

DISTRIBUTION OF VALUE IN ASIAN RICE VALUE CHAINS

CHRISTOPHE ALLIOT
THEODORE FECHNER

BASIC (Bureau for the Appraisal of Societal Impacts for Citizen information)

CONTENTS

1	Introduction.....	3
2	Global rice value chains.....	4
	The rice sector at world level.....	4
	The global market of rice.....	4
	The global rice value chain.....	8
	Rice value chains in Asia and their evolution.....	9
3	Case studies of rice value chains in Asia	10
	Pakistan.....	10
	Rice value chains in Pakistan.....	10
	Rice value breakdown in Pakistan	14
	Rice value breakdown in Export markets (Sweden).....	16
	Ability of small farmers to earn a living income	17
	Nepal	19
	Rice value chains in Nepal.....	19
	Rice value breakdown in Nepal.....	22
	Ability of small farmers to earn a living income	24
	Viet Nam.....	25
	Rice value chains in Viet Nam.....	25
	Rice value breakdown in Viet Nam	28
	Rice value breakdown in Export markets (Sweden).....	29
	Ability of small farmers to earn a living income	31
4	TRANSVERSAL ANALYSIS.....	32
	Appendix: Objectives, perimeter & methodology.....	33
	Objectives.....	33
	Research questions & countries.....	33
	Methodological approach	34
	Conceptual framework	34
	Operational framework.....	35
	Limitations	37
	Reading guide for estimates.....	38
	Notes	40
	Acknowledgements	46
	Oxfam.....	47

1 INTRODUCTION

Rice is a key agricultural sector in countries across Asia, and the single most important source of calories in countries across Asia. The rice sector exemplifies systemic problems with agricultural production systems in the region. As with other elements of the agri-food system, it is facing rapid transformation - in production methods, in value chain development, in terms of trade and in concentration of assets (ownership and control). All these factors are exacerbating structural inequalities and trapping small-scale farmers in poverty. It is also increasingly unsustainable environmentally and impacted by climate change. And throughout this process of change, smallholder farmers struggle to gain a viable sustainable livelihood, and do not receive a fair share of the value of their produce. Women in particular face high levels of discrimination and gender-based barriers to improving their incomes and getting fair/ equal prices.

As public opinion gets increasingly sensitive about the issues of social inequalities, human rights abuses and environmental degradation, voters and consumers expect private companies and public actors to engage in long term positive practices to address these critical challenges in the food sector.

However, the lack of transparency on value distribution in agricultural value chains represents an obstacle for citizens to understand the magnitude and drivers of the current problems, as well as for public actors and for those companies that are engaged for sustainability to design programs and policies for reducing the negative impacts and externalities on small holders and rural workers.

In this context, Oxfam's Asian regional platform is building a campaign on inequality in agriculture across the region which focuses on the rice sector, in connection with Oxfam International's GROW campaign "Behind the BarCode" launched in June 2018.

The regional platform is seeking to start – at the regional level – a policy debate and mobilization around inequality in the rice sector and agriculture in general, and to support national-level advocacy and programming. Its primary audience will be national governments, policy-makers and regional/national media (its secondary audience being civil society organisations and private actors of the rice sector).

To achieve this, Oxfam's Asian regional platform has commissioned a specific investigation on the distribution of value in rice chains in Pakistan, Nepal and Viet Nam. This research builds on the research work & methodology on value distribution in agricultural chains which was conducted for the GROW campaign "Behind the BarCode".

This investigation aims at examining how value is shared along rice value chains in different countries, more specifically estimating historical share of value received by rice farmers compared to the other actors along the rice value chain, primarily in domestic markets.

2 GLOBAL RICE VALUE CHAINS

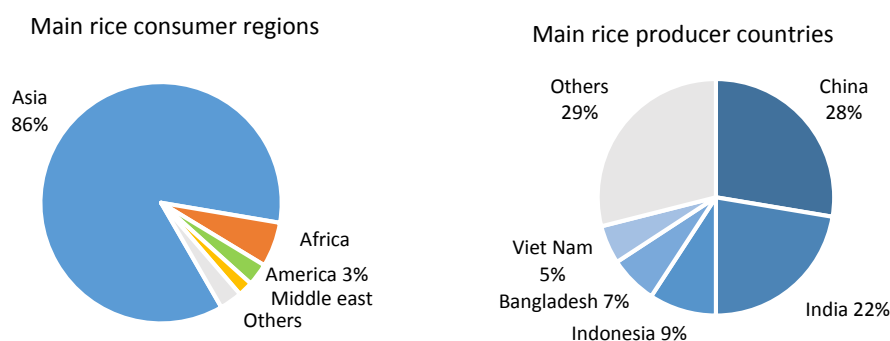
THE RICE SECTOR AT WORLD LEVEL

The global market of rice

Rice consumption and production

Rice is the world's most common staple food. The global average consumption per person is 235 grams per day (equivalent to two meals or two full plates each day)¹. For more than half of the world's population, in 118 countries, rice is the main component of their diet and is, therefore, critical for food security². It is also the primary source of income and employment for more than 200 million households across countries in the developing world³.

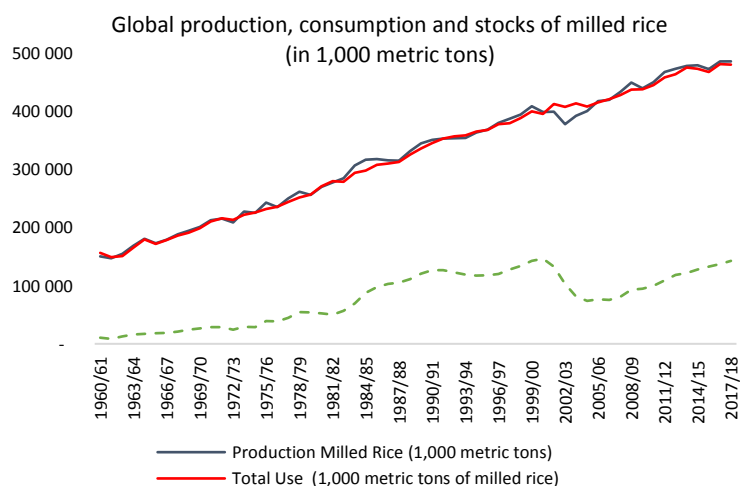
Fig. 1 Main world rice producer and consumer countries



Source: BASIC, based FAO data (2018)

Asia represents about 86% of global consumption, China and India accounting for almost half of the total volume of rice consumed each year at the international level. They are followed by Africa (6%), America (3%), and the Middle East (2%). In developed economies, rising incomes dampen rice demand as it is considered an inferior good and aging populations and increasing health concerns tend to shift preferences away from it⁴. The world rice production reached almost 760 million tonnes of paddy per year in the season 2017-18 equal to 504 million tonnes of milled rice. Almost half of it is grown in China (28%) and India (22%), the next biggest producers being Indonesia, Bangladesh and Viet Nam.⁵

Fig. 2 Evolution of global rice production and consumption 1960-2017

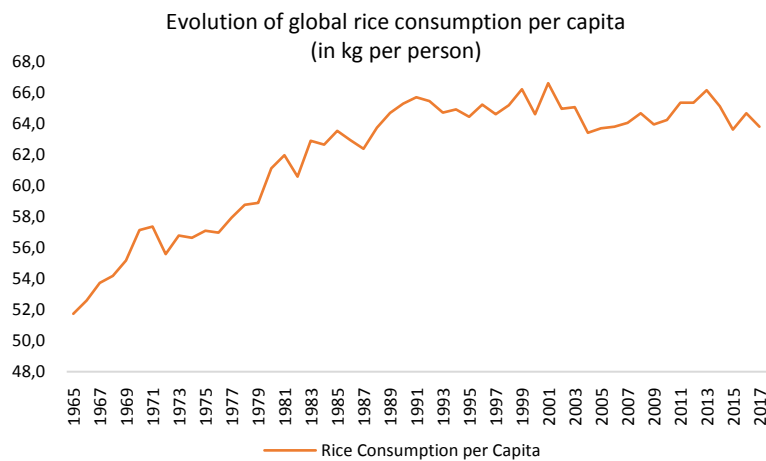


Source: BASIC, based on USDA data (2018)

At a global level, the production and consumption of rice have increased considerably since 1960, by approximately 6 million tonnes per year (see previous graphic), thereby following the growth of the population that depend on it for their dietary needs, mainly in Asia but also increasingly over the period in Latin America and Africa. Many countries which used to produce limited quantities have become self-sufficient, and sometimes managed to export surplus⁶. The share of rice in total cereals has slowly increased from 21.4% in 1961 to 24.4% in 2007, then decrease again to 21.3%⁷.

The rice sector is also characterized by significant world stocks driven by food security issues which have regularly increased since 1960 (albeit between 2000 and 2005). These stocks amount to almost 30% of yearly production in 2017 and are detained by a handful of countries with China accounting for almost 60% of total volumes, and India 12%⁸.

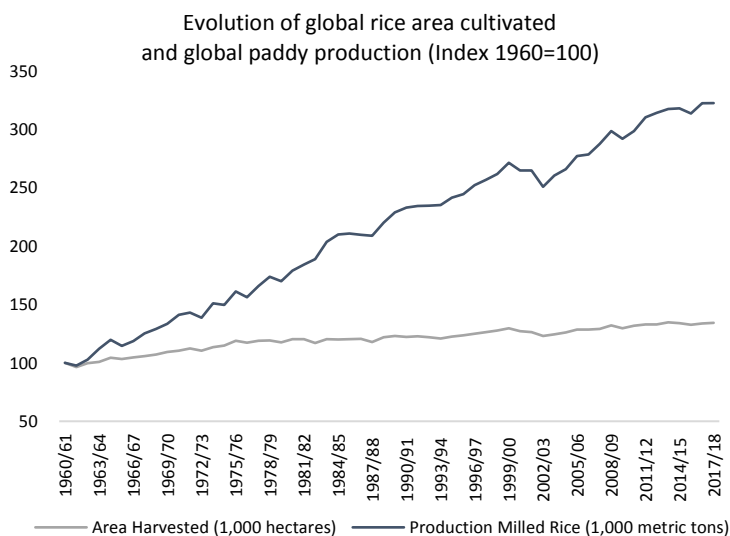
Fig. 3 Evolution of world rice consumption per capita 1965-2017



Source: BASIC, based on USDA data (2018)

The rise in consumption over the last decades is not only linked to the growth of world population, but also to the increase of per capita consumption which jumped from 51.7 kg in 1965 to more than 65 kg in 1992 (see above). Since then, a relative stagnation is observed, and even a slight decrease of 5% since 2013. This evolution is mainly driven by a significant drop in per capita consumption in Asia whereas the per capita consumption is still on the rise in Africa.

