



Concept Note

Smart Agriculture and Its Connection to the Digital World

Indonesia faces major environmental challenges that's consequences made the Indonesian government refocus on green transition as its primary goal for this and future mandates that is and will be heavily supported by international community mainly through the Just Energy Transition Partnership that mobilizes up to 20 billion USD to help decarbonize Indonesia's energy industry. However, green transition is supposed to materialize in all relevant areas ranging from sustainable energy, circular economy, environment protection to sustainable cities and infrastructure none of which can exist without **sustainable food system** that has been facing challenges in and outside of Indonesia for a long time. Indonesia's food systems, despite the false general perception of Indonesia as mainly agricultural country, are highly dependent on food imports and the existing agricultural ecosystems suffer from lack of technical equipment, they do not benefit from environmentally friendly agricultural methods while keeping the traditional, however unsustainable processes in place, and most of all with its current state of development they cannot easily adapt to the indisputably significant impact of climate change. **Smart Agriculture 4.0 is inevitably the next development phase in agricultural systems** that will involve the use of Big Data, Internet of Things, precision farming, high-tech agricultural machinery and robotics.

Context

- **Indonesia will rise to the world's top five largest economies by 2040**, however it continues to fight its dependence on food imports and underdevelopment of agricultural sector.
- **Agriculture thus far only constitutes up to 13 % of Indonesia's GDP** that's prospect is a rather decreasing trend if the current approach stays in place, reasons for that being - the rapid urbanization (**by 2050 two thirds of Indonesia's population will be living in urban areas**), traditional however inefficient cropping patterns and agricultural methods, lack of modern technical equipment.
- The future economic growth of Indonesia will derive from the successful green transition that should materialize also in the agricultural sector thus making the country food-secure (**currently Indonesia ranks 69 out of 113 countries on the Global Food Security Index**) and self-sufficient, given that the resources are in place but are not correctly used.
- The Indonesia's agricultural sector is structurally dominated by plantation industry with prominence of palm oil cultivation that makes Indonesia the first world's supplier of palm oil. However, in the context of greater emphasis on sustainability worldwide while now especially promoted through the EU legislation known as Green Deal, Indonesia's agricultural industry finds itself under pressure for adaptation and efficiency if it wants to stand up to the new requirements and retain the access to global markets.
- **Czechia and Indonesia enjoy active bilateral relations also in the area of environment and forestry.** Mutual official visits including the ministerial visit of Czech leader of environment and forestry bureau in 2021 to Indonesia or Deputy Minister of Environment and Forestry A. Dohong's visit in Czechia in 2023 have proved interest of both sides to collaborate in areas of *biodiversity protection, wastewater and waste treatment methods, and climate change*



adaptation policies and technologies. The Czech and Indonesian ministries of environment and forestry sealed *Letter of Intent on Environmental Protection and Sustainable Development Cooperation* that is now being promoted to the Memorandum of Understanding while defining three working groups in the above-mentioned areas.

- Strong Czech-Indonesian relations with respect to the area of agriculture are reflected also in academic and research field where the Czech University of Life Sciences (CZU) enjoys collaboration with multiple Indonesian counterparts i.e. IPB, ITDEL, HUN, UNSRAT, UNIMED, UTAD and others working together on joint research projects, promoting student and scholar mobility for the last 15 years. CZU's activities are complemented with initiatives promoted by the Czech University of Ostrava, and University of Liberec with focus on sustainability of ecosystems and promotion of innovative materials' use.

Seminar

The objective of the seminar is to raise-awareness about the latest technologies applied in the agricultural sector and their contribution to the achievement of Sustainable Development Goals as set by the UN Agenda 2030. The seminar aims at enhancing the Czech-Indonesian dialogue and cooperation on sustainability while taking into account the importance of *business-science nexus* for the benefit of sustainable agriculture development. This seminar is intended as a direct presentation of one Czech and one Indonesian expert with consecutive discussion with the informed audience, taking place at the premises of the Embassy of the Czech Republic in Jakarta. It is financially backed up with the instrument *Project UN Agenda 2030* provided by the Ministry of Foreign Affairs of the Czech Republic through the Embassy of the Czech Republic in Jakarta, and it is co-organized in joint cooperation with the Willi Toisuta&Associates

Speaker

Prof. Ing. David Herák, Ph.D. (1978) – is currently a Vice-Dean for International Relations and a professor at the Department of Mechanical Engineering, Faculty of Engineering, Czech University of Life Sciences Prague. He specializes in applying agricultural technologies in tropical countries and energy efficiency for processing agricultural products. His research work is strongly linked with the modelling and simulation of the behaviour of agricultural products and their transformation into virtual reality in the form known as digital twins. For the last 20 years, he has been involved in several scientific projects focused on processing agricultural products worldwide (Ethiopia, Indonesia, Malaysia, Cambodia, Myanmar, Turkey, and Ukraine). He is a summer school coordinator in Indonesia, the Philippines, and Turkey. He has also served as a guest professor at several foreign universities. Professor Herák is the author of 185 publications in scientific databases (71 in Web of Science, H-index 12, and 114 in Scopus, H-index 17), the author of several patents, a member of the European Physical Society, a member of the Czech Academy of Agricultural Sciences, an editor, and a member of the editorial board of several high-level scientific journals such are Biosystems Engineering, Processes, Energies, Research in Agricultural Engineering and others. Professor Herák also works as an external evaluator of the National Accreditation Body of the Czech Republic and the Council of the Czech Government for Science and Research.



Expected Results are

- Networking and partnerships are promoted with stronger involvement of private sector in this area
- Follow-up to other activities in green agenda carried out by the Embassy of the Czech Republic in Jakarta such as the International Conference on Environment Protection 2022, development cooperation small-scale projects in joint cooperation with local Indonesian NGOs e.g. Kukang Rescue Coffee (protection of slow loris), CRU Tangkahan (protection of Sumatran elephant), as well as B2B projects by the Czech Development Agency, e.g. rainwater treatment solutions for human consumption, ad hoc projects financed by departments of environment or agriculture with focus on sustainable landscaping or environmental engineering etc.
- Contribution to the EU agenda on environmental topics in Indonesia
- Contribution to the SDGs – SDG 8 (decent work and economic growth), 12 (sustainable production and consumption), 13, 14, 15 (climate action, life below water and on land)

Venue

Exhibition Room of the Embassy of the Czech Republic in Jakarta

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