

Pemaparan Roadmap Implementasi Industry 4.0 dalam Konteks Pengembangan Teknologi Baterai di Indonesia



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2018



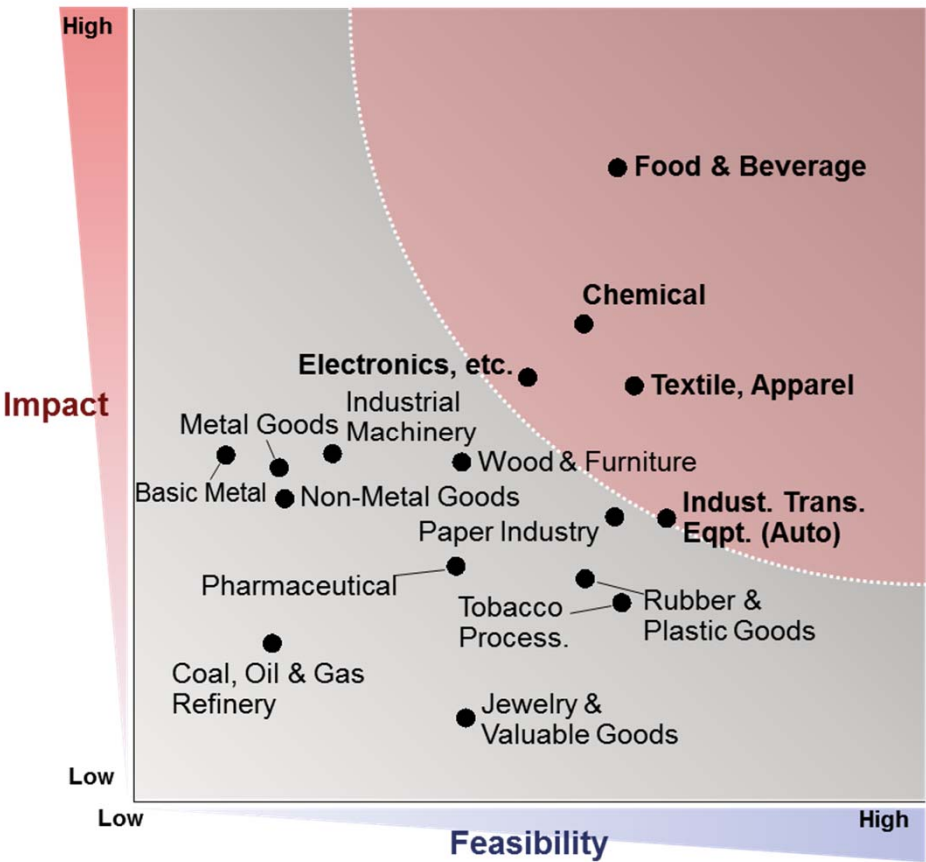
Bogor, 8 Oktober 2019



**Kementerian
Perindustrian**
REPUBLIK INDONESIA

Berdasarkan analisis prioritisasi, terdapat 5 sektor yang menjadi prioritas untuk implementasi Industri 4.0

Matriks Prioritas Sektor





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Industri Otomotif

Jalan menuju Indonesia *Automotive 4.0*



1. Internal Combustion Engine

Industri Elektronik

Jalan menuju Indonesia *Electronics 4.0*

Horizon 1 2021 3-5 tahun

Inisiatif utama

Secara agresif mengundang investasi asing sekaligus mendorong transfer keahlian dan investasi

Aktivitas utama

- Melibatkan pemain elektronik terkemuka untuk berinvestasi di Indonesia
- Akselerasi pengembangan keahlian *engineer* Indonesia

Produk fokus

Smart phone

Produk 4IR

EV



Komponen Smartphone (Layar, Charger)



IoT Manufacturing

Horizon 2 2025 5-10 tahun

Meningkatkan kapabilitas manufaktur skala besar di area fokus dan kapabilitas perangkat lunak

- Memfasilitasi program untuk mendorong produsen produk fokus (mis: komponen IoT, dll.)
- Memanfaatkan teknologi & investasi asing



Komponen Smartphone (Kamera)



Baterai untuk Kendaraan Listrik (*Electric Vehicles*)

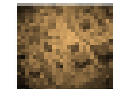
Di kawasan bersaing untuk produk-produk fokus kunci (tiga besar di ASEAN), mis: IoT, EV

Mengurangi rasio impor komponen elektronik sebesar 20%

Horizon 3 2030 10-15 tahun

Membangun kapabilitas manufaktur *advanced component* lokal murni

- Memperkuat para pemimpin manufaktur elektronik lokal



Manufakturing semi-konduktor (*Foundry*)