Fig. 4 Evolution of world rice paddy production and harvest area 1960-2017



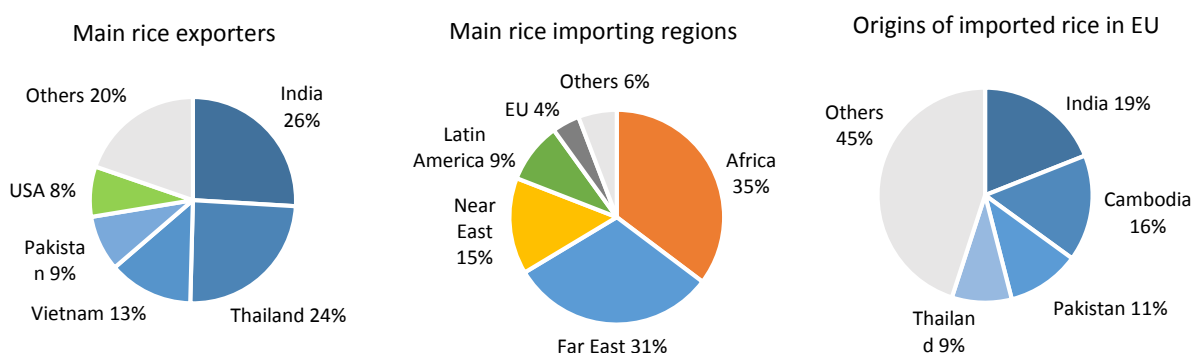
Source: BASIC, based on USDA data (2018)

On the production side, the multiplication by 3 of the volume of rice produced since 1960 is mainly attributed to yield improvement as the area harvested only increased by one third over the same period (see above). These record increases in rice production occurred as a result of the so-called “Green Revolution”, mainly in Asia, which led to the wide spread of new varieties of semi-dwarf, early-maturing rice that can be planted up to three times per year and are responsive to nitrogen fertilizers. As a result, yield levels have doubled or tripled since the pre-Green Revolution. Today, these varieties are grown in irrigated land in half of the world’s rice harvested area and contribute to nearly three-quarters of the world’s total rice production.

Rice exports and imports

Among the 504 million tonnes of milled rice produced in 2017-18, only 48 million tonnes are traded internationally, accounting for a very small share of total production in comparison with other major cereals.

Fig. 5 Main world rice export and rice import countries



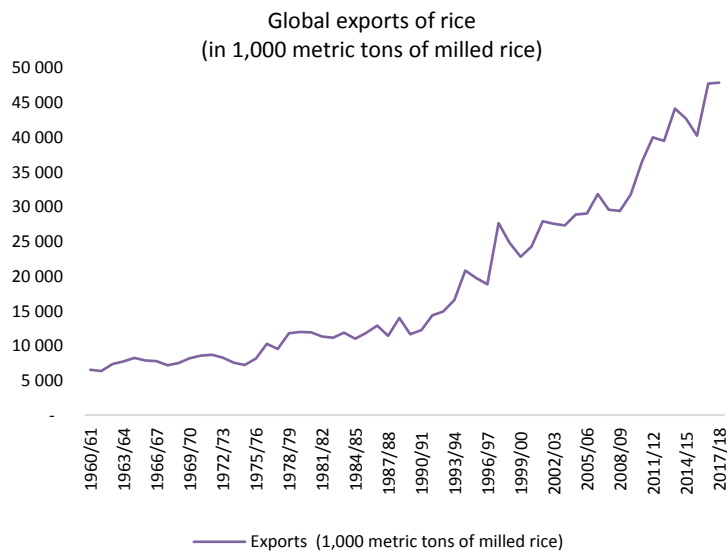
Source: BASIC, based on USITC, FAO and UN Comtrade data (2016)

The 5 main exporters are responsible for 80% of this trade. India has recently become the biggest exporter (26% of global rice trade in 2017-18, following a strong and sustained increase of its exports since 2012), followed by Thailand which was the historical rice export leader (now 24% of traded volumes), Vietnam (13%), Pakistan (9%) and USA (8%).⁹

In comparison, rice imports are widely dispersed among regions and countries, the leading importing region being Africa (35%), followed by the Far East (31%) and the Near East (15%) and Latin America and the Caribbean (9%).

The European Union is a small importer (only 4%), but with a strong growth rate (+50% since 2010). It is almost self-sufficient in Japonica rice (short grain) and mainly imports long-grain (Indica) rice and aromatic varieties (basmati, jasmine). The main origins of imported rice in the EU are: India (19%), Cambodia (16%), Pakistan (11%) and Thailand (9%)¹⁰. The United States is a surplus rice producer, supplying its domestic rice consumption and only importing aromatic varieties (2% of world’s traded volumes)¹¹.

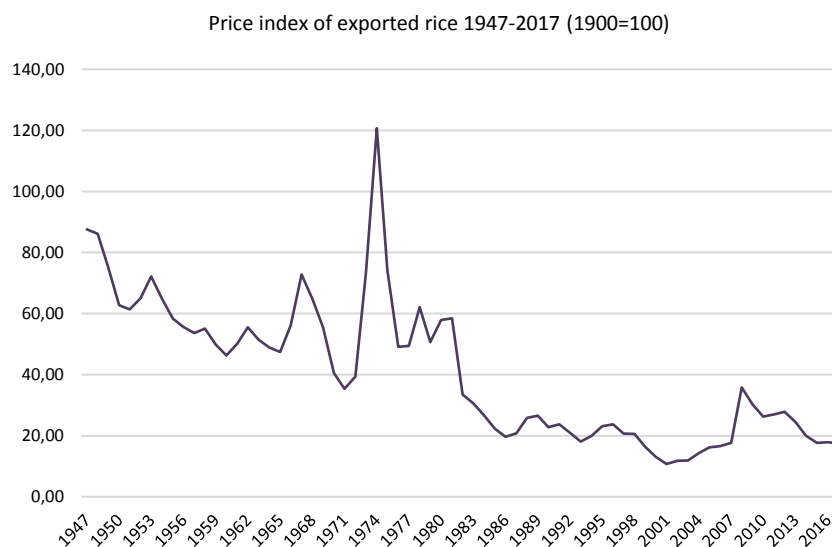
Fig. 6 Evolution of rice exports 1960-2017



Source: BASIC, based on USDA data (2018)

The international trade of rice is a recent trend: the volumes of rice exported at the world level remained quite low until the end of the 1980s, then were multiplied by 4 between 1989 and 2017. This exponential trend is mainly linked to the change of dietary habits of the population in Africa, Latin America and the Near East, as well as the growing food needs in some Asian countries.

Fig. 7 Evolution of the FOB price of exported rice 1947-2017

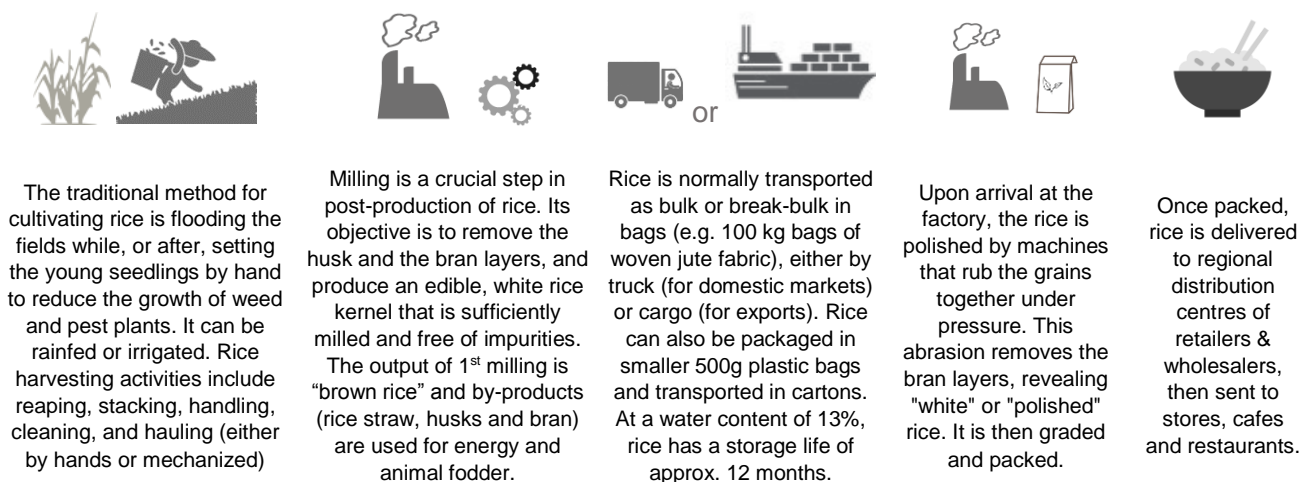


Source: BASIC, based on From David S. Jacks, Boom to Bust: A Typology of Real Commodity Prices in the Long Run. NBER Working Paper 18874 (2018) - <http://www.sfu.ca/~djacks/data/boombust/index.html>

This strong increase of traded volumes at the international level is correlated with a significant drop of the real price (i.e. not adjusted for inflation) of exported rice: it has been almost divided by 4 between 1947 and 2017 (albeit during the oil crisis in 1973-75).

The global rice value chain

Fig. 8 Technical description of the rice chain from producers to consumers



Source: BASIC

Most rice consumed in the European Union and the USA is sold through supermarkets, a trend which is also extending rapidly to emerging countries in Latin America, Asia and Africa¹². Large multinational rice manufacturers dominate in the mature retail markets, end increasingly in emerging markets. The leader is the Spanish-based Ebro Foods SA which owns dozens of brands (e.g. Minute Rice, Oryza, Success Rice, Taureau Aile...) and is the n°1 brand in countries such as the USA (21% market share), Canada, France, Spain, Portugal, Morocco... Among its direct competitors are Mars Inc. (owner of the brand Uncle Ben's), Associated British Foods (owner of Westmill), Marbour group (leader of rice for retailer's private label in Europe)¹³.

