
WORLD SCIENCE FORUM
Budapest 2024
The science and policy interface at the time of global transformations
WORLD SCIENCE FORUM
BUDAPEST

The Kirkhouse Trust Funding Model: Focused and Hands-on

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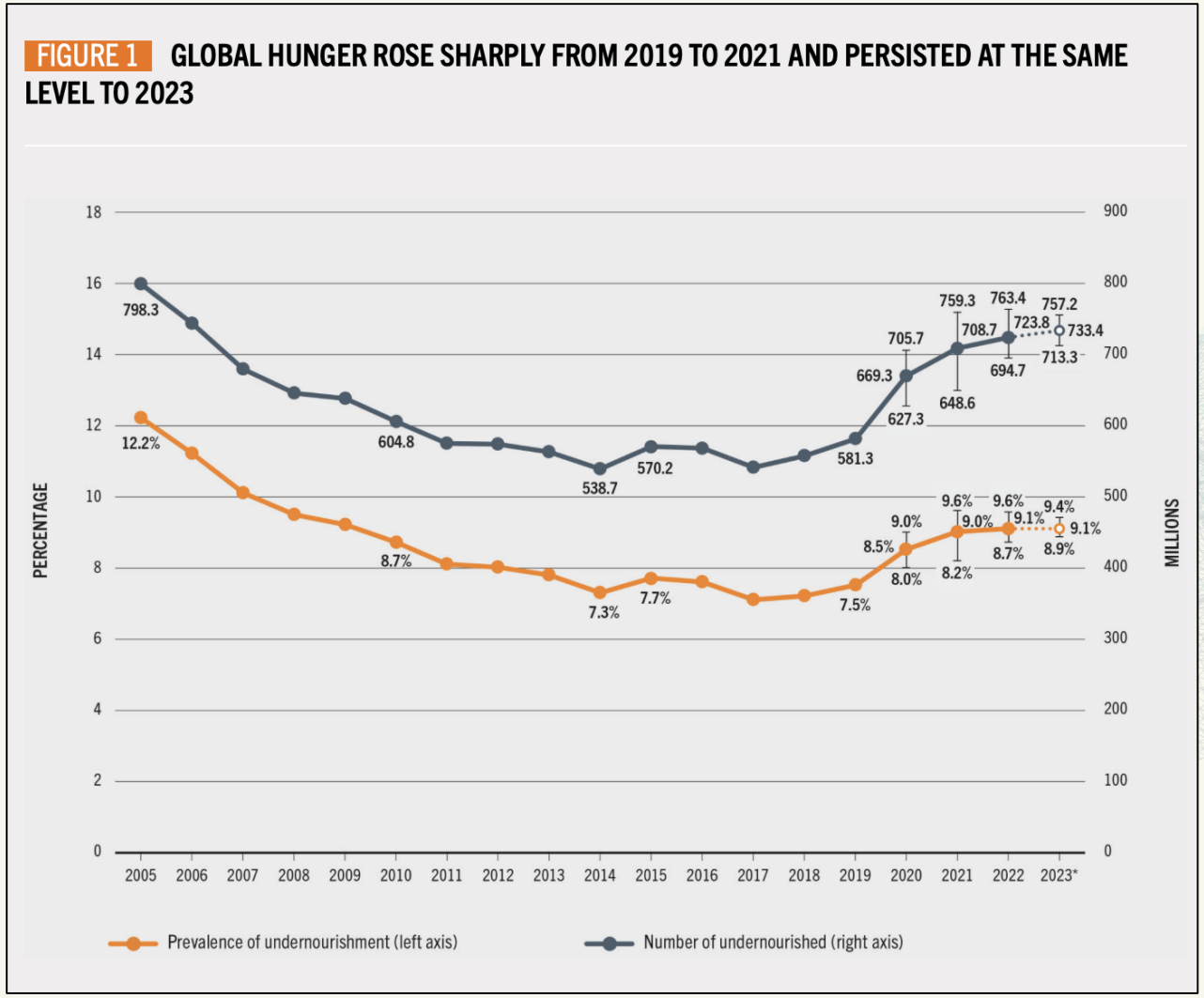
iap SCIENCE HEALTH POLICY the interacademy partnership

WORLD SCIENCE FORUM BUDAPEST

Status of global food and nutrition security



- Between 713 and 757 million people faced hunger in 2023
- 2.83 billion people could not afford a healthy diet

FAO. 2024. *FAOSTAT: Suite of Food Security Indicators*.

