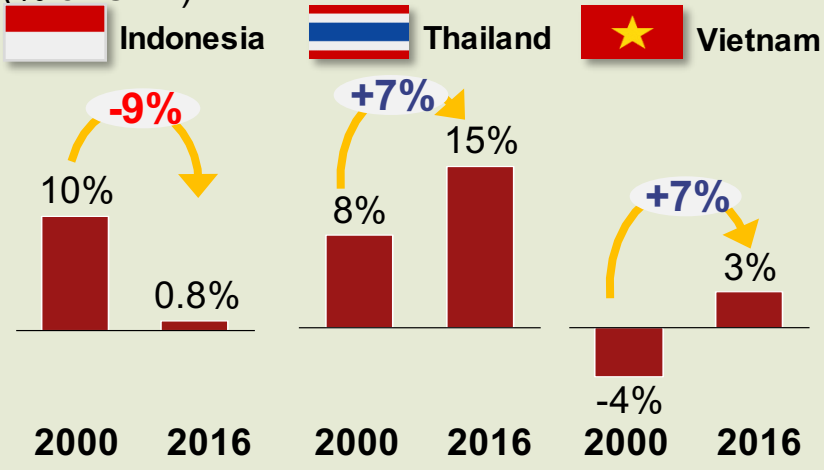
1 Other countries are gaining more competitiveness

Productivity per Labor Cost Trend
(Index; from 2005 to 2016)



2 Indonesia's net export has been declining

Net Export[1] Trend
(% of GDP)

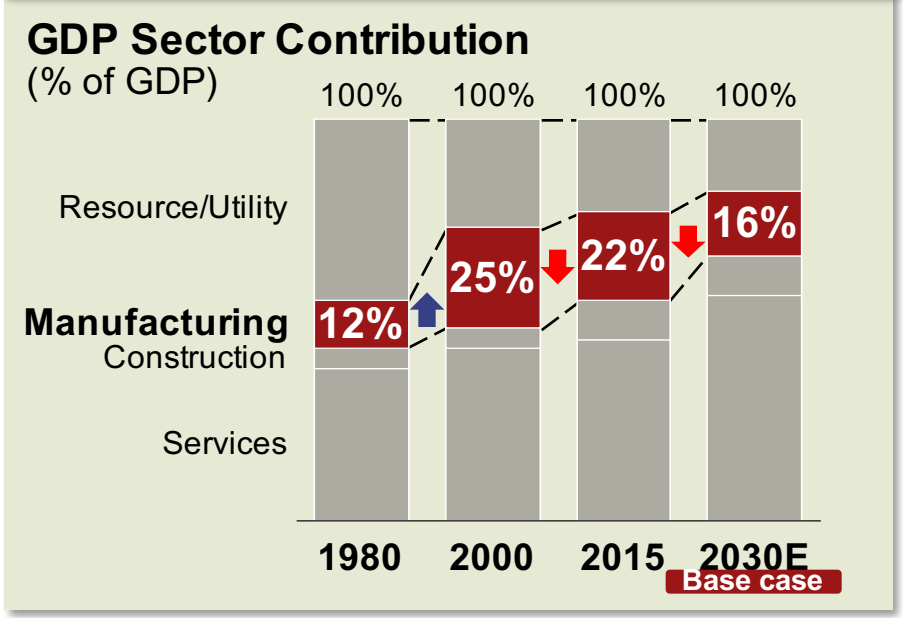


1. The net exports figure include manufacturing, agriculture, O&G, mining and services industry. Indonesia's manufacturing net export stood at -2% of GDP in 2016; lower than Thailand (16%) and Malaysia (11%), but higher than Vietnam (-6%)

