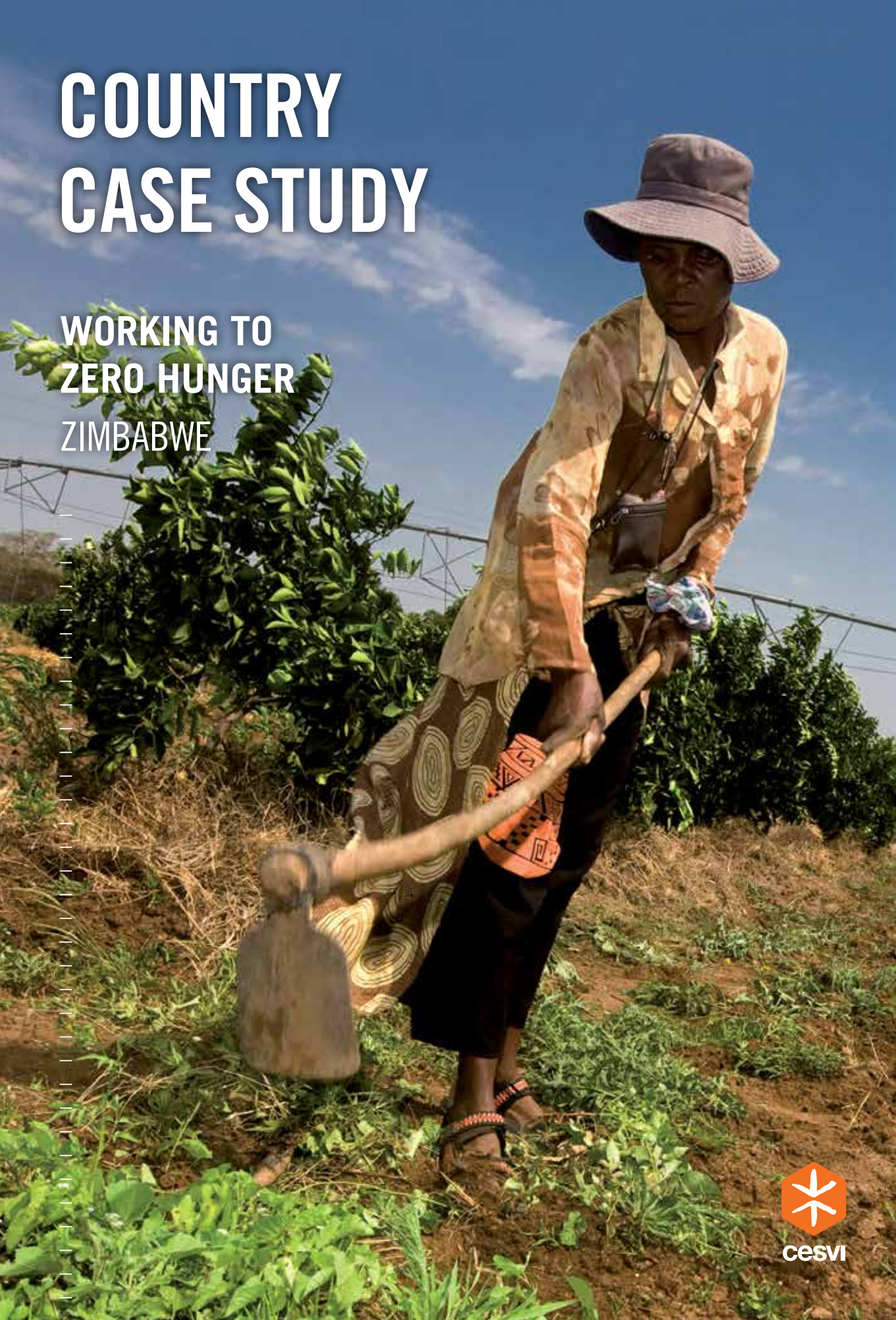


# COUNTRY CASE STUDY

WORKING TO  
ZERO HUNGER  
ZIMBABWE



# CONTENT

INTRODUCTION .....	3
ZIMBABWE: COMMUNITY RESILIENCE AND SUSTAINABLE AGRICULTURE .....	4
BIBLIOGRAPHY.....	14

*“By ending rural poverty and empowering women; by transforming agriculture and food systems in a way that makes them inclusive, resilient, and sustainable; and by preserving ecosystems and natural resources, we can achieve Zero Hunger.”*

*David Nabarro, Special Adviser on 2030 Agenda for Sustainable Development and Climate Change  
2016 Global Hunger Index: Getting to Zero Hunger*

# INTRODUCTION

The Global Hunger Index (GHI) 2016 confirms that 50 countries in the world have serious or alarming hunger levels, and over 795 million people suffer from hunger, mainly in Africa south of the Sahara and South Asia. These figures appear incompatible with the full achievement of the second Sustainable Development Goal (SDG 2), which aims to eradicate global hunger by 2030.

Africa will face a long and difficult journey. Many believe that agriculture is the only way out of hunger and poverty for the African continent. A modern, market-oriented, sustainable and inclusive agriculture as indicated by the SDG 2: increase *“the agricultural productivity and incomes of small-scale food producers (...) including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets”* (2.3); *“ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality”* (2.4); *“increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development (...)”* (2.a).

Cesvi and the Shashe community, along with all the public and private actors involved in the project, have set these same goals to be achieved even before 2030. By that date, the Shashe Citrus Orchard will be able to produce over 6,000 tons of oranges to be sold on the national market, in particular to juice and concentrate producers. This journey started in 2011. There is still a long way to go for the over 1,000 residents involved, but the first significant results are already visible. What are the main features of this initiative?

