



## 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



“Investments in infrastructure – transport, irrigation, energy and information and communication technology – are crucial to achieving sustainable development and empowering communities in many countries.”

**-THE Impact Rankings**

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**1.02**  
Citation Impact

**RESEARCH IN NUMBERS (2016-2023)**



**417**  
publication



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# BUILD RESILIENT, INFRASTRUCTURE, PROMOTE SUSTAINABLE INDUSTRIALISATION, AND FOSTER INNOVATION

### 1

## Lithium Nickel Manganese Cobalt Oxide and Lithium Iron Phosphate as Cathode Materials for Li-Ion Batteries

The demand for Li-ion batteries and the growth of electric transportation in Indonesia are not matched by the readiness of the battery manufacturing industry, so Indonesia should utilize its nickel and iron resources for battery cathodes to reduce dependence on imports and prevent raw material exports that benefit foreign companies.

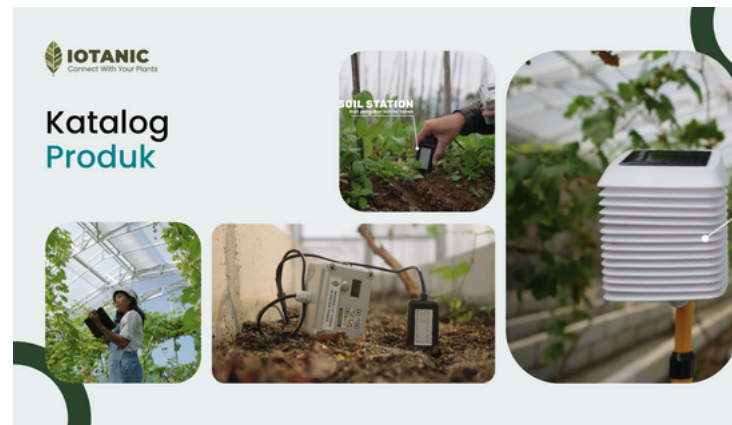
This problem can be addressed by utilizing cathode materials produced by PT Polimikro Berdikari Nusantara (PBN). PBN has developed production technology to process Indonesia's mineral resources into cathode materials, based on **research conducted under Universitas Sebelas Maret**, which **has been patented to protect intellectual property**.

Extensive testing has ensured the product's competitiveness with imports, while the production method uses organic additives for eco-friendly waste.

With the increasing demand, abundant natural resources, and mature technology, PBN has the opportunity to become the **first pioneer producer** of cathode materials in Indonesia.

### 2

## Universitas Sebelas Maret iHub Incubated Startup: IoTanic



IoTanic is a **technology company** that offers innovative Internet of Things (IoT) solutions for the agricultural sector, focusing on enhancing efficiency, productivity, and sustainability in farming practices. Its main products include hardware and software that monitor and manage critical aspects like soil quality, irrigation, and fertilization, with the vision of driving digital transformation in agriculture and supporting **more sustainable farming**. IoTanic makes contribution in the implementation of the SDGs by focusing on energy efficiency, sustainability, and the integration of technology to improve quality of life.



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**Number of University Spin-Offs**

**55**

**3** Sebelas Maret Startup Academy (SEMESTA) Bright



Sebelas Maret Startup Academy Bright is a program that fosters **the growth of pre-startups/startups** through a series of selection and incubation processes organized UNS Innovation Hub UNS. This program provides funding through a grant scheme for selected pre-startups and startups to participate in the **incubation process**, develop startups, and produce marketable prototype products (pre-startups) or establish independent, competitive startups. Pre-startups/startups selected for SEMESTA Bright incubation will receive **a series of business development training** to strengthen the quality of their companies.

<b>Number of</b>	
<b>employees</b>	<b>3,701</b>
<b>academic staff</b>	<b>1,856</b>
<b>academic staff by subject area: STEM</b>	<b>887</b>
<b>academic staff by subject area: Medicine</b>	<b>361</b>
<b>academic staff by subject area: Arts &amp; Humanities / Social sciences</b>	<b>608</b>

**Research income from industry and commerce: Total (IDR)**

**586,457,026,675**

**by subject area: STEM (IDR)**

**182,946,758,704**

**by subject area: Medicine (IDR)**

**83,272,602,144**

**by subject area: Arts & Humanities/Social sciences (IDR)**

**320,237,665,826**