Baterai untuk penggunaan industri, rumah

Mengembangkan pemain nasional senilai 2-3 mega miliar di sektor ini

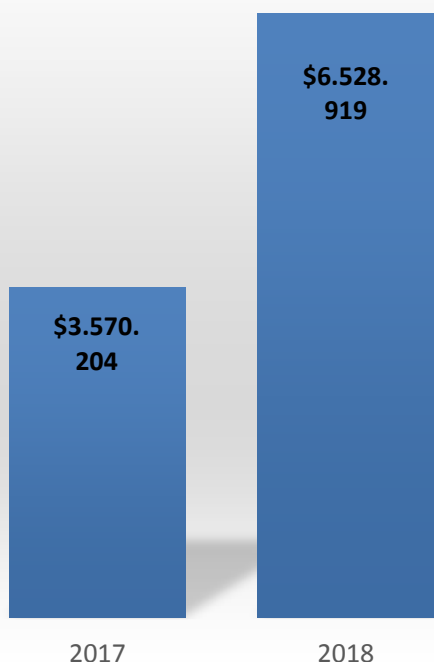


Pasar Baterai ion Litium

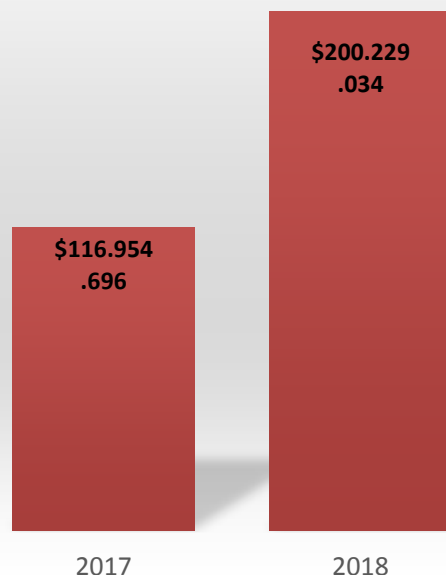


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impor baterai litium
untuk laptop



impor baterai litium
untuk elektronik lainnya

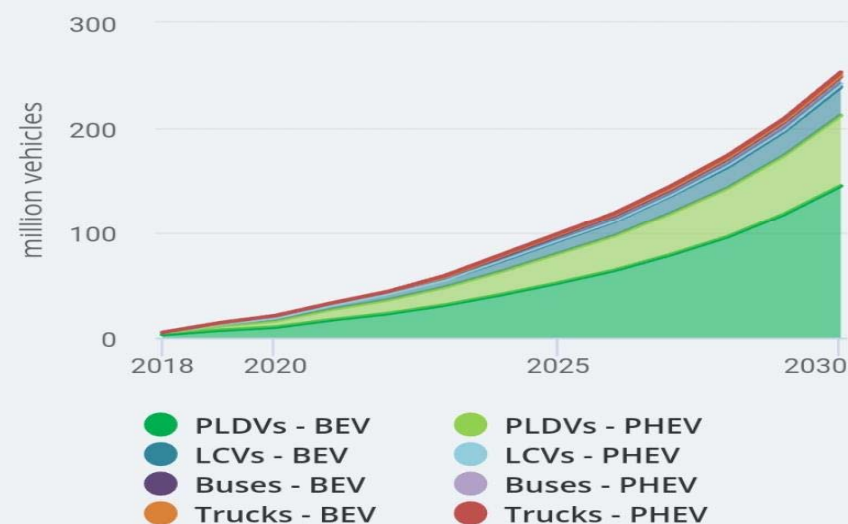


Total impor:
US\$ 120.737.585 (2017) and US\$ 207.092.100 (2018)

sumber : PUSDATIN, Ministry of Industry

Under the EV30@30 Scenario, EV sales reach 44 million vehicles per year by 2030.