In import markets, these manufacturers purchase rice to international specialised brokers and traders based in Europe and the USA such as Louis Dreyfus (one of the market leaders which handles approx. 8% of total Thailand's rice exports and 30% of African's imports), Jackson Sons & Co, Cargill, Action SA, Continental Grain or Schepens Co¹⁴. The price of rice traded by these actors on international markets is highly volatile for a number of reasons: inelastic supply and demand throughout much of Asia where it is the dominant food staple and plays a critical role in food security, hence its political sensitiveness and vulnerability to government actions and private speculation. A major illustration took place in 2007-08, when India implemented a ban on non-basmati rice exports and the Philippines imported higher-than-normal volumes over a short period of time, the subsequent speculative rice price spikes endangered food security and triggered social unrest in a number of countries.¹⁵

At the beginning of the chain, rice farming is hugely fragmented with very small holdings and scattered field plots: there are an estimated 200 million rice farms in Asia, their average size being less than 0.5 ha in China and Indonesia, less than 1 ha in Viet Nam, Bangladesh and Eastern India and around 2 ha only in Thailand, Cambodia and Western India. In much of the world, small holders produce enough rice - amounting to a year's stock - for their own use, their rice being processed free of cost by thousands of small and medium-sized millers located nearby in exchange for the rice bran. These local mills use old machinery with a milling capacity ranging between 5 and 60 tons of paddy rice per day.¹⁶

Over the past decades, the rice industry is consolidating in the large rice-producing regions to include more medium and large mills that have a higher processing capacity of between 60 and 220 tons of paddy rice per day. Rice growers with slightly larger farms sell their produce directly to these mills. Often characterized by their weak bargaining power and limited access to mills - owing to poor road conditions or high transportation costs - these farmers are forced to sell their produce to paddy collectors or traders at the offered price.¹⁷

RICE VALUE CHAINS IN ASIA AND THEIR EVOLUTION

The first feature of the Asian rice sector over the past 10 to 15 years is the decline of per capita consumption. The main decreases have been measured in Taiwan (-1.52% per year), Pakistan (-1.40%), South Korea (-1.08%) and Nepal (-0.99%)¹⁸. Significant reduction has also been observed in the two biggest countries, China (-0.33% per year) and India (-0.68%), leading to prospects of a potential decrease of the total volume of rice consumed in Asia by 2050 in spite of the population growth in the region¹⁹. At the other end of the spectrum, Viet Nam (-0.11% per year) is the least impacted by this trend, while Sri Lanka (+0.34%) and the Philippines (+1.13%) are the two only countries on the rise²⁰.

The main drivers of this decline are rapid income growth in Asia, combined with a massive shift of labour from rural to urban areas²¹. Income growth, along with increasing opportunity cost of time as women worked outside the home in urban and rural areas, led to major diet and shopping changes: whereas cereals were 40% of the daily food intake in 1970, they dropped to only 24% by 2013²². In Asian areas where rice traditionally reigned, wheat has made inroads in the form of noodles and bread. By contrast, non-staples (in particular processed products) soared from 46% to 74%²³.

In addition, the policy liberalization and privatization which occurred since the 1990s in the region led governments to gradually minimize their direct intervention in food systems and focus instead on large infrastructure programs which reduced transaction costs and formed the foundation for food supply chain development from rural areas to the burgeoning cities²⁴.

As a result, the private sector MSMEs (micro, small, and medium enterprises) stepped into the void left by parastatals and strongly increased their participation in the food sector, being encouraged by the expanding urban food markets. The public policy changes also led to the entry of large-scale domestic and foreign food companies such as processors, supermarkets and fast food chains, as well as large input firms²⁵.

These macro-level changes led to a rapid transformation of rice value chains in Asia²⁶:

- The downstream retail segment is undergoing a “supermarket revolution” with different starting times and pace of evolution depending on the country (China being one of the most advanced). This transformation appears to be improving food security for cities by reducing margins, offering lower consumer rice prices, and increasing quality and diversity of rice. In some countries as China and India, supermarkets have a two-pronged strategy: selling cheap rice (packaged or loose) to appeal to the lower-income consumers, and higher quality, packaged and diversified rice (such as fragrant rice) for the middle class.²⁷
- Midstream, in wholesale and milling, there is a quiet revolution underway driven by expanding urban markets (rather than export markets). Thousands of entrepreneurs are investing in machines, increasing scale and diversifying into higher quality. The equipment needed to reach economies of scale and capture more added value through the double polishing of rice imply expensive investments that only medium and large mills can make (even with government mechanization subsidies). As a result, this segment of the chain is undergoing consolidation, but also vertical coordination and integration.²⁸

On the distribution side, mills - especially the larger ones - are building agent networks in downstream markets, contractual relationships with large wholesalers and sometimes direct relationships with supermarkets. Most mills are shifting (at least partially) from marketing loose rice to packed rice with information on trader & mill, but no brand. In China, large mills have started packaging and branding, paving the way for a broader trend in the region.²⁹

On the procurement side, significant disintermediation is underway as mills start to buy directly from farmers, bypassing middlemen such as village traders which traditionally dominant role is being increasingly challenged, especially in the more developed rice regions. The smaller farms tend to still sell to the village trader while the medium and large farms tend to access directly mills and district or urban larger wholesalers.³⁰

- In parallel, the upstream part of the rice chain is also changing quickly. Farmers are shifting from subsistence to small commercialized farms and in some areas, landholdings are concentrating. Rice growers are also undertaking capital-led intensification and participating in burgeoning markets for land rental, fertilizer and pesticides, irrigation water, and seed. The basic paddy intensification technology using improved seeds, chemicals, and irrigation has become nearly ubiquitous (sometimes with the exception of pockets of marginal farmers). In addition, a rapid and generalized diffusion of small-farm mechanization is taking place thanks to the development of farm machines rental market, the ownership of machines being still very concentrated (and correlated with farm size). As machines substitute for labour, their uptake appears to be correlated with the rise of rural wages, which in turn is correlated with increasing rural nonfarm employment and migration, tightening further the rural labour markets.³¹

In this context, we further investigated 3 case studies – Pakistan, Nepal and Viet Nam – to explore to what extent they are undergoing the same evolution, and what are the consequences on the livelihoods of rice growers.

3 CASE STUDIES OF RICE VALUE CHAINS IN ASIA

PAKISTAN

Rice value chains in Pakistan

Rice consumption, production and trade

Rice is the third largest crop of Pakistan after wheat and cotton, and one of the main export items of the country (generating 950 million \$ annually). It accounts for 6.4% of value added in agriculture and 1.4% of GDP³². Pakistan grows high quality rice to meet both domestic demand and for exports (on an equal footing). Area sown for rice is estimated at 2.88 million hectares. Favourable growing conditions, combined with attractive prices and state input assistance are estimated to have raised the production to an all-time record of 11.1 million tonnes (7.4 million tonnes, milled basis) in 2017, making Pakistan the 9th biggest rice producer in the world³³.

The country is also the 4th biggest rice exporter, trading both Basmati rice and IRRI long grain rice with significant growth rates over the past decade. In 2017, Pakistan has shipped 3.7 million tonnes, a 10% annual growth and the second highest volume on record³⁴. As a result, export volumes of rice account for half of the total country's production. Pakistan is also reaping the benefits of the evolution of legislation on fungicides in consumer markets. At the end of 2017, the European Union announced a lower Maximum Residue Levels (MRL) for tricyclazole in rice. As Pakistani farmers do not have access to this fungicide, which is commonly used in many other countries, Pakistani exports are more easily entering this market. In the 1st semester of 2018, EU imports from Pakistan have doubled, while imports from India are only one-third of the volume compared to the same period last year. In June 2018, Saudi Arabia announced the same lower MRL as the EU, increasing growth prospects for Pakistani exported rice.³⁵

Fig. 9 Map of rice cultivation in Pakistan



Source: USITC, Rice: Global competitiveness of the US Industry, 2015

Two main varieties of rice, Basmati and IRR1, are produced in Pakistan in the summer (kharif) season under irrigation:

- Basmati rice is a long grain fine rice variety with aroma which is produced mainly in the Punjab province (90% of total Basmati production). Over the past two decades, the area of Basmati rice varied between 1.3 and 1.7 million hectares and its production between 1.2 and 3.1 million tons³⁶. Its yield is quite low at around 1.7 tons per hectare. Beyond these average figures, there are significant discrepancies between the different varieties of Basmati rice grown and consumed (Basmati 370, 385 and Pak, Super Basmati...) ³⁷. Pakistan produces roughly 30% of the world's Basmati rice volumes and accounts for 2/3 of international trade in Basmati³⁸.
- IRR1 rice is a coarse grain variety which is mainly produced in Sindh province (65% of total production). Its development over the past two decades has been very strong: the area of IRR1 soared from 0.6 to 9.2 million hectares and its production from 0.3 to 3.0 million tons³⁹. The yield of IRR1 is significantly higher than Basmati, at around 2.5 to 3 tons per hectare⁴⁰.

Domestic consumption of Basmati rice is higher than IRR1 rice (Sindh people tend to consume only IRR1 rice whereas it varies in other provinces) while yield, production and exports of IRR1 are higher than that of Basmati. The fluctuations primarily depend on timely availability of fertiliser and pesticides, water availability, access to credit, weather conditions, price volatility, market power of the middlemen and the effect that unstable farm income has on the timing of sowing, the purchase of inputs and the ability to respond to external shocks⁴¹. In certain areas it is slowly shifting from existence a mere cereal crop to the commercial one⁴².

