JOINT STATEMENT

ADVANCING RENEWABLES IN AGRICULTURE TO MEET SDGS AND CLIMATE OBJECTIVES

IRENA coalition FOR ACTION

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Food and energy systems must transform to cope with increasing demand and align with the 2030 Agenda for Sustainable Development, as well as climate goals. Over 2.5 billion people's livelihoods depend on agriculture, particularly in rural areas. Access to affordable, reliable and sustainable energy is a crucial enabler of growth and development in the agriculture sector. However, large disparities remain in the access to and use of sustainable energy for agricultural activities across regions.

Energy use is responsible for about one-third of the greenhouse gas emissions from food systems. Rapidly accelerating efforts to transition the agriculture sector away from fossil fuels to low-carbon energy solutions – such as renewable energy and energy efficiency – are key to making food systems more sustainable and resilient to climate change impacts. Investing in infrastructure that ensures sustainable agri-food chains in all parts of the world will also advance multiple Sustainable Development Goals (SDGs) and support an inclusive and greener recovery from COVID-19.

There is no better time than now to link a renewables-based energy transition with a food systems transformation.

As the global community convenes in September 2021 for the United Nations Food Systems Summit and the High-Level Dialogue on Energy, the IRENA Coalition for Action issues this joint statement for stakeholders across sectors to break down silos and collectively rethink the production and consumption of food and energy.

Renewable energy solutions in agriculture

Biomass	Geothermal	Hydro	Marine	Solar	Wind
Biodiesel-fuelled engines for pumps and agri-equipment (crushers, grinders, weeders)	Geothermal heat for green houses, soil fertilisation	Small hydro-powered irrigation systems	Seawater Air Conditioning/ Ocean Thermal Energy Conversion heated and irrigated greenhouses	Solar refrigerators / chillers	Wind-powered water pumps
Liquid biofuel or biogas-powered vehicles	Geothermal food dryers		Salinity gradient powered desalination plants and irrigation systems	Solar dryers	Grinder, mills
Dryer (herbs & spices)	Geothermal aquaculture and horticulture		Wave and tidal powered fish and seaweed farming	Solar pumps	Direct use for lighting, cooking, cleaning
Biogas for lighting, cooking, heating and cooling	Geothermal energy for spirulina/algae cultivation			Agrivoltaics	Land leasing for wind turbines
	Geothermal energy use for soil heating				

Why we should tap into the potential of renewables in the agriculture sector

Renewable energy solutions can meet a variety of energy needs across the agri-food value chain, from primary production to post-harvest processing, transportation, storage and food preparation. Integrating renewables in agriculture also offers significant benefits that extend well beyond energy and food sectors.

Climate and sustainability

- **Mitigate climate change.** Energy use accounts for a third of greenhouse gas emissions from food systems. Renewables-based and climate-smart agricultural practices will decouple improved food security and nutrition from fossil fuel use.
- **Adapt to climate change.** Build resilience and the adaptive capacity of farmers and agri-enterprises to climate impacts such as adverse weather conditions, resource shortages and changing climatic conditions (*e.g.* through solar irrigation).
- **Reduce agriculture's environmental impacts.** For example, agrivoltaics can reduce water use in arid climates, and renewables-based clean cooking solutions can reduce indoor air pollution and deforestation caused by the use of traditional firewood.

Energy transition

- **Tap into the potential of renewables to meet the agriculture sector's energy needs** for electricity, heating/cooling and transport.
- **Broaden access to modern energy at each step of the agri-food chain** to improve incomes, value-add opportunities and access to markets, particularly in low-access areas.
- **Advance integrated food-energy systems and security**, including sustainable bioenergy production and agrivoltaics to optimise energy and food production.

Photograph: National Solar Energy Federation of India

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Food systems transformations

- **Reduce food losses across the agri-food supply chain** (*e.g.* through cold storage, processing).
- **Improve the efficiency and yields of agricultural practices** (*e.g.* through solar-powered irrigation, geothermal drying, renewables-based agro-processing).
- **Minimise dependence on volatile fossil fuel prices** and switch to affordable, reliable and sustainable energy sources.

Socio-economic benefits

- **Catalyse agriculture-dependent economies** through improved incomes, diversified products and services, job creation, and enterprise development.
- **Increase farmers' incomes and long-term prospects** through reduced operational/energy costs, improved supply chain productivity and the realisation of profits from energy production.
- **Develop local, renewables-based agriculture ecosystems** through holistic, innovative agriculture practices. Along with capacity building and skills training, this will create rewarding employment opportunities, including energy-related jobs, for local communities.
- **Increase access to economic and educational opportunities for vulnerable populations**, such as women and youth, by reducing time-consuming agricultural and cooking practices.

Delivering on the energy transition and food systems transformation

A joint approach to SDG 7 and SDG 2 can deliver significant socio-economic and environmental dividends. Reaping full benefits will require strong collaboration across sectors. To break the silos, the IRENA Coalition for Action puts forward the following recommendations:

1. Cross-sectoral strategies to co-ordinate the planning and implementation of energy transition and food systems transformation.

- **Governments:** Design sustainability strategies and policies aimed at exploiting the potential of renewables across the entire agri-food chain. Strengthen local regulations to preserve arable land. Engage both sectors in the process to secure successful policy development and implementation.
- **Renewable energy sector:** Communicate and collaborate with key stakeholders in the agriculture sector (*e.g.* farmers, processors, civil society, local enterprises).
- **Agriculture sector:** Communicate and collaborate with key stakeholders in the renewable energy sector (*e.g.* industry associations, civil society, local enterprises).