Electric vehicle stock in the
EV30@30 scenario

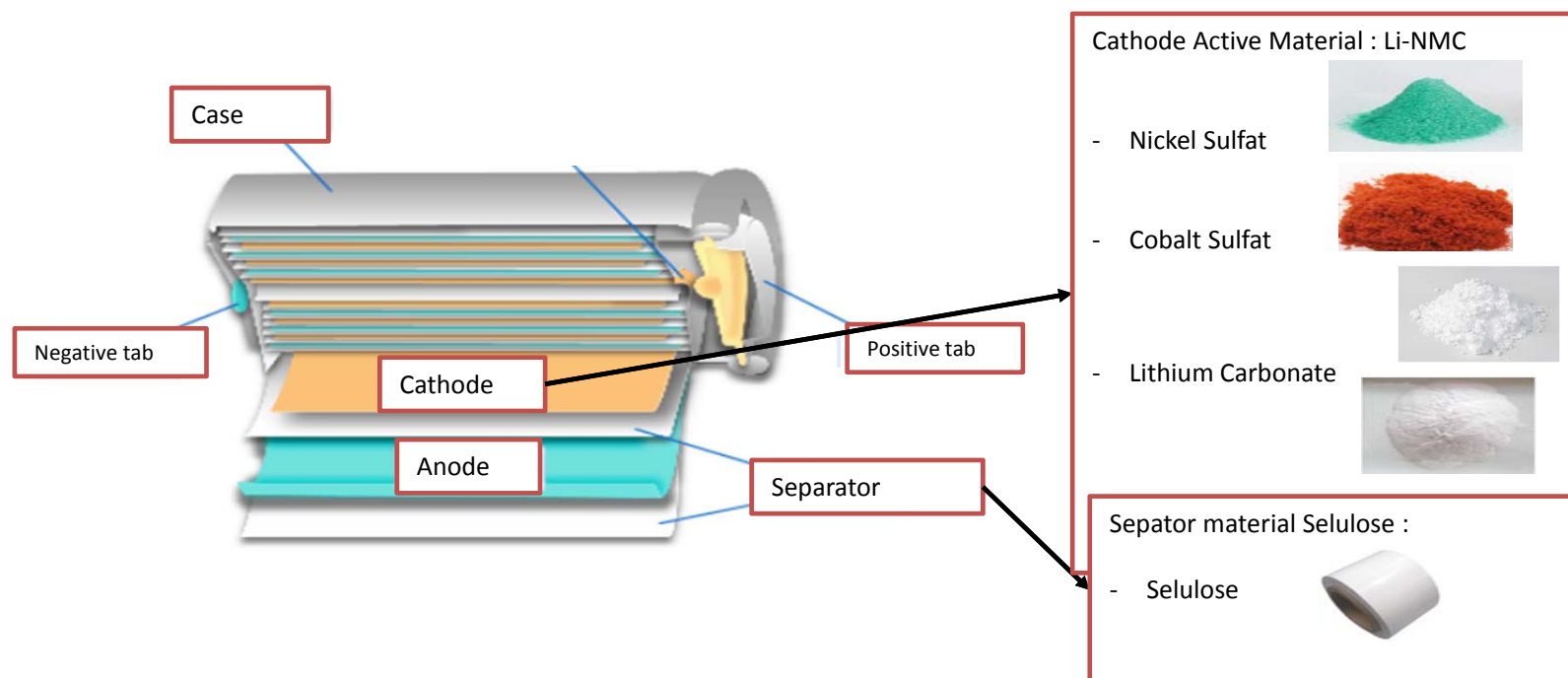


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Notes: PLDV: passenger light duty vehicle, LCV: light commercial vehicle, BEV: battery electric vehicle, PHEV: plug-in hybrid electric vehicle

<https://www.iea.org/gevo2019/>

Isu-Isu yang Terkait



- Semua komponen baterai litium masih impor
- Isu **safety** terkait keamanan baterai litium
- Isu **lingkungan** terkait limbah baterai litium
- Tugas B4T dalam mendukung industri 4.0 (layanan balai)

Indonesia memiliki **sumber nikel**
(dalam bentuk nikel laterit) **terbesar ketiga di dunia**



(<http://psdgi.geologi.esdm.go.id>)



Vw dggdug lvdv l# dwhud l# l# qgrqhvd



BSN Technical Committee

- There are 2 part of Technical Committees that relations with Batteries:
 - Technical Committee 31-01- Electronics for Household
 - Technical Committee 43-02 – Electric-Powered Highway Vehicles



Technical Committee 31-01

National Program Standard Formulation (PNPS)



PNPS 2017		PNPS 2018		PNPS 2019	
1.	IEC 62552-1: 2015	1.	IEC 61049 : 1991	1.	IEC 60086-1: 2015
2.	IEC 62552-3: 2015	2.	IEC 62368 : 1:2018	2.	IEC 60086-2: 2015
3.	ISO 10472-1:1997	3.	IEC 60745-1	3.	IEC 60335-2-24 : 2010, Amd.1:2013; Amd2 :2017
4.	ISO 10472-2:1997	4.	IEC 62133 -1	4.	IEC 60335-1 : 2010, Amd.1:2013; Amd2 :2016
5.	ISO 10472-3:1997	5.	IEC 62133 -2 : 2017	5.	IEC 62321:12013
6.	ISO 13253:2011	5.	IEC TS 62610-1:2009	6.	IEC 62321-8 : 2017
7.	ISO 15042:211	6.	RSNI Power Bank	7.	IEC 62607-4-1: 2015
8.	ISO 16358-1:2013			8.	IEC 62321-6 : 2015
9.	ISO 16358-3:2013				

