Issue 16-1
July 15, 2024

NEWSLETTER

Smart & Net-Zero Project

Overview

The Smart Net-Zero (SNZ) project team under the Food and Fertilizer Technology Center (FFTC) for the Asian and Pacific Region regularly collects and shares information related to sustainable agri-food system and climate smart agriculture, including research, news, policy, data and event updates around the world on the project website (link to website).

Consumers in metropolitan cities are relying more and more on fresh produce and frozen food products that have been transported over long distances. On one hand, sustaining such consumption pattern will require decarbonizing the cold chain or post-agricultural value chain. On the other hand, while globalization of food and agricultural trade has led to significant global land cover changes, there have been numerous research advising to meet local consumption needs with local produces (shortened supply chain). The highlight of this issue is on **routes of lowering the GHG emissions of global cold chain or supply chain,** including technical innovations in food processing, refrigeration, cold chain temperature management, cold chain database and modelling initiative, as well as policy recommendations on global consumption and supply of food.

Content

RESEARCH

01 THEME: GHG emission reduction

Promoting resilient and sustainable food systems: A systematic literature review on short food supply chains

January 5, 2024 | Journal of Cleaner Production | Source |

Introduction: Researchers from China, UK, Czech Republic, and Pakistan conducts a literature review on Short Food Supply Chain (SFSC) model, which connects local food producers directly with consumers to promote sustainability, economic development, and community engagement. A total of 92 research articles were reviewed understand factors influencing SFSCs, such as rising consumer demand for local and sustainable products, resilience in the food system, and environmental concerns.

Key findings: The SFSC model includes stages like food sourcing, processing, aggregation, and distribution. Key sustainable practices at each stage help reduce environmental impacts and support small-scale farmers. However, challenges such as information gaps, inadequate infrastructure, regulatory hurdles, and market dynamics limit SFSC potential.

Economically, SFSCs boost local economies and empower small producers, while environmentally, they reduce carbon footprints. Socially, they enhance community ties and promote responsible consumption. Future research should explore consumer behavior, sustainability impacts, technological innovations like blockchain, and policy interventions. Extending studies to different regions and improving data collection methods will provide deeper insights into SFSCs.

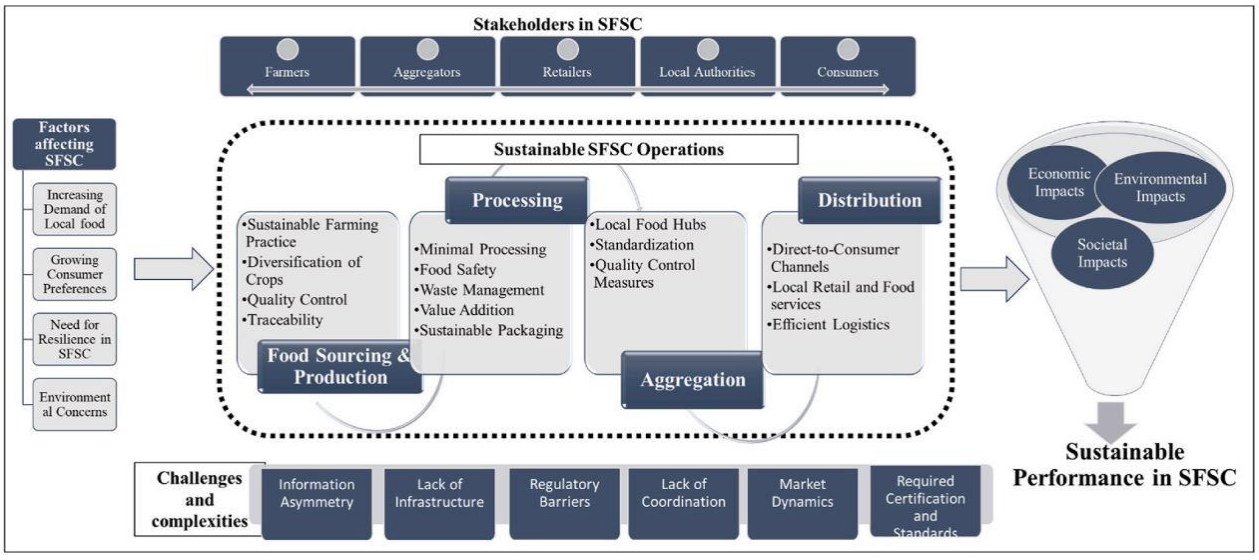


Figure | Integrated model of sustainable SFSC.

02 THEME: GHG emission reduction

Nonthermal technologies to maintain food quality and carbon footprint minimization in food processing: A review

November 1, 2023 | Trends in Food Science & Technology | Source |

Introduction: Researchers from National Chung Hsing University and National Kaohsiung University of Science and Technology in Taiwan conduct a literature review on nonthermal food processing technologies like high-pressure processing (HPP), pulsed electric fields (PEF), cold plasma (CP), and low-energy electron beams (LEEB), examining the effects on extending shelf life, reducing energy use, and maintaining food quality.

Key findings: Nonthermal technologies use less energy compared to thermal methods, thereby lowering overall carbon footprint. For instance, PEF has shown significant energy savings in drying processes and extends the shelf life of products, reducing food waste and associated emissions. Despite challenges such as initial costs and energy source variability affecting carbon footprint, these technologies offer viable solutions. Furthermore, integrating renewable energy sources can further enhance their environmental benefits. As global food demand rises, adopting nonthermal technologies not only supports sustainable food production but also aligns with international efforts to combat climate change and promote eco-friendly practices in the food industry.