*Beneficiaries' leading role at the heart of international development.* Cesvi has been following this principle in Zimbabwe since 1998. That year, it started working for the Great Limpopo (the first and at the time the biggest “Peace Park” wanted by Mandela on the border between South Africa, Mozambique and Zimbabwe) to become a development driver for all those communities that had been sometimes impoverished by the creation of natural parks themselves. And then in 2001, when HIV/AIDS in Zimbabwe spread to its highest level, Cesvi launched its bold programme “Stop AIDS at birth” which had a great impact on the way the disease is fought in the whole of Africa south of the Sahara thanks to the active role of mothers. And finally, it implemented the Shashe Citrus Orchard, which allowed for the cultivation of 22,000 oranges on over 90 hectares of “communal land”, following a decision by the same Shashe community.

*Food security.* Shashe community can overcome the spiral of hunger and poverty thanks to an adequate agricultural production and the opportunity to access local and national markets, in collaboration with the private sector both for sales and the processing of products.

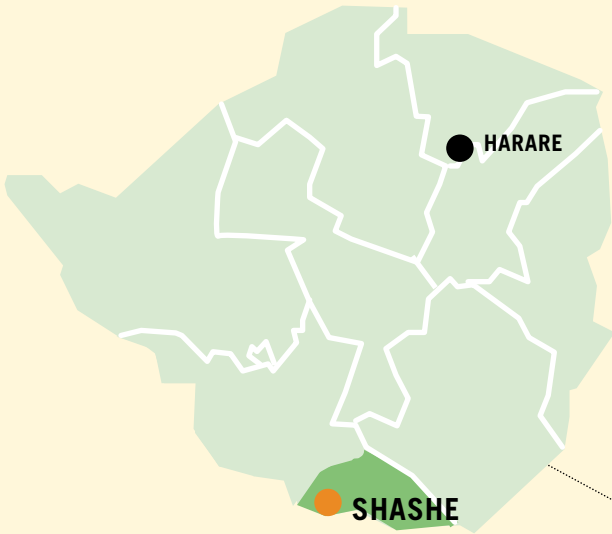
*Tradition and innovation.* The agricultural production which was introduced 50 years ago by the colonial settlers and then abandoned, also due to political choices, is today being restored and supported by modern infrastructures and technologies. These allowing, for example, 50% saving of water and energy compared to the traditional methods used in that area.

*Agriculture as opportunity.* Farming is complex in Shashe. The majority of small farmers are women. Men emigrate in South Africa looking for a more stable and profitable job. Today new opportunities are accessible for everyone in the Shashe Community. Emigration is not the only solution.

*Sustainability and resilience.* The dissemination of new knowledge and the enhancement of traditions can contribute to a community's environmental, social and financial sustainability and higher resilience to adverse climate conditions and phenomena such as El Niño, which are making an already semi-arid land less and less productive.

Giangi Milesi  
President Cesvi

# ZIMBABWE: COMMUNITY RESILIENCE AND SUSTAINABLE AGRICULTURE



*Zimbabwe is ranked 99 of 118 countries in the 2016 Global Hunger Index. It is one of the Sub-Saharan countries worst hit by El Niño with more than 2.8\* million people suffering from food insecurity.*

- Capital City
- Beitbridge District, Matabeleland South Province
- Shashe, Cesvi project area



\* Sources: SADC/VAC, Humanitarian Partners, FEWSNET, WFP, FAO (September 2016).



## SOUTHERN RHODESIA PROCLAIMED ITSELF AS AN INDEPENDENT

Republic from Great Britain in 1965 through a unilateral declaration of the white minority, but very soon it became the theatre of a terrible civil war between British settlers (promoters of the country's autonomy) and the local population. This war caused over 30,000 dead (BBC 2002) and lasted until 1979. The following year democratic elections were held, which brought to power the Zanu-Pf party (Zimbabwe African National Union – Patriotic Front) and its leader Robert Gabriel Mugabe, who is still the country's President.

The country changed its name to *Zimbabwe*, after the name of an important archaeological site (Great Zimbabwe, in Shona language “zimba remabwe” means “great stony house”) which hosts impressive stone buildings that are very rare in other African regions.

Towards the end of the '90s, Mugabe started a land redistribution plan, the *Land Acquisition Act*, through which about half of the 11 million hectares of land that were in the hands of over 4,000 colonial agricultural companies were redistributed (Treccani 2016). Together with other controversial economic choices, this measure led to a deterioration of the country's agricultural economy, whose effects are still visible today.

Agriculture remains the main source of income for about 65% of the population (Treccani 2016) and it could potentially provide significant returns from exports, but the limited availability of capital and equipment, and a still unattractive environment for foreign investments limit actual growth. Today the country, which was known as Africa's granary and was the world's second biggest tobacco producer, is in deep crisis: it does not export anymore and has become a net importer of food (it bought one million tons of maize, mainly from Zambia, in 2015) and other basic goods. In the period 1984-2013 Zimbabwe witnessed over a hundred sudden increases in imports in difficult financial moments, overcoming the average level of imports by 30% (SOFI, FAO 2015).

After long periods of hyperinflation, in April 2009 Zimbabwe abandoned its own currency (the Zimbabwean dollar, which was officially withdrawn in June 2015) and adopted a “multi-currency” regime with nine foreign currencies accepted in economic and financial transactions. The US dollar is the most widely used (90% of the total) while the South African rand accounts for 5%.

Zimbabwe ranks 155 out of 187 countries in the Human Development Index (HDR, UNDP 2015), it counts 5 million people undernourished (FAO 2015) and it ranks 99 out of the 118 countries analysed in the 2016 Global Hunger Index (2016 GHI, von Grebmer et al., 2016).

Prolonged poverty plays a critical role in making hunger a persistent problem in Zimbabwe. 10 million people live in chronic poverty and 72% of the rural population live on less than USD 1.25 a day (HRP, UNOCHA 2016). Malnutrition, food insecurity, very high levels of HIV/AIDS (1,400,000 HIV-positive people, UNAIDS 2015) and a persistent economic crisis keep the population in an extremely vulnerable condition.



“In the most difficult moments, I remind everybody that it all seems impossible until it's done. Failing is not an option.”

