



Australian Government
Australian Centre for
International Agricultural Research



Australian
International Food
Security Research
Centre

aciar.gov.au/aifsc

Australian International Food Security Research Centre

“Food security is the
issue of our time.”

(Former United States Secretary of State Hillary Clinton, 2011)

Accelerating the adoption of research and innovation for food security

According to *The State of Food Insecurity in the World* report¹, one in eight people in the world (870 million people) go hungry every day. Hunger perpetuates poverty by reducing people's health and their ability to work, to learn and to lead prosperous lives. Enhancing food security of the poor not only enhances their health and productivity, it contributes significantly to social wellbeing and national and global stability.

The state of global food security will be increasingly challenged as populations increase and food production is compromised by depleting natural resources (particularly land and water), climate change and increasing energy costs.

Sustainable agricultural development has proved to be the key driver of food security in most developing countries with agricultural productivity growth being four times more effective at raising the income of the poor than growth from other sectors like manufacturing or services².

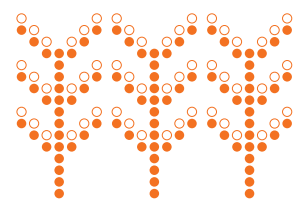


Credit: R. Alders, Kyeema Foundation

In Sub-Saharan Africa, growth generated by agriculture is considered eleven times more effective in reducing poverty than GDP growth in other sectors³. Efforts to reduce poverty and improve food security therefore need to be foremost directed to enhancing agricultural and food systems.

The Australian International Food Security Research Centre (the AIFSRC or Food Security Centre) was announced by the Australian Prime Minister in late 2011 within the Australian Centre for International Agricultural Research (ACIAR). It was established to strengthen the Australian Government's contribution to global food security with A\$33 million committed over four years.

1 FAO, WFP & IFAD – 2012. See <http://www.fao.org/publications/sofi/en/>
2 IFAD – 2012. See http://www.ifad.org/pub/factsheet/food/foodsecurity_e.pdf
3 Kanayo Nwanze, IFAD African Agricultural Science Week 2013



Addressing the greatest needs

The Food Security Centre has an international focus, recognising the significance of food security to developing countries across Africa, Asia and the Pacific region.

However, initial focus has been given to advancing food security in eastern and southern Sub-Saharan Africa where currently one in four people go hungry every day¹ and where the linkages between the agricultural sector and overall economic growth are particularly strong. The continent has the fastest growing population and the highest rate of urbanisation in the world, along with a growing middle class driving demand for better quality produce. The African Union's New Partnerships for Africa's Development (NEPAD) and its Comprehensive African Agricultural Development Program (CAADP) argue that the agricultural sector must grow on average by 6% per annum to play its role in Africa's development and the alleviation of poverty. They recognise the substantial gap that exists between agricultural potential and agricultural productivity must be bridged.

Bridging this gap requires not only identifying the necessary agricultural inputs, systems, services, government policy and private sector support; it requires farmers to adopt these inputs and services into farm practice.



Vegetable market, Kenya. Credit: M. Wood, AIFSRC

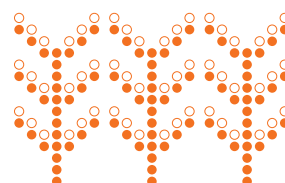
What is food security?

Food security encompasses more than food productivity. It is underpinned by having healthy food systems in place in country, and access to regional and global food systems, including through trade. Food security involves three interrelated elements: Food Availability, Access and Utilisation. Improving any one of the three elements is necessary but not sufficient in itself to improve food security.

“The development of a Science Agenda for Agriculture in Africa under the auspices of FARA⁴ is an important step on the road to a strong agricultural sector. It is all the more important because it is Africa-owned and Africa-led. It holds the promise of African farmers and citizens reaping the benefits of African research”.

Kanayo Nwanze, President of the International Fund for Agricultural Research (IFAD)

⁴ Led by the Forum for Agricultural Research in Africa (FARA)





“Post-harvest grain losses in Sub-Saharan Africa are worth an estimated \$4 billion a year This lost food could meet the minimum annual food requirements of at least 48 million people.”