Climate change and food systems

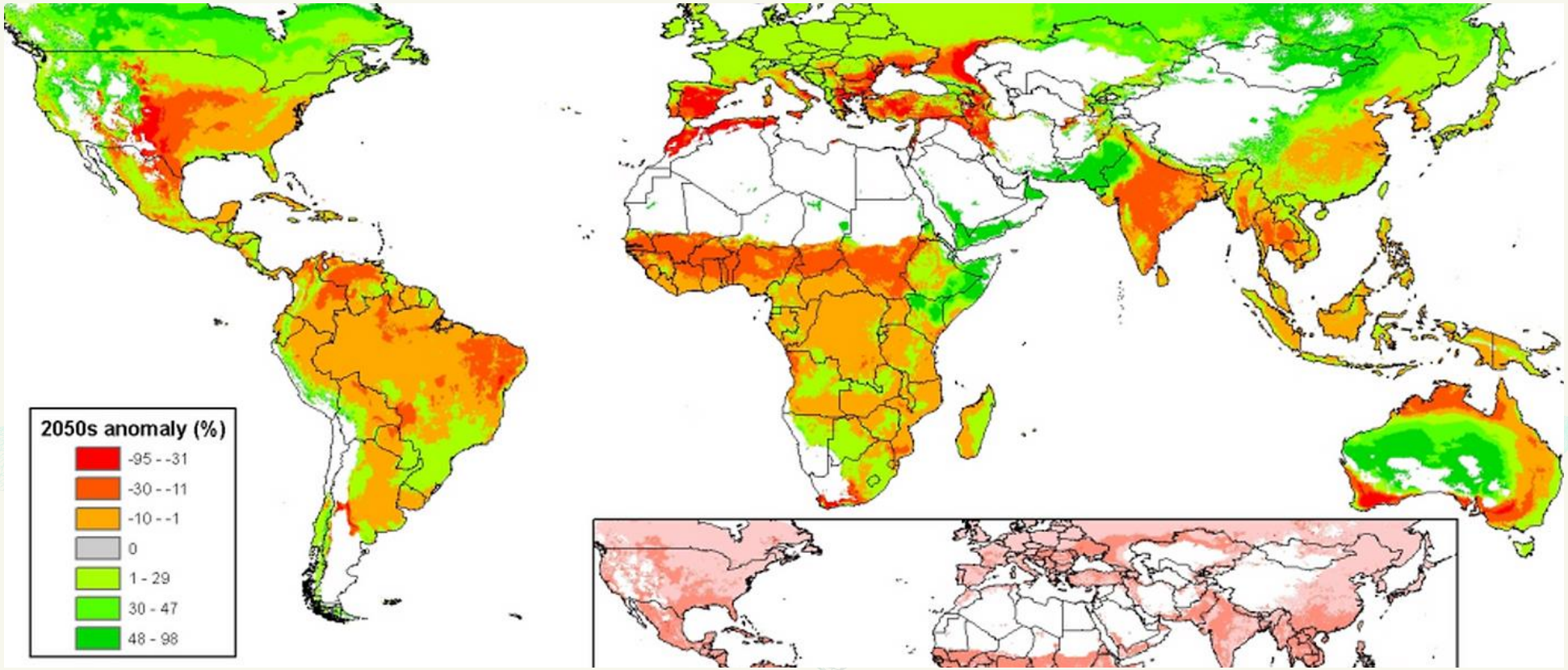
Common bean field trials in Awassa, Ethiopia 2022. Credit: Yayis Rezene.

Common bean field trials in Mozambique, 2023. Credit: Celestina Jochua.

Common bean field trials in Zambia, 2024. Credit: Kelvin Kamfwa.