**Munyaradzi  
Katemaunzanga**  
Cesvi coordinator  
in Shashe

# 3.4%

of population is **undernourished**.

# 3.2%

of children under five are **wasted**.

# 26.8%

of children under five are **stunted**.

# 7.1%

of children **die** before the age of five.

### Agricultural crisis, drought and food insecurity

Zimbabwe, with an agricultural sector already in crisis, is one of the Sub-Saharan countries worst hit by El Niño, a cyclical climatic phenomenon (every 2-7 years) which is characterized by an anomalous rise in the temperature of the central Pacific Ocean between December and January. It brings a significant reduction in rain and drought, often with serious consequences for agriculture and food security in entire regions. The 2015-16 El Niño was particularly long and intense with a negative impact on crops and livestock, and consequences for millions of people worldwide (FAO 2016).

The extreme drought of the 2014-15 season (December/March) led to a lack of over one million tons of maize over a total of the 1.6 million that are necessary to meet national needs, forcing the country to import maize from Zambia, which had had a significant surplus. A further deterioration due to scarce rain was recorded in the 2015-16 season: another loss of one million tons of maize (WFP 2016), which the government will have to import from extra regional markets, as most of the countries in the region also recorded losses due to the drought and need to import as well for their own internal needs. The only country which recorded a surplus is Zambia, but it can't satisfy the requests from the whole of Southern Africa on its own.

Furthermore, significant reduction in hectares of arable land and lack of water have caused a fall in demand for casual labour (45% less) in the planting and harvest periods (HRP, UNOCHA 2016), which have then led to unemployment and lack of income for hundreds of local households, in addition to overall damage to the local economy.

Rain, which was absent in most of the country from Novem-

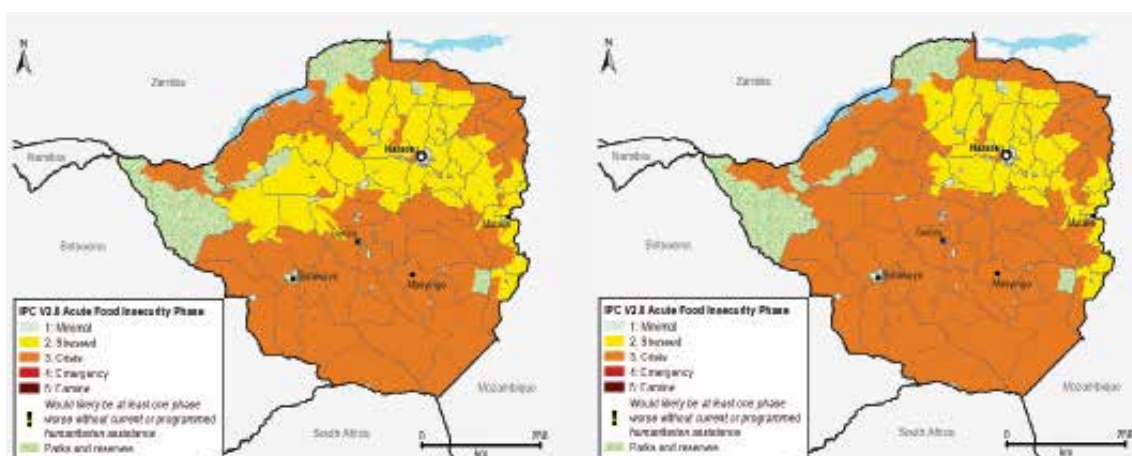
ber 2015 to February 2016 but was abundant, albeit late, from March, only partially regenerated the aquifers without any beneficial impact on the yearly harvest, which by then was completely compromised. It is estimated that October 2015- February 2016 was the second driest period in the last 35 years (FEWS NET 2016).

The availability of water for domestic use is not adequate either. In the provinces of Masvingo and Manicaland many families (42% and 40%) have no access to drinking water anymore, and are forced to use unsecure sources with an increased risk of contracting diseases such as typhus and cholera (HRP, UNOCHA 2016).

In drought-hit areas in the provinces of Masvingo and Matabeleland South (always among the most arid regions of the country) almost 25,000 livestock died (FAO 2016; HRP, UNOCHA 2016) and maize production was 81% less compared to the average of the last six years (Ministry of Agriculture Mechanization and Irrigation Development of Zimbabwe and FAO, 2016) forcing communities to depend on remittances coming from the Zimbabwean diaspora in South Africa, either as cash or more often food.

WFP estimates show 3.6 million people in need in October/December 2016 and 4.4 million in the first trimester 2017 (HRP, UNOCHA 2016).

This severe drought brought the country to such a level of food insecurity that President Mugabe was forced to appeal for USD 1.5 billion of humanitarian aid for the population at risk of hunger (WFP 2016; UNOCHA 2016). In response to the government's appeal, the United Nations (coordinated by the UN Resident Coordinator and supported by UNOCHA), some local ministries, NGOs and other humanitarian actors set up a shared action plan – the Humanita-



Source: FEWS NET, June 2016

Note: Projected acute food security outcomes, June-September 2016 (map 1) and October 2016-January 2017 (map 2).

rian Response Plan (HRP, April 2016- March 2017) – with a USD 360 million budget to be invested in five areas of intervention: agriculture and food security; health and nutrition; education; protection; water and sanitation (FAO 2016).

### Environmental conservation, resilience and rural communities' development

Cesvi has been working in Zimbabwe since 1998 with the ambitious target of combining environmental conservation of big protected areas and protection of endangered species with the socio-economic development of the poorest communities. Since 2000 Cesvi has been active in the Great Limpopo Trans-frontier Park (GLTP, between South Africa, Mozambique and Zimbabwe), introducing strategies of sustainable land use so that natural resources conservation goes hand in hand with the development of rural communities. There are many actors involved, from governments to local institutions and local population, from private tour operators to NGOs, down to the village leaders.

