UNFAIR HARVEST

The state of rice in Asia

www.oxfam.org

OXFAM

Small-scale producers grow most of the rice in Asia, playing a significant role in providing food security, jobs and income across the region. However, a combination of worsening inequality in food value chains and the crippling impacts of climate change is leaving rice farming systems at a critical juncture. These challenges threaten the future viability of rice production that underpins the livelihoods and primary food source for millions of people.

New research commissioned by Oxfam shows that rice farmers in some countries can receive as little as 4% of the price paid by consumers. This has implications for poverty: in Nepal, farmers' income from rice farming is estimated at just 13% of the amount needed for a basic but decent income. The burden is particularly bad for women farming and working in the Asian rice sector: they receive lower wages and often suffer discrimination.

There are opportunities for change. For example, smarter government regulation to protect workers' rights and empower small-scale producers can support better returns for farmers; and responsible private sector investment can support small-scale producers to benefit from rapidly modernising rice markets.

This paper puts forward a vision for a more equitable, sustainable and climate-resilient rice sector; and provides recommendations for governments and the private sector to help achieve that vision.

This paper was written by Ruth Segal and Le Nguyet Minh. Oxfam acknowledges the assistance of the Bureau for the Appraisal of Social Impacts for Citizen Information (BASIC), Alvaro Durand-Morat, Siddharth Sreenivas, Asim Saqlain, Shirrin Abbasy, Mahendra Mahato, Prakash Subedi, Shreedhari Pandey, Emma Wadley, Robin Willoughby and Anna Coryndon in its production. It is part of a series of papers written to inform public debate on development and humanitarian policy issues.

For further information on the issues raised in this paper please email AsiaComms@oxfam.org.uk

Published by Oxfam GB for Oxfam International under
ISBN 978-1-78748-418-4 in March 2018. DOI: 10.21201/2019.4184
Oxfam GB, Oxfam House, John Smith Drive, Cowley, Oxford, OX4 2JY, UK.

Cover photo: Working to transplant rice in Sheikhpura District of Pakistan.
Photo: Shirin Abbasy/Oxfam in Pakistan.

SUMMARY

The food industry is worth billions of dollars, and yet poverty is widespread among the small-scale farmers and workers who produce and process the things we eat.

Rice farming in Asia is no exception. Small-scale producers grow most of the rice in Asia, but for generations have been trapped in unequal relations with traders, millers and other actors along the value chain, lacking the power to negotiate for a fair share of the value of what they have grown. Increasing input costs, unsustainable production methods and climate change are all adding to their risks and vulnerability. The burden is particularly bad for women farming and working in the Asian rice sector: they receive lower wages and suffer discrimination.

Research commissioned by Oxfam suggests that rice farmers can receive as little as 4% of the price paid by consumers.[1]

Research commissioned by Oxfam suggests that rice farmers can receive as little as 4% of the price paid by consumers,[3] leaving them with incomes significantly below the level needed for a basic but decent standard of living (a living income – see the definition in Box 2) in each country studied. In Nepal, where the gap is largest, farmers' incomes from rice farming are estimated at just 13% of the living income.[4]

In Nepal, where the gap is largest, farmers' incomes from rice farming are estimated at just 13% of the living income.[2]

However, the rice sector in Asia is changing fast, with mechanization changing production methods, consolidation of millers and traders changing distribution, and the rise of supermarkets changing retail. This modernization could be a major opportunity for rice farmers to engage in new markets, build sustainable and climate-resilient production systems, and reverse historical injustices and market exploitation.

Unfortunately, evidence indicates that so far, small-scale producers and workers are being further squeezed by these changes. The situation could get worse, as supermarkets gain more of a foothold in the region and consolidation along the value chain enables traders and retailers[5] to take even more of the total value of rice sold.

To address these challenges, and ensure the development of a prosperous and sustainable rice economy, there must be reform. The development of new, better regulated value chains offers opportunities to small-scale farmers to escape exploitative relations, and move out of poverty. But governments, the private sector and civil society must act to realize this vision.

Modernization could be a major opportunity for rice farmers to engage in new markets, build sustainable and climate-resilient production systems, and reverse historical injustices and market exploitation.

To ensure that the modernization of the rice sector benefits small-scale farmers, we call on governments, the private sector and civil society to address the structural inequalities. The sector needs better regulation, including policies that enable and encourage sustainable production, and incentivize companies to work with small-scale producers—both women and men—to achieve a more equitable distribution of the benefits and opportunities in the value chain.

Governments should:

- Legislate to protect labour rights and women's rights, including guaranteeing adequate minimum prices for small-scale farmers, and guaranteeing equal pay and conditions between women and men.
- Support alternative business models that work with and strengthen cooperatives and agricultural collectives, including in the informal sector.
- Enact and enforce policies to improve access to resources and opportunities for small-scale producers and women, including supporting farmers to move to more sustainable production methods.
- Create incentives for businesses to implement sustainability standards which benefit smallholder farmers.

The private sector should:

- Commit to upholding the UN Guiding Principles on Business and Human Rights.[6]
- Commit to implementing inclusive and gender-sensitive practices and standards, and promote standards that focus on smallholder interests, gender equality and climate change.
- Guarantee safe working conditions and equal opportunities for women throughout their value chain.

This report is part of Oxfam's new campaign to expose the root causes behind human suffering in food supply chains and to mobilize the power of people around the world to help end it.[7]

1 RICE AT THE HEART OF AGRICULTURE IN ASIA

Rice is the staple crop for more than half of the world's population. It is the most important crop grown in Asia, providing livelihoods for millions of farmers, and up to 70% of calories for the poorest people across the region.[8] Roughly 90% of the world's rice is grown in Asia, and most of it is consumed there.[9]

Across Asia, there are about 400 million people engaged in growing rice on 144 million smallholder farms, often no bigger than two hectares.[11] These small-scale farms currently account for most of the rice grown in the region. Earning an adequate living is hard, with returns from small-scale rice farming only between $2 and $6 a day per farm.[12] Rice growers are also increasingly having to manage the impacts of climate change, which increases risk and uncertainty. The poorest farmers and workers are least able to cope.

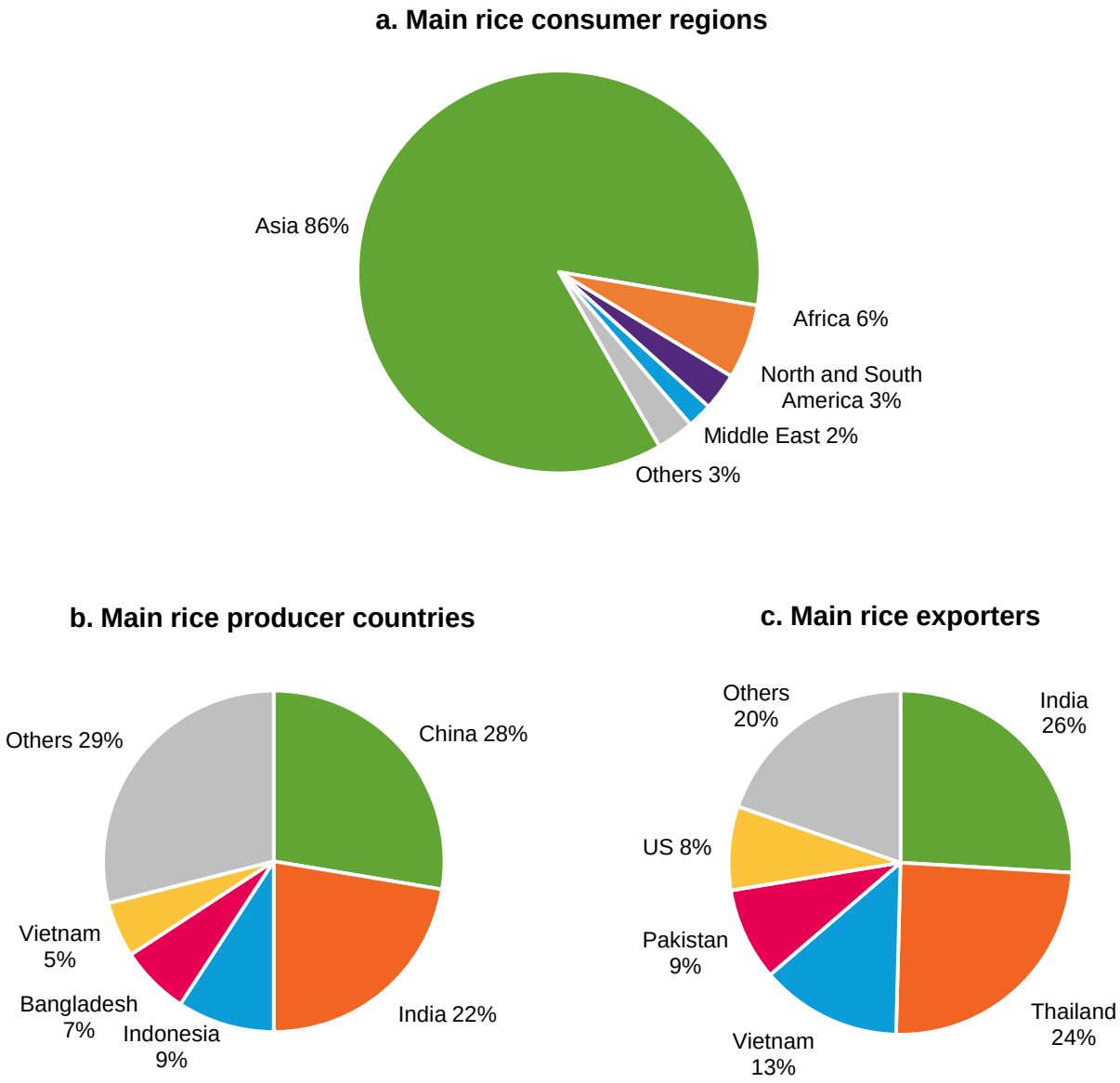
Returns from small-scale rice farming are only between $2 and $6 a day per farm.[10]

Women play a major role in rice farming in all countries in Asia. In Indonesia, over 70% of labour in upland rice production is female, while women contribute over 45% of labour for rice production in Bangladesh.[13] But across the region their work often goes unrecognized and unpaid, leaving women struggling to feed themselves and their families. Oxfam research found that, in 2017, more than eight out of ten women workers and farmers growing rice in Pakistan were severely food insecure.[14]

DOMESTIC CONSUMPTION DOMINATES

Rice is mainly grown for domestic consumption, with only 9.5% of total production traded internationally in 2017–18.[15] Nonetheless, in some countries, the export market contributes significantly to overall GDP, so governments are keen to see it grow. Most rice on global markets (81% in 2016) is grown in Asia, with India, Thailand, Vietnam and Pakistan major exporters (see **Figure 1**).