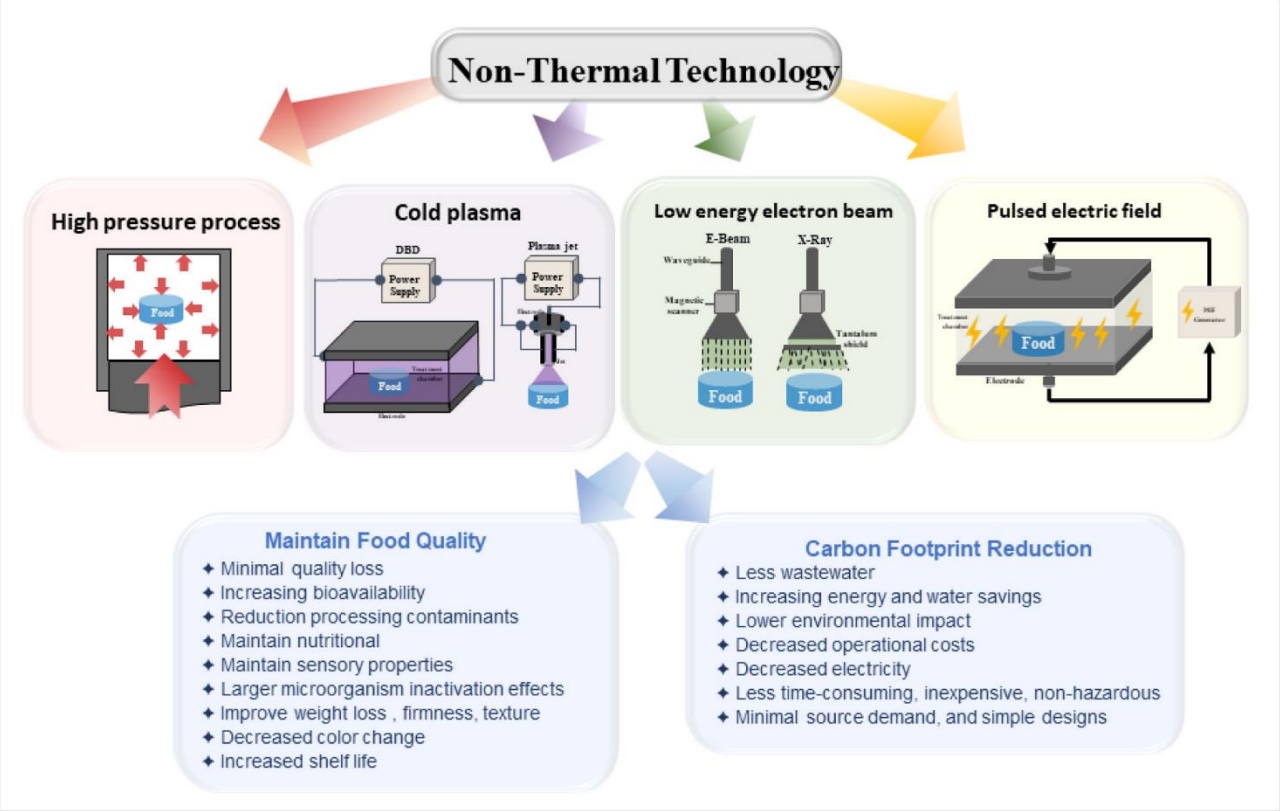


Figure | Schematic diagram of non-thermal emerging technology related to carbon footprint.

03 THEME: GHG emission reduction

Mitigating environmental burden of the refrigerated transportation sector: Carbon footprint comparisons of commonly used refrigeration systems and alternative cold storage systems

October 20, 2022 | Journal of Cleaner Production | Source |

Introduction: The cold chain in modern food systems helps reduce food waste but increases energy use, contributing to GHG emissions. Refrigeration accounts for 1% of global GHG emissions and 15% of electricity use. To address this, phase-change material-based cold storage systems (PCCSS) offers a lower-emission alternative to traditional systems. Researchers from University of Padova in Italy and from Guangzhou University in China evaluate the carbon footprint of traditional vapor-compression refrigeration systems (VCRS) versus phase-change material-based cold storage systems (PCCSS).

Key findings: Results show PCCSS can reduce carbon emissions by 22% to 56% compared to VCRS, especially in warmer climates. The use stage is the primary source of emissions for both systems, contributing 84%-91% for VCRS and about 68% for PCCSS. PCCSS's advantage is greater in regions with lower-emission electric grids. However, PCCSS's production and recycling stages have higher carbon footprints than VCRS. The study also highlights the importance of improving engine efficiency, utilizing cleaner electricity, and opting for low-GWP refrigerants to further reduce emissions.

