

Four crops feed the world

Over 7 billion people depend on just four crops for most of their food and non-food needs.

The world is getting hotter

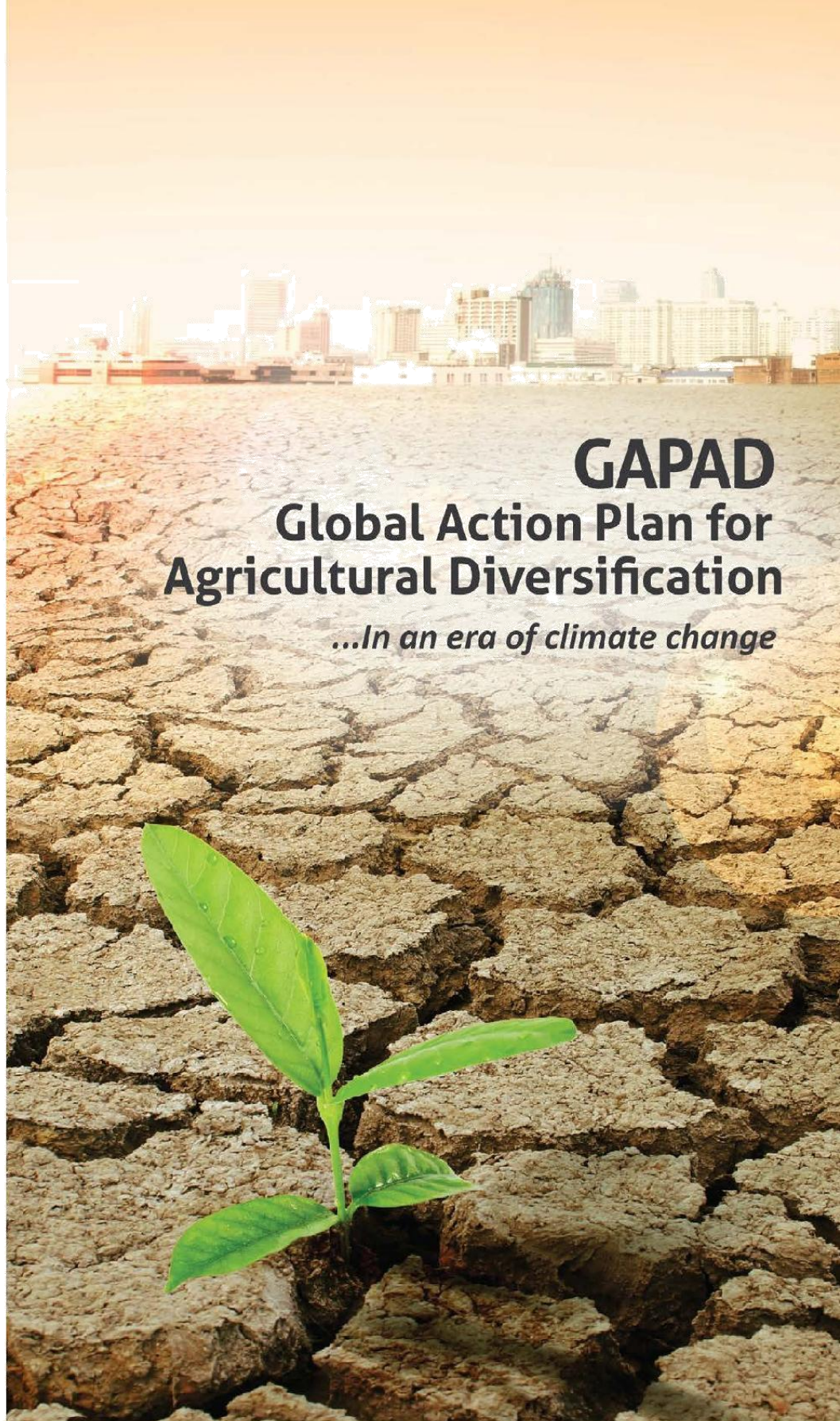
Global temperatures are predicted to increase by +2°C. This has serious implications for the productivity of major crops in much of the world.

The major crops alone cannot feed a hotter world

We need options for agricultural diversification that include a wider range of crops and cropping systems.