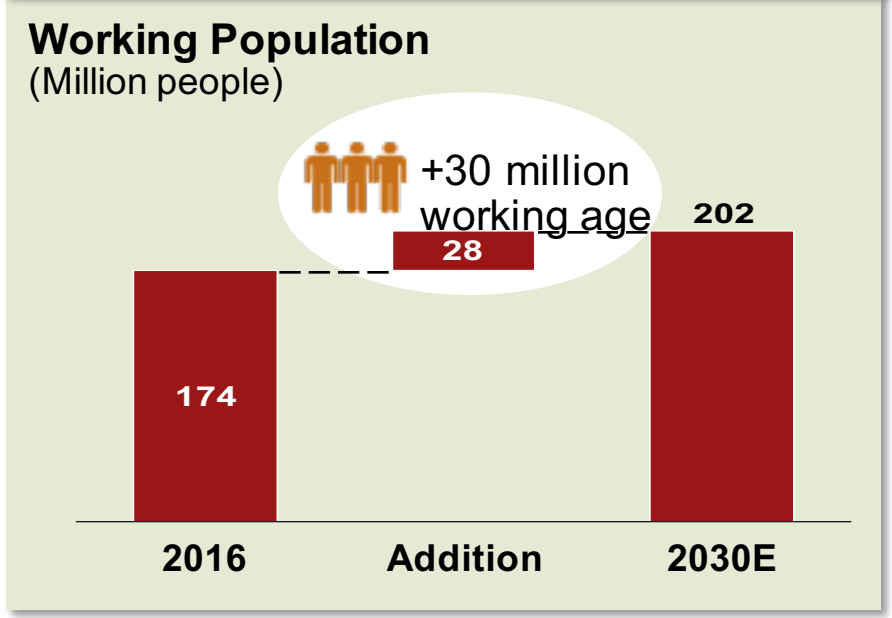
Source: World Bank, Badan Pusat Statistik, A.T. Kearney

It is time to revive Indonesia's manufacturing sector (2/2)

3 Manufacturing GDP share can decline further if we do nothing



4 Indonesia needs to create more jobs

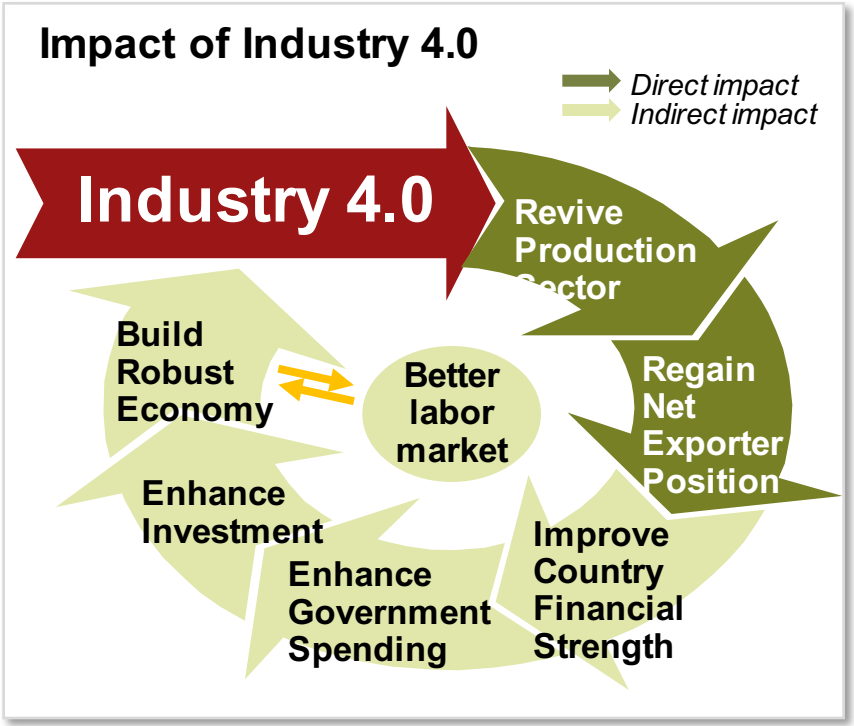


Source: World Bank, Badan Pusat Statistik, A.T. Kearney

Kementerian Perindustrian
REPUBLIK INDONESIA

Industry 4.0 can revive the Indonesian manufacturing sector; Indonesia should launch "Making Indonesia 4.0" initiative

Impact of Industry 4.0



Making Indonesia 4.0 → **Global Top 10 Economy by 2030**

10% Net Export contribution to GDP	**Regain net export position** (the same level as 2000)
2x current[1] productivity-to-cost	**Enhance output while managing cost** (Similar improvement speed to India)
2% of R&D spending share to GDP	**Build local innovation capabilities** (Similar level to China[2])