- Agriculture is very dependent on precipitation levels and distribution (95% of food production in African countries is in rainfed fields)

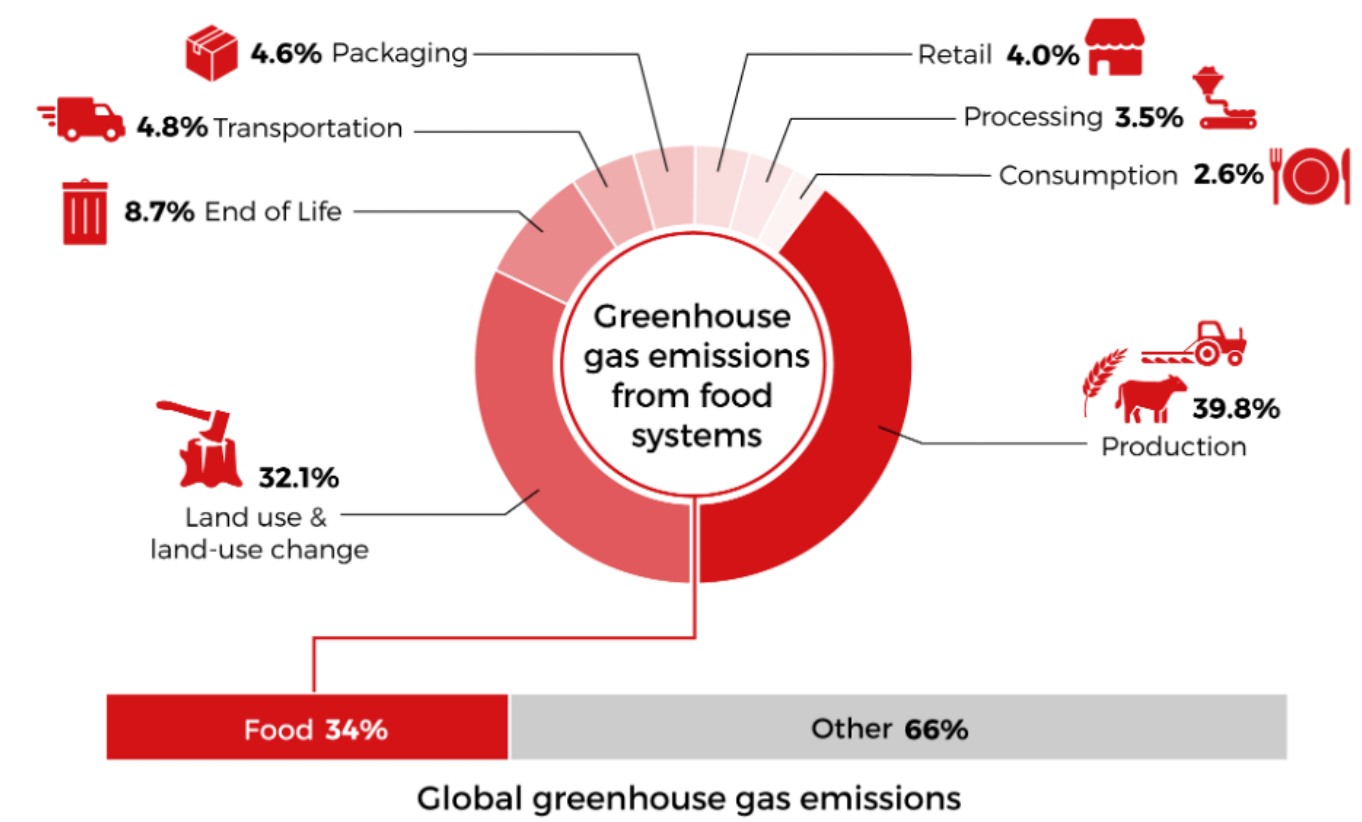
Unequal impact of climate change



World regions expected to be most impacted by the effects of climate change in 2050 (shown in red).