Figure 1: The Asia region is a major consumer, producer and exporter of rice



Source: C. Alliot and T. Fechner. (Forthcoming). Distribution of value in Asian Rice Value Chains. Oxfam-commissioned research undertaken by BASIC (Bureau for the Appraisal of Societal Impacts for Citizen Information). Based on FAO data (2018) and on USITC and UN Comtrade data (2016).

Global markets are changing: new markets are opening up as consumption increases in countries in West Africa, while dietary changes in Asia are reducing rice consumption in some traditional markets. This is affecting the shape of value chains and prices in Asian markets. The amount countries export also depends on domestic policies, as well as the impact of climate change on production. This creates a close link between domestic and export markets. Global price volatility therefore affects what price farmers receive, even if they are producing for domestic consumption.

Global price volatility affects what price farmers receive, even if they are producing for domestic consumption.

RICE VALUE CHAINS ARE EVOLVING

Rice reaches consumers either through a large number of informal value chains, in which smallholders sell to informal mills and traders to serve local markets; or through a smaller number of more integrated value chains, in which farmers sell to larger mills or traders serving urban markets (including via supermarket chains). Integrated chains tend to be shorter. For both routes, there are three segments to the value chain:

Figure 2: The stages of the rice value chain fall into three segments

Changes to the structure of value chains

At all stages, rice farming is changing:[16]

- Upstream production is moving from subsistence farming with minimal surplus to more commercialized operations;
- Midstream is changing through the modernization and consolidation of milling; and
- Downstream structures are adjusting to the growing role of supermarkets.

Changes in the rice sector are driven by structural changes in Asian economies, particularly income growth and urbanization. These have caused labour to shift from rural to urban areas, decreased rice consumption in several countries, and put pressure on governments to ensure stable food supplies for urban populations.

As a result, governments have reduced direct support to farmers and invested in infrastructure creating food systems serving cities.[17] Richer farmers are able to take advantage of these shifts by investing in inputs such as fertilizer, pesticides, irrigation and new seed varieties, and entering burgeoning markets for land rental. This is starting to lead to the concentration of landholdings and an increase in the number of small commercial farms.

Milling is becoming more concentrated,[18] with a smaller number of large mills taking on a larger proportion of processing. Mills are also engaging in packaging and branding, and building direct relationships with supermarkets. The retailing of rice is changing as supermarkets become larger players in retail across the region. These changes are leading to

lower prices for urban consumers, but often at the expense of a decent income for smaller-scale farmers.

Despite these changes, most rice grown in Asia is still produced by small-scale farmers working landholdings that are, on average, smaller than two hectares.[19] New, better regulated value chains offer a major opportunity for these small-scale rice farmers to engage in new markets and lift themselves out of poverty. But governments, the private sector and civil society must act to ensure that modernized value chains are set up to develop these opportunities. So far, many small-scale farmers have not benefitted.

Policy challenges

Many countries have put in place policies to ensure stable supplies and low prices for urban populations.[20] However, this needs to be balanced with policies to reduce poverty in rural areas by ensuring rice farmers receive an adequate income. Because rice is a staple food for so many, it is politically sensitive, and governments have tried different policy approaches to address both urban and rural poverty.

The complexity of this is challenging even for middle-income countries. For instance, Thailand implemented eleven different subsidy schemes between 2004 and 2014.[21] These have ranged from paying farmers a premium to encourage production, to subsidizing the prices of inputs such as fertilizer and farm machinery. All have been attempts to address the politically thorny problem of the income gap between farmers and employees in other industries.

In Vietnam, 85% of rice-growing households cultivate an area of less than 0.5 hectares.[22] The government has implemented a range of different policies, such as paddy stockpiling and price support, but these have had limited impact on the incomes of small-scale farmers or the volatility of prices.[23]

2 ASIA'S RICE SECTOR IS VASTLY UNEQUAL

Since the mid-1990s, there have been major changes in regional rice value chains that have contributed significantly to inequality. The power of rice farmers has declined, both in terms of their share of value in the rice value chain and their negotiating power. Alongside this, the role of the private sector has grown considerably, shifting relations between stakeholders in the industry.

The power of rice farmers has declined, both in terms of their share of value in the rice value chain and their negotiating power.

For women farmers and workers in rice value chains, the situation is even worse. They have the least power, incomes, access to markets, inputs and training, and rights to land and social protection.

Climate change has also increased risks and uncertainty for the millions of farmers in Asia through changing precipitation patterns and increases in extreme weather such as floods and drought. This increases inequality as the poorest farmers are the most vulnerable to these impacts.

THE POWER OF FARMERS IS DECLINING

Farmers as price takers

Smallholder farmers are at the bottom of the rice value chain, and hold the least negotiating power. They are invariably price takers, struggling against exploitative relations with traders, millers and other middlemen. In many countries in Asia, rice value chains are unregulated and unmonitored, based on informal relations between actors.

Research shows that production costs and retailers' share of value have risen steadily between 2007–16 in all the countries studied, while prices for farmers have fallen, squeezing their profit margins.

New research commissioned by Oxfam[24] examining the rice value chains in Nepal, Pakistan and Vietnam estimates that farmers receive 4–17% of the price paid by consumers, depending on the type of rice and the final market for it; retailers receive 22–24% of the value in domestic markets. The research also shows that production costs and retailers' share of value have risen steadily in the period 2007–16 in all the countries studied, while prices for farmers have fallen, squeezing their profit margins.

Box 1: Three stages of value chain modernization

Reardon et al. (2018)[25] describe three stages of food system transformation:

- In a **traditional** food system, there is a small urban population, and short supply chains serve local villages and towns. The chain is fragmented, with little capital investment and uses labour-intensive technologies. There are no formal contracts or standards, and farmers rely on loans from traders to buy inputs.
- In a **transitional** system, increased urbanization means supply chains lengthen as a larger area is needed to grow enough food to feed the urban population. Value chains are still fragmented, but with some consolidation. Quality standards are emerging and used in some markets. Both capital-intensive and labour-intensive production methods are used. Farmers rely less on traders for loans because they have other income sources, such as off-farm employment.
- In a **modern** system, there are long value chains, with consolidation in some parts of the chain, such as retail and processing. Private standards and contracts are more widely used, and there is more regulation of food quality and safety. Farmers may have formal contracts, and access to regulated financial services. They may also have more diverse income sources.

The authors conclude that the impact of these changes has been mixed '*with transformation being a two-edged sword bringing benefits and challenges*'.

Benefits include increased market opportunities for farmers, more predictable incomes from organized markets, and the protection of rights through improved regulatory frameworks and formal contracts. However, only those farmers who are already relatively wealthy are able to access modern value chains and invest to meet quality demands. Modernization tends to exclude resource-poor farmers and increase inequality.

Oxfam-commissioned research found that Nepal operates a traditional food system, Pakistan's food system is in transition, and Vietnam's rice sector, mainly its export market, has partially modernized.

Source: T. Reardon et al. (2018). *Rapid transformation of Food Systems in Developing Regions: Highlighting the role of agricultural research & innovations*. *Agricultural systems*. https://doi.org/10.1016/j.agsy.2018.01.022 [paywall].

Countries aiming to modernize their rice sectors have implemented policies that have benefitted larger farmers, millers and traders, who are mostly men. They have failed to address the needs of small-scale farmers and labourers, who are often women. For instance, Cambodia's policies include commitments to free trade, the promotion of rice exports and protections for foreign investors.[26] Pakistan has implemented a technical support programme to increase the use of resource-saving strategies and improve harvesting technologies, which only large-scale farmers can afford to take up. The programme does not include training for women on using the machinery, so as mechanization reduces the need for labour, it reduces employment opportunities for landless women. Vietnam's price regulation policies primarily benefit traders, but do not reduce production costs for farmers. Even when policies are aimed at farmers, such as crop insurance support, women are rarely members of the farmers' groups accessing such support.[27]

Countries aiming to modernize their rice sectors have implemented policies that have benefitted larger farmers, millers and traders, who are mostly men.