1. Based on 2016
2. Indonesia's R&D spending per GDP is currently around 0.1-0.3%

Source: World Bank, A.T. Kearney

All industry sectors in Indonesia are facing 10 common issues

10 Key Challenges Across the Industries (1/2)

1 Underdeveloped Up-midstream Industry

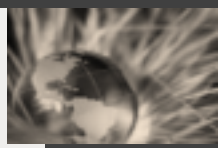
- **Raw materials and critical parts are highly import dependent** e.g.
  - >50% of petrochemicals, 74% of basic metals
  - All the critical parts for electronics and automotive

2 Underleveraged Geographical Potential

- **Absence of comprehensive industry zoning plan** e.g. oil gas vs. petrochemicals
- **Underdeveloped and underutilized economic zones** e.g. Batam, Karawang, Bekasi and Central Java

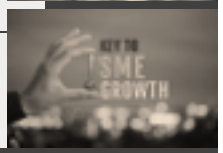
3 Inevitable Global Sustainability Trends

- **Sustainability trends are no longer only for developed economies**
  - Exports need to meet requirements e.g. EUROx
  - Shift to business opportunities e.g. solar, biomaterials



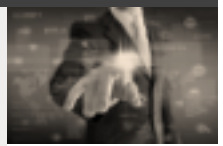
4 Left-Behind SMEs

- **62% of workers in Indonesia are working at small or micro enterprises** with low productivities



5 Must-Have Digital Infrastructure

- **Digital platforms are still underdeveloped**
  - Mobile: currently adopting 4G (not ready for 5G)
  - Fiber: average speed is <10Mbps (not 1Gbps)
  - Cloud: limited cloud infrastructures

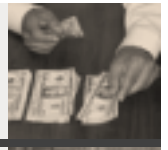


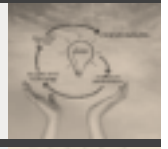
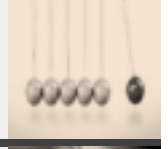
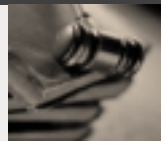
Source: IHS Markit, BPS, articles, A.T. Kearney

All industry sectors in Indonesia are facing 10 common issues

10 Key Challenges Across the Industries (2/2)

Limitation of Domestic Funding and Technologies	**6**	• **Recently, FDI inflow to Indonesia is flattening** (0% growth during '13-'16) although Indonesia is suffering from limited source of funding and access to new technologies
Abundant but under trained people	**7**	• Indonesia has **4th largest working population** in the world, however, **very limited trained talents**; e.g. government education spending is only $114 per capita
Absence of Innovation Centers	**8**	• **Very limited R&D spending** as a country; only 0.1-0.3 % of GDP • **No strong government led R&D/innovation centers** as well as private sector's
Inertia to stay in status quo	**9**	• Currently **no comprehensive incentives** for 4th Industrial Revolution technology adoption e.g. tax exemptions, subsidies, funding support etc.
Regulation & Policy Roadblocks	**10**	• **Overcomplicated regulations and policies,** handled by multiple organizations; e.g. upstream by MOE, midstream by MOI and trade by MOT, central government vs. local government



Source: BKPM, Desk Research, A.T. Kearney

Indonesia has set 10 National Priorities for "Making Indonesia 4.0"

10 National Priorities

1 Reform Material Flow
- Enhance **domestic upstream material production**; e.g. 50% of petrochemical is imported

2 Redesign Industrial Zones
- Build **a single nationwide industry zoning roadmap**; resolve zoning inconsistency challenges

3 Embrace sustainability
- Grab **opportunities under global sustainability trend**; e.g. EV, biofuel, renewables

4 Empower SMEs
- Empower **3.7 million SMEs[1] by technologies;** e.g. build SME e-commerce, technology bank

5 Build Nationwide Digital Infrastructure
- Advance **network and digital platform;** e.g. 4G to 5G, Fiber speed 1Gbps, Data center and Cloud

6 Attract Foreign Investments
- Engage **top global manufacturers** with attractive offer and accelerate **technology transfer**

7 Upgrade Human Capital
- Redesign **education curriculum** under 4IR era
- Create professional **talent mobility program**