- Bold texts are relation with battery / battery-powered devices:
 - RSNI Power Bank (E-Balloting)
 - IEC 60086-1:2015 & IEC 60086-2:2015 (Primary Batteries)



Technical Committee 43-02

Electric Vehicle



To accommodate participation of National stakeholder, TC 43-02 will create three working group as follows:

- System and Component of Electric Vehicle
- Safety Aspect of Electric Vehicle
- Charging system and infrastructure of Electric Vehicle



Existing Batteries Standards

International Standard Organization (ISO)



No.	ISO Number	Title
1.	ISO 18243:2017	Electrically propelled mopeds and motorcycles – Test specification and safety requirements for lithium ion battery system
2.	ISO 12405-1	Electrically propelled road vehicles — Test specification for lithium-ion traction battery packs and systems — Part 1: High-Power Applications
3.	ISO 12405-2	Electrically propelled road vehicles — Test specification for lithium-ion traction battery packs and systems — Part 2: High-Energy Applications
4.	ISO 12405-3	Electrically propelled road vehicles — Test specification for lithium-ion traction battery packs and systems — Part 3: Safety Performance requirements
5.	ISO 12405-4	Electrically propelled road vehicles --Test specification for lithium-ion traction battery packs and systems -- Part 4: Performance testing



Existing Batteries Standards

International Standard Organization (IEC)



No.	IEC Number	Title
1.	IEC 62660-1:2017	Secondary lithium-ion cells for the propulsion of electric road vehicles – Part 1 : Performance testing
2.	IEC 62660-2:2017	Secondary lithium-ion cells for the propulsion of electric road vehicles – Part 2 : Reliability and abuse testing
3.	IEC 62660-3:2016	Secondary lithium-ion cells for the propulsion of electric road vehicles – Part 3 : Safety requirements



Regulations

United Nations Regulations (UNR)



No.	Regulations	Title
1.	UNR 100	Uniform provisions concerning the approval of vehicles with regard to specific requirements for the electric power train
2.	UNR 100 Part II	Requirements of a Rechargeable Energy Storage Systems (REESS) with regard to its safety
3.	UNR 136	Uniform provisions concerning the approval of vehicles of category L with regard to specific requirements for the electric power train
4.	UNR 136 Part II	Requirements of a Rechargeable Electrical Energy Storage Systems (REESS) with regard to its safety



Existing Batteries Standards

Indonesian National Standard (SNI)



No	SNI Number	Adopted Standard
1	SNI ISO TR 8713:2017	ISO TR 8713:2012 Electrically propelled road vehicles — Vocabulary
2	SNI IEC 62660-1 :2017	IEC 62660-1 Secondary lithium-ion cells for the propulsion of electric road vehicles – Part 1: Performance testing
3	SNI IEC 62660-2:2017	IEC 62660-2 Secondary lithium-ion cells for the propulsion of electric road vehicles – Part 2: Reliability and abuse testing
4	SNI ISO/TR 13062:2018	ISO/TR 13062:2015 Electric mopeds and motorcycles - Terminology and classification
5	SNI ISO 13063:2018	ISO 13063:2012 Electrically propelled mopeds and motorcycles — Safety specifications
6	SNI ISO 13064-1 :2018	ISO 13064-1 Battery-electric mopeds and motorcycles — Performance — Part 1: Reference energy consumption and range
7	SNI ISO 13064-2 :2018	ISO 13064-2 Battery-electric mopeds and motorcycles — Performance — Part 2: Road operating characteristics



Existing Batteries Standards

Indonesian National Standard (SNI)



No	SNI Number	Title
8	SNI 0038:2009	Lead-Acid Batteries for Four Wheels Vehicle or More
9	SNI 4326:2013	Lead-Acid Batteries for Vehicle L Category
10	SNI 04-2051.1-2004	Primary Batteries – Part 1: General
11	SNI 04-2051.2-2004	Primary Batteries – Part 2: Physical and Electrical Specifications
12	SNI 04-6392-2000	Cell and Secondary Battery for Use of Individual Photovoltaic Power Generation Systems – General Requirements and Testing Methods



B4T Capability

Testing

Lead-acid Batteries, accredited for
SNI (JIS & IEC), SLS, PNS, EN, GSO 34
& GSO 35 Standard



