



**IPB University**  
— Bogor Indonesia —

### **Integration of SDGs in**

- Institutional governance/strategic level
- SDGs in research**
- SDGs in campus operations
- SDGs in curriculum development
- SDGs in student engagement activities
- SDGs into community activities
- SDGs at a whole-institution level

### **Focus on**

- Goal 1 - No poverty
- Goal 2 - Zero hunger
- Goal 3 - Good health and wellbeing**
- Goal 4 - Quality education
- Goal 5 - Gender equality
- Goal 6 - Clean water and sanitation
- Goal 7 - Affordable and clean energy
- Goal 8 - Decent work and economic growth
- Goal 9 - Industry, innovation and infrastructure**
- Goal 10 - Reduced inequalities
- Goal 11 - Sustainable cities and communities
- Goal 12 - Responsible consumption and production
- Goal 13 - Climate action
- Goal 14 - Life below water
- Goal 15 - Life on land
- Goal 16 - Peace, justice and strong institutions
- Goal 17 - Partnerships for the goals

## **Covid-19 Innovations**

### **Summary**

IPB University is committed to handling Covid-19 through various continuous innovations, such as the [ELISA-based Covid-19 antibody kit](#) and the [Invenpro® RT PCR enzyme](#) as a fast method of disease diagnosis and [Oxygen Concentrator Technology \(OxIL\)](#) as an oxygen crisis solution for the treatment of Covid-19 patients. These innovations have been introduced to the public and are expected to solve national problems tackling Covid-19.

The development of an ELISA-based Covid-19 antibody kit, along with the innovation of less expensive materials, was created to assess the absolute success of vaccination in providing better antibody protection. The other health innovation from our university is the development of the Invenpro® Reverse Transcriptase (RT) enzyme for molecular purposes, which is relatively cheaper with exquisite sensitivity compared to premium quality commercial products in various virus detection tests. Invenpro® enzyme products are produced from synthetic gene materials with modifications of several amino acids and are made using the Escherichia coli expression system.

Together with the Instrumentation Development Center, and the National Research and Innovation Agency (BPI-BRIN), IPB University was also succeeded in creating OxIL, an oxygen concentrator product with a local product molecular sieve to replace imported products as a solution to the oxygen shortage crisis that occurred during the COVID-19 pandemic. OxIL is an oxygen concentrator with a maximum capacity of 10 liters per minute using the pressure swing adsorption (PSA) method, which effectively separates gases in the air so that oxygen purity can reach more than 90 percent. OxIL uses local zeolite materials for cheaper production costs than imported products. This innovation is not only part of the solution to handling COVID-19 in Indonesia but also contributes to agriculture and health in the future. The effectivity of high oxygen concentration produced from OxIL in accelerating seed preparation and horticultural washing products has also been proven.

### **Benefits of integrating this theme:**

1. Covid-19 innovations contribute to solving national problems in tackling the ongoing pandemic.
2. Support national independence in handling COVID-19 by using local ingredients
3. High effectiveness and sensitivity of the product enhance the reliability of the local products and create competitiveness
4. Production costs are relatively cheaper than commercial/imported products

### **Barriers or challenges:**

1. The use of these innovations is still limited and needs to be expanded to create more benefits for society. It can be done by expanding cooperation with various stakeholders.
2. Low support from government institutions to develop local-based products.
3. Availability of local raw materials needs to be guaranteed to maintain sustainability.

**Conclusions and recommendations– max 200 words**

IPB University created innovations for sustainable Covid-19 handling, such as the ELISA-based Covid-19 antibody kit and the Invenpro® RT PCR enzyme as a fast method of disease diagnosis and Oxygen Concentrator Technology (OxIL) as an oxygen crisis solution for the treatment of Covid-19 patients. These innovations have outstanding effectiveness and sensitivity compared to commercial products and are made locally so that production costs are relatively cheaper than imported products. The creation of this product supports the nation in independently solving the problem of handling the Covid-19 crisis, which is becoming a pandemic in Indonesia.



Fig 1. IPB University's innovation products for handling Covid-19 in a downward sequence, namely: ELISA kit, OxIL, and Invenpro® RT PCR enzymes.



Fig 2. IPB University researchers demonstrate the use of OxIL, an Oxygen Concentrator, on the Dramaga Campus of IPB