8 Establish Innovation Ecosystem
- Enhance **R&D centers** by government, private sector and universities

9 Incentivize Technology Investment
- Introduce **tax exemption/subsidies** for technology adoption and **support funding**

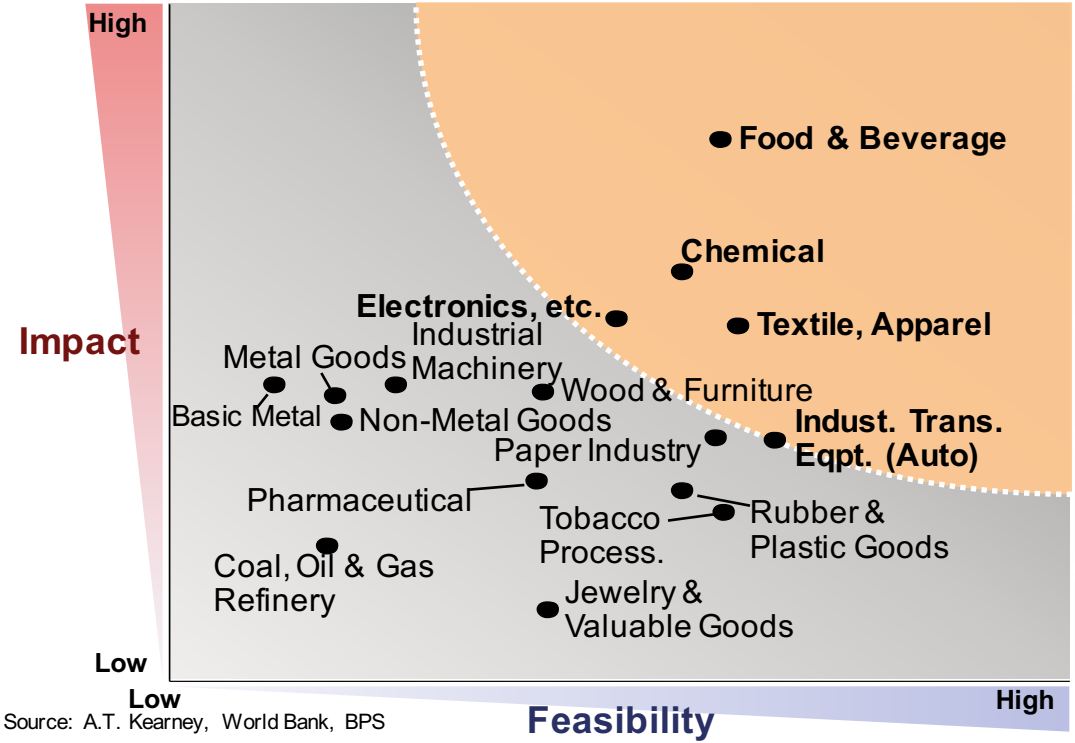
10 Reoptimize Regulations & Policies
- Build more **coherent policies/regulations** by **cross-ministry collaborations**

1. Including micro enterprises

Source: Ministry of Industry, A.T. Kearney

5 sectors were selected for “Making Indonesia 4.0”

Sector Prioritization Matrix



Source: A.T. Kearney, World Bank, BPS

Top 5 Sectors

- Food & Beverage
- Textile & Apparel — ~60% mfg. GDP
- Automotive — ~65% mfg. exports
- Electronics — ~60% mfg. workers
- Chemical

"Making Indonesia 4.0" can create massive uplift in overall GDP, manufacturing contribution & employment opportunity