World Bank - 2011. See http://reliefweb.int/sites/reliefweb.int/files/resources/F_R_70.pdf

Our Strategy: adoption of research innovations

The Food Security Centre will work foremost to better understand how to accelerate the delivery and adoption of agricultural research innovations that will positively impact food security over shorter time frames and larger areas than traditional agricultural development programs.

A strategic framework for the period 2012–2022 has been developed in close consultation with African, international and Australian stakeholders and is aligned with Australia’s Comprehensive Aid Policy Framework and CAADP. Our strategy is built around three themes:

New and enduring partnerships

Since the Food Security Centre was first announced, priority has been given to consultation and building and sustaining partnerships with national and international partners and donors, regional bodies, research agencies, private sector, NGOs and civil society regarding how to improve the uptake of agricultural research innovations and devising new modes of working to overcome these constraints.

Bridging the gap between research and development

The Food Security Centre has been given the remit of working closely with both research and development partners to ensure all partners are built into research project design from the outset. A range of mechanisms to enhance adoption are being tested through new research, and increased individual and institutional capacity building.

Matching African priorities with Australian and international capabilities

The Food Security Centre has selected countries and research foci where our investments in the food and agricultural sector will make a significant impact and complement rather than duplicate other efforts.

Our Priorities

The Food Security Centre's programs and the allocation of investment are assessed against a range of priorities, including:

- located within our focus countries (Burundi, Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Uganda, Tanzania, Zambia, Zimbabwe)
- identified as a country/sub-regional need
- provides opportunities to accelerate adoption
- provides opportunities for leveraging off existing work
- identified as a gap or weak area in existing agricultural research for development
- provides opportunities for co-investment, especially with private-sector partners
- focuses on gender-responsive agricultural innovations, recognising the impact of gender on agriculture
- encourage south-south institutional support
- provides opportunities for Australian comparative advantage to have impact

In addition to commissioning agricultural research, the Food Security Centre has a mandate to use new ways of working with providers and donors.

The Food Security Centre is forging new financial partnerships and programs with like-minded donor and provider agencies and utilising competitive calls for research seeking proposals for novel and multidisciplinary partnerships that may cross continents. This mix of approaches aims to encourage new partnerships and innovative responses to the complexity in addressing food security and enhancing adoption of innovations.

Building African biosecurity capacity

Biosecurity capacity development has been identified as a priority for the Food Security Centre by African stakeholders who have highlighted that Australia has strong biosecurity systems and agencies and institutions with expertise in the protection of plant, animal and food industries, and in managing biosecurity risks in agri-food trade, in particular intra-regional trade.

The Biosecurity Initiative aims to lever this expertise to enhance the human and institutional capacity of middle level managers, policy makers and scientists from African countries who have an identified biosecurity problem or need. The Food Security Centre will work closely with African institutions and Australian biosecurity partner agencies to ensure the priorities and activities of the Biosecurity Initiative are jointly aligned, complemented and integrated.

“Simply providing smallholders with fertilisers, improved seed and access to irrigation is half of the equation. The other half of the equation for food and nutrition security includes the right policies, investment in rural infrastructure and access to land and local, national regional markets”.

Kanayo Nwanze, President of the International Fund for Agricultural Research (IFAD)

Our Programs: research, knowledge sharing and capacity building

The Food Security Centre's strategic framework has five programs; three focused on research and two focused on capacity building.

Sustainable and productive farming systems—Ensuring sustainable and productive agricultural technologies are underpinned by systems thinking, foresight and enabling policies to enhance their rapid adoption, and embody sound natural resources management.

Strong and Equitable Economic and Social Systems—Ensuring effective policies, inclusive institutions and strong markets to build food security and accelerate adoption of innovations. Improved understanding of socioeconomic behaviour regarding adoption constraints and incentives.

Food nutrition and safety— Improving research on better nutritional quality and diversity of crops and diets, improved food safety, reducing post-harvest waste and value-adding technologies to food after harvest. It will contribute to the under-researched area of the nexus between agriculture, nutrition and health.

Communications and knowledge management— Ensuring the awareness and adoption of useful innovations through developing innovative ways to access information and knowledge, deliver high-quality technical advice and services to smallholder farmers, and support evidence-based decision-making.