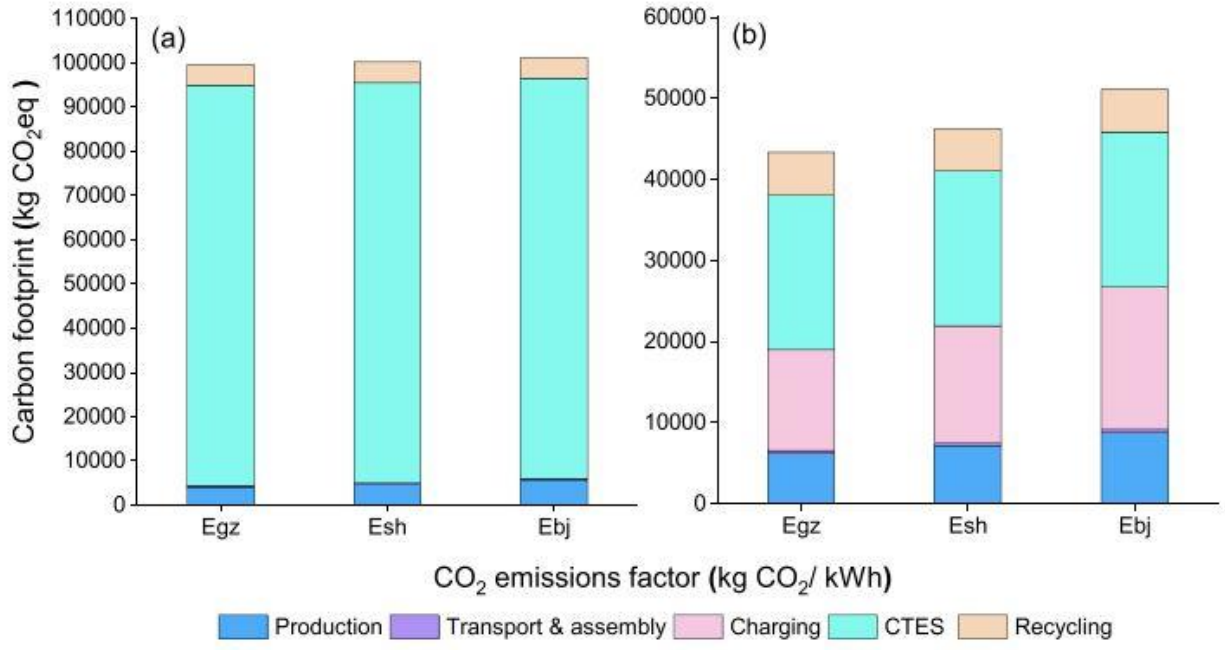


Figure | The life cycle carbon footprint of both VCRS and PCCSS at three CO_2 emissions factors (a, VCSS; and b, PCCSS). CTES: Cold thermal energy storage. Egz: Carbon footprint in Guangzhou. Esh: Carbon footprint in Shanghai. Ebi: Carbon footprint in Beijing.

04 THEME: Carbon sequestration; GHG emission reduction; ICT in agrifood sustainability; Others

Carbon mitigation in agriculture: Pioneering technologies for a sustainable food system

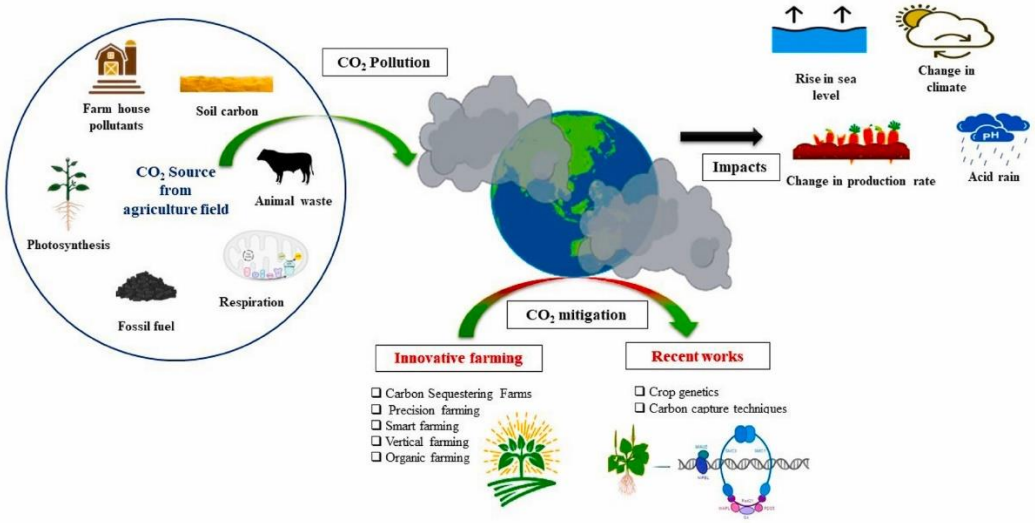
May 1, 2024 | Trends in Food Science & Technology | Source |

Introduction: Agriculture significantly contributes to greenhouse gas emissions, affecting climate change and global food security. Researchers from Saveetha School of Engineering in India explore how techniques like precision farming, vertical farming, organic farming, and carbon-sequestering farms show promise in lowering emissions and mitigating climate change.

Key findings: Carbon-sequestering farms focus on enhancing soil carbon through practices like crop rotation and cover crops, which can improve soil health and reduce greenhouse gas emissions.

- Precision farming uses advanced technologies such as GPS, sensors, and AI to optimize resource use, reduce waste, and increase efficiency. This method allows for precise application of water, fertilizers, and pesticides, minimizing environmental impact.
- Vertical farming involves growing crops in vertically stacked layers in controlled environments, reducing land use and water consumption. This method can also reduce transportation emissions by bringing food production closer to urban areas.
- Organic farming emphasizes natural fertilizers and traditional practices to improve soil health and biodiversity, potentially increasing resilience to climate change.
- Recent advances in crop genetics aim to develop climate-resilient crops that can withstand extreme weather conditions, drought, and soil salinity. Additionally, carbon capture and utilization (CCU) in agriculture involve integrating methods to capture CO_2 and use it in agricultural processes, further reducing emissions.