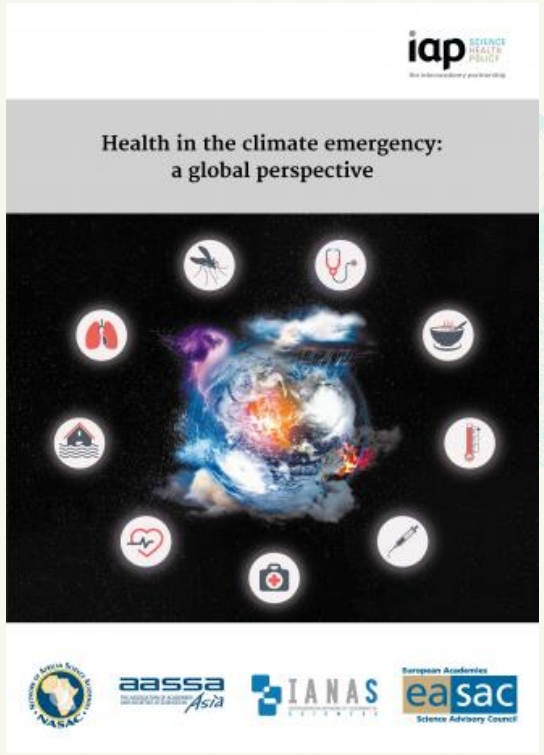
Source: the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

Food systems and climate change



Food systems account for about a third of anthropogenic greenhouse gas emissions

Action on climate action for health requires a systems based approach

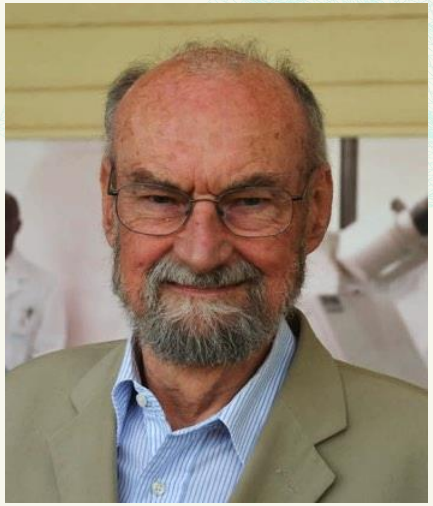


How can the impact of limited available resources for improving food and nutrition security be maximised?

An effective funding model for small-scale interventions

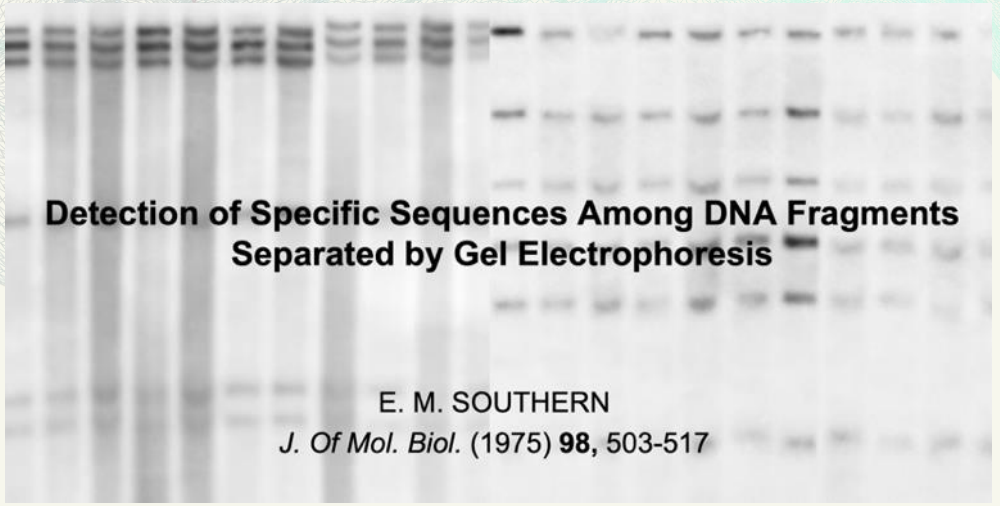
The Kirkhouse Trust (KT)

- KT is a UK-registered charity founded in 2000 by Ed Southern
- Ed also invented and commercialised the DNA microchip- the profits funded KT
- Use of molecular biology tools for food and nutrition security
- KT operates as a charity in perpetuity