Smallholder farmers often have to take out loans to buy inputs such as seeds. In Nepal and Pakistan, it is common practice for traders to give out loans to farmers during the planting season and agree on the price of rice in advance.[28] Farmers have no other access to finance, so rely on traders or millers to act as moneylenders. The traders set the price for inputs, the terms of the loan[29] and the price they will pay for rice, leaving farmers open to exploitation. Traders or millers are therefore key powerbrokers who control access to both markets and finance. Most smallholders lack storage and cash flow, so have to sell their produce immediately after harvest, when prices are lowest. They also lack the means to transport their produce to the rice mills, and therefore have to accept whatever price the traders offer. As the milling sector becomes more concentrated, small village mills are disappearing, making this problem even worse.[30]

Exploitative relations

In many countries, there is little governance of rice value chains. Farmers do not have formal contracts with traders and there are few regulations to protect them. Prices are set at a local level on a daily basis, and can fluctuate, leaving farmers unsure of their income and unable to plan or invest. Traders control information about the markets, so farmers cannot make informed decisions. For instance, in Nepal, farmers sometimes barter their rice for vegetables or other produce with village traders who then sell the rice on at district markets for a large profit.[31] Because farmers do not have market information, they do not know how much their rice is worth. In Pakistan, there is no monitoring of sales, prices, commission rates or quality leaving farmers without any support. There is no national pricing mechanism, as there is for wheat. Instead, standards and prices are set by local markets or millers, so farmers have to negotiate with them. Additionally, the lack of implementation of labour policies across the informal agriculture sector leaves farmers and workers unprotected.[32]

Prices are set at a local level on a daily basis, and can fluctuate, leaving farmers unsure of their income and unable to plan or invest.

Women farmers face further barriers accessing markets, as it is often culturally unacceptable for them to travel. Because their role in rice farming is not often recognized, extension services do not consider their needs, and they cannot access information about the services available to them. It is also harder for women to access information because they generally have lower education levels.

In Pakistan, research has shown that women working on farms earn about half men's wages, and younger women even less.[34] They have no negotiating power with employers and suffer unsafe working environments and long hours. They are also responsible for unpaid care work alongside their farm labour.

In Pakistan, research has shown that women working on farms earn about half men's wages, and younger women even less.[33]

In Nepal, the government has aimed for the commercialization of rice farming, identifying priority regions for rice production and providing support such as subsidies for farm machinery and the provision of extension services in those regions. However, support is only available for farms of 10 hectares or more. While farmers can consolidate their land in farmers' associations, smallholders further away from zonal centres are less able to do so, and are therefore further marginalized. The government also runs the Nepal Food Corporation, a public company with the remit of buying staple

food commodities to maintain food security and reduce price fluctuations. It sets a minimum price for rice. However, it does not buy rice in large enough quantities to affect market prices and farmers are still at the mercy of local traders.

Rising costs and uncertain incomes

Farmers' position as price takers creates income insecurity and prohibits investment. At the same time, they have to manage rising production costs. Agricultural inputs, such as seeds, fertilizers and pesticides represented 23% of the total cost of rice production in the Philippines and up to 40% in Vietnam in 2014.[35] In Nepal, seed prices have increased by 345% over the last 13 years, and fertilizer by up to 140%, but yields have increased by only 46% and farm gate prices by 126%.[36]

Analysis of rice value chains in Pakistan, Nepal and Vietnam shows that rice growers bear the brunt of price fluctuations. Production costs generally follow the rate of inflation, while farm-gate prices vary, and prices for traders, millers and wholesalers have remained stable. For instance, rice growers in the Sindh region of Pakistan have seen prices fall from 12 rupees per kg (9 cents) in 2007 to only 2.5 rupees per kg (2 cents) in 2017 (adjusted for inflation).[38]

Rice growers in the Sindh region of Pakistan have seen prices fall from 12 rupees per kg (9 cents) in 2007 to only 2.5 rupees per kg (2 cents) in 2017 (adjusted for inflation).[37]

Farmers also struggle with unreliable access to inputs, such as irrigation, technology, seeds, infrastructure and financial services. In Nepal, vital inputs such as fertilizer and seed have to be imported from India, increasing prices. Farmers bring fertilizer over the border informally, but face many hazards doing so, such as having to do chores as a bribe-in-kind for Indian border police, or having goods confiscated on the Nepali side.[39]

The Nepal-India Trade Treaty allows free trade between the countries, with no quotas on rice trade. Rice farmers in India receive production subsidies and therefore are able to produce rice more cheaply than farmers in Nepal.[40] Traders often choose to import higher quality fragrant rice from India to serve urban markets, creating further uncertainty for rice farmers in Nepal. Nepal's rice farmers cannot compete because there is limited infrastructure to process rice to the same standard.

Because of these structural inequalities, those farmers with more resources—land, access to irrigation, market knowledge—benefit more from market development, thus increasing inequalities and making it even harder for resource-poor farmers to compete and escape poverty.[41]

In the three countries studied, rice value chain analysis found that small-scale rice farmers earn only a fraction of the living income, with farmers in Nepal earning as little as 13% of the living income from rice farming. In Vietnam, where the rice sector is much more developed, farmers still only earn around 26% of the living income from rice farming. This makes rice farmers more likely to remain living in poverty and unable to meet their basic needs and realize their rights.

Box 2: Definition of Living Income

The concept of a living income builds on the idea of a living wage, which is an adequate wage for workers to meet the basic needs of their household. A living income applies to any income earner, such as a self-employed farmer. Living wage and living income differ in referring to employees versus smallholder farmers or small business owners.

A living income is the net income needed for a decent standard of living for an entire household based on international guidance and local customs. It encompasses decent housing, a low-cost nutritious diet, water, healthcare, transport, clothing and other essential needs including a small margin for emergencies. Living income estimates differ from living wage in that they consider the total income of a household generated in decent working conditions

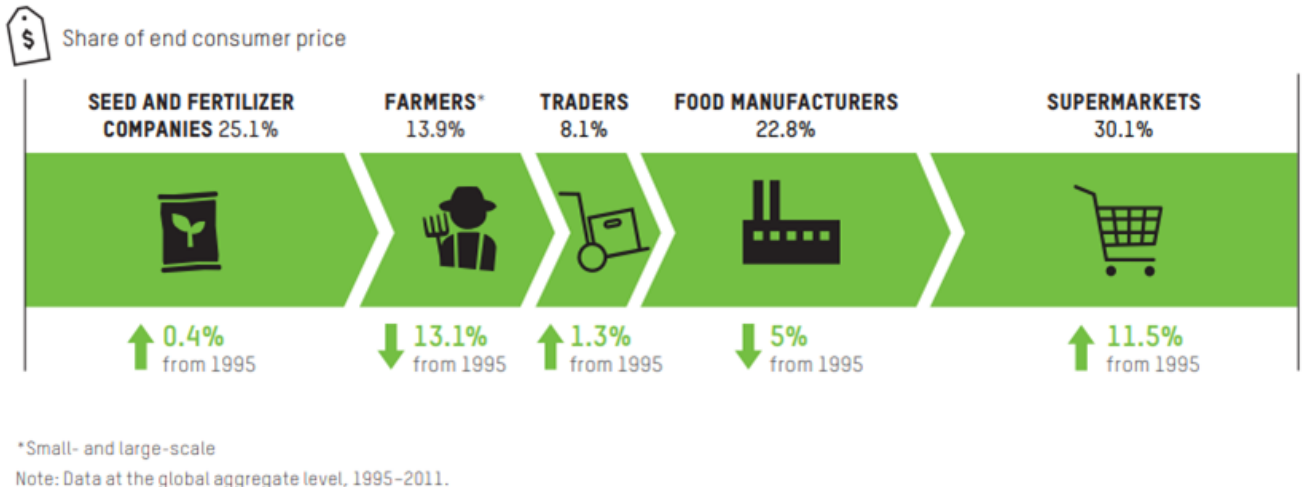
The proportion of their total income farmers earn from rice growing varies across different countries in Asia. Some farmers may be able to diversify into different crops, or off-farm income earning activities. However, when rice farming provides only a small percentage of the living income, it is harder for farmers to earn enough from other sources for a decent standard of living.

Source: K. Komives et al. (2015). *Defining, Calculating and Using a Living Income Benchmark in the Context of Agricultural Commodities.*
https://docs.wixstatic.com/ugd/0c5ab3_a7f0140e754b4754afb55ea19cd0b583.pdf

THE POWER OF LARGE PRIVATE ENTERPRISES IS INCREASING

Globally, across a range of food products, the retail sector captures the greatest share of value in food value chains, while the share of value reaching farmers has been steadily decreasing.[42]

Figure 3: Increased inequality in food supply chains between 1995 and 2011



Source: Adapted from A. Abdulsamad and G. Gereffi. (Forthcoming 2018). Measurement in a World of Globalized Production. Durham, NC.: Duke Center on Globalization, Governance and Competitiveness. Research report undertaken for Oxfam America.

As a result of liberalization and privatization policies in the 1990s, many Asian governments moved away from direct intervention in food systems to large infrastructure programmes to support food supply chains for growing urban populations.[43] Private sector enterprises—from micro-enterprises to large-scale domestic and foreign retail chains—filled the gap left by parastatals and strongly increased their participation in the food sector.

In wholesale and milling, thousands of entrepreneurs are investing in machines, increasing scale and diversifying into higher-quality products. However, only medium and large mills have the resources to invest in the equipment needed to reach economies of scale and capture added value through improved quality, which is leading to consolidation.

Mills are also moving into distribution, building agent networks in downstream markets, contractual relationships with large wholesalers and sometimes direct relationships with supermarkets. This process of vertical coordination and integration means that power has shifted more towards the retail end of the value chain. While in some cases farmers are able to have better access to mills and bypass traditional middlemen, in most cases this shift is at the expense of small-scale producers.

In the three countries studied, rice value chain analysis indicated that small-scale rice farmers earn only a fraction of the living income from their rice farming: as little as 13% of the living income in Nepal and 26% of the living income in Vietnam.

WOMEN FARMERS FACE MANY DISADVANTAGES

Women play a vital role in ensuring the livelihoods of rice-growing families.[44] Traditionally, women have been responsible for specific tasks, such as transplanting, weeding and harvesting, while men work in land preparation, crop management and marketing. Therefore, women's roles exclude them from the value usually associated with higher levels of the chain. They are often excluded from decision-making roles[45] and are paid less than men for the same work.