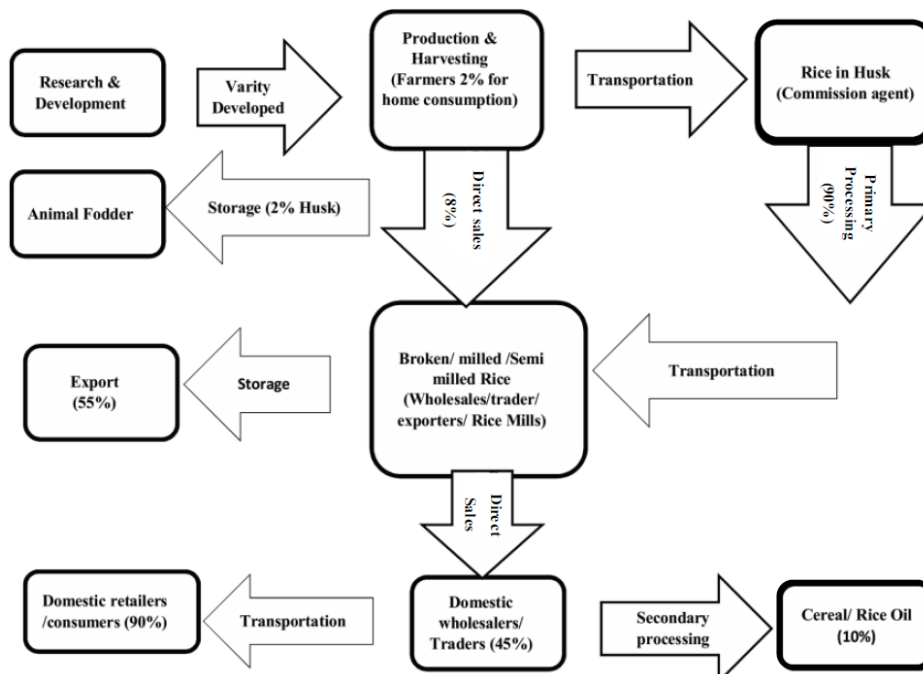
Structure of the IRR1 rice chain

The whole value chain is dominantly handled the middle men, in particular the mill owners who are the key value chain player in Pakistan⁴³. The majority of the IRR1 farmers possess small and medium size holdings and mainly depend for the marketing of their produce on middlemen who control the supplies through village dealers/contractors. Distant markets, shortage of transport and improper roads are major barriers which make the farmers dependent on traders (Arthi) who assert their own terms and price conditions upon them. In addition, rice growers are affected by extra commission, high market committee fee, high carriage and other handling charges, late payment by dealers, high storage cost and lack of storage facilities.

The traders who buy paddy rice to farmers perform the drying and husk removal (primary processing) and sell the brown rice onwards to millers; the 10-15% of husk generated from the process is used as fodder for animals and sometimes is also procured to the paper making industry. The main traders/wholesalers are located in the grain markets; 8 of them are major domestic wholesale hubs for rice in Pakistan: Karachi, Lahore, Rawalpindi, Multan, Sukkur, Hyderabad, Peshawar and Quetta.⁴⁴

Further down the chain, milling is a very important step wherein edible white rice is produced after completely removing the husk and bran layers. This process also produces broken rice which should be kept to a minimum (rice germ, bran layer and fine broken rice are by-products which are mainly procured to oil & cereal making companies). Rice mills are most often private enterprises, owned by rice exporters, while some rice growers also have also established their rice mills. The IRRI white rice produced is then transported to consumers in both the domestic and export market through wholesalers. About 90% of IRRI exports are directed to Middle East, Africa and South and Central Asia. It is channelled through the major wholesale markets detailed earlier: Hyderabad which lies close to Karachi from which rice is shipped to foreign countries, Quetta and Peshawar from which rice is sent to Iran and Afghanistan, as well as from Rawalpindi close to Lahore in the Punjab province which is a deficit region of IRRI.⁴⁵

Fig. 10 IRRI rice value chain mapping in Pakistan



Source: TDAP (2016), Abdullah, et al. (2015), Pakistan (2013)

Structure of the Basmati rice chain

As for IRRI, the majority of Basmati Rice growers are small and middle-size: 20% of farmers hold less than 10 acres and 60% own farms between 10 and 25 acres. Around 80% of farmers are owner-cultivators, while 10% are tenants and 10% lease or contact holders. In the Basmati rice belt, land preparation has been fully replaced by tractors and harvesters thanks to the development of a service industry that provides farm machinery on rents; however, improvement in this field is still needed as farmers often use machines designed for harvesting wheat, generating significant trash, broken grains and by-products.⁴⁶

Local traders or Arthi's are the main driver of the Basmati rice value chain. The rice is predominantly channelled – around 80% of the total volume - through these traditional local middlemen at the Mandi (local wholesale market) on to private millers, while 20% is directly bought to rice growers by millers⁴⁷. Farmers mainly obtain seeds, fertilizers and pesticides from millers or Arthi through a network of dealers. These dealers operate for companies such as

Fauji (FFC), Engro (EFL), Ali Akbar (AAG), Syngenta or Bayer (a small proportion of seed, around 10%, is procured by the public sector, Punjab Seed Corporation and Rice Institute at Kala Shah Kaku). Advice on using seeds, fertilizers and pesticides are often provided by these middlemen who are rarely qualified, as agricultural department offices in local districts lack the capacity to reach the majority farmers; this results in major issues such as health hazards for farm workers and rising immunity in pests.⁴⁸

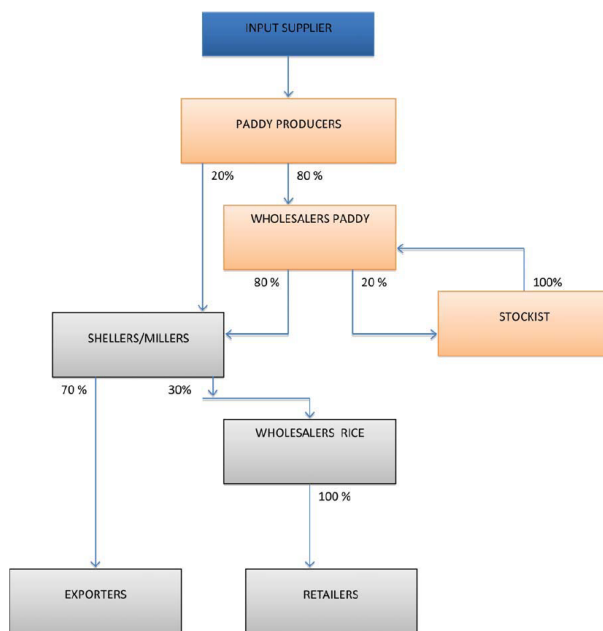
Overall, traders hold the market power and set the quality requirements and the farmgate price as growers are in a weak position to negotiate. Traders (Arthi) control the information flow in the chain and the storage of rice, and provide critical financing to farmers, especially the smallest growers (they pay them in advance for their planned production and finance them for their inputs when they get out of cash, thereby effectively binding them for another season). They operate from wholesale markets where their product is stored and auctioned to wholesalers and/or sold on to millers.⁴⁹

In the processing stage of the chain, there are 2 kind of actors⁵⁰:

- Local hullers who meet the local needs of the population at village level are fast disappearing
- Medium and large-scale millers process and pack rice on demand for domestic and/or export markets. Their processing units range from old traditional equipment of smaller size to modern fully integrated mills as in the case of Engro Rice in Muridke and Guard Rice in Lahore. More recently, the larger milling companies are developing new trading schemes whereby they purchase directly from medium-size growers (under contract farming) to produce quality rice in return for a better price, as in the case of Engro (EFL) / Eximp or the joint venture between Rice Partners Ltd (PRL) and Mars to export Pakistani brown rice.

At retail level, Basmati rice is sold either in open bag at the groceries stores or to modern supermarkets where brands are competing. The large rice processing companies have networks of commissioned agents at retail level to distribute their products and gain market share. At export level, most Basmati rice is graded and packed at the milling site, then directed to foreign markets through agents in these countries.⁵¹

Fig. 11 Basmati rice value chain mapping in Pakistan



Source: State Bank of Pakistan, Basmati rice value chain in Pakistan, 2014

Public policies and government's intervention

Over time, Pakistan has implemented a wide range of government policies and regulations influencing the domestic and export rice markets: privatisation of exports in 1988-89, export subsidies during 2002-04, minimum export price policy during 2007-08, decreasing import tariffs and a price support policy until 2001-02.

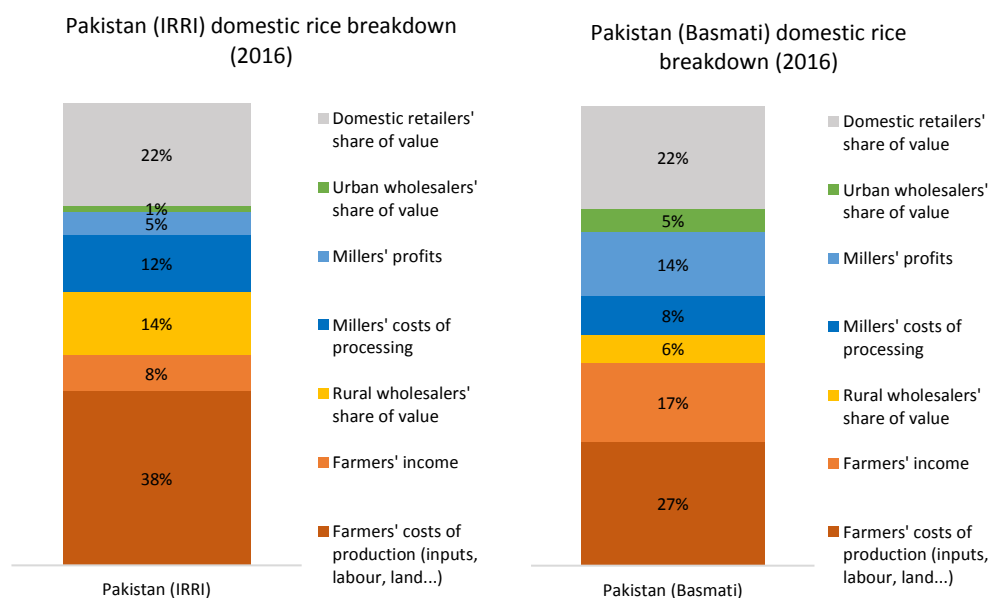
After 2002, the government occasionally announced an indicative support price, essentially intended to generate a floor price during the period of abundant supply. However, this measure has not been a substitute to market-determined prices as there have been no government purchases of rice since 1996. This is mainly intended at correcting shortcomings in the marketing system, such as controlling the control of market information by middlemen.

Rice value breakdown in Pakistan

Average value breakdown in 2016

Below is our estimation of value breakdown of rice produced and consumed in Pakistan, based on data series and ground research publicly available (see methodological section for further details). The lack of data availability didn't enable to make robust estimates in 2017 for all countries, hence the calculations have been performed for 2016 to ensure comparability.

Fig. 12 Value breakdown of rice produced in Pakistan (IRRI and Basmati)



Source: BASIC, based on data from national statistics offices, research institutes and academic papers (see section on methodology for further details).