The GLTP is one of the “Peace Parks” wanted by Nelson Mandela: a transboundary protected area that incorporates the borders of different states. Inside the park any political or physical boundary is abolished, animals and residents are free to move around.

However, the population who lives in the parks has often been excluded from national development strategies, with very serious consequences in rural areas: low levels of education and schooling, lack of health services, extremely high levels of unemployment, mere subsistence agriculture and food crises. It is therefore necessary to strengthen the so-called last mile (isolated areas or suburbs where public services are not available) where scarce agricultural inputs, non-existent rural services, lack of basic and technical training, little or no access to credit, difficult communications, conflicts underway or latent, few economic alternatives still persist (Cesvi 2010).

Today Cesvi's environmental conservation, agricultural development and food security programmes in the transboundary areas of the parks of Great Limpopo (GLTFCA) and Greater Mapungubwe (GMTFCA) combine multi-sectorial interventions in collaboration with the private sector, for the production, processing and marketing of products with a high market value. This is to make sure that communities experience a true improvement in their living conditions while at the same time safeguarding and protecting the soil and the surrounding environment.



“In the past we used to have only theoretical classes in agriculture but now we can take our students to the fields of the project, grow our oranges, and earn an income for the school management and the development of our activities”.

#### Omega Nyathi

primary school teacher,  
Shashe



“Many farmers were not coming to the fields often. They were demoralised because of the difficult environmental and labour conditions. Clearing the land was very hard, we were doing everything manually, even cutting big trees and stumping roots”.

#### Takalani Moyo

farmer and Women  
Ambassador to Expo  
2015, Shashe

# The Shashe Citrus Orchard Experiment

## Background and area of intervention

Beitbridge district is situated in the southwest lowlands of Zimbabwe. It is part of agro-ecological zone five (Vincent and Thomas 1960) with altitudes averaging about 500 metres above the sea level. It is categorized as a semi-desert region. The Maramani Communal Area is situated in the southwest of the district on the Shashe-Limpopo Rivers, the international boundary with South Africa and Botswana.

Zimbabwe's Communal Areas are reserved for indigenous Zimbabweans where they live under traditional systems of land tenure and governance arrangements (Holleman 1952; Rukuni 1994). Their settlements are mainly concentrated near the rivers and in scattered villages inland where some water is available from natural pools and springs. In the '60s more people were moved into Maramani by the colonial government in order to devote more land to commercial farming.

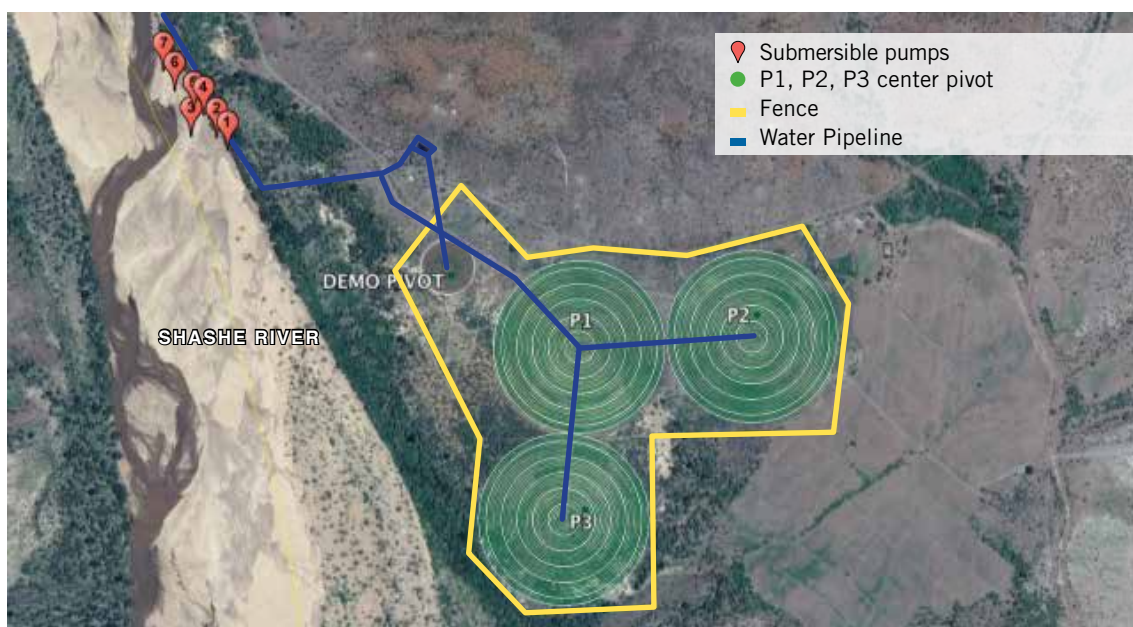
The Shashe irrigation scheme<sup>1</sup>, originally 184 hectares, was built and run as a top-down government-controlled "technocratic" scheme (Bolding 2004). The scheme was designed to provide livelihood opportunities to approximately ten villages in Maramani. Until the early '80s the scheme was productive, watering crops mainly for local consumption. Support from central and local government started dwindling from the '70s and almost completely ceased by the early '80s as a consequence of the independence war and the result-

ing lack of funds from the new government. The scheme slowly deteriorated and it ceased to be productive by the end of the '80s. Devastating floods and cyclonic events eventually damaged the remaining infrastructure so that by mid '90s no more than between ten and twenty hectares were being irrigated.

## Community engagement and traditional knowledge

In 2003, Nottingham Estate, a large-scale commercial citrus farm some forty kilometres from Shashe, promoted a consultation among local plot holders. The farmers wanted to have greater jurisdiction and ownership of the scheme, including the irrigation infrastructure. They liked the idea of a partnership with commercial institutions or non-governmental organizations (NGOs) in order to raise capital to revamp the scheme. They also proposed that a high-value marketable crop was introduced and favoured the introduction of oranges, in view of the long-term expertise of local farmers involved in citrus production. Also, Beitbridge Juicing (BBJ)<sup>2</sup>, a juicing factory mainly processing orange concentrate in the district, was interested in starting a collaboration.