Women are rarely listed alongside men as owners of their farms, so their work often goes unrecognized. Without assets in their name, they cannot access finance, extension services or other technical support. Even when national laws give men and women equal rights to own and control land, social norms and customary laws often prevent women from fully owning any.[46] Even when women have sole responsibility for rice production, they can be excluded from access to critical productive resources and services, including credit, farm inputs, marketing facilities, extension and information.

Land consolidation enables the increased use of machines, and reduces reliance on labour. This has led to many younger people and men leaving to find other work. Higher production costs have also led men to seek off-farm work to increase family incomes. In Nepal and Thailand,[47] high levels of male migration mean women are left behind to manage farms alongside their household roles, including unpaid care work for children and other family members. Farm work is often physically demanding and labour intensive, with families with small plots of land unable to afford to hire farm machinery or additional workers.

While women as a whole are disadvantaged in the rice value chain, other factors, such as age, class or location, can further affect some women's ability to participate in the sector on an equal footing. For instance, in Nepal, farmers who can get their produce to Nepal Food Corporation collection centres can get a better price for their produce, but social norms can restrict women's mobility.[48] In addition, the informal nature of relationships between rice producers and traders—who are usually men—leaves women open to exploitation.[49]A failure to recognize women's work in rice production means that the health issues they experience also go unrecognized and untreated. During the rice transplanting season, women stand in paddy fields for long hours in hot weather without protection. For example, women in Pakistan have reported suffering sun stroke and exhaustion, as well as skin diseases from standing in water—often containing fertilizer and pesticides—for long periods.[50] Farm managers often do not provide protection from chemicals, health facilities or access to drinking water for workers in the fields.

In Pakistan, many of the poorest women have to work as labourers on other farmers' land. They receive very low pay on a per hectare, rather than hourly, rate. In order to earn enough to survive, children are taken out of school to work in the fields so that the family together can cover more area. Without an education, they are trapped in the same poverty work as their parents.[51]

CLIMATE CHANGE PRESENTS A SERIOUS RISK

Rice production, and the livelihoods it supports, is at serious risk from impacts of climate change. Additionally, rice cultivation is a major source of methane and nitrous oxide—both greenhouse gases (GHG) more potent than carbon dioxide.

Reduced rice yields

It is predicted that climate change will lead to reduced rice yields,[52] through an increased occurrence and severity of extreme weather events, including heatwaves and storms. Yields are affected by increasing temperatures: studies report that for every 1°Celsius increase in night temperature, there is a 10% decrease in rice yield.[53] In addition, agricultural labourers in many countries report that increasing temperatures make working conditions unbearable, with extreme heat causing falling productivity, sickness and even death among people working outdoors.[54]

Studies report that for every 1°Celsius increase in night temperature, there is a 10% decrease in rice yield.[55]

Changes in rainfall patterns also affect yields: across Asia, more than 23 million hectares of rice lands are rainfed, making these areas highly vulnerable to uncertain rainfall, as well as drought,[56] floods and typhoons. Early or late rains affect sowing and harvesting times, reduce yields and increase crops' susceptibility to pests and diseases. Floods in Pakistan in 2010 left more than 750,000km^2 of land covered in water, while rice growers in desert areas of Punjab face drought.

Climate change will also reduce land available for rice cultivation. For example, it is predicted to reduce the area of rainfed rice cultivation in

Cambodia by 20% by 2050.[57] In Vietnam, rice producers on around 100,000 hectares of coastal land in the Mekong Delta are affected by increased water salinity as sea levels rise.[58] Research has shown that for every unit of salinity increase, a 12% reduction in rice yield can result.[59] In coastal Bangladesh, salinity has reduced rice production, and farmers are turning to shrimp farming instead. This can generate greater incomes, but requires farmers to learn new skills and make capital investments, and reduces job opportunities for farm workers.[60]

Rice's contribution to climate change

Rice production emits more GHG per kilocalorie than many other crops. Researchers have estimated that rice contributes 48% of emissions from crop production for 15% of the calories.[61] Methane emissions are particularly high from rice grown under continuous flooded irrigation, because of methane-emitting bacteria that thrive in inundated soil. Farmers and scientists have been working together to try to develop alternative rice growing methods that improve resilience, reduce emissions and use fewer resources (see **Box 3**). No individual technique or set of practices is a panacea to the challenges presented by climate change. However, several techniques have shown success in different contexts, including: alternative wetting and drying (AWD); seed varieties which are resilient to drought, pests, or other climate-induced change; crop rotation and intercropping; and terrace building.[62]

Box 3: The System of Rice Intensification

The System of Rice Intensification (SRI) is an agroecological methodology that has been shown to reduce emissions from rice cultivation. Farmers using SRI principles, which include reduced plant density and controlled water application (such as AWD), have seen increased yields.[63] While it is applied differently across regions, its measures allow farmers to produce more rice with less water, agrochemicals and seeds. For that reason, SRI is considered a boon for income generation, food security and resilience to climate change-induced shocks.[64] Research has also shown that the use of SRI practices can reduce methane emissions. In Southeast India, for example, SRI produces less than half the GHG emissions per kilogram compared with conventional rice production.[65]

Oxfam started promoting SRI in 2002 to help farmers improve their food and income security and increase their resilience to shocks and stresses. As of 2016, nearly 2 million smallholder farmers in groups supported by Oxfam and partners in Cambodia, Sri Lanka and Vietnam have benefitted from SRI using both improved and local rice varieties. Overall, SRI has been found to increase the autonomy of farmers by reducing their reliance on external inputs, making the practice accessible to farmers with limited assets, while helping them adapt to the challenges of climate change and enhancing their knowledge.

Oxfam's partner, SRI-Rice Centre at Cornell University, advances and shares knowledge about SRI and supports global networking. SRI is currently used by more than 20 million producers in more than 60 countries.

Impacts on small-scale farmers

Small-scale farmers—who have no incomes outside agriculture and do not have access to social safety nets—are hardest hit by the impacts of climate change.[66] Their reliance on rainfed production puts them at greatest risk of lower yields in uncertain weather conditions.[67] Their lack of access to resources such as credit, market information and technical advice will further exacerbate inequality.

For landless workers, most often women, the situation is even worse. When natural disasters hit, they are unable to work but do not receive any compensation for lost earnings (see **Box 4**).

Box 4: Resource-poor farmers most affected by natural disasters

Razia Bibi, a rice worker from Pakistan. Photo: Shirin Abbasy/Oxfam

Razia Bibi is from Muridke, Pakistan. She and her daughters work as labourers, and also rent land to grow rice. If a natural disaster, such as a flood, destroys the crops, her family has no income, either from labouring or from the crops they grow. Landowners do not compensate for natural hazards and demand their rent regardless of whether or not there has been any produce from their fields. Therefore, every natural disaster pushes families like Razia's further into poverty.

Source: Oxfam interview with Razia.

Alongside climate change, the rice sector is also struggling to cope with other environmental impacts, which can have a devastating effect on the health of rice farmers. Fertilizer overuse is rife in the region, partly arising from subsidies, which meant it was seen as a cheap way to increase productivity. Herbicides and pesticides are also used to cope with labour shortages (e.g. for weeding). However, uncontrolled use of these inputs causes soil, water and air pollution, as well as health issues for farmers and labourers.[68]

Box 5: Health problems among rice farmers

Shamshad Bibi, a rice worker from Pakistan. Photo: Shirin Abbasy/Oxfam

Shamshad Bibi lives in Muridke, Pakistan. A normal day for her starts at 6am, when she makes food for the family and cleans the house. She leaves the house by 8am to work in the rice fields. After spending long hours in the field, she suffers from headaches and muscle pain. Heat and the lack of precautionary measures and adequate working equipment has resulted in many health problems for her and her family, including eye infections, skin irritation and diseases and respiratory illnesses.

Source: Oxfam interview with Shamshad.

3 THE OPPORTUNITY FOR CHANGE

Asia's rice economy continues to shape the lives of millions of people and contribute to feeding the population of the entire region.[69] Sadly, its unsustainable cultivation practices fuel climate change, while unfair value distribution perpetuates and increases inequalities for small-scale producers, especially women.

To address these challenges, and ensure the development of a prosperous and sustainable rice economy, there must be reform. The development of new, better regulated value chains offers opportunities to small-scale farmers to escape exploitative relations, and move out of poverty. But governments, the private sector and civil society must act to realize this vision. Proactive efforts are needed to rebalance power along the value chain in rice-producing countries to make the rice economy more equitable, fair to women and climate resilient. It would be a tragedy if what could be a huge opportunity for small producers made them worse off than before.

To address the challenges, and ensure the development of a prosperous and sustainable rice economy, there must be reform.