Education, training and capacity building— Accelerating research adoption through enhanced individual and institutional capacity, from research development and management through to delivery and empowering of farmers' organisations. Facilitating activities that enhance the abilities of public- and private-sector agencies responsible for the widespread dissemination and adoption of innovations.

A new partnership to cultivate Africa's future

The CA\$15 million Australia-Canada food security fund, *Cultivate Africa's Future (CultiAF)* launched at the African Agricultural Science Week, Accra in July 2013, represents a new partnership model for Australia's Food Security Centre, and Canada's IDRC, and for research in southern and eastern Africa. This unique four-year partnership is designed to combat hunger in Sub-Saharan Africa by harnessing the potential for innovation among the region's smallholder farmers, the majority of whom are women.

CultiAF will build research capacity and increase opportunity for scientists in the region through agricultural science and innovation, in particular on bridging the gap between science, technology and innovation, which is key to enhancing Africa's capacity to sustainably feed itself.

The competitive fund will support innovative and complementary applied research on post-harvest systems, nutrition and sustainable water use; identify innovations and mechanisms for scale-up of the most promising research results and support and underpin national and regional agriculture and food security policies and programmes.

Maize-bean intercropping at SIMLESA field trials at EIAR Research Station, Ethiopia. Credit: M. Wood, AIFSRC



“Africa’s women reinvest not only in their businesses but also in their communities - its agriculture is vibrant thanks to women”

Dr Ibrahim Mayaki, CEO, NEPAD



Legumes for sale at market, Kenya. Credit: M. Wood, AIFSRC

Our Achievements

The Food Security Centre has delivered significant achievements in its first year of operation. The Centre is now fully operational having achieved:

- a highly successful Conference and formal launch of the Centre by the Australian Minister for Foreign Affairs
- strong endorsement of the ten-year Strategy, by senior representatives from Pan-African bodies, African governments, international peers and Australian stakeholders
- a new CA\$15 million research partnership with the Canadian International Development Research Centre (IDRC) established to run a competitive food security research fund Cultivate Africa’s Future (CultiAF)
- all research programs actively implemented across the 10 focus countries through six major research projects
- new partnership opportunities, including financial partnerships and new ways of working with African, Australian and international partners established
- website and a range of communication materials developed

- necessary operational systems (such as governance, monitoring and evaluation) established
- the African Regional office established in Kenya
- a scoping study on building African biosecurity capacity initiated in collaboration with Australian biosecurity experts
- supported the training of policy makers from African countries in mainstreaming CAADP nutrition policy

Together, these achievements have helped establish a profile for the Food Security Centre, positioning it as a legitimate and valued partner.