If Shashe develops as a successful project, it could be used as a model for other schemes in the area. In 2010 the Maramani Community, supported by Nottingham Estate and BBJ, asked Cesvi – active in the Southern Lowveld since 1998 having done extensive research<sup>3</sup> in the Maramani area linked to the introduction of the Mapungubwe TFCA (Trans-frontier Conservation Area) – to revamp the Shashe irrigation





scheme. Cesvi accepted the challenge also thanks to the EU financial support. A new model was proposed, which promoted a shift of paradigm from traditional subsistence agriculture and aimed to turn the community into a commercial enterprise by linking together: traditional knowledge of the area and its resources; local expertise from existing commercial ventures; market access through the local processing plant; commitment to the implementation of a long-term strategy by traditional and local leaderships; and donor funds through the technical support of a NGO (Latham et al. 2015). The scheme started working in 2011.

### Shashe: an example of adaptive management

The model introduced at Shashe is based on researches carried out over a number of years at regional and national level as well as local participative research with and by the Shashe Community. The work undertaken by Mead (2001), Cunliffe (2004) and Latham (2005) as advisers and consultants to Cesvi (see Bibliography) contributed to its progress. Most importantly it incorporates the views and scenarios of the community, the local leadership and other stakeholders.

The replacement of obsolete technologies (well points and flood irrigation) with a modern and sophisticated irrigation system (submersible pumps and ultra-high center pivots) was designed and adapted to fit the needs of the community and the agricultural regime (coexistence of citrus and other crops grown between the citrus trees). Oranges represent an innovation for the community. The adoption of inter-row cash cropping at the behest of the community, in order to enhance immediate returns of food and funds for development and maintenance, represents a further innovation, compared to the traditional citrus culture. This way, immediate cash returns are made available by using land between the trees, which normally remains uncultivated on commercial citrus plantations.

The development of the new model is based on regular and iterative use of a systematic and strategic scenario planning referred to as *adaptive management* (Jiggins and Roling, 2000; Latham 1999 and 2005; Murphree 2001). The shift from subsistence agriculture to a community-based commercial enterprise is thus made possible by innovation, experiments and adaptive management of land and resources.

### Innovative approach and climate change mitigation

Through goal setting, and regular, iterative self-assessment, farmers are assisted to develop and change perceptions in light of newly perceived opportunities, technologies and agronomic innovations, as well as to adapt and change their short-term goals while retaining their vision and overall objectives. This new model thus embraces a common worldview and vision that is centred upon rural perceptions of food security (generally defined by the “food availability”) as a main objective, which is accompanied by long-term commercial sustainability (“high-value crops - oranges”) and the investment of the acquired income in scheme management and maintenance, with individual profits accruing to participating beneficiaries (scheme’s shareholders). This new model consists in an on-going learning



“I have often thought that if our community fails, we will be left with only firewood and many farmers will be disappointed and won't have any income anymore. Leading the Irrigation Scheme Committee is a complex task but there is a lot of satisfaction when we achieve results. Our children will remember us if we are successful, but they will forget us if we fail”.

### Masotsha Mudau

representative of the Shashe Irrigation Committee



“When we started many farmers were afraid that orange trees would die because of drought and lack of water. Some of them left the project straight away, but now many have asked to come back and work with us”.

### Gediwe Sibanda

farmer and resident of Shashe

and adaptive process where Cesvi is devoted to promote a partnership between the community and its external partners.

At Shashe, the task of upgrading infrastructure goes hand in hand with institutional development. Thanks to Cesvi, the centre pivots and related installations were introduced.

This involved some bold decisions such as: sinking boreholes for submersible pumps deep in the Shashe River bed to replace the unserviceable old well point system; replacing degraded asbestos-cement delivery lines from pumps; extensive bush clearing and land preparation for three 30-hectare center pivots that replaced the in-field trapezoidal canals, siphons and flood irrigation system. All these improvements led to a reduction of at least 50% of water usage which can be estimated at a figure of about 400,000 m<sup>3</sup> of water saved each year per each pivot when the citrus trees will be fully grown (by 2020). Saving water automatically translates into saving electricity, for the amount of about USD 50,000 per year. This money thus becomes available to the community, and it represents an enormous reduction in CO<sub>2</sub> emissions, contributing to global response to climate change.

Furthermore, since 2011 Cesvi has been supplying over 22,000 orange trees planted by the community. The carbon sequestration<sup>4</sup> potential for a low input orchard like Shashe represents an incredible opportunity to demonstrate that also small rural communities can play an important role in climate change mitigation (Jackson 2013; Mngorsquo and Beedy 2013; Mehta et al. 2016). It might even play a direct

role within the carbon market in the near future, generating additional revenues to support and boost community development and further expand current irrigated land also through payment for ecosystem services (Mngorsquo and Beedy 2013).

Following the introduction of young orange trees, which take at least four to five years to reach maturity, intercropping between the trees became an established practice. Crops such as seed beans, squash, sweet potatoes, turnips, cabbage and maize are cultivated, either on contract for cash or for basic food requirements. Through the formula of contract farming, farmers are allowed to borrow inputs (i.e. seeds, fertilizers) as part of their contract with agri-business companies and to repay the loan by deduction from the yield. With this formula, the burden of up-front capital investment is mitigated and sale is guaranteed, allowing the poorest communities to farm high-value crop at an ideal farming regime. Because of lack of money, communities often reduce fertilization thus seriously damaging the harvest. This is no longer necessary now.