There are important noticeable differences between the two types of rice, IRRI and Basmati, first of all because of the higher price of Basmati on the market (whatever the percentage of broken kernel) which is 2.5 times the price of IRRI on average. Only one stage of the chain – retailers - appears to gain the same share of value in both cases (but higher amount of money if expressed in rupees).

In both cases, the farmers costs of production account for the highest percentage (38% in IRRI, 27% in Basmati, despite the fact that the latter has lower yields on average). Farmers seem to generate higher income in Basmati (17% of the total value) than IRRI (8%). Given that the yields of Basmati is twice lower than IRRI, but its price is 2.5 times higher, this means that Basmati farmers tend to earn twice more from their rice activity (regardless of potential differences in acreage).

Regarding wholesalers, the situation seems quite distinct: whereas local/village traders seem to gain a (much) bigger share of IRRI's value than urban wholesalers, the situation is quite balanced in the case of Basmati (both earning 5-6% of the total value). This may be linked to the fact that in the IRRI's chain, Arthis have a large influence and negotiation power while urban wholesalers sell this rice variety has a cheap product, making their profits on volume rather than value. In contrast, in the Basmati chain, our analysis tends to show that local traders (Arthis) are under stronger competitive pressure from millers who buy 20% of volumes directly whereas at the end of the chain, urban wholesalers are selling a quality product with higher margins.

Finally, the millers seem to capture a bigger share of the total value than wholesalers, in particular because of their substantial costs of processing. Beyond this first observation, the differences between the two types of rice seem to be correlated to their specific marketing positioning: IRRI appears to be a cheaper rice for which millers are making profits on volume rather than value whereas Basmati is a quality product which generates higher costs of processing (if expressed in rupees) and (much) higher profits for millers.

Evolution of value breakdown between 2007 and 2016

Fig. 13 Evolution of rice's value breakdown in Pakistan



Source: BASIC, based on data from national statistics offices, research institutes and academic papers (see section on methodology for further details).

To investigate further this situation, we have analysed the evolution of value breakdown since 2007. The results are provided below.

First of all, the two evolutions are quite distinct, probably because of the different marketing positioning of the two products: Basmati is a more expensive quality rice (often bought by higher income consumers) while IRRI rice is a cheaper rice, more accessible for the daily consumption of the wider population. In addition, a sizeable proportion of Basmati being exported, its price in the domestic market is also heavily influenced by foreign demand (which is partially less true for IRRI, even though this rice variety is also exported). As a result, the end consumer price of Basmati appears to be quite a lot fluctuating whereas the price of IRRI follows a clear downward trend (-33% since 2009 once corrected for inflation), increasing the accessibility of this product for urban consumers. The peak in 2008 is correlated to the surge of commodity prices on the world market which greatly affected rice and triggered government's interventions in may rice producing countries (in particular Thailand and India).

Looking at the other stages of the chain, the rice growers appear to be the ones who bear the consequences of price volatility: indeed, the price lines of all other actors in the chain (local traders, millers, urban wholesalers) are quite parallel over the years, whereas the farmers are trapped between high costs of production (which seem to follow the rate of inflation) and fluctuating farmgate prices. The situation seems to have worsened greatly for IRRI farmers who only get 2.5 rupees per kg in 2017 compared to 12 rupees per kg in 2007 (once corrected for inflation).

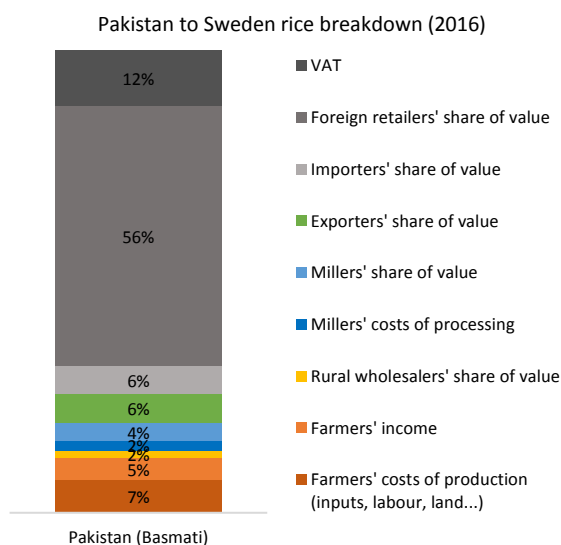
Analysing the situation of intermediaries in the chain, our estimates tend to show that the millers have the capacity to amplify the trends of prices evolution upstream. This illustrates their important and growing influence in the rice chain which enable them to generate substantial gains and transfer, even amplify, price increases to urban wholesalers and retailers.

Rice value breakdown in Export markets (Sweden)

Average value breakdown in 2016

Below is our estimation of value breakdown of rice produced and consumed in Pakistan and consumed in Sweden, based on data series and ground research publicly available (see methodological section for further details).

Fig. 14 Value breakdown of rice produced in Pakistan (Basmati)

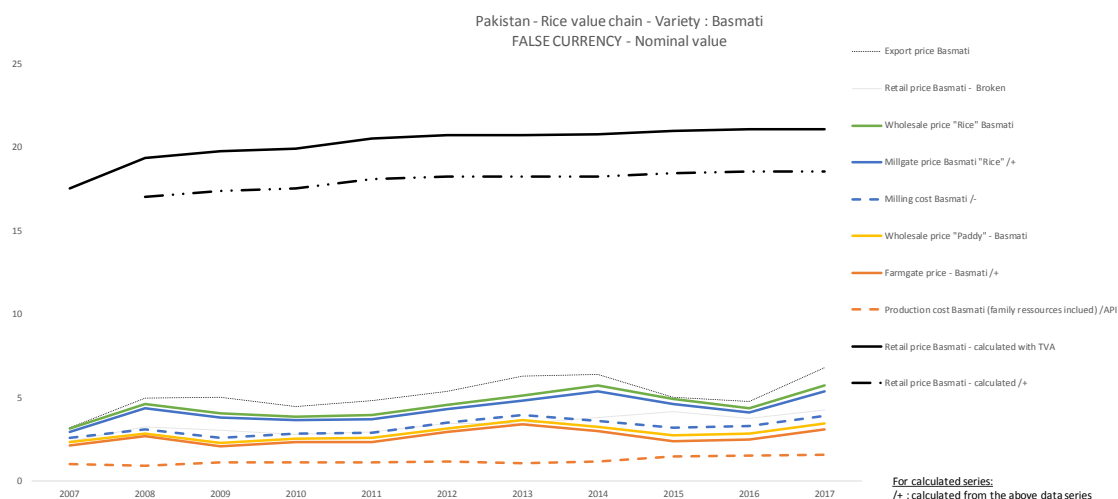


Source: BASIC, based on data from national statistics offices, research institutes and academic papers (see section on methodology for further details).

The main outstanding result of our estimates is the high proportion of value generated in the consumer country (Sweden) compared to the value left in Pakistan: only 26% of the end consumer price is captured by Pakistani actors (farmers, wholesalers, millers and exporters) and at the other end of the chain, the share of value of Swedish retailers is greater than 50%. In particular, the Pakistani rice growers appear to only capture 5% of the consumer price of Basmati sold in Sweden (after deducting their costs of production).

Evolution of value breakdown between 2007 and 2017

Fig. 15 Evolution of rice's value breakdown



Source: BASIC, based on data from national statistics offices, research institutes and academic papers (see section on methodology for further details).

To investigate further this situation, we have analysed the evolution of value breakdown since 2007.

The case of Basmati rice sold in Sweden is a good illustration of many food products imported from the Global South and sold in European retailers' outlets. The (very) high share of value captured by supermarkets enable them to keep prices stable for consumers (in nominal values in the diagram above to prevent distortions between currencies). They easily buffer price fluctuations at origin, while the actors in Pakistan, especially farmers are the ones who bear the consequences of price volatility.

Ability of small farmers to earn a living income

Our estimations of the average income earned by small farmers are approx. 30,000 rupees per family for IRRI in 2016 (based on an average farm as a size of 4 hectares, a productivity of 3,000 kg/ha/year and 5 people making their living on the farm) and 125,500 rupees per family for Basmati in 2016 (based on an average farm as a size of 6 hectares, a productivity of 1,700 kg/ha/year and 5 people making their living on the farm).

These numbers can then be compared with the surveys on living income conducted by the Global Living Wage Coalition (based on a daily caloric intake and a reference food diversity index as well as education, health, housing and minimum savings). According to these studies, the total household costs for basic but decent living standard for reference family can be estimated at 173,300 rupees per year for a typical rural family, if considering that most food is produced on the farm (and 335,000 rupees if food is bought on the market)⁵².

This means that the IRRI farmers only gain 17% of a living income through their rice activity, and Basmati 72%. Even taking into account that rice is not the sole source of liquidity of farmers (who often also produce wheat...), these estimates show that the income of IRRI farmers is much below the living income threshold (50% below if considering that rice makes 35% of their revenue) while the Basmati farmers seem to be able to almost reach this level with the rice activity only. Our calculations are based on average values and do not take into account the wide variety of situations of rice farmers which is likely to be worse in many cases. To conduct a more reliable estimate, there would be a need to collect mean values from ground studies.

NEPAL

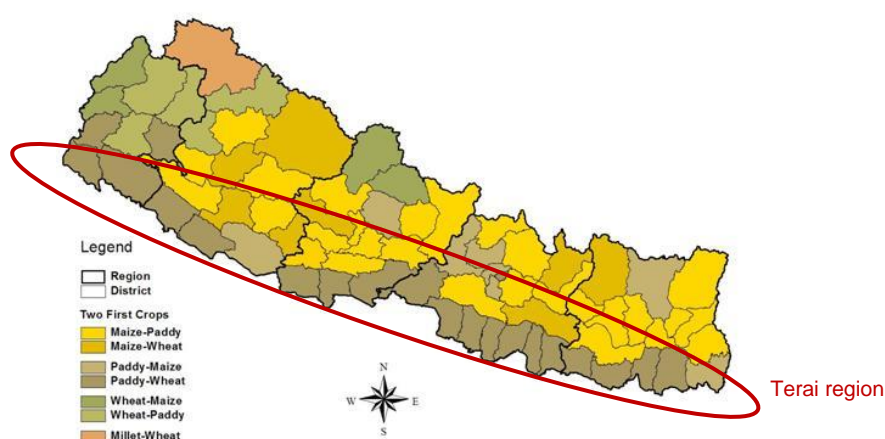
Rice value chains in Nepal

Rice consumption, production and trade

Rice is the most highly preferred staple in Nepal and contributes to 40% of calorie requirement of the country, and 21% of the country's Agriculture GDP⁵³. It plays a role in important religious festivals and is positively associated with wealth and a high social status. While demand has been slowly growing over the last decades, more recent jumps in household income as well as the development of road networks in the Hill and Mountain communities appear to have triggered a greater shift towards rice consumption in these regions⁵⁴.