Estimated Benefits[1] of "Making Indonesia 4.0" Implementation

GDP Growth

+1-2% p.a.
incremental GDP growth from baseline in 2018-2030

- Improve real GDP growth from ~5%[2] to 6~7% YoY between 2018-2030

Job Creation

>10 Million[3]
additional employment opportunity from baseline by 2030

- Increase new employment from +20 mn to >30 mn additional jobs by 2030

Manufacturing GDP Contribution

>25% of manufacturing GDP contribution by 2030

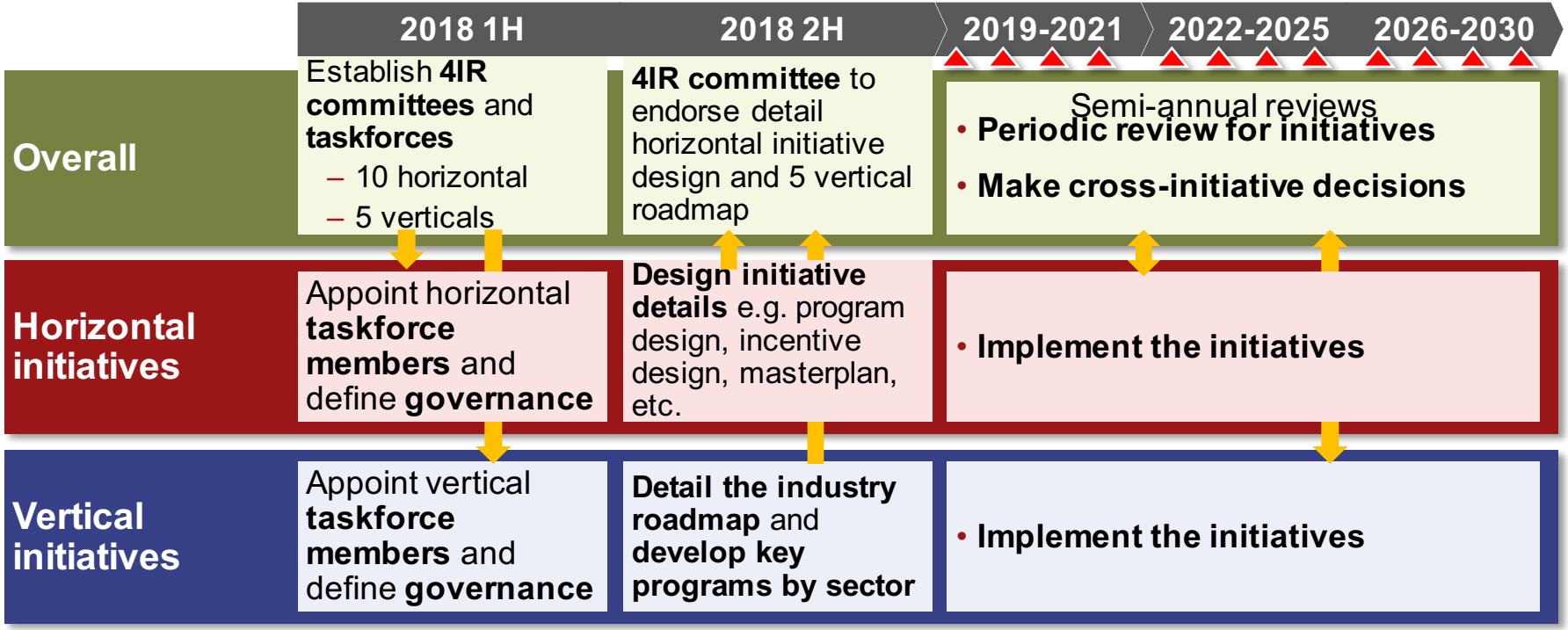
- Boost manufacturing contribution to GDP from ~16%[2] to >20% by 2030

1. Benefits are estimated based on the incremental difference between the aspirational case and the base case in A.T. Kearney economic models
2. In the base case, real GDP growth is estimated at ~5% YoY between 2018-2030, additional jobs created is estimated at ~22 million by 2030 and manufacturing contribution is estimated at ~16% of total Indonesian GDP in 2030
3. Industry 4.0 implementation can absorb 30~50% of the 30 million additional working age population by 2030; The rest of the workforce are already absorbed in the base case scenario