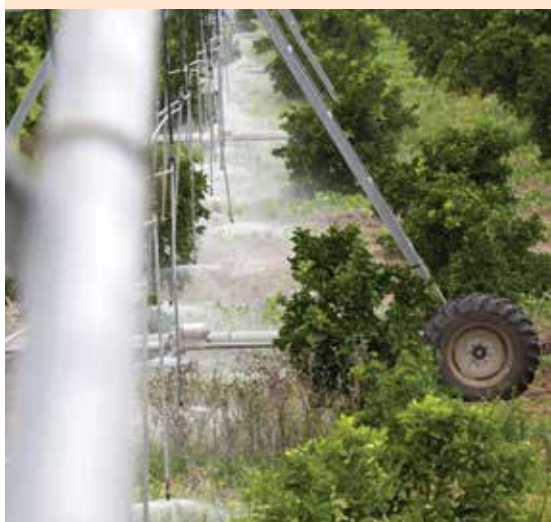
### Community resilience

In light of the experience gained at Shashe, the new model being developed may well prove to be a successful template for replication to other schemes in the area and beyond - with suitable modifications to fit the needs, aspirations and technical requirements. The Shashe model is not only economically sound and sustainable but might also prove capable of feeding the whole Maramani community.

The project is including not only small farmers but also 2 schools in Shashe (about 900 students), which are members of the irrigation scheme contributing in planting and harvesting within their classes in agriculture. They earn an income for the school management and the development of the activities.

Our research and conclusions also suggest that increased resilience is achievable by introducing solar power to replace expensive and unreliable grid energy, thus promoting environmental conservation and increased profitability of the scheme. The electricity cost for pumping and delivering water is estimated to increase by up to USD 150,000 per year by 2025, when the trees will be fully grown. Therefore, an investment in solar installations will not only boost the reduction of CO<sub>2</sub> emissions but at the same time allows for huge savings which can be reinvested in further development for the wellbeing of the entire community.

Center pivot at work in the Shashe orange grove



### Sustainable agriculture through a market approach

The contract farming formula, which was introduced in the third year of the project, proved very successful, anticipating the originally planned breakeven by allowing an immediate income for the community as well as two farming seasons each year in addition to the citrus harvest. This, coupled with the drop in orange juice prices due to the devaluation of the South African Rand, its main competitive market, made inter-cropping more valuable than citrus, at least until the orange production reaches a full commercially viable quality and quantity by 5 years after planting (2018 for the Shashe orchard).

At the same time, the introduction of inter-cropping allowed experimenting suitable varieties adapted to the local climate and better performing in terms of productivity and market price. The production of sugar beans on contract for local seed companies allows for a price premium – double price compared to food beans – at the same production cost. Identification of locally available markets and premiums on productivity are at the roots of the improved model. This can then be replicated through ad hoc identification of cheaper technological solutions to be adapted to the communities' will.

### Conclusions

From what we have illustrated, it becomes clear that managing an irrigation scheme involves counterbalancing a set of essential ingredients. There is the need for efficient and effective means of delivering cost-effective water to the crops in sufficient and reliable quantities. It is also necessary to have effective, appropriate, resilient and adaptable management in place. The Shashe model illustrates the implementation of a programme which was designed to maximize the benefits deriving from these primary requirements (Latham et al. 2015). Cutting edge technology, new and untested by the community, coupled with the intro-



“The Shashe Community Citrus Scheme is the perfect example of a successful private-public partnership that will benefit a poor community for decades to come. It has taken a significant amount of work on the part of Cesvi for the project to be a success. We commit as BBJ to continue supporting the project and would like to see similar schemes being developed as a sustainable solution to eradicate hunger and poverty.”

**Unaiswi Nleya Nyikadzino**  
BBJ-Schweppes

Agriculture is the pillar of the economy of Zimbabwe and contributes 15% to the national Gross Domestic Product, provides livelihoods for about 70% of the population and accounts for 23% of formal employment. The European Union has long recognised this key role of the agricultural sector for economic growth in Zimbabwe as well as the challenges it faces. We therefore not only continue our support but have reinforced our commitment with 88 million Euro under the 11th European Development Fund to create a diversified, competitive and efficient agricultural sector that contributes to inclusive economic growth and revenue generation. To realise this vision the European Union follows a strategic approach that addresses the three pillars of i) resilience building of communities, ii) sustainable management of natural resources and iii) productivity improvement and value creation. As such the Shashe Citrus Orchard Project unifies all elements of this

approach and confirms its relevance. In this process, establishing an effective partnership between the Public Sector, the Private Sector and the Communities has emerged as the key success factor and I believe the project in Shashe has been particularly successful in establishing this Public Private Community Partnership (PPCP). I would like to take this opportunity and thank Cesvi and our partners in the private sector: Nottingham Estate & Schweppes as well as Seed Co Limited, Northern Farming and East-West Seed Group for their contract farming arrangements; and our partners in the public sector: District Administration, Rural District Council, AGRITEX and most of all the community in Shashe for making the project a striking success.

Ambassador Philippe Van Damme, Head of Delegation of the European Union to the Republic of Zimbabwe

duction of citrus on a high scale, both in terms of hectares and lead-time (five years for its commercial viability), were unprecedented in the experience of the farmers.

All these innovations require management. More importantly, they require a sense of ownership by the community. The development of a management paradigm must contain three primary ingredients. Firstly, it must be developed as part of the community's own vision and mission and fit with its worldview and perception of how best to improve its livelihood strategies in a harsh and unforgiving environment. Secondly, it must develop in circumstances which allow a conservative and cautious community to adapt to the changes brought about by technology, the demands of a market-driven economy and reliance on outside agencies for support and expertise. Thirdly, and perhaps most importantly, the ownership of the scheme must remain firmly in the hands of the community. This is achieved through the creation of a Trust<sup>5</sup> which legally states the community's ownership of the scheme.

From the outset, the facilitators (Cesvi and the Beitbridge Rural District Council)<sup>6</sup> employed the methodological tools of scenario modelling and planning linked to adaptive management: "an approach to the management of complex systems based on incremental, experiential learning and decision making, buttressed by active monitoring of and feedback from the effects of outcomes and decisions" (Jiggins and Roling 2000). Farming at best is a business that needs to respond to

unforeseen changes in weather, markets, diseases and other unexpected events. It strengthens resilience, creates a culture of learning and a capacity to use experience blended with new ideas to cope with situations that are not usually encountered. Ownership and pride in the ability to cope with internal and external challenges are enhanced, and management is thus improved. However, the gains achieved by adaptive management must be balanced against the reality that this process takes time.

