

Public Policies to Transform **Research**  
Outcomes to **Industrial** Activities:  
**An Indonesian Case**

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# Background

- Indonesia has already established R and D institutions since its Independence in 1945.
- Research based universities.
- Some focused R and D institutions: BATAN (National Nuclear Energy Agency), LAPAN (National Institute of Aeronautics and Space), BPPT (The Agency for Technology Assessment and Application).
- LIPI (Indonesian Institute of Sciences) carries out various R and D activities, such as Social Sciences, Basic and Applied Sciences and many others.
- AIPI (The Indonesian Academy of Sciences), an institution to assemble senior scientists.

# Previous Significant Policies and Activities

- Basic Policy : **Significant Top Down Programs** to undertake selected Researches and transform the outcomes to industrial activities. These are carried out by R and D institutions in cooperation with appointed SOEs. Initial markets were provided by programs led by the Government.
- Although not so significant, incentives were provided for various research activities.
- Included among others: **The development of Indonesian Aeroplane N250, The first flight on 10 August 1995 is commemorated as Indonesia Technology Day.**
- Mainly due to the economic crisis in 1997, almost all top down programs were terminated.



## The First Flight of N250, by IPTN

10 August 1995

Commemorated as **Indonesia Technology Day**

**TAKE-OFF AND LANDING**



**N-250 GATOTKACA**

# Current Policies and Activities (1/2)

- All R and D programs should be part of the **ten sectors** selected by The National Research Council and the Ministry.
- The top down and incentive based R and D programs are carried out at the same time, receiving more or less similar amount of attention.
- **Technology Readiness Level (TRL)** is used as the basis to distinguish various R and D programmes. There are programs from Basic Research, Applied Research, up to Industrial Development Support.
- The setting up of **legal basis for R and D activities** in Indonesia, is done through the Constitution, Acts, Ministerial Decrees and others.

# Current policies and activities (2/2)

- The main programs, called the **National Research Agenda**, are formed by **The National Research Council**, taken into account Indonesia's Long Term Development **Plan 2005 - 2025**. Members of the Council are Government Officers, Businessmen/ Industrialists and Academicians.
- 8 sectors are selected : **Food and Agriculture**, **Energy**, **Transportation**, **Information and Communication Technology**, **Defense Technology**, **Health and Medicine**, **Advance Material**, **Social and Humanity**.
- During the implementation period, three sectors are added : **Maritime**, **Disaster Support Management** and **Arts** which is included in the **Social and Humanity** sector.

# Current Outcomes

- Although not as significant as it used to be, top down programs also show some significant outcomes. Among others is the development of N219 aeroplane. The first flight was launched on 16 August 2017.
- Incentives for various researches have seen the rise of R and D collaborations. Several Science and Industrial Consortiums, Teaching Industries, and Techno Parks among others have been established.
- The number of scientific papers written by Indonesian scientists has shown a high increase.

# The First Flight of N219

A Collaboration of LAPAN and PTDI

16 August 2017





# The Smart Card Case (1/2)

- One R and D program is the formation of the Indonesian Consortium for Smart Card on 9 August 2016. It consists of 4 universities and 5 industries. Each organization contributed their expertise.
- The activity is mainly to develop smart card system, only the semiconductor chip is produced abroad due to the lack of semiconductor foundry in Indonesia.
- During the Indonesia Technology Day on 10 August 2017 in Makasar city, the smart card system was exhibited.
- In addition, a standard for the smart card system was also introduced; the standard was designed such that the system can be used by all universities and each university can also add their own applications.

# The Smart Card case (2/2)

- Universities which carry out the researches are requested to use the smart card system developed by their own researchers on a trial basis, i.e. the users have to give feedback regarding the system. Hence the field trial platforms are the universities.
- The Ministry of Research, Technology and Higher Education will also introduce the Smart Card system to all higher education institutions. On a voluntary basis, those institutions can apply to be the place for the smart card system R and D.
- With around 4 million students, it is predicted that this trial is financially feasible, even for redeveloping the local foundry in the Universities and R and D institutions.

9 August 2016

**Smart Card Consortium**

was established

**by 4 Universities and 5 Industries**



# Mobile Reader, Smart Cards for University ID, Standard Development by Industries and Universities

Exhibition on Indonesia Technology Day, Makassar City, 10 August 2017



# Conclusions

- Research activities, both top down and incentive approaches, are selected using TRL as the tool. This selection system is legalized by the Ministry and hence can be viewed as a more accountable system.
- R and D collaborations are encouraged to be carried out by Research and Industrial Institutions. Each contributes their expertise.
- Both technical publications in journals/conferences and research products are required to be delivered.

Thank you.  
Inputs please.

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