2. Multifaceted financing tools to improve access to capital for farmers, enterprises and end-users. Local and international financial institutions have a key role to play.

- **Governments:** Facilitate the financial inclusion of small and medium-sized enterprises (SMEs; *e.g.* farmers, co-operatives) by implementing regulatory and financial policies that encourage investments in agricultural renewable energy solutions. Improve access to financing for agri- and energy SMEs through dedicated funding facilities and readiness assessments for such projects. Include access to agriculture-specific technologies within renewable energy finance schemes.
- **Multilateral development banks:** Provide credit guarantees, concessional debt financing and first-loss capital to de-risk novel and unfamiliar combined renewable energy and agriculture projects. Pioneer investments in these projects and create a knowledge base to unlock local financing opportunities.
- **Local financing institutions:** Support SMEs and agri-enterprises looking to integrate renewables by tailoring financing products to local conditions and seasonal cash flows. In partnership with industry associations and incubation centres, improve outreach on building pipelines for new agricultural renewable energy projects.

3. Innovative, cross-sectoral business models that enable energy access and improved agricultural yields while protecting biodiversity, ecosystems and communities.

- **Governments:** Create supporting enabling frameworks through policy incentives (*e.g.* feed-in tariffs, fiscal exemptions), invest in research and development programmes, and facilitate knowledge exchange. Integrate the water-energy-food nexus perspective in policy making to maximise sustainability. Prioritise the development of local agri-food supply chains by facilitating investments in tangible (*e.g.* cold storage) and non-tangible (*e.g.* skills and training, technology innovation) assets at each stage.
- **Renewable energy sector:** Consider the agriculture sector to be an important off-taker. Design and conceptualise renewable energy solutions and business models for the sector that prioritise both electricity generation and agriculture production, by choosing the right cultivations and adapting them to the local context. Innovate technology processes to improve the energy efficiency of appliances and linkages to renewables-based solutions. Build on lessons learnt from other sectors.
- **Agriculture sector:** Identify energy gaps within local agri-food value chains and convey these gaps to governments and the renewable energy industry. Share best practices on successful joint projects. Advance a nexus approach to policy making and programme design by partnering with energy-sector stakeholders to maximise benefits and sustainability.

4. Capacity-building initiatives to provide local actors with relevant skills, knowledge and resources to integrate renewable energy solutions in agriculture projects (*e.g.* operation, maintenance, business management, enterprise development).

- **Governments:** Engage local actors (communities, NGOs, and end-users, with a focus on youth and women) through capacity-building and training initiatives. Set up training centres and partner with research institutes or renewable energy industry associations to develop joint renewable energy and agriculture programmes and curricula. Undertake initiatives to improve awareness among end-users (including farmers and agri-enterprises) of the benefits of renewable energy solutions. Empower women to be active agents in the renewable energy and agriculture sectors, and enable them to promote transformational change and contribute to the energy transition.
- **Renewable energy sector:** Provide hands-on training, often in partnership with governments and development partners, through certification programmes for the operation and maintenance of specific agriculture-oriented renewable energy solutions.
- **Agriculture sector:** Provide demonstration and training programmes showcasing how renewables can make agricultural processes more sustainable and efficient. Focus capacity building efforts on skills needed to maximise the benefits of renewables, including on improving market access and enabling product and service diversification.

5. Improved data on renewables applications in agriculture to de-risk projects, improve acceptability and effectively guide sustainable investments.

- **Governments:** Leveraging digital tools (*e.g.* GIS mapping), determine where and which renewable energy solutions could significantly and sustainably support agri-food chains, and overlay these analyses with agricultural maps. Conduct holistic cost-benefit analyses and feasibility studies of integrating renewable energy into agriculture practices to guide investments. Develop norms and standards to evaluate and assess the agricultural impact of energy projects.
- **Renewable energy sector:** Develop, maintain and share data and best practices on agriculture-sector renewable energy projects. Conduct feasibility studies of renewable energy technologies and applications to inform renewable energy deployment opportunities across different areas and agri-food value chains.
- **Agriculture sector:** Develop, maintain and share data from the comprehensive mapping of agri-food chains and energy use at each stage, including productivity, impact on food security, energy requirements and associated costs, and the energy sources used (conventional vs. renewable).

Signatories from the Coalition membership

The Coalition for Action is facilitated by the International Renewable Energy Agency (IRENA).

ACCIONA Energía
Alliance for Rural Electrification
AMEA Power
Azelio
CAN International
Clean Energy Business Council
Dii Desert Energy
Dutch Marine Energy Centre
Enel Green Power
Energy Watch Group
European Geothermal Energy Council
European Renewable Energies Federation
Falck Renewables
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Global Solar Council
Global Wind Energy Council
Global Women's Network for the Energy Transition
Graded
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Husk Power Systems
ICLEI - Local Governments for Sustainability
INFORSE
Institute for Sustainable Energy Policies
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World Future Council
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About the IRENA Coalition for Action

The IRENA Coalition for Action brings together leading renewable energy players from around the world with the common goal of advancing the uptake of renewable energy. The Coalition facilitates global dialogues between public and private sectors to develop actions to increase the share of renewables in the global energy mix and accelerate the global energy transition. ***https://coalition.irena.org***