<sup>1</sup> An irrigation system includes all the plumbing infrastructures for water distribution. It is made by a source of provision, a main net which provides water to a secondary one aimed at distributing water to each land or field.

<sup>2</sup> Beitbridge Juicing (pvt) Ltd (BBJ), is a manufacturer and processor of fruits into juice concentrate and other related bi-products such as fruit oils, fruit essences and stock feed. It became a member of Schweppes Holding Africa Limited in 2014. BBJ is situated in the Beitbridge District and it has been a part of the Shashe Citrus Orchard project since the beginning.

<sup>3</sup> For more info see [http://www.cesvi.eu/sectors/UserFiles/File/reports%20eco%20development/SLP10\\_SLTFCA%20Concept%20paper.pdf](http://www.cesvi.eu/sectors/UserFiles/File/reports%20eco%20development/SLP10_SLTFCA%20Concept%20paper.pdf); [http://www.cesvi.eu/UserFiles/File/reports%20eco%20development/SLP20\\_CESVI%20SL-TFCA%20Workshop%201oct03.pdf](http://www.cesvi.eu/UserFiles/File/reports%20eco%20development/SLP20_CESVI%20SL-TFCA%20Workshop%201oct03.pdf)

<sup>4</sup> Carbon sequestration is the process involved in carbon capture and the long-term storage of atmospheric carbon dioxide (CO<sub>2</sub>) to either mitigate or defer global warming and avoid dangerous climate change. The carbon emissions from fertilizer, pesticides, water, electricity and fuel production, delivery and use, was estimated to range from 0.22 Mg CO<sub>2</sub> eq/ha for low

input orchards to 4.28 Mg CO<sub>2</sub> eq/ha for high input management. The net carbon sequestration potential was calculated between 15.35 Mg CO<sub>2</sub> eq/ha and 95.14 Mg CO<sub>2</sub> eq/ha for an input application ranging from two years to 16 years (Jackson, 2013).

<sup>5</sup> A Trust is a relationship whereby property is held by one party for the benefit of another. A trust is created by a settlor, who transfers property to a trustee. The trustee holds that property for the trust's beneficiaries. Trusts exist mainly in common law jurisdictions.

<sup>6</sup> Rural District Council (RDC) is one of the local offices of the government aimed at guaranteeing the integrity and the accuracy of each development intervention in the Beitbridge District. It is one of the main partners of the Shashe Citrus Orchard project.

<sup>7</sup> The Irrigation Management Committees (IMC) are private bodies democratically elected by an assembly (composed by all recipients of a specific irrigation scheme) under the supervision of both local and traditional authorities. The IMC's members remain in office for two years managing the irrigation scheme and guaranteeing the respect of the rules and statutory purposes.

## THE SHASHE IRRIGATION MANAGEMENT COMMITTEE<sup>7</sup> AND ITS STORY

“We have always wanted to revamp the Shashe irrigation scheme, which was built in the '60s but then was completely abandoned. We tried many times but to no avail, until 2007, when the University of Zimbabwe and FAO accepted our request for help. Later on, together with Nottingham Estate and BBJ we contacted the European Commission and Cesvi, which had been working in the area since 2000, to start a new and fruitful collaboration. In 2011 we started clearing the soil and planting oranges in an initial area of about two and a half hectares, and we installed the first of the three centres - 30 hectares each. In 2013, we planted the first 60 hectares of oranges and in 2015 we got our first harvest. Only recently we finished our third lot - a further 30 hectares - reaching the target of over 22,000 oranges”.

At the beginning it was hard work. Our Headman, Maupulo, always pushed us to go forward even when we were scared of not achieving any result. But we believed in it, thanks also to the support of technicians and agronomists who explained to us how to plant and use the pivots for an efficient irrigation that allows for significant savings in water and energy. In 2015, while we were waiting for the first orange harvest, we started cultivating beans and vegetables in between trees. Today we sell oranges, vegetables and beans to local companies and we have the money to support our families, to pay other labourers who collaborate with us and manage our irrigation scheme. It is a long process and we know that we have just started. If we fail, the scheme will become firewood, as our Committee Representative says. But we don't want this to happen. We are very proud of what we have done so far.”



# BIBLIOGRAPHY

## B

BBC, 2002. **Government compromise in 1971 Rhodesian talks.** Londra.

Bolding, Alex. 2004. **In hot water: A study on sociotechnical intervention models and practices of water use in smallholder agriculture, Nyanyadzi catchment, Zimbabwe** (Wageningen University The Netherlands).

## C

Cesvi, 2010. **Policy Sicurezza Alimentare.** Bergamo.

Cunliffe, RN. 2004. **"Sustainable development and natural resources management in southern Zimbabwe. PRA and Questionnaire Survey Study in Sengwe-Tchipise Communal Lands - Final Report Part II: Livelihood Patterns."** In [http://www.cesvi.org/aaa-root/o/SLP29\\_CESVI\\_AID5063\\_Sengwe\\_PRA\\_part\\_II\\_final.pdf](http://www.cesvi.org/aaa-root/o/SLP29_CESVI_AID5063_Sengwe_PRA_part_II_final.pdf): Cesvi.

## F

FEWS NET (Famine Early Warning System Network), Marzo 2016. **Southern Africa Special Report.** Illustrating the extent and severity of the 2015-16 drought, <http://www.fews.net/southern-africa/special-report/march-2016>, accessed on 05/08/2016

FEWS NET (Famine Early Warning System Network), Aprile 2016. <http://www.fews.net/southern-africa/zimbabwe/food-security-outlook-update/april-2016>, accessed on 31/07/2016

FEWS NET (Famine Early Warning System Network), Luglio 2016. <http://www.fews.net/southern-africa/zimbabwe/food-security-outlook/july-2016>, accessed on 07/09/2016

FAO (Food and Agriculture Organization of the United Nations). 2015. **The State of Food Insecurity in the World 2015. Meeting the 2015 international hunger targets: taking stock of uneven progress.** Rome.