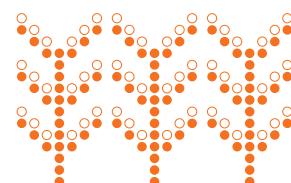
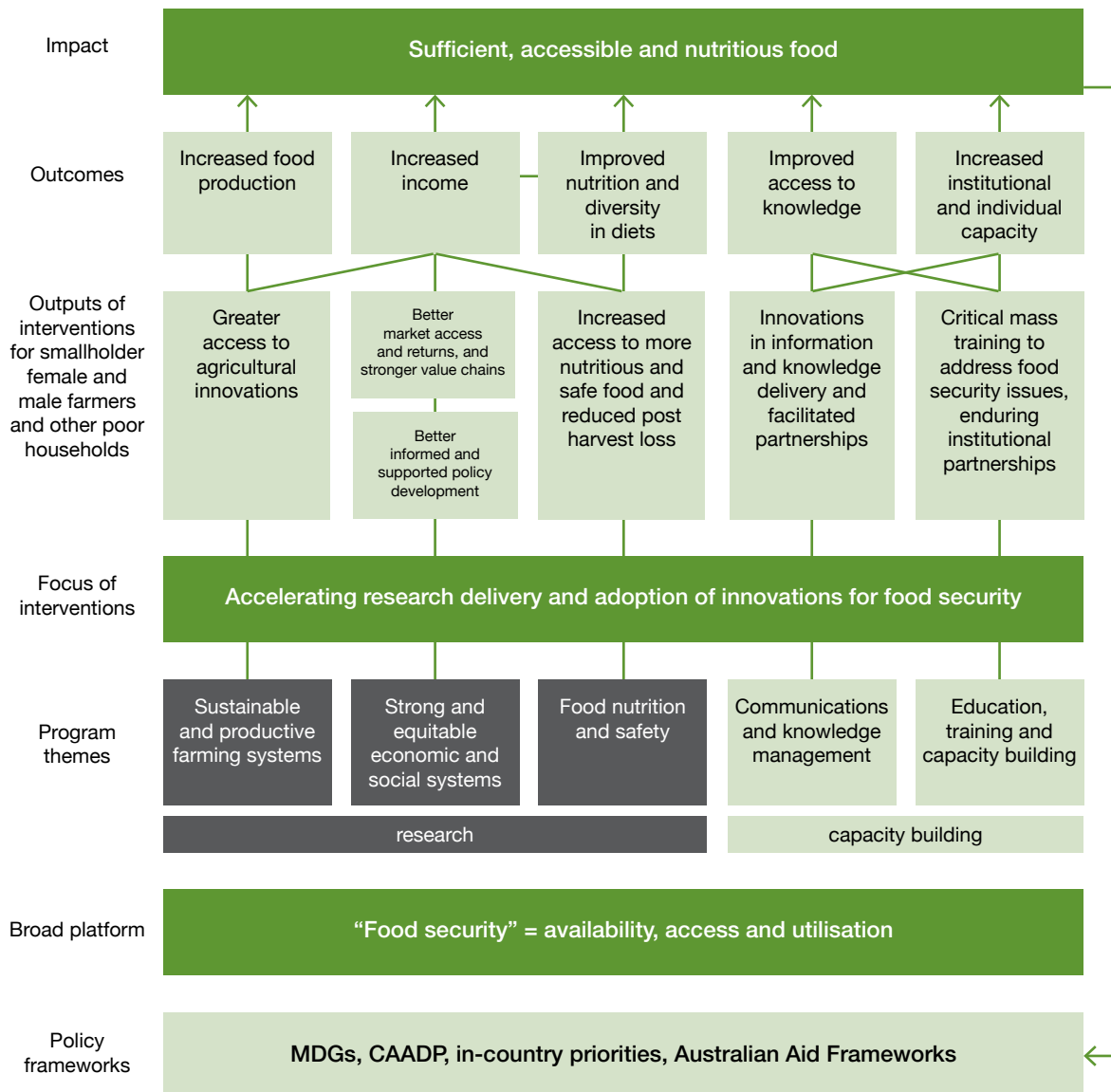


AIFSRC staff visit Newcastle disease control community vaccinators and farmers, Tanzania. Credit: M. Young, Kyeema Foundation



Delegates at the AIFSRC Food Security in Africa Conference, Sydney 2012. Credit: T. Pascoe

Figure 1. Food Security Centre Program diagram



Our Projects

Improving sustainable productivity in farming systems and evergreen agriculture in eastern Africa (Trees for food security)

Problem: Minimal livelihood and food security options for female and male farmers exist in east Africa and low productivity is being delivered from farms, especially in good seasons.

Project objectives: To enhance food security for poor rural in east Africa through research into understanding and removing the barriers to farmers introducing “fertiliser trees” that fix nitrogen in the soil into cropping systems. It will test whether integrated tree-cropping systems are more productive in these regions and whether barriers can be overcome to improve food security and enhance livelihood options. Importantly, it will test whether existing national programs can provide effective mechanisms for scaling up and out.

Countries: Uganda, Ethiopia, Rwanda, Burundi.

Partners: World Agroforestry Centre ICRAF, International Maize and Wheat Improvement Center (CIMMYT), International Livestock Research Institute (ILRI), Commonwealth Scientific and Industrial Research Organisation (CSIRO, Australia), World Vision Australia, Ethiopian Institute for Agricultural Research (EIAR), Rwanda Agriculture Board (RAB), Institut des Sciences Agronomiques du Burundi (ISABU), National Agricultural Research Organisation (NARO, Uganda).