To ensure that the modernization of the rice sector benefits small-scale farmers, a large-scale pro-poor transformation of relations along the value chain is needed, through:

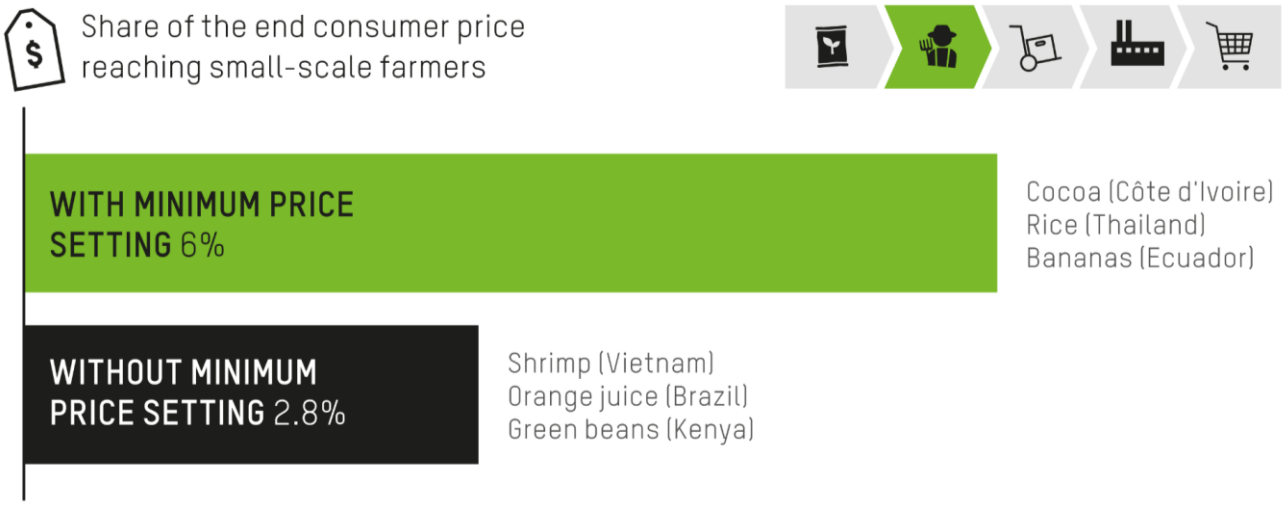
- more protection from governments for producers' rights;
- support to producers for more collective action; and
- responsible private sector investment, including through multi-stakeholder initiatives.

GOVERNMENTS MUST PROTECT FARMERS' INCOME AND RIGHTS

Governments have to balance urban populations' need for low food prices with the need of rural producers to receive adequate incomes. However, policy interventions in the rice sector have often failed to increase producer incomes or protect their rights.

Research suggests that, across a range of different food commodities, policy interventions such as setting a minimum producer price and a statutory minimum wage lead to improved incomes for producers and workers. Where governments set a minimum producer price for food commodities, farmers receive, on average, a share of the end consumer price that is around twice as high as that received by farmers without such support.[70]

Figure 4: Government intervention to set minimum prices for agricultural commodities benefits small-scale farmers in food supply chains



Note: Data from 2015. The commodities shown are those analysed that are produced by small-scale farmers, so where minimum price setting is relevant. Source: C. Alliot et al. (Forthcoming). Distribution of Value and Power in Food Value Chains. Oxfam-commissioned research undertaken by BASIC.

Raising minimum wage levels has also been shown to lower the gender pay gap, and can play a critical role in supporting women's economic empowerment, provided that the minimum wage rises are extended to the informal sector.[72]

Investing in women is essential. For instance, if women had equal access to education, seeds, agriculture training, mechanization and water, they could produce 20–30% more food.[73] Governments should also act to address legal barriers women face, such as unequal land rights, and challenge cultural norms which limit women's freedoms.

Raising minimum wage levels has been shown to lower the gender pay gap, and can play a critical role in supporting women's economic empowerment, provided that the minimum wage rises are extended to the informal sector.[71]

As the rice sector changes, governments must take the lead in regulating the role of private companies. While modernization of the rice sector could create opportunities for improving smallholders' livelihoods, it will only do so if governments regulate to ensure fair relations along the value chain, or create incentives to encourage companies to support smallholders. This could include supporting progressive companies by legislating to prevent the undercutting of sustainable practices by less sustainable companies.

Governments can support small-scale farmers and workers through a range of policy tools. These must go beyond a narrow focus on productivity enhancement to tackle immediate production constraints—such efforts have not taken small-scale farmers out of poverty. It is vital that such measures are tailored to ensure that they deliver for women as well as men.

They could include:

- Legislative and regulatory frameworks to protect labour rights and ensure workplace health and safety standards;
- Strengthening and ensuring stringent enforcement of policy and legislation on the elimination of violence against women;
- Regulating and formalizing market mechanisms, for instance through

establishing national pricing systems and standardized commission rates;

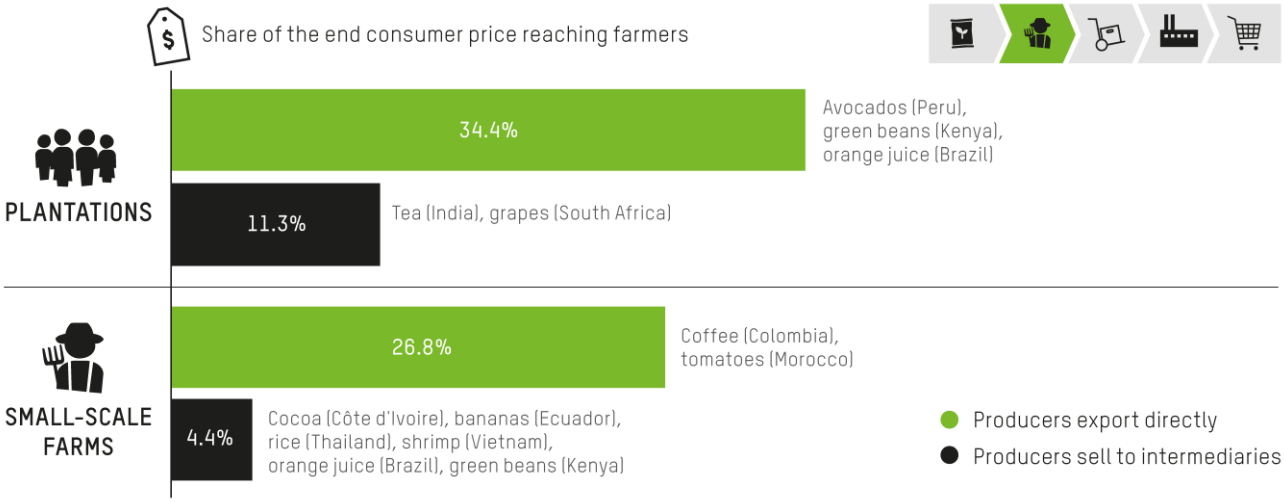
- Action to secure land rights for women;
- Working with the business sector to develop and implement sustainable production standards, for instance to reduce pesticide use and increase use of crop rotation practices;
- Ensuring that labour and wage standards cover workers—often women—who are informally employed;
- Social spending on public goods like health, education and other forms of social protection that are particularly valued by women.

While government support to small-scale farmers and workers is vital, to be successful it must go hand-in-hand with efforts to address unequal power relations along the value chain.

SUPPORTING COLLECTIVE ACTION IS KEY

Building the bargaining power of smallholder farmers through collective action is critical to increasing the economic value they receive. Analysis of global and domestic[74] food value chains has indicated that small-scale producers benefit from much higher shares of the end consumer price (around 26%) where they are organized into producer organizations that can achieve economies of scale, compared with those who are not (who retain around 4%).[75]

Figure 5: Collective action increases the bargaining power of small-scale farmers in food supply chains



Note: Data from 2015. Some commodities appear twice, as they are both produced by small-scale farmers and by waged workers on large-scale plantations, in processing facilities or on fishing vessels.
Source: C. Alliot et al. (Forthcoming). Distribution of Value and Power in Food Value Chains. Oxfam-commissioned research undertaken by BASIC.

Oxfam's experience shows that collective action is an important mechanism to improve the conditions for women in the food system. Under the right conditions, women producers and landless workers can benefit from working collectively, especially where it reduces the risks involved in engaging in new, and often more distant, markets. The Women-Led

Agricultural Service Team (WLAS), an Oxfam-supported programme building collective extension services and women-led micro enterprises in Cambodia, provides an example of an alternative approach. The project aims to improve women's livelihoods and challenge social norms in rice cultivation (see **Box 6**). It demonstrates that women can become agricultural extension workers and entrepreneurs when they are provided with the right support.

Box 6: Women-Led Agricultural Service Team (WLAS)

In Cambodia, smallholder rice producers struggle with low productivity and high input costs. Most receive little or no agricultural extension services. To push up yields, they tend to use excessive chemical fertilizers and pesticides. However, this practice further erodes productivity, worsens pollution, and can even impact negatively on farmers' health. Producers, especially women, also face labour shortages, because many men are forced to migrate for waged work in towns and cities.

Since 2015, Oxfam and partner organizations in Cambodia have been piloting work with groups of landless women to become professional extension service providers, called WLAS teams. They are trained on agricultural techniques and skills, and new rice cultivation methods like the SRI (see **Box 2**). They provide a full package of technical services for farming. Besides the normal tasks assigned to women, such as broadcast seeding and weeding, they have learned new skills such as transplanting seedlings, land preparation and levelling, and harvesting. WLAS teams use local radio and mobile phones to market their services.

WLAS teams have contributed to improving livelihoods for both service team members and their clients. The teams have helped farmers to optimize the benefits of their land, as well as improved their own livelihoods and incomes. Over two years from 2015, ten teams of 257 farmers (89% women) have evolved into successful businesses, especially in rice production, with rice yields increasing up to 50%. In dry areas, SRI participants saw average yields of 3.6 tons per hectare compared with yields with conventional practice of 2.4 tons per hectare.

Source: Oxfam. (2018). Women-Led Agriculture Service Team (WLAS). https://cambodia.oxfam.org/policy_paper/women-led-agriculture-service-team-wlas

Producer organizations can help smallholders engage in markets, and give them a voice in market development. They enable economies of scale, reduce transaction costs, and reduce risk in financial transactions.

But producer organizations by themselves cannot solve all problems. They may have their own shortcomings, such as weak governance, poor capitalization, political interference and even socially constructed hidden barriers to women members.

Public policy therefore has a big role to play in overcoming these limitations so that small-scale rice producers in developing countries can organize effectively and benefit from opportunities such as contract farming and private investment schemes.