The United Nations Sustainable Development Agenda (SDA 2030)

Provides a global framework for sustainable development through 17 Sustainable Development Goals, many of which relate to agriculture. As yet, there is no plan for how agricultural diversification can contribute to SDA 2030 in climates of the future.



GAPAD **Global Action Plan for Agricultural Diversification** *...In an era of climate change*

Global Action Plan for Agricultural Diversification (GAPAD)

Crops For the Future (CFF) has identified the need for a Global Action Plan for Agricultural Diversification (GAPAD) to meet the needs of a hotter world. With its partners, CFF is taking the lead to establish a global stakeholder alliance to implement GAPAD. The GAPAD initiative will be developed through international events in Paris, Kuala Lumpur and Rome during 2015 and 2016



Four crops feed the world

From over half a million plant species on the planet, we currently rely on just four crops (wheat, rice, maize and soybean) for more than three-quarters of our food supply. These 'major' crops are grown in a limited number of exporting countries, usually as monocultures, and are highly dependent on inputs such as fertiliser and irrigation.

Over 7 billion people depend on the productivity of these major crops not just for their direct food needs but increasingly as raw materials for livestock and aquaculture feeds and bioenergy systems.

The world is getting hotter

The world's climate is changing. Global CO₂ emissions are far above levels needed to keep global temperatures within 2°C above pre-industrial levels – the target of the UN Conference on Climate Change (UNFCCC COP21).

Even without extreme events, +2°C average temperature increases will affect agricultural production, especially in parts of the tropics where productivity thresholds are at the limit of physiological tolerance. As well as higher temperatures, climate change is likely to cause more volatile rainfall patterns with increased risks of drought and flooding. We have little scientific evidence on exactly which crops and cropping systems will suit the hotter, more volatile climates of the future.

A global population approaching 9 billion people, living in a hotter world with scarce water and energy resources represent a 'Perfect Storm' for humanity. In these circumstances, the major crops alone may not be able to meet the world's food and nutritional requirements. Even if crop yields can meet the food demands of a growing population, they may not provide adequate nutrition. The double-burden of over and under-nutrition (Hidden Hunger) is a major concern. Nutrient-poor and energy-rich diets are linked with lack of dietary diversity.



"It is predicted that by 2030 the world will need to produce around 50% more food and energy, together with 30% more fresh water, whilst mitigating and adapting to climate change.... A 'perfect storm' of food shortages, scarce water and insufficient energy resources threaten to unleash public unrest, cross-border conflicts and mass migration as people flee from the worst-affected regions".

*Sir John Beddington
Former UK Government Chief Scientific Adviser*

The need for Agricultural Diversification

Agricultural development models for more benign climates have promoted the profitability of major crops grown as high-input monocultures. This made sense when there was access to high yielding varieties, good soils and mechanisation. However, we now need new, imaginative opportunities for agricultural diversification that include a wider range of crop species and agricultural systems that can link producers, consumers and markets and that are resilient to variable and volatile climates.

Agricultural diversification can help humanity withstand the Perfect Storm through greater food and nutritional security, minimising environmental harm, alleviating poverty, supporting the wise use of land and helping to combat desertification. Diversification also provides new opportunities for more environmentally sustainable agricultural systems, livelihood options for farmers and integration of community knowledge with scientific evidence and novel technologies.

Crops that are currently underutilised can contribute to agricultural diversification, support more environmentally sustainable agricultural systems and provide new livelihood options for smallholders and the poor.



The United Nations Sustainable Development Agenda

In September, 2015, the United Nations launched the 2030 Sustainable Development Agenda (SDA 2030) which provides a global framework for sustainable development. SDA 2030 includes 17 Sustainable Development Goals (SDGs) and 169 targets. The ambitious SDGs will shape the next 15 years of global investment priorities and actions.

Whilst agriculture provides a common link across the SDGs, climate change will have variable impacts on agricultural systems in different parts of the world. As yet, there is no plan for how agricultural diversification can contribute to SDA 2030 in the variable and volatile climates of the future.