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B4T Capability

Testing



Testing
Primary batteries





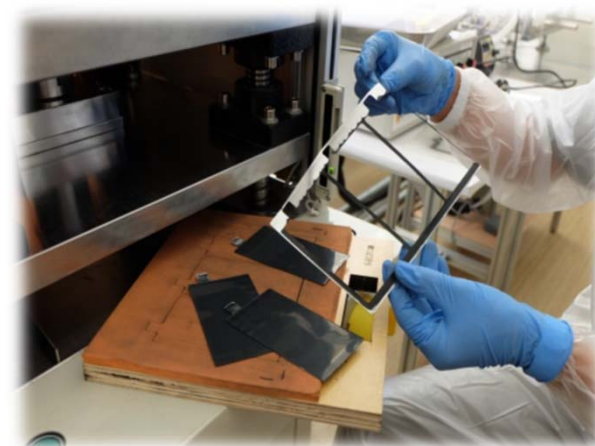
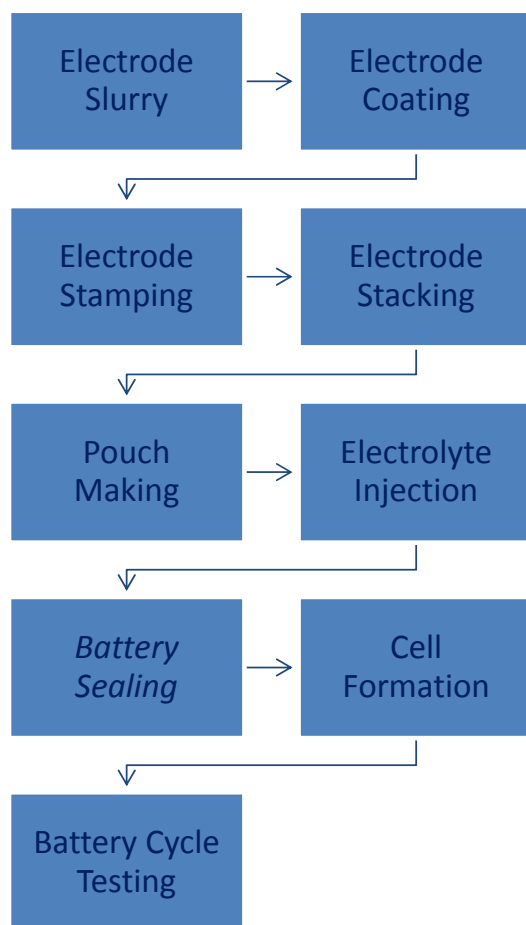
B4T Capability

Research



The BATTERY RESEARCH LABORATORY

produce lithium-ion battery cells Pouch type
Safety Research





B4T Battery Customers



PT. INDOBATT INDUSTRI PERMAI



Creador®



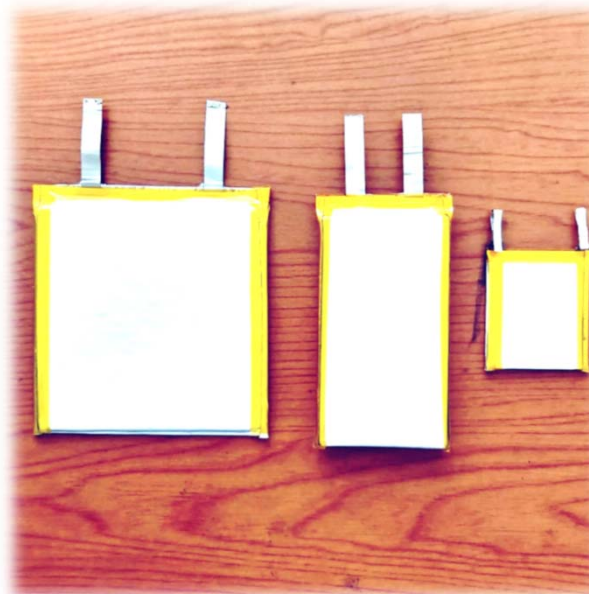


B4T Capability



Research

Research Products



Pouch Li-Ion
Battery Cells



Battery Pack

Electric
Motorcycle
Battery Pack



Power Storage
Power Bank and
Power House



B4T Future Plan



Years	PLANNING
2019	Development of electrical battery testing laboratory (from cell to portable device)
2020	Improvement testing ability (full safety parameter) from cell to portable device and get accreditation
2021	Development of motorcycle battery pack testing laboratory for safety parameter and get accreditation
2022	Development of passenger car battery pack testing laboratory for safety parameter
2023	Accreditation for electric vehicle battery testing laboratory for safety parameter
2024	Accreditation for electric vehicle battery testing laboratory for performance

TERIMA KASIH