On a national basis, per capita annual consumption is estimated at less than 88 kg⁵⁵. All socio-economic groups consume rice in varying volume, frequency, and quality: those who can afford rice eat it twice a day (together with lentils and vegetables), while those who are poorer will eat rice once a day whenever they have sufficient money (very poor households generally only consume rice from their own production during the harvest season and then switch to a less preferred staple like wheat, maize or millet)⁵⁶. Small broken rice is also made into flour from which people prepare bread-like pancakes or steamed rice dough (e.g., dosa)⁵⁷.

Fig. 16 Map of rice cultivation in Nepal



Source: FAO (<http://www.fao.org/docrep/010/ah869e/ah869e00.htm>)

Rice is produced across the country, and up to an altitude of about 2,500 m above sea level (at higher elevations, farmers grow a long-grain red rice rather than white rice). Production is heavily concentrated along the southern plains which are suitable for rice production, the Terai region being the undisputed rice belt which represents 69.7% of total production (followed by 25.8% in the Hills and 4.4% in mountain areas).⁵⁸

In terms of production system, 85 % of rice cultivation remains monsoon-dependent (transplanted in June/July and harvested in September/November) while only 15% is grown under irrigation (planted about one month earlier and harvested slightly later). The crop is mostly combined with wheat (in Terai) or maize (in the Hills).⁵⁹

Annual rice production was estimated at approximately 5.2 million tons of paddy for 2016-17, accounting for more than half of the country's total cereal production⁶⁰.

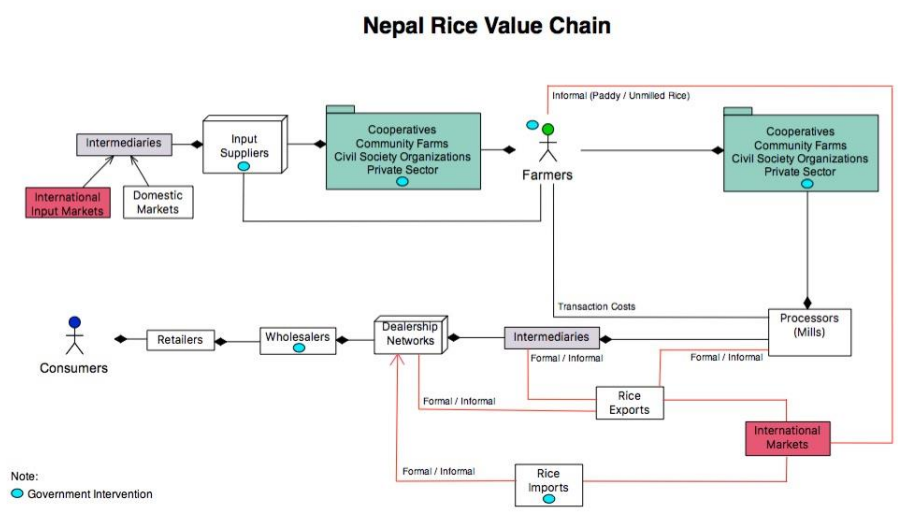
Rice production is quite volatile from one year to the other (fluctuating between 4 and 5 million tons at the national level) as rice growers face major constraints to stabilize and increase their production and productivity: limited irrigation and technological availability, depletion of soil fertility, low and inadequate supply of seeds, labour shortages, very limited marketing infrastructure and price volatility, high costs of production, institutional ineffectiveness, climate change impacts, and fragmentation of land holdings⁶¹. In addition, government-imported fertilizers cover one fourth of the country's demand, farmers being obliged to rely strongly on informal imports⁶².

According to the Ministry of Agricultural Development, the average growth in paddy production over the last 65 years is only 1% per year, whereas the population has been growing at about 2% per year over the last decade, creating a deficit of supply at the national level⁶³. In 2016-17 Nepal officially imported approximately 0.48 million tons of rice and a conservative estimate of informal imports adds another 50 % to official imports (accurate numbers of reportedly large volumes informally imported from India being unavailable)⁶⁴. As a result, the local rice production contributes to roughly 85% of domestic demand.

Until 1980 Nepal exported rice, and has been a rice importing country since then: lack of irrigation facility, encroachment of human settlements in arable land, lack of incentives on agriculture inputs, absence of public subsidy are among the main factors explaining the evolution of Nepal on the rice global market over the past 3 decades.⁶⁵

Structure of the rice chain

Fig. 17 Rice value chain mapping in Nepal



Source: Nepal Leadership Academy, Rice Value Chain in Nepal, 2018 (forthcoming)

With an average farm size just below 0.8 ha, very few farmers have surplus rice to sell and only 22 % of paddy production is sold (according to the 2010-11 Nepal Living Standards Survey)⁶⁶. Beyond the farming stage, the marketing chain in Nepal appears very little organized when compared with other rice producing countries. Producers sell to small collectors at the village level (locally called kantawallahs) who serve as the link between farmers on the one side, and traders and millers on the other. In their turn, millers process and store the product, then sell it to large wholesalers who on-sell to district wholesalers, retailers, and eventually consumers.⁶⁷

Most small rice growers are highly dependent on the traders for selling their produce (and sometimes millers when they sell them directly). Due to their low bargaining power and their inability to store rice, most farmers sell their product regardless of the price offered by traders or millers in order to meet their basic needs and repay the credit taken at the time of cultivation⁶⁸. Farmers who have access to cooperatives can rely on these institutions for necessary finance to invest on inputs such as seeds and fertilizers, as well as to access loans and other

services⁶⁹. Regarding the government's production and marketing services, it appears that the bigger producers are the ones who benefit most of them⁷⁰.

In the middle of the chain, there are more than 400 grain mills throughout the country, but only 4 or 5 could be considered large industrial mills⁷¹. Milling percentage is lower in Nepal than in other Asian countries because it is hindered by hulling/sheller milling types and operators' lack of skills, as illustrated by the traditional foot pounding (dhiki) and hand pounding (okhal) which are quite inefficient and labour intensive⁷². According to rice industry experts and newspaper articles, the number of rice mills in the Terai has declined considerably since 2010 as Nepali millers struggle to compete with formal and informal imports from India; for those who remain, sales have dropped considerably⁷³. As a result, this segment of the chain is increasingly controlled by a few large traders and millers who are the only actors having sufficient financial resources to buy modern technologies (in particular to process steamed and aromatic rice, thus accessing more lucrative markets)⁷⁴.

At the retail level, the growing population and rising income are fuelling the demand for rice, putting pressure on the procurement and processing sector to expand and modernize facilities, and on national governments to maintain sufficient stocks to stabilize urban rice prices.

Public policies and government's intervention

The government of Nepal considers rice the most important staple, and regularly intervenes on the production and marketing stages of the chain to ensure access for Nepali consumers.⁷⁵

In particular, the Nepal Food Corporation (NFC) - a public company which mission is to maintain food security and protect people from price fluctuations - purchased 29023 tonnes of paddy in 2014-15, compared to 265 tonnes in 2005-06⁷⁶. The NFC also provides transport-subsidized rice to 23 food-deficit districts but is reported to fail reaching consumers outside of district headquarters (DHQ) where a significant part tends to be purchased by civil servants and military staff⁷⁷. In terms of price-fixing, the NFC forms each year a committee to fix a buying price of paddy based on the minimum support price of the Ministry of Supplies, but the Nepalese government has provisions to buy less than 10% of total paddy production and only farmers who have access to the NFC office or collection centre in their regions are able to benefit from this mechanism⁷⁸.

In addition, The Nepal-India Trade Treaty allows for free trade in primary agricultural commodities between the two countries, meaning that goods are zero-rated for customs, and there are no quotas. Despite the treaty, Nepal has levied an agriculture tax of 5% on the import of both paddy and milled rice, trying to support employment or value addition in Nepalese mills but also affecting the profitability of rice wholesalers and processors, and the ultimate retail price for Nepali consumers.⁷⁹

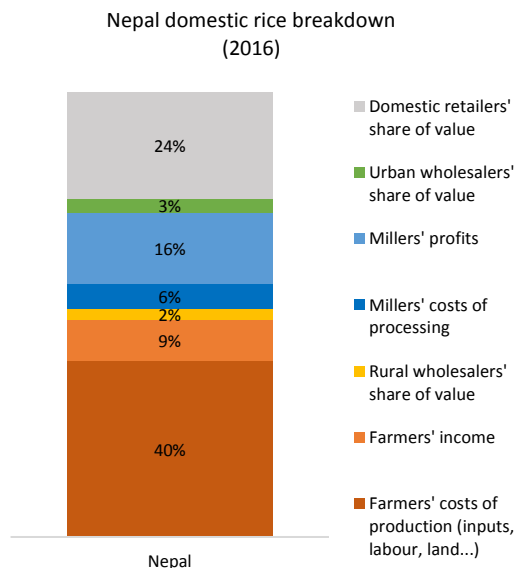
Reversely, interventions from the Government of India can also have strong effects on the rice market in Nepal. For example, since the Indian government lifted an export ban on rice in late 2012, Nepalese traders have benefited from increased availability and lower prices through imports from India. On the contrary, Nepali producers and millers have suffered losses as Indian rice receives large production subsidies and therefore unfairly competes with Nepalese rice.⁸⁰

Rice value breakdown in Nepal

Average value breakdown in 2016

Below is our estimation of value breakdown of rice produced and consumed in Nepal, based on data series and ground research publicly available (see methodological section for further details). The lack of data availability didn't enable to make robust estimates in 2017 for all countries, hence the calculations have been performed for 2016 to ensure comparability.

Fig. 18 Value breakdown of rice produced in Nepal



Source: BASIC, based on data from national statistics offices, research institutes and academic papers (see section on methodology for further details).