Graphical Abstract.



05 THEME: MRV (measurement, reporting, verification)

California dominates U.S. emissions of the pesticide and potent greenhouse gas sulfuryl fluoride

February 28, 2024 | Communications Earth & Environment | Source |

Introduction: Despite its global warming impact, sulfuryl fluoride (SO_2F_2) is not currently regulated under major international climate agreements, complicating efforts to manage its emissions effectively. Research team led by Johns Hopkins University in the United States analyzes SO_2F_2 emissions across the country.

Key findings: Sulfuryl fluoride (SO_2F_2) is a synthetic pesticide used primarily for structural fumigation in warm regions like California, where drywood termites pose a significant threat. These emissions, though relatively small compared to other gases, have a potent greenhouse effect. Despite California's progressive climate policies, SO_2F_2 has not been included in emissions reduction targets until recently, raising concerns about its impact on global warming. Efforts to better monitor and regulate SO_2F_2 emissions could help mitigate its environmental and health risks, especially considering its long atmospheric lifetime and potential adverse effects on both climate and local air quality.

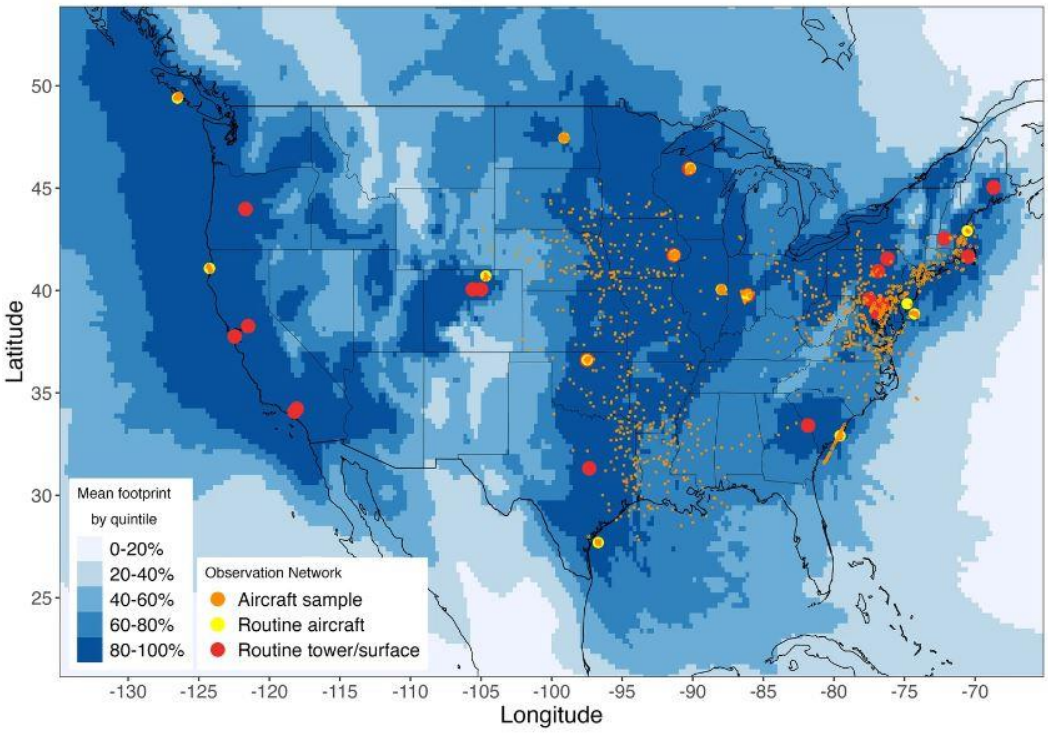


Figure | Map of the mean footprint (sensitivity) of NOAA GGGRN observations to SO_2F_2 emissions. The mean footprint in each grid box is colored by quintile in shades of blue (2015-2019, Nobs = 15,385). Quintiles are defined relative to the maximum of the daily mean footprint. Red markers show GGGRN tower/surface sites, yellow markers represent locations of regular NOAA/GML vertical profiling aircraft sites, and small orange markersindicate locations of individual samples collected during intensive aircraft campaigns.

06 THEME: GHG emission reduction; MRV (measurement, reporting, verification);Policy incentives, financing, pricing

An overview of the interactions between food production and climate change

September 10, 2022 | Science of The Total Environment | Source |

Introduction: A global research consortium from UK, Portugal, Sri Lanka, South Africa, Nigeria, Japan, Uruguary, Serbia explores how food production and climate change are intricately linked throughout the entire food supply chain.

Key findings: The global research consortium points out how activities along food supply chain like agriculture, livestock farming, food processing, transportation, and waste disposal contribute to greenhouse gas emissions and environmental impact. Climate change, in turn, disrupts these processes through factors like extreme weather and economic shifts, affecting global food security, especially in vulnerable regions like Africa and South Asia. The study identifies key Sustainable Development Goals (SDGs) that are impacted, including poverty alleviation, zero hunger, clean water, climate action, and biodiversity conservation. It calls for integrated strategies across the food supply chain to mitigate these impacts, emphasizing the need for sustainable practices, technological advancements, and shifts towards more resilient food systems to ensure future food security and environmental sustainability.