Ed Southern

Sonia Morgan



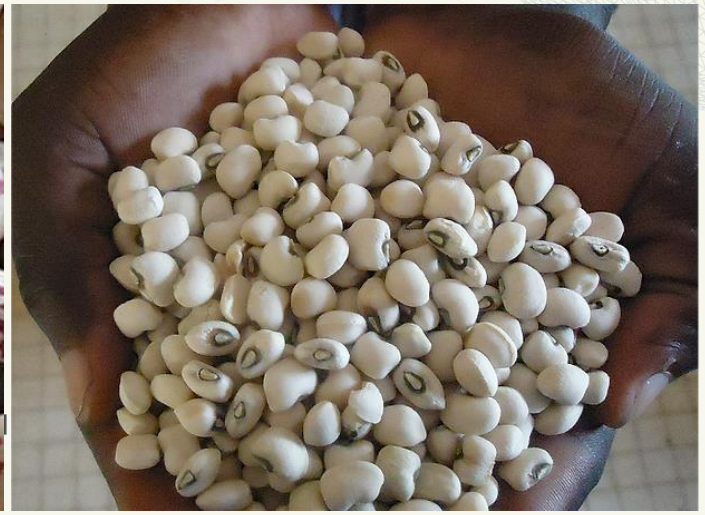
~39,920 academic citations

KT funding focus

- Boost the productivity of important legume crops in African countries and India via the application of molecular biology tools. Breeding targets: pest and disease resistance, improved heat and drought tolerance, nutrition content, cooking time.
- Identify the potential resilience to climate change of underutilised legume species in India and in African countries: the stress tolerant orphan legume (STOL) programme. Diversification of cropping systems for risk mitigation.
- Improve in-country scientific capacity (public sector universities and NARS).

Common bean

Cowpea



Bambara groundnut

STOL

Current KT projects

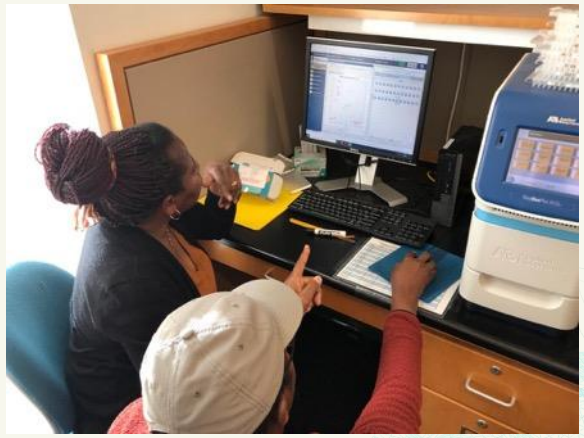
African Cowpea Consortium (ACC)
Cameroon, Malawi, Zambia, Botswana, Namibia, Tanzania
Past projects: Burkina Faso, Ghana, Nigeria, Mali, Niger, Senegal and Togo

African Bean Consortium (ABC)
Ethiopia, Kenya (2), Mozambique, Uganda, Tanzania, Zambia,
Past projects: Rwanda, Western Kenya

Stress tolerant orphan legumes (STOL)
India, Burkina Faso, Senegal
Past projects: Ghana, Kenya, Mali, Namibia, Nigeria, Niger, Tanzania, Uganda

Teaching project
Zimbabwe

1. Scientific mentoring









2. Provision and maintenance of essential research infrastructure

KT has established and maintains functional molecular biology laboratories and screenhouses

Ann Pearce (KT's P&D officer)

Frederik Awusu (Ghana)

Dr Kelvin Kamfwa (Zambia)

3. Engagement of smallholder farmers: the intended beneficiaries

- Initial selection of landraces to be improved, target characteristics for improvement and valued characteristics to be retained (taste, cooking time, colour)
- Participate in the selection of advanced breeding lines considered for release

4. Long term support

Esther Arunga during a training in 2011 as a MSc student (top) and with her research team (below) in 2021, University of Embu, Kenya.

Sobda Gonné during a training visit at Mike Timko's lab, University of Virginia, in 2008, and below, with his research team, IRAD, Cameroon (2022).