First of all, the retailers' share of value at the end of the chain is quite comparable with the results obtained in Pakistan (24% compared to 22%)

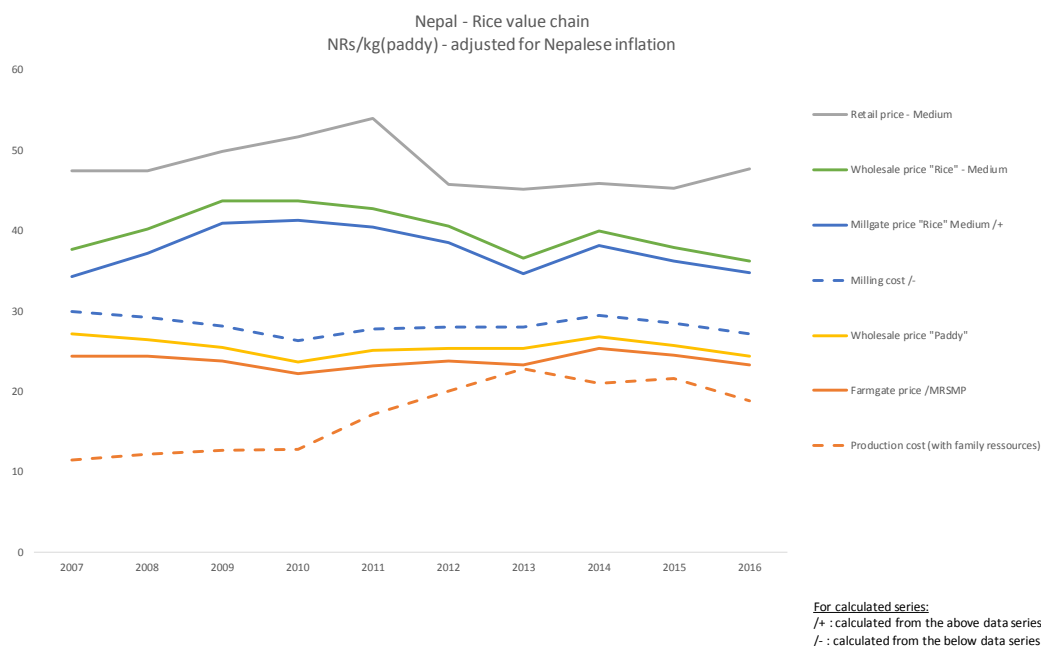
At the beginning of the chain, the farmers costs of production account for the highest percentage: 40%, a proportion quite comparable to IRRI in Pakistan. Nepalese farmers seem to capture for their income a share of value of 9% which is also comparable to IRRI growers in Pakistan.

Regarding wholesalers, although local traders have a strong bargaining power compared to farmers, they appear to be making their profits on volume rather than value, as it is the case for urban wholesalers down in the chain.

Finally, the millers appear to capture a bigger share of the total value than wholesalers, and more strikingly seem to be making substantial profits from their activity when accounting for their processing costs. This tends to reflect their growing influence in the rice value chain in Nepal.

Evolution of value breakdown between 2007 and 2016

Fig. 19 Evolution of rice's value breakdown in Nepal



Source: BASIC, based on data from national statistics offices, research institutes and academic papers (see section on methodology for further details).

To investigate further this situation, we have analysed the evolution of value breakdown since 2007. The results are provided below.

First of all, the end consumer price of rice appears to be quite fluctuating, with a global stagnating tendency over the last decade (once corrected for inflation). The rise of prices between 2008 and 2011 seem to be correlated to the export ban of Indian rice which strongly influenced the market in Nepal, while the decrease in 2012 seem to be linked to the lift of this ban and the pressure on price triggered by Indian imports, as explained in our previous analysis of the chain.

Looking at the other stages of the chain, the rice growers appear to be the ones who bear the consequences of price volatility: indeed, the price lines of all other actors in the chain (local traders, millers, urban wholesalers) are quite parallel over the years, whereas the farmers are trapped between (strongly) increasing costs of production (mainly because of labour costs) and fluctuating farmgate prices. The situation seems to have greatly worsened for farmers who only get 5 rupees per kg in 2017 compared to 12 rupees per kg in 2007 (once corrected for inflation).

Analysing the situation of intermediaries in the chain, our estimates tend to show that the millers had the capacity to amplify their margins during the Indian export ban when the competitive pressure was much lower. They seem to have somehow maintained their share of value since then. This illustrates their important and growing influence in the rice chain which enable them to generate substantial gains and transfer, even amplify, price increases to urban wholesalers and retailers.

Ability of small farmers to earn a living income

Our estimations of the average income earned by small farmers are approx. 11,400 rupees per family in 2016 (based on an average farm as a size of 0.8 hectares, a productivity of 3,200 kg/ha/year and 5 people making their living on the farm).

These numbers can then be compared with the estimates on living income conducted by the World Fair Trade Organization (based on a daily caloric intake and a reference food diversity index as well as education, health, housing and minimum savings). According to their estimates, the total household costs for basic but decent living standard for reference family can be estimated at 89,600 rupees per year for a typical rural family, if considering that most food is produced on the farm (and 128,000 rupees if food is bought on the market)⁸¹.

This means that the rice farmers only gain 13% of a living income through their rice activity. Even taking into account that rice is not the sole source of liquidity of farmers (who often also produce wheat...), these estimates show that the income of rice farmers is much below the living income threshold (3 to 4 times less than what would be required if considering that rice makes 50% of their revenue). Our calculations are based on average values and do not take into account the wide variety of situations of rice farmers which is likely to be worse in many cases. To conduct a more reliable estimate, there would be a need to collect mean values from ground studies.

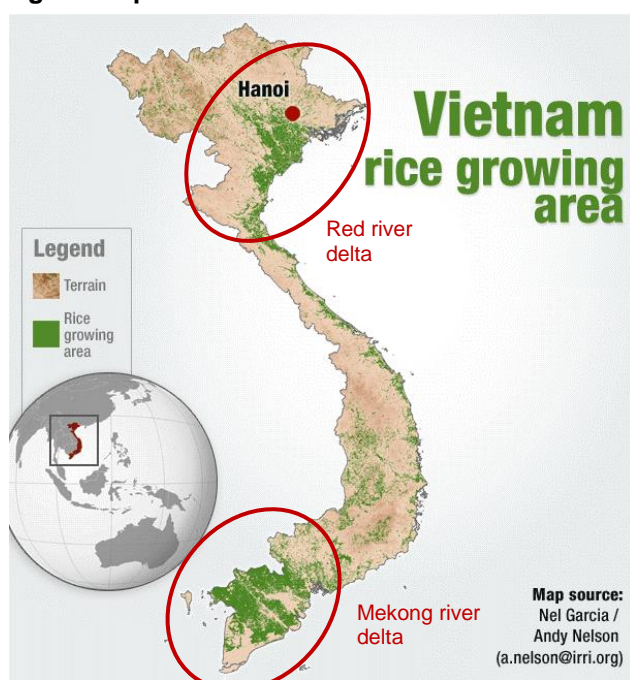
VIET NAM

Rice value chains in Viet Nam

Rice consumption, production and trade

Viet Nam has been characterized by a relatively rapid economic growth and poverty reduction since the on-going economic reform process of the early 1990s. Correlated with this evolution, the share of rice in dietary energy supply has fallen from 75% in the 1980s to about 55% in recent years. Annual Per capita consumption dropped to approximately 135 kg per year, and even 100 kg within the urban population.⁸²

Fig. 20 Map of rice cultivation in Viet Nam



Source: <http://www.sest2012.com/working-in-the-rice-fields-of-vietnam/>

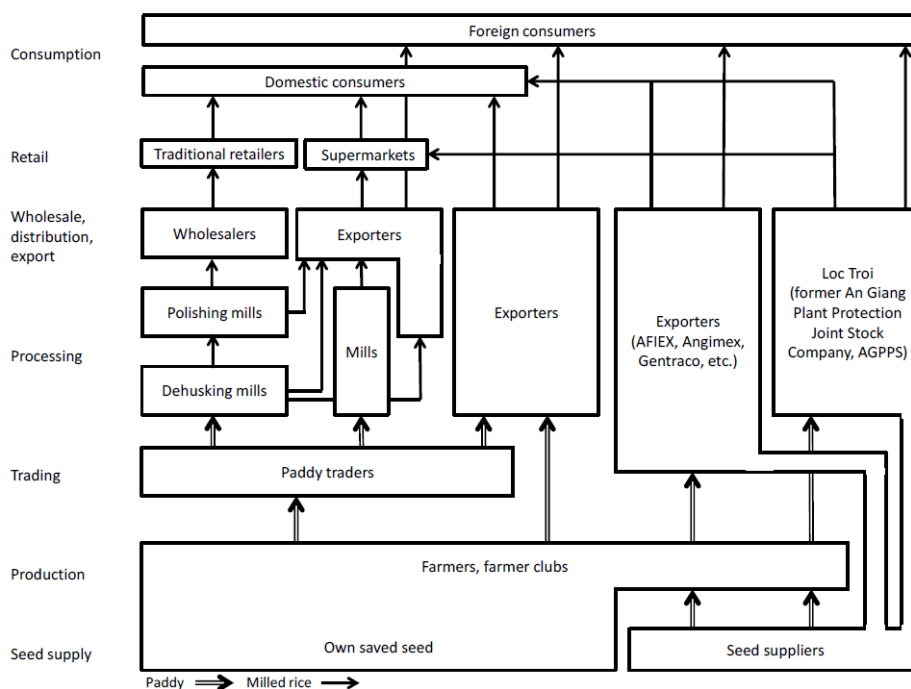
On the agricultural side, national paddy production doubled from 19.2 million tons in 1990 to over 40 million tons in 2017, thanks to the increase of productivity growth. Whereas the area of dedicated rice land marginally remained stable at around 3.1 million ha in 2017, improvements in water resources management and the availability of shorter growing period varieties enabled an increased intensity of plantings⁸³. As a result, average national yields have been increasing about 1 ton per hectare per decade since the 1990s and reached 5.3 tons/ha in recent years, with wide variations among seasons, locations, and farm size categories⁸⁴.