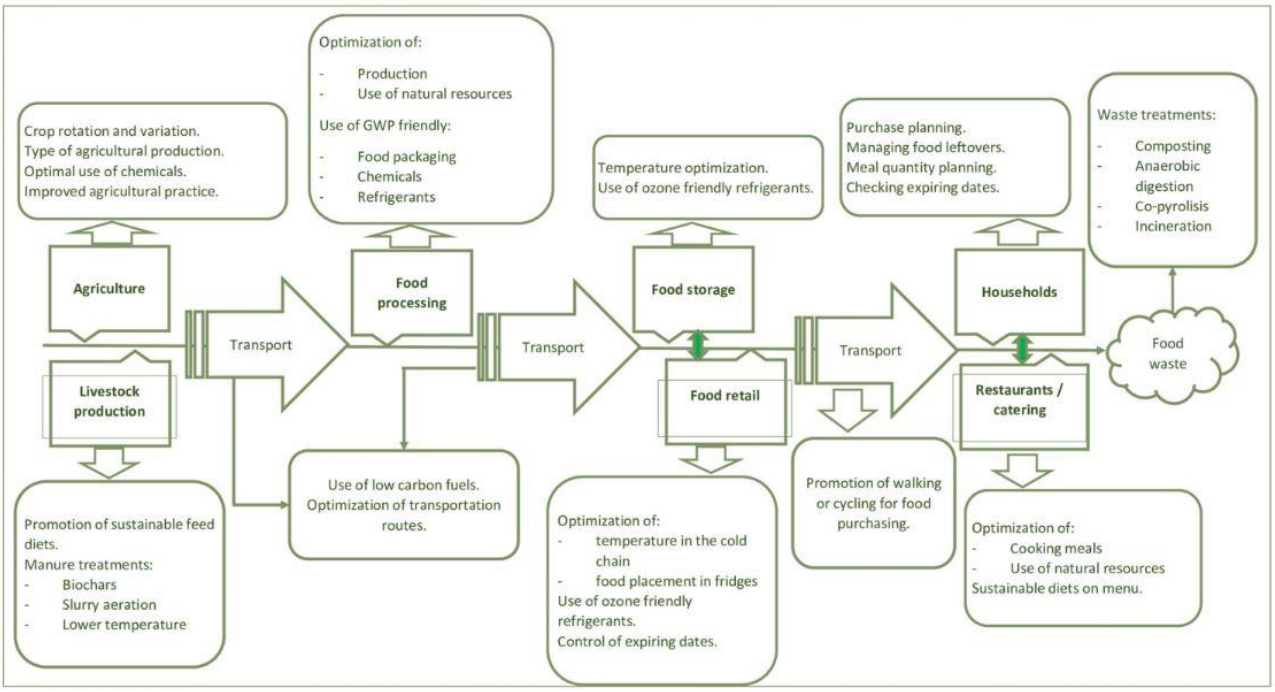


Figure | Main mitigation strategies in combating climate change throughout the food supply chain continuum.

NEWS

01 **THEME:** GHG emission reduction; Policy incentives, financing, pricing

Walmart supports programme to decarbonise food supply chain

June 07, 2024 | Food Digital | Source |

Major food industry players Walmart, Albertsons, and Con Edison are partnering with The Clean Fight, a climate tech organization, to decarbonize the food supply chain. This initiative aims to implement high-impact climate tech solutions in businesses providing on-site food, drink, or accommodation, including hotels, restaurants, and cafes. The programme focuses on often-overlooked post-farm food supply chain emissions and offers technologies addressing key sustainability challenges, such as refrigeration, food preservation, heating, ventilation, air conditioning, heat recovery, and cold chain energy management.

Clayton Casteel, Walmart's Senior Director for Strategic Partnerships, emphasized the importance of scalable, cost-effective innovations in Walmart's decarbonization efforts. Notable companies like Air Water Global, enhancing food storage and shelf life, and Bedrock Energy, providing geothermal heating and cooling systems, are part of the programme.

The collaborative approach involves comprehensive assessments, renewable energy exploration, energy efficiency optimization, and fostering environmental responsibility. Companies like Carrier and Con Edison are also participating, leveraging natural refrigerant technologies and renewable energy investments. This initiative positions these companies as leaders in corporate social responsibility, aiming for significant carbon footprint reductions by 2030.

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02 **THEME:** GHG emission reduction

Key players in the global cold chain join the Move to -15°C, committing to its mission to slash carbon emissions for frozen food

February 02, 2024 | India Shipping | Source |

The Move to -15°C initiative aims to modernize frozen food storage practices, shifting from the longstanding -18°C standard to a slightly warmer -15°C. Backed by research demonstrating negligible impact on food safety, this change promises significant environmental benefits and cost reductions across the supply chain. Nomad Foods, a major advocate, reported a 10-11% reduction in freezer energy usage without compromising product quality. Support spans the industry, including Danish Crown, the American Frozen Food Institute, and global logistics leaders like Indicold, Blue Water Shipping, and Constellation Cold Logistics. Seacube Container Leasing, Orbcomm, and Seafrigo also recently joined, highlighting growing industry commitment to sustainable cold storage solutions.