FAO (Food and Agriculture Organization of the United Nations). 2016. **2015 – 2016 El Niño. Early action and response for agriculture, food security and nutrition.** Working draft, update 9.

## H

Holleman, J.F. 1952. **Shona Customary Law: With Reference to Kinship, Marriage, the Family and the Estate** (Manchester University Press).

## J

Jackson, Mwamba Bwalya. 2013. **Estimation of net carbon sequestration potential of citrus under different management systems using the life cycle approach.** Research Thesis, **University of Zambia Research Repository Online**, Research Thesis.

Jiggins, Janice, and Niels Roling. 2000. **Adaptive management: potential and limitations for ecological governance**, *International Journal of Agricultural Resources, Governance and Ecology*, 1: 28-42.

## L

Latham, C.J.K, L. Palentini, M. Katemaunzanga, and P. Ashton. 2015. **From Subsistence Agriculture to Commercial Enterprise: Community management of green technologies for resilient food production**, *Future of Food: Journal on Food, Agriculture and Society*, 3: 8-17.

Latham, C.J.K. 1999. **Local Level Management of Natural Resources: a Longitudinal Perspective**, IAC, Wageningen, Netherlands.

Latham, C.J.K. 2005. **NYIKA VANHU: THE LAND IS THE PEOPLE**, University of Zimbabwe.

## M

Mead, B. 2001. **Consultancy for the Re-design of Small-scale Irrigation Schemes, Maramani Communal Land, Beitbridge District, Zimbabwe (Shashe, Jalukanga and Bili Irrigation Schemes).** In.: Cesvi.

Mehta, Lal Chand, Jitendra Singh, PS Chauhan, Bhim Singh, and RK Manhas. 2016. **Biomass Accumulation and Carbon Storage in Six-Year-Old Citrus reticulata Blanco. Plantation**, *Indian Forester*, 142: 563-68.

Mngr'squo, Simon A, and Tracy Beedy. 2013. **Positioning fruit trees into climate change/variability scenarios: Opportunities and constraints in the placement of fruit tree species in payment for environmental services**, *Scientific Research and Essays*, 8: 1343-48.

Murphree, Marshall. 2001. **Experiments with the future.** In A seminar on an interdisciplinary longitudinal and interactive methodology to explore environmental and institutional sustainability in the human use of nature, UCB Botanic Garden.

## T

Treccani. 2016. <http://www.treccani.it/geopolitico/paesi/zimbabwe.html>, accessed on 05/08/2016

## U

UN Sustainable Development Knowledge Platform. <https://sustainabledevelopment.un.org/sdg2> Accessed on 05/08/2016

UNAIDS (Joint United Nations Programme on HIV and AIDS). 2015. **Global AIDS Response Progress Report 2015.** Follow up to the 2011 Political Declaration on HIV/AIDS: Intensifying our efforts to eliminate HIV/AIDS. Zimbabwe Country Report. Period January – December 2014. Harare.

UNDP (United Nations Development Programme). 2015. **Human Development Report.** Work for Human Development. New York.

UNOCHA (Office for the Coordination of Humanitarian Affairs of the United Nations). April 2016. **Humanitarian Response Plan**, March 2015 – April 2017, Zimbabwe. Harare.

[https://www.humanitarianresponse.info/en/system/files/documents/files/4\\_may\\_zim-hrp-2016\\_03\\_pm\\_002.pdf](https://www.humanitarianresponse.info/en/system/files/documents/files/4_may_zim-hrp-2016_03_pm_002.pdf)

## V

Von Grebmer, Klaus, J. Bernstein, D. Nabarro, N. Prasai, S. Amin, Y. Yohannes, A. Sonntag, F. Patterson, O. Towey, and J. Thompson. 2016. **2016 Global Hunger Index: Getting to Zero Hunger.** Washington, DC: International Food Policy Research Institute; Bonn: Welthungerhilfe; and Dublin: Concern Worldwide.

## W

WFP (World Food Programme of the United Nations). 2016. <http://documents.wfp.org/stellent/groups/Public/documents/ep/WFP284601.pdf>

# IMPRINT

**Cesvi**

Via Broseta 68/a  
24128 Bergamo, Italia  
Tel. +39 0352058058  
Fax + 39 035260958  
www.cesvi.org

**CEO & General Manager:**

Daniela Bernacchi

**Authors:**

Lylen Albani, Loris Palentini

**Editing:**

Nicoletta Ianniello, Valentina Prati, Arianna Previdi

**Translation:**

Laura Fano

**Photo credits:**

**Photo Cover:** Giovanni Diffidenti.

Farmer working in the Shashe orange grove.

page 4: Loris Palentini. Harvesting.

page 10: Giovanni Diffidenti. Center Pivot.

page 13: Giovanni Diffidenti. Family.

All pictures have been taken in Shashe, Zimbabwe.

**Disclaimer:**

The views expressed in this publication are those of the authors and not necessarily those of Cesvi.

**Graphic:** New Target srl, Bergamo

**Printing:**

EUROINTERMAIL srl  
Via del Caravaggio 3, 20144 Milan

This publication is part of the European edition of the 2016 Global Hunger Index and published by Cesvi.

Bergamo, October 2016

With the  
support of



Under the  
patronage of



European Union



ITALIAN EMBASSY HARARE

**Cesvi**

Via Broseta 68/a  
24128 Bergamo, Italy  
Tel. +39 0352058058  
Fax + 39 035260958  
[www.cesvi.org](http://www.cesvi.org)  
Member of Alliance2015