

Expanding the boundary of chemical engineering to the primary industry: Sustainable development in Tohoku

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Submission Category:

(A) Technical research proposal to solve concrete problems.

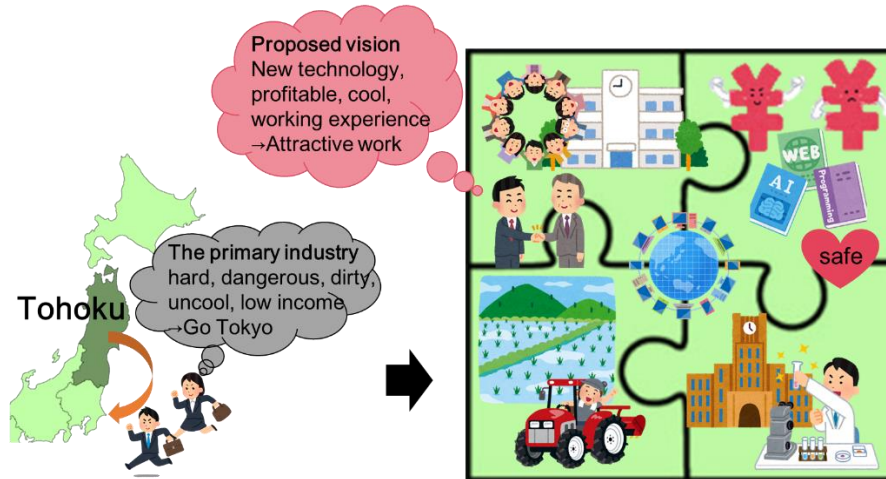
SDGs Targets/Indicators:

8: Decent Work and Economic Growth, 9: Industry, Innovation and Infrastructure, 11: Sustainable Cities and Communities

Abstract

Responding to the Sustainable Development Goals (SDGs), efforts to building a sustainable society have also been put in Japan. However, in our preliminary investigation, there are still some difficulties in Tohoku, a region rich in natural resources but small population, in Japan. Nowadays, the outflow of the population to the Tokyo metropolitan area is increasing, which causes the declining birthrates and aging populations especially in Tohoku. It leads to difficulties to maintain and build infrastructures, attract investments, and to keep the primary industry due to the lack of successors. Finally, it results in unsustainable development in Tohoku. Based on it, we hypothesized that reasons for the low attractiveness of the primary industry are the lack of job experiencing opportunities and the attractiveness itself. In addition to it, we discussed an innovated technology about integrating agronomy and chemical engineering. This one of the examples was to integrate the new sugar and ethanol coproduction system from sugarcane by which both productions were enhanced. With such innovations of the primary industry, the population, and the economy can also be improved as a result. We outlined a proposal to improve the development of the primary industry in Tohoku or even the world by building an Internet-based platform connecting

stakeholders, researchers, teachers, and students. By accessing to it, in terms of agriculture, researchers can get test lands and useful data for demonstrations and then feed the data to the platform back, thereby improving the content of technology in agriculture, making it more attractive.



Graphical abstract. The outflow of young generations and our proposed vision by the internet-based platform and chemical engineering