03 **THEME:** GHG emission reduction; Policy incentives, financing, pricing

Financial and climate impact of regenerative farming practices

May 02, 2024 | Farm Carbon Toolkit | Source |

A recent study conducted with Students Organizing for Sustainability (SOS) in the UK explored the financial and climate impacts of various regenerative farming practices in the UK. The report emphasizes potential financial benefits from adopting these practices, particularly when supported by Sustainable Farming Incentive (SFI) payments. It highlights that while regenerative practices may initially lead to lower yields and output, they reduce business risk by lowering input costs. The transition period to regenerative systems, crucial for soil health improvement, typically spans up to five years. The report calls for increased research to clarify impacts on yield and output, alongside support for farmers to acquire necessary skills. It also recommends enhanced institutional support and the development of machinery-sharing initiatives to facilitate broader adoption of regenerative farming practices across different farm types. These findings underscore the growing momentum and challenges in integrating sustainable agricultural practices into mainstream farming in the UK.

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04 **THEME:** Carbon sequestration; MRV (measurement, reporting, verification); Policy incentives, financing, pricing

Callirius and Cula forge alliance for biochar project funding and monitoring

May 08, 2024 | Carbon credits | Source |

Germany's climate solutions giant, Callirius AG, has partnered with Cula Technologies to expand efficient biochar projects, addressing quality concerns and boosting market credibility. Cula, known for its digital measurement, reporting, and verification (dMRV) technology, will provide precise data to support Callirius' financial products aimed at attracting private capital into carbon projects.

David Steinmetz, Natural Climate Solutions Specialist at Callirius, highlighted the importance of reliable data from Cula in ensuring investments fund impactful climate projects. The collaboration tackles data reliability issues in biochar production, crucial for preventing fraud and maintaining trust.

Cula's advanced monitoring platform integrates machine, tracking, and laboratory data, enabling seamless data transfer to Carbon Standards International (CSI) for automatic carbon credit issuance. Oliver Erb, Co-Founder of Cula, emphasized that this partnership will drive more financial resources into high-quality climate solutions.

BLOCK Biochar, a project in Schleswig-Holstein, exemplifies this approach with its innovative Carbo-FORCE pyrolysis technology. This partnership aims to revolutionize biochar production and utilization, setting new standards in sustainability and enhancing confidence in the climate impact of biochar projects.

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05 **THEME:** Carbon sequestration; GHG emission reduction; MRV (measurement, reporting, verification); Policy incentives, financing, pricing

Standardising of carbon credits an opportunity to bring money into agriculture

June 05, 2024 | Teagasc | Source |

The EU's upcoming carbon removals and carbon farming (CRCF) regulations present significant opportunities for Irish agriculture, according to David Dolan, Nuffield Scholar and dairy farmer. Speaking on the Teagasc Signpost Series webinar, Dolan highlighted key findings from his international study on net-zero emissions farming. He noted the lack of standardized frameworks for carbon credits in Irish agriculture, but praised the EU's efforts to develop a voluntary framework for carbon removals, which could benefit small and medium-sized businesses, including farms.

By 2030, one tonne of carbon could be worth €100, rising to €200 by 2045. Dolan emphasized that the EU's standardization of carbon credits could attract new investments into Irish agriculture. He also highlighted the need for more sophisticated accounting systems to integrate innovative greenhouse gas reduction approaches, such as renewable energy production and afforestation, within the agricultural sector. Dolan recommended enhancing the National Inventory Report's data accuracy and developing a long-term plan to support farmers' investments. Additionally, he suggested establishing a carbon baseline program and a carbon insetting bank to facilitate carbon trading within Irish agriculture.

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06 **THEME:** GHG emission reduction

Japan and IRRI kick off rice carbon neutrality project in the ASEAN region

June 24, 2024 | IRRI | Source |

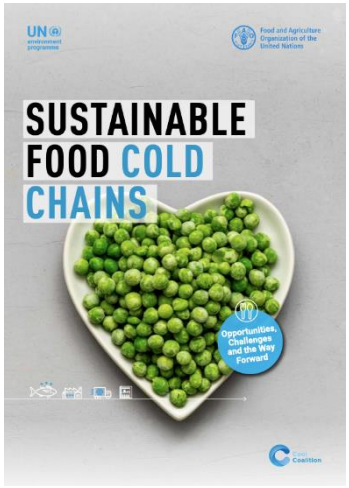
In a landmark collaboration, Japan's Ministry of Agriculture, Forestry and Fisheries (MAFF), along with the International Rice Research Institute (IRRI) and partners, launched the "Development of Rice Cropping Systems Toward Carbon Neutrality and Food Security in ASEAN Countries" project at IRRI Headquarters in Los Baños, Philippines. Beginning with pilot programs in the Philippines and Vietnam, the five-year initiative aims to reduce greenhouse gas emissions from rice production while enhancing food security in ASEAN nations. Led by Dr. Joanna Kane-Potaka of IRRI and supported by MAFF, the project focuses on integrating low-carbon farming practices through rigorous research and stakeholder collaboration. It seeks to identify emission hotspots, develop innovative crop management systems, and scale up successful strategies across the region. This effort underscores a pivotal step towards sustainable agriculture, aiming to transform rice farming practices for environmental resilience and long-term food security across Southeast Asia.

POLICY

01 THEME: Supply chain

FAO Report - Sustainable food cold chains

Food and Agricultural Organiztion of the United Nations | Source | Download |



Introduction: Issue: Inefficient food cold chains contribute significantly to global food loss and waste, exacerbating hunger and environmental impacts. Developing countries, in particular, face challenges in expanding and optimizing cold chain infrastructure.