Government could fill the ‘missing middle’ between small-scale producer organizations and markets by supporting the formation of specialized intermediaries that provide aggregation, financial and marketing management.

Public policy should incentivize producer groups to encourage female membership and address the constraints that women face, such as unfair membership eligibility criteria that limit women’s participation. These include members having to own the land that they farm, a stipulation that excludes most rural women; and minimum production or harvest volumes, which women are often unable to meet because of their poor access to land and other productive resources.

Public policy should go beyond incentivizing just membership, and ensure that women are represented in organizations’ governance structures.

It is vital to extend support to informal groups, which women often join due to the difficulty of gaining membership in formal groups. These may be producer groups, or informal arrangements between women to work collectively on each other’s farms to reduce their labour burden.

THE PRIVATE SECTOR MUST INVEST RESPONSIBLY

While stronger public policies and empowered producers are fundamental to rebalancing power in the rice supply system, the private sector also has an important role to play.

Some major firms and progressive companies have taken voluntary action to address sustainability issues in their supply chains, including developing sustainable production standards. However, Oxfam commissioned research[76] analysing whether sustainable rice production standards and initiatives address the needs of small-scale producers, found that most initiatives are at an early stage of development and have some way to go to reach large numbers of small-scale producers. Sustainable rice is far from being mainstream.

Although they have some drawbacks, approaches such as Fairtrade and organic production do demonstrate the possibility of using sustainable production standards to provide benefits for all actors in the value chain. For example, to achieve Fairtrade certification, traders must buy rice from farmer groups or cooperatives, enhancing smallholders’ bargaining power; and the producer groups receive a premium in the market for Fairtrade products. Such schemes also require businesses to build up longer term, more secure relationships with producers, addressing some of the problems arising from the informal relations currently prevalent in the rice sector. They therefore demonstrate the viability of working in more equitable and transparent ways, leading the way to improvements in the mainstream rice sector.

However, the cost of third-party certification schemes can often be too expensive for smallholders, especially for a low-value crop like rice. High

costs may make it impossible for unorganized and remote smallholders to participate in such schemes. There is also still a long way to go until these certification standards adequately address workers' rights and gender issues. For instance, women tend to play a less active role in cooperatives' decision making than men.

While the market for Fairtrade and organic rice is growing in Asia and globally, it still reaches only a small section of the market. There is therefore a need to build up markets for these premium products, but more importantly, to improve the raising of standards in the rice sector as a whole.

Private sector actors, especially mills and supermarkets, are in a position to drive wide-scale schemes through their extensive networks. They can reward efforts to reduce input use (e.g. water and fertilizer) and adopt more sustainable production. It is imperative that such schemes help small-scale producers—both men and women—manage the transition to more climate-resilient cultivation practices. Alignment with local and national development objectives is critical to leveraging resources for scaling up schemes and protecting small-scale producers from commodity price volatility.

Oxfam's Future of Business Initiative[77] has identified a range of more equitable business models emerging across Asia in different sectors. Inclusive business models, which are particularly popular in agriculture, seek to address poverty by companies partnering with poor communities in their value chain, for instance by providing training to help farmers improve the quality of their produce (see also Box 7). Other models include producer-owned co-operatives, and Fairtrade social enterprises, whose profits are invested back into producers.

Although useful, these sustainable production schemes and initiatives alone are not powerful enough to ensure decent living standards for all rice farmers and workers. Deeper changes are needed to uproot the structural power imbalances at the heart of the current rice supply system. Sharing value equitably must be central to any solution. Governments must take the lead in putting in place strong labour laws and appropriate environmental codes —and businesses need to support policies addressing inequality in value chains.

The UN Guiding Principles on Business and Human Rights makes clear the responsibility of business to respect human rights and pay wages that enable workers to realize these rights. Businesses can put in place new governance structures to ensure fair livelihoods for producers and workers. However, without regulatory and legislative frameworks to enforce labour laws and support progressive business models, economic integration in the rice sector is likely to continue benefiting private sector interests and larger actors in the value chain to the detriment of small-scale producers.

Box 7: Promoting responsible business practices in Cambodia

Cambodia has experienced rapid economic growth (an average annual growth rate of 7.7% from 1995 to 2017[78]), particularly in the agriculture sector, in which half of the country's labour force work. Unfortunately, the concept of responsible business has not gained ground at the same pace, and most stakeholders and companies are still unaware of the strategic importance of responsible business practices. This is particularly the case for gender-sensitive business practices, even though the vast majority of the workforce in the agriculture and garments sectors are women. This situation, coupled with a weak regulatory framework, has put communities and workers at risk and kept them in poverty.

To bridge this gap, Oxfam's Gender Transformative and Responsible Agribusiness Investments in South East Asia (GRAISEA) programme, along with 43 organizations representing front-running companies and civil society organizations (CSOs), initiated the CSR (Corporate Social Responsibility) Platform Cambodia to encourage agribusiness companies and others to adopt responsible business practices that will specifically benefit smallholder women and men farmers. Through the Platform, best practices on social and environmental responsibility, good governance and corruption reduction, respecting human rights, and inclusive economic growth were shared with stakeholders.

Members of the Platform are showing the way forward. Cambodia's largest rice exporter, Amru Rice, for example, supports smallholder rice farmers in entering fair contracts negotiated by agricultural cooperatives and their union, and serves as a market enabler by buying directly from the farmers and helping them sell their products to other markets. For these companies, the goal of responsible business conduct is to both increase their positive impact and decrease their negative impact; to help farmers, workers and employees increase their income and improve their quality of life; and to ensure long-term growth and development.

The CSR Platform Cambodia has demonstrated that even without a regulatory framework in place, responsible business practices can be adopted and advanced through cooperation between the private sector and CSOs.

Through the GRAISEA programme, Oxfam supports regional and national policies on responsible practices; inclusive agro-commercial value chains; and corporate policies that embrace gender equality, women's economic empowerment, and other aspects of social responsibility.

Source: M.V. Aranas, R. de Jong, K. Sok and N. Kek. (2017). *Responsible Business Practices: Cambodia's changing business landscape*. GRAISEA Stories of Change, Issue No. 1. https://policy-practice.oxfam.org.uk/publications/responsible-business-practices-cambodias-changingbusiness-landscape-620353

MULTI-STAKEHOLDER INITIATIVES COULD BE TRANSFORMATIVE

Multi-stakeholder initiatives (MSIs) aim to bring together governments, civil society and private sector actors to work to address shared concerns and increase transparency and collaboration. They can, if designed well, be inclusive avenues for transforming an industry. However, their impact varies, and each MSI must be assessed on whether all stakeholders can

participate equally, and whether actions actually benefit smallholder farmers.

To find out, Oxfam reviewed ten sustainable rice production standards and MSIs to assess how well they align with the needs of small-scale rice producers.[79] The review found:

- Varied and limited attention to the needs of smallholder farmers;
- Limited attention to the needs of women farmers;
- No explicit focus on climate change mitigation and adaptation, though most standards include relevant actions on soil conservation and water management;
- Limited engagement of smallholders beyond the farm gate, e.g. in trading or processing;
- Limited focus on supporting farmers to improve their practices and incomes (e.g. through capacity building and improving access to finance and other resources);
- Inadequate engagement with national governments to ensure standards align with local contexts and development priorities.

Box 8: The Sustainable Rice Platform (SRP)

The Sustainable Rice Platform (SRP)[80] is a global multi-stakeholder initiative on rice, co-convened by the United Nations Environmental Program and the International Rice Research Institute, established in 2011. It has more than 90 members, including government bodies, private sector companies, research institutions and NGOs. It seeks to promote resource efficiency and sustainability both on-farm and throughout the value chain. It pursues public policy development and voluntary market transformation initiatives, by encouraging members to adhere to its Standard for Sustainable Rice Cultivation. It aims to facilitate wide-scale adoption of sustainable best practices in the global rice sector, thereby increasing the global supply of affordable rice, improving livelihoods for rice producers, and reducing the environmental impact of rice production.

In November 2015, SRP launched its Standard for Sustainable Rice Cultivation. This includes 46 requirements structured under eight guiding principles, and is supplemented by 12 performance indicators to measure the impacts of adoption and reward progress. SRP and its partners aim to encourage one million farmers to adopt SRP's Standard by 2021.

Oxfam is involved in discussions with the SRP, engaging in debates about global rice policies and standards, and working to address shortcomings in the Standard. Oxfam is working to influence SRP in four strategic areas: gender justice, small-scale producer voice, environmental sustainability and corporate accountability.

The current Standard on Sustainable Rice Cultivation is a good start, which should be adapted to specific producer contexts to meet local needs. However, it could go further: companies and development partners of the SRP can contribute to sustainability when they address more than one sphere of engagement—the market, producer organizations, services, community development and public policy.

Protecting small-scale producers

The SRP Standard must emphasize small-scale producers, gender equality and climate change. This could include:

- Promoting group management models that are more inclusive of smallholders and women;
- Expanding guidance on climate mitigation and adaptation linkages;
- Performance and outcome monitoring of standard systems, including indicators on women's empowerment;
- In campaigning for sustainable rice demand and uptake, advocate for supply chain models that lower entry barriers for smallholders;
- Holding supply chain actor members accountable for impacts on climate change.

Source: Oxfam. Unpublished. *Report on Oxfam's Engagement with the Sustainable Rice Platform.* Internal document

4 RECOMMENDATIONS

FOR GOVERNMENTS

The governments of rice-producing countries should regulate the sector more effectively in the following areas:

Rice sector policies

- Legislate to protect labour rights and women's rights, including guaranteeing adequate minimum prices for small-scale farmers; setting a statutory minimum wage for agricultural workers that ensures a living wage; and guaranteeing equal pay and conditions between women and men.
- Enact and enforce policies to improve access to resources and opportunities for small-scale producers and women:
    - Invest in extension services, education and training, and other relevant infrastructure to improve small-scale farmers' incomes and resilience.
    - Improve access to finance and information, so rice producers have more power in negotiations.
    - Introduce subsidies and other incentives to support farmers to move to more sustainable production methods.
    - Encourage the establishment of microfinance initiatives exclusive to women farmers to facilitate their access to capital.