Kirkhouse Trust

Highlighted accomplishments

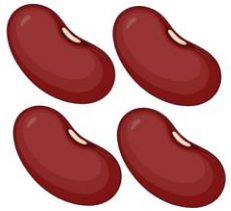
20 cowpea releases

260 peer-reviewed papers published

49 PhD and **58** MSc degrees funded

Six dolichos releases

Four common bean releases

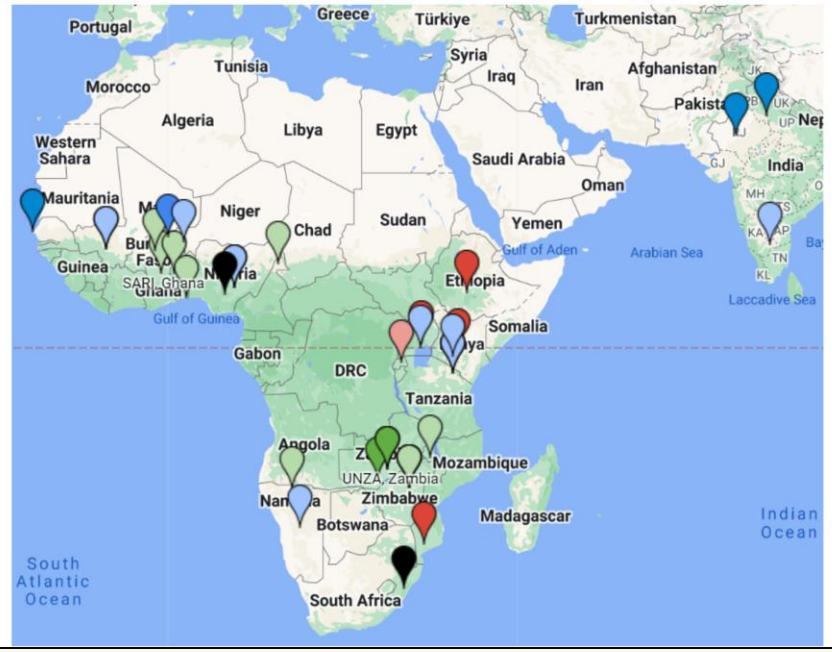


2,479 stress-tolerant orphan legume accessions evaluated

12,000+ university students and research professionals trained

31 research labs provided with molecular biology equipment, plant growth facilities, and training

16 countries with supported projects



Two teaching labs supported (mobile teaching lab shown)

Canales Holzeis C, Gepts P, Koebner R, Mathur PN, Morgan S, Muñoz-Amatriaín M, Parker TA, Southern EM, Timko MP (2024). The Kirkhouse Trust: Successes and Challenges in Twenty Years of Supporting Independent, Contemporary Grain Legume Breeding Projects in India and African Countries. Plants 13:1818.

Policy lessons

- For small-scale interventions a narrow focus is essential for impact.
- The development of healthy and sustainable food systems requires cross-sectoral interventions. Partnerships are essential.
- The establishment of communities that jointly address problems and share the learnings and research products produced amplifies the impact of interventions.
- Long-term support is critical.
- Risk management and communication essential- in research, in the farming fields and in policy formulation.
- **Enabling and integrated national and regional policies are critical to provide the framework allowing small-scale interventions to contribute to climate change action and for improved health outcomes**

KT grantees (PIs) and scientific advisors


Esther Arunga


Celestina Jochua


Kelvin Kamfwa


Swiwia Hamabwe

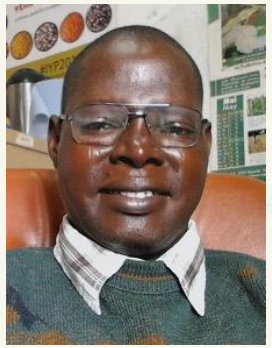

Philipo Mashamba


Stanley Nkalubu


Yayis Rezene


Shamir Misango


Idah Sithole Niang


Sobda Gonné


Sethunya Tait


Bestrice Waipopo


Meshack Makenge


Lydia Horn


Anthon Wanga


Florence Akaneme


Julia Sibiya


Issa Faye


Samuel Jeberson Muniyandi


Vandana Tyagi


Felicien Zida


Michael Timko


Robert Koebner


María Muñoz-Amatriaín


Travis Parker


Prem Mathur

Thank you