DURATION: 4 yrs
FSC FUNDING: AUD\$5.5 million
CO-INVESTMENT: AUD\$2.1 million

Identifying socioeconomic constraints to and incentives for faster technology adoption: Pathways to sustainable intensification in eastern and southern Africa

Problem: Lack of understanding and data on the socioeconomic barriers to adoption of agricultural technologies and on how farmers manage risk and make decisions.

Project objectives: To improve understanding of how socioeconomic factors, risks (including climate change) and policies determine (conservation agriculture) technology adoption by smallholder farmers. It will test strategies regarding accelerating technology adoption and identify agricultural intensification strategies to improve farmer livelihoods, income and food security.

Countries: Ethiopia, Kenya, Tanzania, Malawi, Mozambique.

Partners: International Maize and Wheat Improvement Center (CIMMYT), International Food Policy Research Institute (IFPRI), University of Life Sciences (UMB), University of Queensland (Australia), Ethiopian Institute for Agricultural Research (EIAR), Sokoine University of Agriculture (Tanzania), Egerton University (Kenya), University of Malawi (Bunda College), University Eduardo Mondlane (Mozambique).

DURATION: 4 yrs
FSC FUNDING: AUD\$3 million
CO-INVESTMENT: AUD\$1.9 million

Farm power and conservation agriculture for sustainable intensification (FACASI)

Problem: Reduced labour availability and high costs of draught animals has contributed to reduced agricultural productivity, processing and market access.

Project objectives: To understand the barriers and incentives to adopting, with a focus on business opportunities, small-scale farm machinery (two-wheel tractors) by farmers. It will demonstrate and evaluate the use of small-scale motorised conservation agriculture technologies, and identify deficiencies in policy, market and access to knowledge in the subregion (including machinery, hire services and support).

Countries: Ethiopia, Kenya, Tanzania, Zimbabwe.

Partners: International Maize and Wheat Improvement Center (CIMMYT), Charles Sturt University (Australia), Ethiopian Agricultural Research Institute (EIAR), Kenya Network for Dissemination of Agricultural Technology (KENDAT), Directorate of Research & Development (Tanzania), University of Zimbabwe, Food and Agriculture Organization of the United Nations (FAO), International Development Enterprise (IDE), African Conservation Tillage network (ACT), Bangladesh Agricultural Research Institute (BARI), Indian Council of Agricultural Research (ICAR).

DURATION: 4 yrs
FSC FUNDING: AUD\$4 million
CO-INVESTMENT: AUD\$1.5 million

Strengthening food security through family poultry and crop integration in Tanzania and Zambia

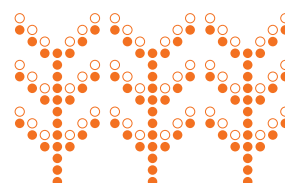
Problem: Lack of access to agricultural extension, inputs and markets by female poultry farmers has resulted in minimal small-scale commercial farming opportunities for women. Family nutritional status in these countries is low.

Project objectives: To reduce childhood stunting by analysing and testing opportunities to enhance the key role that women play in improving poultry and crop integration and efficiency to strengthen household nutrition. It will investigate the drivers and linkages between family poultry and crop production and value chains and the potential to improve household income, nutrition, and social and gender equity.

Countries: Tanzania and Zambia

Partners: University of Sydney, KYEEMA Foundation, Tanzania Veterinary Laboratory Agency, Mikocheni Agricultural Research Institute (Tanzania), Zambia Ministry of Agriculture and Livestock, Sokoine University of Agriculture (Tanzania), University of Zambia, Royal Veterinary College (UK).

DURATION: 5 years
FSC FUNDING: AUD\$2.6 million
CO-INVESTMENT: AUD\$1.3 million



Improving income and nutrition in eastern and southern Africa by enhancing vegetable-based farming and food systems in peri-urban corridors

Problem: Malnutrition and youth (labour) migration to cities are two major issues that are negatively impacting on farm productivity and food security in east Africa.