Actions to build capacity and empower small-scale producers and women

- Invest in public goods that reduce and redistribute women's unpaid care work, and remove other barriers (such as denial of land rights) to women's economic empowerment.

- Support alternative business models that work with and strengthen cooperatives and agricultural collectives, including in the informal sector.
- Hold businesses to account for transparency in their supply chains, and put in place policy incentives for equitable business structures.

Actions to regulate businesses more effectively and accountably

- Support the adoption of the proposed UN Binding Treaty on Business and Human Rights.[81]
- Create incentives for businesses to implement sustainability standards which benefit smallholder farmers.

FOR THE PRIVATE SECTOR

Private sector actors should:

- Commit to ensuring decent livelihoods and adequate health and safety protection for workers and farmers in their supply chains
- Provide transparent and accountable reporting of the impacts and benefits of their supply chains, including monitoring working conditions for producers supplying them.
- Commit to upholding the UN Guiding Principles on Business and Human Rights.[82]
- Commit to implementing inclusive and gender-sensitive practices and standards, and promote standards that focus on smallholder interests, gender equality and climate change.
- Commit to invest in alternative business models including agricultural cooperatives
- Provide training, extension services and support to farmers on sustainable practices.
- Guarantee safe working conditions and equal opportunities for women throughout their value chain.
- Commit to the UN Women's Empowerment Principles.[83]

NOTES

All links last accessed 15 October 2018, unless otherwise specified

1 C. Alliot and T. Fechner. (Forthcoming). *Distribution of value in Asian Rice Value Chains*. Oxfam-commissioned research undertaken by BASIC (Bureau for the Appraisal of Societal Impacts for Citizen Information). Countries included in the research were Nepal, Pakistan and Vietnam.

2 Ibid.

3 Ibid

4 Ibid.

5 Note that for the purposes of this report, a 'retailer' is any outlet selling rice to the end consumer. This includes traditional markets and grocery retail (which dominate in most of the countries studied) as well as supermarkets/hypermarkets and convenience stores where they exist.

6 UN (2011). Guiding Principles on Business and Human Rights: Implementing the United Nations 'Respect, Protect and Remedy' Framework. https://www.ohchr.org/Documents/Publications/GuidingPrinciplesBusinessHR_EN.pdf

7 For more details on the campaign (called Behind the Barcodes in some markets, and Behind the Price in others), see https://indepth.oxfam.org.uk/behind-the-barcodes/

8 GRiSP (Global Rice Science Partnership). (2013). *Rice Almanac.* 4th edition. International Rice Research Institute. http://irri.org/resources/publications/books/rice-almanac-4th-edition

9 P.A. Seck, A. Diagne, S. Mohanty and M.C.S. Wopereis. (2012). *Crops that feed the world 7: Rice*. *Food security*, 4(1), 7–24. https://link.springer.com/article/10.1007/s12571-012-0168-1

10 B. Bouman. (2014, January 1). *Modernizing Asian rice production*. *Rice Today*. http://ricetoday.irri.org/modernizing-asian-rice-production/

11 B. Bouman. (2017, September 13). *The importance of sustainable rice supply systems*. *Rice Today.* http://ricetoday.irri.org/the-importance-of-sustainable-rice-supply-systems/

12 B. Bouman. (2014, January 1). *Modernizing Asian rice production*. *Rice Today*. http://ricetoday.irri.org/modernizing-asian-rice-production/

13 FAO (Food and Agriculture Organization of the United Nations). (2010). *The State of Food Insecurity in the World: Addressing food insecurity in protracted crises.* http://www.fao.org/3/a-i1683e.pdf

14 Data from Household Food Insecurity Access Scale surveys conducted in 2017 with a sample of farmers and workers in specific food supply chains. See the methodology note for more information. R. Willoughby and T. Gore. (2018). Ripe for Change: Methodology note. http://policy-practice.oxfam.org.uk/publications/ripe-for-changemethodology-and-datasets-620478. The raw data can also be accessed at the same link.

15 C. Alliot and T. Fechner. (Forthcoming). *Distribution of value in Asian Rice Value Chains*.

16 T. Reardon, K.Z. Chen, B. Minten, L. Adriano, T.A. Dao, J. Wang and S. Das Gupta, S. (2014). *The quiet revolution in Asia's rice value chains. Annals of the New York Academy of Sciences* 1331, 106–18. http://onlinelibrary.wiley.com/doi/10.1111/nyas.12391/epdf

17 T. Reardon et al. (2018). *Rapid transformation of food systems in developing regions: Highlighting the role of agricultural research & innovations*. Agricultural systems 2018. https://doi.org/10.1016/j.agsy.2018.01.022 [paywall]

18 C. Alliot and T. Fechner. (Forthcoming). *Distribution of value in Asian Rice Value Chains*.

19 FAO. (2014). *A regional rice strategy for sustainable food security in Asia and the Pacific*. http://www.fao.org/fileadmin/templates/rap/files/aprc32/regional-rice-strategy-for-asia-pacific_final-edition.pdf

20 Syngenta and Frontier Strategy Group. (2016). *Rice Bowl Index 2016: Collective Responsibility*. http://exchange.growasia.org/system/files/Syngenta%20Report%20v5%20v3_final%2014dpi.pdf

21 T.A. Dao, V.D. Vu and H.T. Nguyen, H.T. (Unpublished). *Analysis of global rice supply system*. Oxfam Research Backgrounder series.

22 Ibid.

23 C.T. Tran, L.H. Do and N.M. Le. (2013). *Who has benefited from high rice prices in Vietnam?* https://www.oxfamamerica.org/static/media/files/who-benefits-rice-prices-

vietnam-full-20131017.pdf

24 C. Alliot and T. Fechner. (Forthcoming). *Distribution of value in Asian Rice Value Chains*.

25 T. Reardon et al. (2018). *Rapid transformation of Food Systems in Developing Regions*.

26 N. Ha and S. Mortensen. (Unpublished). *Gender Equality and Women's Economic Empowerment in Sustainable Rice Production*. Oxfam-commissioned research undertaken by Stockholm Environment Institute

27 Nepal Leadership Academy. (Unpublished). *Rice Value Chain in Nepal*. Research paper commissioned by Oxfam Nepal.

28 Ibid.

29 A. Ali, J. Ali, S. Akhtar, A. Anam, A. Ghafoor, A. Meraj, S. Ilyas (Unpublished). *Practices, farmer's knowledge and technologies trade-off in gender role: draft report of field survey*, University of Agriculture, Faisalabad, Oxfam, Doaba Foundation

30 H. Yagi. (2012). Farm size and Distance-to-Field in Scattered Rice Field Areas. Selected poster prepared for presentation at the International Association of Agricultural Economists Triennial Conference, 18–24 August. http://ageconsearch.umn.edu/bitstream/125390/2/Yagi2012IAAE16493.pdf

31 Nepal Leadership Academy. (Unpublished). Rice Value Chain in Nepal. Research paper commissioned by Oxfam Nepal.

32 A. Ali, J. Ali, S. Akhtar, A. Anam, A. Ghafoor, A. Meraj, S. Ilyas (Unpublished) Practices, farmer's knowledge and technologies trade-off in gender role: draft report of field survey, University of Agriculture, Faisalabad, Oxfam, Doaba Foundation.

33 Ibid.

34 Ibid.

35 F.H. Bordey et al. (2015). Game Changer: Is Philippine rice ready to compete at least regionally? Rice Science for Decision Makers, 6(1). http://www.philrice.gov.ph/wp-content/uploads/2015/11/Game-Changer.pdf

36 G.R. Joshi. (2017). Challenges and Opportunities for Enhancing Rice Production in Nepal. In M.N. Paudel et al (eds). (2017). Rice Science and Technology in Nepal (A historical, socio-cultural and technical compendium). Crop Development Directorate and Agronomy Society of Nepal, pp 764-770.

37 C. Alliot and T. Fechner. (Forthcoming). Distribution of value in Asian Rice Value Chains.

38 C. Alliot and T. Fechner. (Forthcoming). Distribution of value in Asian Rice Value Chains.

39 Nepal Leadership Academy. (2017). Rice Value Chain in Nepal. Research paper commissioned by Oxfam Nepal.

40 USAID Office of Food for Peace. (2013). Nepal USAID-BEST Analysis. http://www.cashlearning.org/downloads/nepal-usaid.pdf

41 R. Permani, W. Umberger and C. Findlay. (2015). Global Food Studies: Developing Smallholder Inclusive Food Value Chain Models for Local and Global Markets: Initial Literature Review and Project Design. https://www.adelaide.edu.au/global-food/research/smallholder-inclusive/EDF_APEC_project_Initial_literature_review_v1.pdf

42 R. Willoughby and T. Gore. (2018). Ripe for Change: Ending human suffering in supermarket supply chains. Oxfam. https://policy-practice.oxfam.org.uk/publications/ripe-for-change-ending-human-suffering-in-supermarket-supply-chains-620418

43 T. Reardon et al. (2018). Rapid Transformation of Food Systems in Developing Regions.

44 I. Ali, O. Erenstein, D.B. Rahut. (2014). Gender Contribution in Production of High Value Crops: Empirical Evidence from Pakistan. *Journal of Animal and Plant Sciences.* 24 (3), pp 936–44

45 R. Puskur. (2017, September 15). Women farmers' empowerment is a key ingredient for social sustainability. *Rice Today*. http://ricetoday.irri.org/women-farmers-empowerment-is-a-key-ingredient-for-social-sustainability/

46 T.A. Dao et al. (Unpublished) Analysis of global rice supply system.

47 S. Mohanty, H. Bhandari, B. Mohapatra and S. Baruah. (2015, November 10). The ongoing transformation of rice farming in Asia. Rice Today. http://ricetoday.irri.org/the-ongoing-transformation-of-rice-farming-in-asia/

48 Nepal Leadership Academy. (Unpublished). Rice Value Chain in Nepal. Research paper commissioned by Oxfam Nepal.

49 T.A. Dao et al. (Unpublished). Analysis of global rice supply system.

50 GRAISEA. (2018). Addressing environmental threats and health risks through responsible rice value chain and multi-stakeholder collaboration in Pakistan. GRAISEA Stories of Change, Issue 4. https://oxfamilibrary.openrepository.com/bitstream/handle/10546/620461/cs-graisea-pakistan-responsible-rice-value-chain-180418-en.pdf?sequence=1

51 Oxfam (unpublished). The role of women in rice farming: the case of female rice growers in Muridke, Sheikhupura. Case study report from Oxfam Pakistan.

