



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

SDG Accord 2023 Case Study

Summary:

In 2018, Craik, Saskatchewan-based Titan Carbon Smart Technologies (Titan) came to Saskatchewan Polytechnic's Innovative Manufacturing Centre (IMC) for help developing a biocarbon masterbatch that could replace traditional carbon black. Carbon black is formed by the incomplete combustion or thermal decomposition of hydrocarbon fuel or natural gas. It's used in everything from tires to paint and plastic, and because it's fossil fuel-based the production of carbon black has some of the highest carbon emissions of any chemical.

Titan was already producing biocarbon from waste biomass such as construction wood waste, sawdust, and agricultural residues for four carbon products used in animal feed, odour elimination, fertilizer and health and beauty care. Titan saw the opportunity that a biocarbon could replace carbon black because of its similar properties.

The company engaged with Dr. Satya Panigrahi, Saskatchewan Polytechnic research chair, IMC. The project sought and was granted NSERC and ReMAP funding to explore how a carbon black alternative could be produced with biocarbon from waste such as plastics and straw. The project will end in 2022, and so far, the results have been good. Titan will be able to produce a biocarbon product that can compete in the carbon black market.

Outline the 3 key benefits of integrating this theme:

- 1.*** Reduced reliance on carbon black, which has some of the highest carbon emissions of any chemical.
- 2.*** Increased utilization of waste biomass, which reduced reliance on new materials.
- 3.*** Strengthening local supply chains by enhancing a local company's ability to meet local demand with locally-sourced inputs.

Outline the barriers or challenges encountered in integrating this theme and how you overcame these:

- 1.*** Research projects of this scale and scope take time. Providing access to stable applied research infrastructure over a four-year period supported the project stakeholders in achieving desired results.
- 2.*** Funding projects of this scale and scope can be a challenge. Engaging funding partners is an important aspect of project development. External grant funding was secured from the Natural Science and Engineering Research Council of Canada and from the Refined Manufacturing Acceleration Process Centre of Excellence.

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Please outline your conclusions and recommendations to others (Max 200 words):

Carbon from waste biomass is a realistic and realisable alternative to traditional fossil fuel-derived sources. Using waste biomass as a source of carbon can significantly reduce carbon emissions, and reliance on new materials. The product uses only waste materials and generates enormous carbon sequestration benefits.

A patent for the product is coming, and the future is bright for an idea developed between industry and Saskatchewan Polytechnic. The depth of Dr. Panigrahi's knowledge and the substantial materials engineering resources at Saskatchewan Polytechnic has allowed Titan to enter an extremely important market for our biocarbon. The biocarbon product should see commercialization for moulding and grain containers first, and then onto other applications.

Through this project, Saskatchewan Polytechnic provided research capacity that supported a local industry to innovatively contribute to UN SDGs 12 and 13.

For more information on this project visit [Saskatchewanpolytech.ca/research](https://saskatchewanpolytech.ca/research).