Project objectives: To improve nutrition as well as generate youth employment and income opportunities for peri-urban vegetable growers through improving indigenous and introduced vegetable variety and seed supply systems, enhancing crop management practices and more effective value chains for each product. Research will assess and promote technologies and practices for increased and safer production of vegetables and assess the feasibility of value adding and processing options, particularly postharvest storage. The project will operate via 'Best Practice Hubs' as centres to demonstrate crop trials, postharvest handling techniques and other interventions for farmers, traders and the wider public.

Countries: Ethiopia, Malawi, Mozambique, Tanzania

Partners: The World Vegetable Center (AVRDC), Applied Horticultural Research (AHR), Ethiopian Institute of Agricultural Research (EIAR), Melkassa Agricultural Research Center (Ethiopia), Africare (Malawi), Instituto de Investigação Agrária de Moçambique (IIAM), Horticulture Research and Training Institute – Tengeru (HORTI), Ministry of Agriculture (Tanzania), International Development Enterprise (IDE), Department of Agricultural Research Services (DARS, Malawi), International Potato Center (CIP), University of Queensland (Australia), Sokoine University of Agriculture (Tanzania).

DURATION: 5 years
FSC FUNDING: AUD\$2.6 million
CO-INVESTMENT: AUD\$0.5 million

Farmer with draught animals, Ethiopia. Credit: M. Gyles, ACIAR



Increasing irrigation water productivity in Mozambique, Tanzania and Zimbabwe through on-farm monitoring, adaptive management and agricultural innovation platforms

Problem: Benefits to farmers from irrigation use and water productivity is low and past irrigation schemes in Africa have failed to deliver adequate returns with market integration and water governance being weak in many regions and land degradation on the increase.

Project objectives: This project aims to increase the agricultural water productivity to enhance food security. It will identify barriers to improved productivity and profitability along the value chain of irrigation production; improve irrigation water productivity; develop an adaptive management approach to water resource management to increase the capacity of farmers, organisations and governments to adaptively manage water. It will use participatory on-farm water monitoring and 'Innovation Platforms' comprising farmers, political representatives and players across the market value chain to identify institutional and market constraints and to stimulate opportunities for change.

A sister project is also being trailed within this project to test water management by smallholder farmers through using a prototype sensor that measures soil moisture at three levels to advise the best time to irrigate.

Countries: Mozambique, Tanzania and Zimbabwe

Partners: Australian National University, Commonwealth Scientific and Industrial Research Organisation (CSIRO, Australia), University of South Australia, Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN), University of Pretoria (South Africa), National Institute of Irrigation (Mozambique), Ardhi University (Tanzania), International Crops Research Institute for the Semi Arid Tropics (ICRISAT).

DURATION: 4 years
FSC FUNDING: AUD\$3.2 million
CO-INVESTMENT: AUD\$1.8 million

A Landcare based approach to food security - scoping study

Problem: East African smallholder farmers require assistance to become better equipped to manage physical resources and farm sustainably, and also to better transition to efficient use of purchased inputs, access to credit, improving productivity, obtaining market information and positioning for commercial engagement to achieve food security for both producers and rural consumers.

Project objectives: This small project is assessing whether a Landcare approach (building social capital through farmer groups) can be broadened to address issues associated with enabling

smallholder farmer access to the agri-food chain to improve food security, through efficient use of purchased inputs and access to credit and market information.

Countries: Kenya

Partners: African Landcare Network, World Agroforestry Centre (ICRAF), Kenya Agricultural Research Institute (KARI), Department of Agriculture (Kenya).

DURATION: 15 months
FSC FUNDING: AUD\$86,000



ACIAR staff and delegates at the AIFSRC Food Security in Africa Conference, Sydney 2012. Credit: T. Pascoe

Our Operations

The Food Security Centre has a Director and a team located at ACIAR's headquarters in Canberra, Australia and a Regional Manager and small team located in Nairobi, Kenya. The Regional Office in Kenya supports Food Security Centre operations and act as an interface with partners in Africa.

The Food Security Centre reports to the CEO of ACIAR. ACIAR provides administrative and financial services to support Centre operations. The Food Security Centre draws on a wide range of experts, including ACIAR's scientific staff, who provide research management for commissioned activities and, more broadly, the scientific and development communities and the private sector in Africa, Australia and internationally.

Keeping in touch

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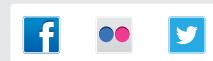
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