52 See, for instance:

CGIAR Research Program on Climate Change, Agriculture and Food Security. (2012, April 13). Rapid climate change threatens Asia's rice bowl. https://ccafs.cgiar.org/news/press-releases/rapid-climate-change-threatens-asia%25E2%2580%2599s-rice-bowl#.W45iAM5KjIU

N.V. Nguyen. (2005). Global climate changes and rice food security. International Rice Commission of the Food and Agriculture Organization. http://www.fao.org/forestry/15526-03ecb62366f779d1ed45287e698a44d2e.pdf

53 S. Peng, J. Huang, J.E. Sheehy, R.C. Laza, R.M. Visperas, X. Zhong, G.S. Centeno, G.S. Khush, and K.G. Cassman (2004). Rice yields decline with higher night temperature from global warming. PNAS 101(27) pp9971–75. http://www.pnas.org/content/101/27/9971

54 L. Hughes, E. Hannah and J. Fenwick. (2016). The Silent Killer: Climate Change and the Health Impacts of Extreme Heat. Climate Council. https://www.climatecouncil.org.au/silentkillerreport

55 S. Peng, J. Huang, J.E. Sheehy, R.C. Laza, R.M. Visperas, X. Zhong, G.S. Centeno, G.S. Khush, and K.G. Cassman (2004). Rice yields decline with higher night temperature from global warming. PNAS 101(27) pp9971–75. http://www.pnas.org/content/101/27/9971

56 G. C. Nelson et al. (2009). Climate Change: Impact on Agriculture and Cost of Adaptation. Commissioned by the International Food and Policy Research Institute.

57 P.L. Poulton, N.P. Dalgliesh, S. Vang, T. Veasna and P. Charlesworth. (2015). Resilience of smallholder farmers in Cambodian lowland rice ecosystems in managing for future climate uncertainty. Paper presented at the 17th ASA Conference, 20–24 September, Hobart, Australia. http://agronomyaustraliaproceedings.org/images/sampledata/2015_Conference/pdf/agronomy2015final00164.pdf

58 T.A. Dao et al. (Unpublished). Analysis of global rice supply system.

59 S.K. Redfern et al. (2012). Rice in Southeast Asia: facing risks and vulnerabilities to respond to climate change. FAO. http://www.fao.org/docrep/017/i3084e/i3084e18.pdf.

60 M. Szczepanski, F. Sedlar and J. Shalant. (2018, September 13). Bangladesh: A Country Underwater, a Culture on the Move. Natural Resources Defense Council. https://www.nrdc.org/onearth/bangladesh-country-underwater-culture-move

61 K.M. Carlson, J.S. Gerber, N.D. Mueller, M. Herrero, G.K. MacDonald, K.A. Brauman, P. Havlik, C.S. O'Connell, J.A. Johnson, S. Saatchi and P.C. West. (2017). Greenhouse Gas Emissions Intensity of Global Croplands. Nature Climate Change 7, 63–68. https://www.nature.com/articles/nclimate3158

62 T. K. Adhya et al. (2014). Working Paper Wetting and Drying: reducing GHG emissions and saving water from rice production. WRI.

S.K. Redfern et al. (2012). Rice in Southeast Asia: facing risks and vulnerabilities to respond to climate change. FAO. http://www.fao.org/docrep/017/i3084e/i3084e18.pdf.

63 SRI International Network and Resources Center. (n.d.). Welcome to SRI-Rice Online!: What is SRI? Cornell University. http://sri.cals.cornell.edu

64 Africare, Oxfam America, WWF-ICRISAT Project. (2010). More Rice for People, More Water for the Planet. https://www.oxfamamerica.org/explore/research-publications/more-rice-for-people-more-water-for-the-planet/

65 A. Gathorne-Hardy, D.N. Reddy, M. Venkatanarayana and B. Harriss-White. (2013). A Life Cycle Assessment (LCA) of Greenhouse Gas Emissions from SRI and Flooded Rice Production in SE India. Taiwan Water Conservancy. 61(4). 110–12. https://www.researchgate.net/publication/280307216_A_Life_Cycle_Assessment_LCA_of_Greenhouse_Gas_Emissions_from_SRI_and_Flooded_Rice_Production_in_SE_India

66 T.W. Hertel and S.D. Rosch. (2010). Climate Change, Agriculture and Poverty. World Bank Policy Research Working Paper 5468. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1702130

67 K.P. Pant. (2011). Economics of Climate Change For Smallholder Farmers In Nepal: A Review. *The Journal of Agriculture and Environment* 12, 113–26.

68 A. Ali, J. Ali, S. Akhtar, A. Anam, A. Ghafoor, A. Meraj, S. Ilyas (Unpublished). Practices, farmer's knowledge and technologies trade-off in gender role: draft report of field survey. University of Agriculture, Faisalabad, Oxfam, Doaba Foundation.

69 FAO. (2016). Asia and the Pacific. Regional overview of food insecurity: Investing in a Zero Hunger Generation. http://www.aphca.org/publications/a-i6481e.pdf

70 R. Willoughby and T. Gore. (2018). Ripe for Change. Op. cit.

71 Ibid.

72 F. Rhodes et al. (2016). Underpaid and Undervalued: How inequality defines women's work in Asia. Oxford: Oxfam international. DOI: 10.21201/2016.7367. https://policy-practice.oxfam.org.uk/publications/underpaid-and-undervalued-how-inequality-defines-

womens-work-in-asia-611297

73 FAO. (2011). The State of Food and Agriculture. Women in Agriculture: Closing the gender gap for development. http://www.fao.org/3/a-i2050e.pdf

74 Nepal Leadership Academy. (Unpublished). Rice Value Chain in Nepal. Research paper commissioned by Oxfam Nepal.

75 R. Willoughby and T. Gore. (2018). Ripe for Change. Op.cit.

76 D. Short, J.W. Molenaar, B. Maréchal. (Unpublished). Implications of Sustainable Rice Production Standards and Initiatives for Small-Scale Rice Producers: A desk review. Oxfam Research Report.

77 Oxfam. (2017). Oxfam's Future of Business Initiative: Promoting equitable businesses and fourth sector development. https://oxfamilibrary.openrepository.com/bitstream/handle/10546/620341/dp-future-of-business-initiative-180917-en.pdf?sequence=1

78 https://www.worldbank.org/en/country/cambodia/overview

79 D. Short, J.W. Molenaar, B. Maréchal (Unpublished). Implications of Sustainable Rice Production Standards and Initiatives for Small-Scale Rice Producers: A desk review. Oxfam Research Report.

80 See the Sustainable Rice Platform website at www.sustainablerice.org

81 https://www.business-humanrights.org/en/binding-treaty

82 UN (2011). Guiding Principles on Business and Human Rights: Implementing the United Nations 'Respect, Protect and Remedy' Framework. https://www.ohchr.org/Documents/Publications/GuidingPrinciplesBusinessHR_EN.pdf

83 UN Global Compact (2011). Women's Empowerment Principles: Equality means Business. https://www.unglobalcompact.org/docs/issues_doc/human_rights/Resources/WEP_EMB_Booklet.pdf

OXFAM

Oxfam is an international confederation of 19 organizations networked together in more than 90 countries, as part of a global movement for change, to build a future free from the injustice of poverty. Please write to any of the agencies for further information, or visit www.oxfam.org

Oxfam America (www.oxfamamerica.org)
Oxfam Australia (www.oxfam.org.au)
Oxfam-in-Belgium (www.oxfamsol.be)
Oxfam Brasil (www.oxfam.org.br)
Oxfam Canada (www.oxfam.ca)
Oxfam France (www.oxfamfrance.org)
Oxfam Germany (www.oxfam.de)
Oxfam GB (www.oxfam.org.uk)
Oxfam Hong Kong (www.oxfam.org.hk)
Oxfam IBIS (Denmark) (www.oxfamibis.dk)
Oxfam India (www.oxfamindia.org)
Oxfam Intermón (Spain) (www.oxfamintermon.org)
Oxfam Ireland (www.oxfamireland.org)
Oxfam Italy (www.oxfamitalia.org)
Oxfam Japan (www.oxfam.jp)
Oxfam Mexico (www.oxfammexico.org)
Oxfam New Zealand (www.oxfam.org.nz)
Oxfam Novib (Netherlands) (www.oxfamnovib.nl)
Oxfam Québec (www.oxfam.qc.ca)
Oxfam South Africa (www.oxfam.org.za)

Observers
KEDV (Oxfam Turkey)