Recommendations

- **Holistic Approach:** Governments should adopt holistic systems approaches, integrating efficient cooling technologies with robust policy frameworks. This includes quantifying energy use, setting efficiency standards, and enforcing monitoring to curb inefficient practices.
- **National Action Plans:** Implementing National Cooling Action Plans can guide sustainable infrastructure development, ensuring seamless agricultural product movement and minimizing post-harvest losses.
- **Capacity Building:** Enhancing skills and financing models is crucial. Governments and stakeholders should invest in training and technology deployment, fostering local industry engagement and scaling up cold chain capabilities.
- **Collaborative Ecosystem:** Establishing multi-disciplinary centers and promoting stakeholder collaboration can accelerate innovation and knowledge sharing. This includes demonstrating scalable solutions and assessing socio-economic impacts, especially for marginalized producers.

Impact: Embracing sustainable food cold chains not only enhances food security and economic growth but also reduces greenhouse gas emissions and fosters resilience against climate change. Strategic investments and coordinated efforts are essential for achieving these objectives globally.

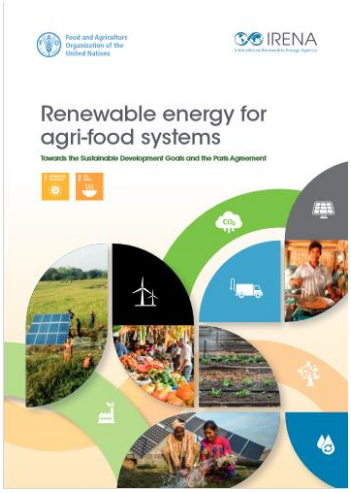
02 THEME: Net-Zero;Supply chain

Renewable energy for agri-food systems: Towards the Sustainable Development Goals and the Paris Agreement

United Nations | Source | Download |

Introduction: The world's energy and food systems need transformation to meet growing demand, become inclusive, secure, sustainable, and align with the 2030 Agenda for Sustainable Development and the Paris Agreement. Agri-food systems consume 30% of the world's energy, with a third of their greenhouse gas emissions stemming from energy use. This interconnectedness means energy transitions will impact food systems and vice versa.

Key Challenges



- **Energy Use in Agri-food Systems:** Agri-food systems' energy consumption varies globally, with significant disparities between developing and developed countries.
- **Dependence on Fossil Fuels:** Current patterns show a heavy reliance on fossil fuels, particularly in developing regions.
- **Energy Access and Productivity:** Limited access to modern energy restricts productivity and resilience in agri-food systems, particularly in Africa.

Opportunities with Renewable Energy

- **Solar Irrigation:** Widely adopted, it improves water access and resilience to changing rainfall, raising incomes by over 50% in India and increasing yields by a third in Rwanda.
- **Renewables-based Agro-processing:** Offers cost-effective alternatives to fossil fuels, reducing environmental impact and promoting decentralized infrastructure.
- **Cold Storage and Refrigeration:** Renewable energy solutions can prevent food spoilage, especially in regions with underdeveloped cold storage, improving income and market access for farmers.
- **Bioenergy:** Utilizes biomass by-products from agri-food activities to produce energy, enhancing sustainability and energy self-sufficiency in several sectors.

Recommendations

- **Data and Information Improvement:** Develop tools for guiding renewable energy investments and informing policy, including mapping optimal locations.
- **Access to Finance:** Enhance financing solutions for both energy supply enterprises and end-users in food systems, leveraging climate finance and local capital.
- **Holistic Approaches:** Promote integrated food-energy systems and the water-energy-food nexus to leverage synergies and minimize competition.
- **Cross-sector Perspectives:** Incorporate cross-sectoral coordination into national and regional strategies for energy and food system transformation.
- **Low-risk, High-impact Actions:** Focus on actions like reducing food losses, enhancing circular economy effects, and linking energy for food with energy for health.
- I**nnovation Promotion:** Support technology and energy-efficient appliance development through innovation funds and multi-stakeholder partnerships, ensuring operational and maintenance services.

03 THEME: Supply chain; Sustainable consumption

Germany - Core Area Strategy – Sustainable Agri-Food Systems

Federal Ministry for Economic Cooperation and Development | Source | Download |

Introduction: To ensure sufficient, safe, and nutritious food for all within planetary boundaries, agricultural and food systems must evolve. This transformation requires enhanced effectiveness, efficiency, resilience, and sustainability. It should also support income, employment, and poverty reduction while balancing the rights of producers and consumers and conserving natural resources.

Key Areas of Intervention

- **Food and Nutrition Security**
  - ✧ **Objective:** Realize the human right to adequate food, especially for vulnerable populations.
  - ✧ **Approach:** Support governments in the Global South to integrate food security measures into production, access, and social protection systems. Emphasize assistance in crisis situations and promote the importance of fish as a food source.
- **Rural Development**
  - ✧ **Objective:** Improve living conditions and prospects in rural areas, focusing on reducing urban-rural inequalities.
  - ✧ **Approach:** Implement a territorial, integrated approach to rural governance, tenure rights, regional economic development, and natural resource conservation. Prioritize climate change mitigation and resilience.
- **Agriculture**
  - ✧ **Objective:** Strengthen sustainable agricultural value chains and enhance local and global market integration.
  - ✧ **Approach:** Support smallholders through research, innovation, and investment to boost local value addition, income, and employment. Focus on climate adaptation, biodiversity protection, and sustainable consumption.