Source: World Bank, Badan Pusat Statistik, Ministry of Industry, A.T. Kearney

2018 will be a critical year for "Making Indonesia 4.0" implementation

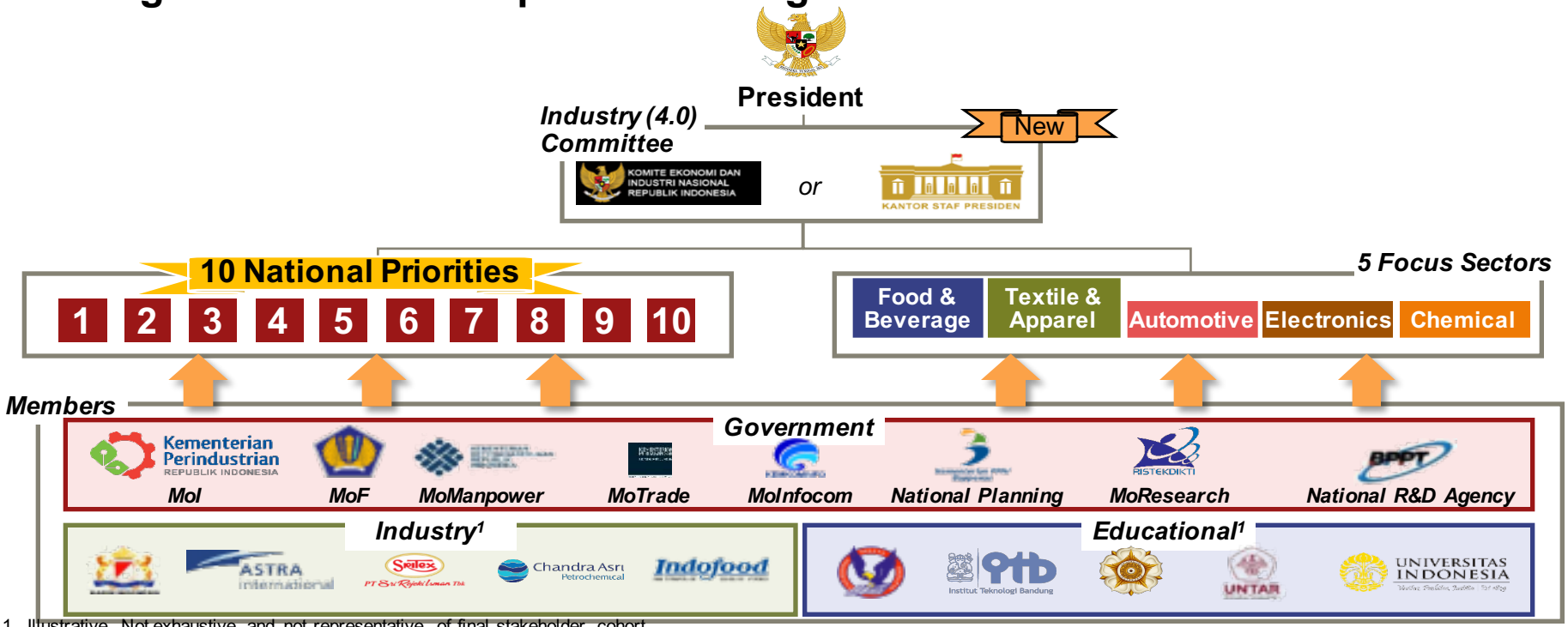
"Making Indonesia 4.0" implementation roadmap



Source: A.T. Kearney

"Making Indonesia 4.0" policy needs to be properly coordinated with several stakeholders and policies

"Making Indonesia 4.0" implementation governance



1. Illustrative. Not exhaustive and not representative of final stakeholder cohort.

Source: A.T. Kearney

"Making Indonesia 4.0" will trigger immediate actions with long term aspirations by focus sector

Focus Sectors Aspiration

1	 Food & Beverages	Founding an ASEAN F&B powerhouse
2	 Textile & Apparel	Becoming a leading "functional" clothing producer
3	 Automotive	Establishing export leadership in ICE and EV
4	 Chemicals	Developing leading biochemical manufacturers
5	 Electronics	Nurturing highly capable domestic champions

Immediate Actions (Quick Wins)

Tech Incentives	**R&D and CAPEX tax exemption** for tech investment
Investor Roadshow	**Targeted roadshow**; focusing on specific product/geography to attract large OEMs
Vocational School	**Up-skilling & Re-skilling** for all sectors (select 1-2 first as pilot)
SME Supports	**SME eCommerce & Technology Bank**

Source: A.T. Kearney

Industrial Revolution 4.0

in implementing the industrial revolution 4.0 in Indonesia, the government imposed several policies

Preparation of industrial human resources through vocational education leading to high skills (engineer)

Giving incentives to labor-intensive business actors in the provision of industrial infrastructure

Upgrading industrial human resources into high skill

Industrial Revolution 4.0