Abstract:

Session III - Development Trends of Technological Solutions for Low-Carbon Food Supply Chain

The transition toward low-carbon food supply chains has accelerated as global pressures and customer expectations to mitigate climate change and improve resource efficiency continue to rise. Customers—especially global companies—now enforce strict standards and demand low-carbon ingredients, materials, and products across their supply networks.

Recent technological developments show a shift from isolated, efficiency-driven tools to integrated, ecosystem-oriented solutions that optimize emissions across the entire supply chain, not only within producers' operations. Scope 3 emissions therefore play a critical role in reducing overall supply-chain carbon footprints.

Digital technologies—such as Internet of Things (IoT) devices, Modenrn Farming and sensing systems that enhance traceability and productivity—are central to enabling real-time carbon monitoring, predictive management of planting and harvesting, improved logistics, and transparent reporting.

Advancements in renewable-energy systems, precision agriculture, and low-emission transportation further contribute to lowering carbon intensity from farm to consumer.

As regulatory frameworks and consumer expectations increasingly require verifiable environmental performance, technological solutions are evolving toward end-to-end decarbonization architectures that support resilient, efficient, and sustainable food systems.

This presentation highlights Mitr Phol's strategic direction in addressing greenhouse gas (GHG) emissions, with a particular focus on Scope 3 emissions from farm operations—currently the

major and most challenging emission source to manage and control. Modern Farming Practices, aimed at improving productivity and efficiency, play a key role in significantly reducing carbon emissions across the food supply chain.