OPEN DATA

01 THEME: Agrifood system; GHG emission inventory

Cold Chain Database and Modelling Initiative

United Nations Environmental Program| Source | Data | Guide |

The Global Food Cold Chain Council (GFCCC) and UNEP OzonAction have launched the Cold Chain Database and Modelling initiative to help developing countries improve their cold chain systems. Starting in 2019, this initiative helps countries understand their current cold chain infrastructure and use of refrigerants like hydrochlorofluorocarbons (HCFCs) and Hydrofluorocarbons (HFCs). By expanding access to energy-efficient, low-global warming potential technology, the initiative aims to reduce food waste and greenhouse gas emissions. Pilots are underway in Bahrain, Bosnia and Herzegovina, The Maldives, North Macedonia, Paraguay, and Senegal. The project supports the Sustainable Development Goals, especially those related to food security and environmental sustainability.

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02 THEME: Climate smart and Net-zero toolkit

Australian Wine Carbon Calculator

Australian Wine Research Institute| Source | Download |

The Australian Wine Research Institute (AWRI) supports the grape and wine industry through research, practical solutions, and knowledge sharing. Established in 1955 and located at the Waite Research Precinct in Adelaide, AWRI is governed by an industry-led board and is part of the Wine Innovation Cluster. Key activities include research based on industry priorities, a helpdesk service for producers, workshops, seminars, and technical information dissemination.

The Australian Wine Carbon Calculator, launched in 2009, helps wineries measure their carbon footprint, incorporating Australian-specific data and emission factors.

EVENT

01

EmiLi 2024 - 5th Edition of the International Symposium on Gas and Dust Emissions from Livestock

September 24-26, 2024 | In-person | Valencia, Spain | Source |

Livestock production is crucial for food security and rural development, yet it contributes to harmful emissions. This conference hostedb by Universitat Politécnica de València will explore innovative solutions to reduce these emissions, ensuring a sustainable future for animal agriculture.

Topics include:

- Emitting processes
- Measuring methods
- Data management and reporting
- Emission factors and inventories
- Modelling
- Mitigation strategies
- Global environmental assessment
- Linking mitigation and adaptation

02

The 2024 World Food Forum flagship event

October 14-18, 2024 | In-person | Rome, Italy | Source |

The WFF, launched in 2021 and hosted by the FAO, is the premier global platform dedicated to transforming agrifood systems for a sustainable future. Join world experts, changemakers, and leaders of all ages under the theme "Good food for all, for today and tomorrow." Engage in dynamic discussions, celebrate innovative solutions, and collaborate across generations and sectors to achieve a hunger-free, inclusive, and resilient future.

Key Highlights

- **Global Youth Action:** Empowering youth to drive agrifood impact.
- **Science and Innovation:** Showcasing cutting-edge solutions.
- **Hand-in-Hand Investment:** Fostering partnerships for sustainable development.

Special Sessions

- World Food Day 2024
- Rome Water Dialogue
- Global Family Farming Forum

03

EIT Food Next Bite 2024: Building the Future of Food Together

October 15-16, 2024 | In-person | Rome, Italy | Source |

EIT Food has announced Next Bite: Building the Future of Food Together. This unparalleled gathering brings together game-changers in food systems transformation and the world's leading food innovators, thought leaders, and pioneers in the agrifood industry.

Discover All the Stages: Elevate your experience, inspiration, and connection with the EIT Food community through the four stages at Next Bite.

- **Healthier Lives Through Food:** Explore the intersection of food and health, focusing on how dietary choices impact overall well-being.
- **Plate and Planet:** Delve into reformulation from farm to fork, highlighting strategies for reducing waste, improving efficiency, and promoting responsible consumption.
- **Fair and Resilient Food System: D**isrupt traditional business models and introduce new frameworks in the food industry.
- **Redesigning Food:** Explore the latest innovations, trends, and leaders in the agrifoodtech space.

04

International Research Symposium on Agricultural GHG Mitigation

October 21-23, 2024 | In-person | Berlin, Germany | Source |

German Federal Ministry of Food and Agriculture has announced the 2024 Environmental Sustainability Summit. This year's theme is "Innovative Solutions for a Greener Future." The summit will bring together researchers and stakeholders from around the globe to explore climate change mitigation and low-emission development strategies in agricultural food systems.

Side Events

- Annual Meeting of the GRA Livestock Research Group
- Inventory and NDC (INDC) Network Meeting
- Circular Food Systems (CFS) Network Meeting
- Alliance for the Climate Project Meeting.

Topics include

- Innovations in emission reductions (N_2O and CH_4)
- Changes in farming systems and land management
- Carbon sequestration
- National policies and low-emission development strategies
- Just transitions and sustainable food consumption
- Novel approaches for GHG monitoring and reporting

05

2024 the 8th International Conference on Agricultural and Food Science (8th ICAFS 2024)

October 28-30, 2024 | In-person | Istanbul, Turkey | Source |

Hosted by the Asia-Pacific Association of Science, Engineering and Technology in cooperation with multiple academic affiliations, this premier event aims to provide a comprehensive overview of agricultural and food science, focusing on cutting-edge topics including biochemistry, food chemistry, environmental science, agronomy, animal biotechnology, and more.

Key Themes

- Biochemistry and Molecular Biology
- Food Chemistry and Engineering
- Environmental Science and Engineering
- Agronomy, Agriculture, and Plant Biotechnology
- Animal Biotechnology, Veterinary, and Livestock Science
- Sensing and Signal Processing, Modeling, and Computation
- Related Science, Technology, and Applications