Global Action Plan for Agricultural Diversification (GAPAD)

Crops For the Future (CFF) has identified the need for a Global Action Plan for Agricultural Diversification (GAPAD) to meet the needs of a hotter world and contribute to SDA 2030. The purpose of all GAPAD actions is to contribute to the eradication of poverty (SDG1). GAPAD will also address five specific SDGs (2, 7, 12, 13 and 15) identified in SDA 2030 that directly relate to the diversification of agriculture beyond only the major crops grown as monocultures and provides a global supporting partnership (SDG 17) to achieve these goals.

GAPAD



SDG2: Agricultural diversification and sustainable practices can contribute to improved nutrition, food security and poverty alleviation. Greater diversity provides new livelihood options for farmers and novel opportunities to integrate community knowledge, scientific evidence and novel technologies.



SG7: Agricultural diversification provides opportunities to use non-food crops as raw materials for renewable energy. Biomass feedstock has high potential as a sustainable source of renewable energy particularly on lands that are increasingly marginal for more favoured major crops.



SDG12: More diverse agricultural systems will help to optimise the use of natural resources and minimise the need for costly inputs. Agricultural diversification practices will also help make our farms more productive and better connected to markets, often with shorter, more efficient supply chains.



SDG13: Specific underutilised crops may help agriculture to adapt to climate change by providing subsistence and livelihood options in vulnerable environments. They may also enhance the resilience of agricultural ecosystems through diversified agricultural management approaches.



SDG15: Diversification can help conserve agricultural biodiversity and provide ecosystem services through sustainable agricultural management, innovative technologies and best practices.



SDG17: GAPAD will provide an action plan to diversify agriculture beyond just the world's major crops. The plan must be ambitious, global, inclusive and evidence-based. It also requires bold leadership and partners who share a common vision for agricultural diversification.

Global Action Plan for Agricultural Diversification (GAPAD)

During 2015 and 2016, CFF and its partners will develop and launch the GAPAD initiative through international events in Paris, Kuala Lumpur and Rome.



The Paris Declaration

In December, 2015, CFF will launch the Paris Declaration on Agricultural Diversification as the first step in delivering GAPAD. The Paris Declaration emphasises the vital need for a new vision for agriculture in a hotter world. It will stand alongside the UNFCCC COP21 Agreement as an historic document. The Paris Declaration will be opened for signature at the Global Landscapes Forum in Paris in December, 2015 and will initiate negotiations on GAPAD to be completed and launched in Rome in 2016.

The Declaration on Agricultural Diversification will be signed in Paris by leading figures of government, academia, the non-government sector and business. The document will be hosted on the internet by CFF for digital 'signature' by the general public.

The Kuala Lumpur Symposium

In March 2016, CFF and its partners will host the Kuala Lumpur Symposium as the second step in the delivery of GAPAD. The symposium will include contributions from international leaders and stakeholders from across science, industry, cultivators and consumers. Its purpose will be to identify actions, timelines and deliverables through which GAPAD can meet specific SDGs and targets in SDA 2030 and contribute to the eradication of poverty (SDG1) through agricultural diversification.

The Rome Symposium and launch of GAPAD

In late 2016, a symposium hosted in Rome will provide final agreement on targets and actions identified through the Paris and Kuala Lumpur events. The Rome Symposium will result in the formal launch of the Global Action Plan for Agricultural Diversification (GAPAD). It must be ambitious, global, inclusive and evidence-based. It requires bold leadership that supports a common vision and agreed activities, timelines and deliverables.

Crops For the Future

Crops For the Future (CFF), the world's first centre dedicated to research and development of underutilised crops for food and non-food uses, was launched in 2011 by the Prime Minister of Malaysia. At its launch, Professor MS Swaminathan (World Food Prize Laureate) described CFF as 'the need of the hour.'

CFF research programmes focus on the uses of underutilised crops to contribute to food security, human and animal nutrition, diversification of agricultural systems and global knowledge systems.

CROPS FOR THE FUTURE (952016-X)

Jalan Broga, 43500 Semenyih
Selangor, Malaysia

Tel: +603-8725 2800

Email: enquiries@cffresearch.org

Fax +603-8725 2801

Website: www.cffresearch.org

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CFF Headquarters in Kuala Lumpur