Development of Next-generation CO_2 -fixing Plant Through the Gene Optimization, Distant Hybrid, and Microbial Symbiosis

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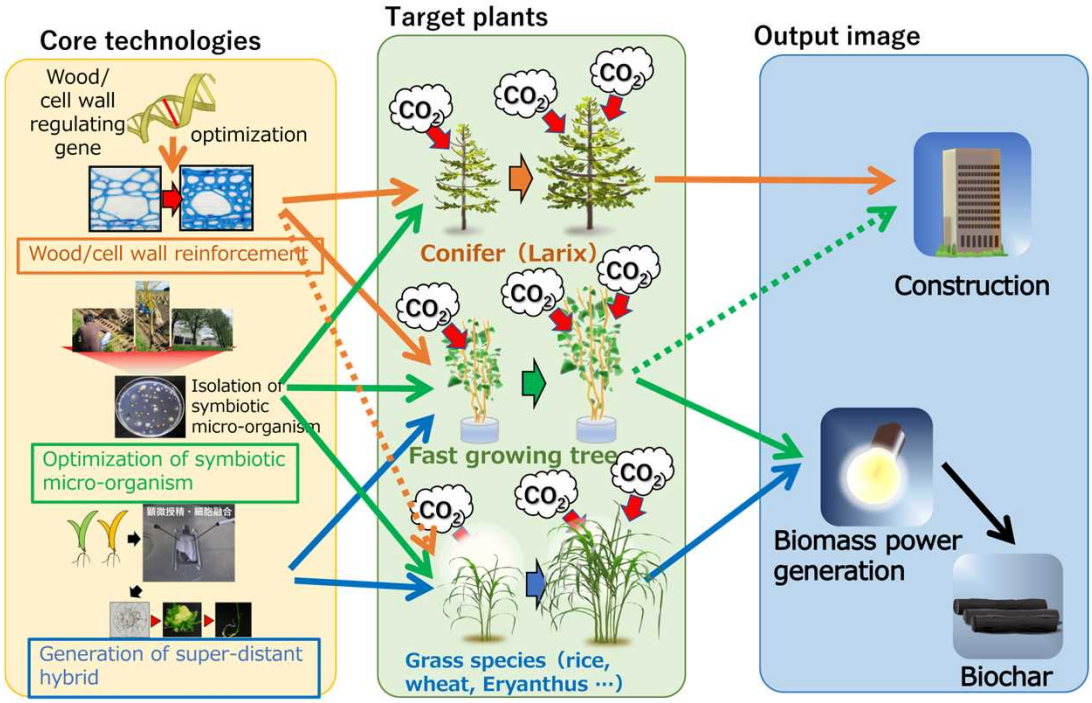
Summary

To accelerate zero/negative emission, we will develop a new CO_2-absorbing ecosystem including trees, grasses, and symbiotic micro-organisms. Specifically,
1. to create coniferous and fast-growing trees that have excellent CO_2 fixation capacity and provide high-density, high-strength wood, and to develop a technology to give them an ability to grow in a wider range of areas,
2. to develop technologies to create new crops that fix more carbon in culms and leaf nodes while maintaining the basic properties as crops, and new herbaceous high-biomass plants adapted to the temperate zone.

These will be achieved through a combination of gene optimization by genome editing, creation of super-distant hybrids, and optimization of microbial symbiosis.



KPI

FY2024

Establish a technology to improve the production efficiency of biomass (cell wall volume) by 50% or more in any of the herbaceous plants and trees subject to this R&D by combining at least two or more of "gene optimization," "hyper distantly related hybrids," and "microbial symbiosis.

Implementation

National Institute of Advanced Industrial Science and Technology (AIST), Tokyo Metropolitan University, Sumitomo Forestry Co., Ltd.