The Mekong is the most important area for rice production in the country, accounting for more than half of national production⁸⁵. A strong process of intensification has occurred in the region over the past 3 decades, shifting from single to double cropping, and, more recently, triple cropping⁸⁶. Thanks to the successful development of shorter growing season varieties and with improved flood and water management systems, the sown area for paddy continued to expand in the region despite the global decline of land dedicated to rice⁸⁷. Despite frequent, localized problems with flood inundation, salt water intrusion, drought, and/or outbreaks of pests and diseases, the overall regional pattern of output expansion is remarkably robust. The most productive season is the Winter– Spring season which accounts for almost 50% of the annual paddy production of the Mekong river delta (MKD), with high average yields of 6.5 tons/hectare in recent years.⁸⁸

On the international market, Viet Nam has become the 3rd largest rice exporter in the world. Its rice export volume increased from 3.48 million tons to more than 6 million tons between 2000 and 2017, of which 95% comes from the Mekong river delta (MKD)⁸⁹. A large and growing proportion of the export trade is carried out on the basis of government-to-government transactions: 2.5 to 3.0 million tons per year is being distributed through such programmes in the Philippines, Indonesia, Cuba, as well as African countries⁹⁰. Paradoxically, Viet Nam also imports a small quantity of rice from neighbouring countries like Cambodia and Laos, mostly through informal trade with an estimated volume of about 1 million ton/year⁹¹.

Structure of the rice chain

Fig. 21 Rice value chain mapping in Viet Nam



Source: M. Demontt and P. Rutsaert, Restructuring the Vietnamese Rice Sector: Towards Increasing Sustainability, Sustainability 2017, 9, 325 (2017)

At the agricultural stage, rice growers are mostly smallholders: less than 3% of them have more than 2 hectares of rice under cultivation. The Mekong river delta is in stark contrast with these figures as the larger rice farms of 2 ha and more account for 14% of the region’s growers (the region hosts almost 90% of the Vietnamese rice growers with a farm area greater than 2 ha)⁹².

Rice growers usually get a loan at high interest rates ranging from 12 % to 15 % in order to purchase seeds, chemicals and fertilizers, and also invest in their own pumping system and storage facilities⁹³. In the Mekong region, the storage is one of main constraints: as double and triple cropping have become the norm, farmers don’t have enough capacity to store rice in their house (even cooperatives further down in the chain rarely have high-quality storage capacity)⁹⁴. Other operations, such as land preparation and harvesting, are done mechanically by contractors⁹⁵. The harvest of paddy is most often performed manually, and labour constraints (because of competition from urban and non-agricultural development) result in harvesting the paddy when it is overripe in some areas⁹⁶.

Farmers have to sell their paddy soon after the harvest to avoid severe post-harvest losses and obtain cash for their daily needs and to pay back loans⁹⁷. Due to increasing input costs and fluctuating international market prices (which began to decline in the later part of the 1990s) rice farming incomes are stagnant or even declining⁹⁸.

According to results from the Vietnam Household Living Standards Survey, the majority of MKD's 1.46 million rice growers rely upon rice for only a small (and lowering) share of their income. Most of the small and middle size growers (1 to 1.75 ha) sell the majority of their paddy, but also buy back rice at an equivalent or greater price than the one they get for their paddy⁹⁹.

In the low season, farmers can easily dry their paddy in the sunlight and sell it later when prices increase. Since traders come to villages, almost all farmers can negotiate with several traders and can therefore choose to wait for an acceptable price¹⁰⁰. In the Summer-Autumn season farmers mostly sell wet paddy in the field, which is later transported by barge to small-scale local traders¹⁰¹. Traders bring the wet paddy to drying service providers, as it needs to be properly and evenly dried within 24 hours in order to prevent cracking¹⁰². From the post-production process onwards, the rice value chain adds significant costs, little value and physical losses: according to recent studies, approximately 1 million tons of paddy is damaged or otherwise physically lost between the farmers' field and the first stage of processing¹⁰³.

The dried paddy is then sold to millers who husk it and transport it to larger millers who produce the polished or unpolished white rice¹⁰⁴. In the traditional chain, a labour division between dehushing and polishing mills can still be observed, due to the coexistence of markets for brown and white rice. However, in order to capture a larger share of the value, milling companies are increasingly upgrading their equipment and incorporating both stages into their operations, while exporters are increasingly integrating upstream by investing in complete processing infrastructure (dryers, dehushers, polishers, color-sorters, and packaging equipment).¹⁰⁵

Exporters are now increasingly looking for efficient ways to source high-quality raw produce or govern the production of it. For example, An Giang Plant Protection Joint-Stock Company (AGPPS), now renamed Loc Troi, which started as a leading agricultural services supplier, recently integrated downstream by incorporating processing and wholesale into their business model. The company provides seed to farmers and buys paddy rice through outgrower contracts. This model soon inspired major exporters like AFIEX, Angimex, Gentraco, etc. that have recently started similar outgrower contracts.¹⁰⁶

At the end of the chain, rice is still predominantly distributed in traditional grocery retail (96% market share), as well as in the rapidly growing channels of supermarkets/hypermarkets (4% market share) and convenience store (1%)¹⁰⁷.

Public policies and government's intervention

Land and market reforms in agriculture began in the early 1990s, triggering a rapid growth in agricultural production, particularly in the rice sector. These reforms were pervasive, moving the system of rice production from commune-based public ownership and control to one with effective private property rights and farm assets, amplifying competitive domestic markets and individual decision making.¹⁰⁸

In terms of food security, the Government has promulgated a new Resolution No. 63/NQ-CP (23/12/2009) on National food security. The related policies focus on ensuring food supply sources including rice and other staple food. This resolution proposes solutions for enabling intensive rice farming in the Mekong and Red River Deltas, so as to create stable supplies for current and long-term national food security through the following specific measures:

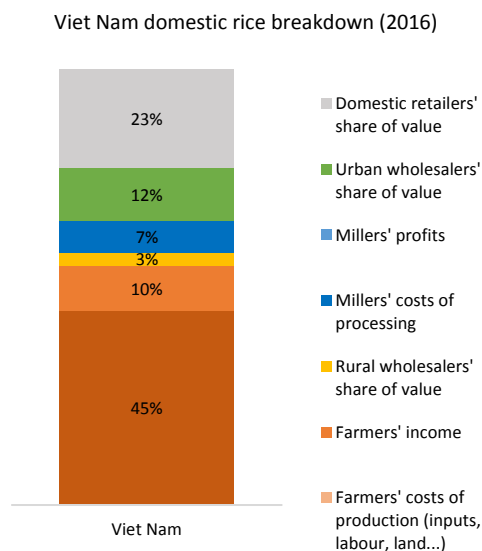
- Investments in research on, and extension of, quality and resistance varieties in the context of climate change, developing a hybrid rice seed industry in order to achieve an average annual increase of 3 % in rice yields to stabilize productivity and meet the demands of domestic and international customers.
- Encouragement of quality rice by focusing on good agricultural practice, "green production" and food safety through the expansion of systems such as VietGAP, GlobalGAP, SRI, Low GHG emission-green rice...

Rice value breakdown in Viet Nam

Average value breakdown in 2016

Below is our estimation of value breakdown of rice produced and consumed in Viet Nam, based on data series and ground research publicly available (see methodological section for further details). The lack of data availability didn't enable to make robust estimates in 2017 for all countries, hence the calculations have been performed for 2016 to ensure comparability.

Fig. 22 Value breakdown of rice produced in Viet Nam



Source: BASIC, based on data from national statistics offices, research institutes and academic papers (see section on methodology for further details).

First of all, the retailers' share of value at the end of the chain is quite comparable with the results obtained in Pakistan and Nepal (23% compared to 22% and 24%)

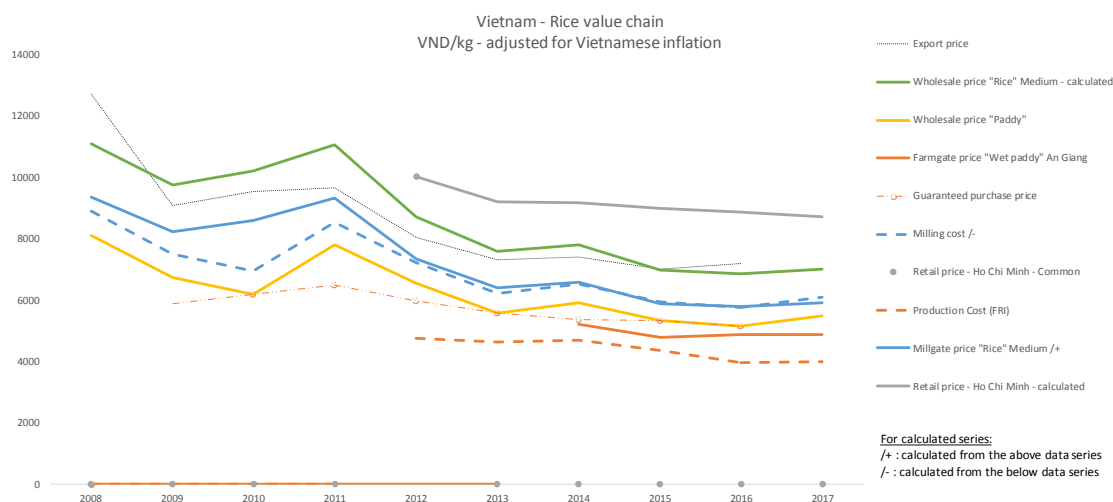
At the beginning of the chain, the farmers costs of production account for the highest percentage: 45%, the highest proportion of the 3 countries, which can be linked to the higher intensification and capital costs of Vietnamese rice growers. In addition, farmers seem to capture for their income a share of value of 10% which is also comparable to growers in Pakistan (8%) and Nepal (9%).

Regarding wholesalers, local traders appear to gain a low margin and make their profits on volume rather than value, probably a result of the high competition and streamlining of activities at their level. In contrast, urban wholesalers down in the chain seem to capture more value, potentially because of higher transportation costs (in particular to transfer rice from MKD to urban cities in other regions) and their closer ties with retailers.

Finally, the millers appear to capture a relatively low share of value compared to the other countries studied, probably illustrating the rapid transformation of this segment of the chain which is streamlining operations, modernizing their infrastructure and reaching economies of scale (hence making profits on volume rather than added value).

Evolution of value breakdown between 2007 and 2016

Fig. 23 Evolution of rice's value breakdown in Viet Nam



Source: BASIC, based on data from national statistics offices, research institutes and academic papers (see section on methodology for further details).

To investigate further this situation, we have analysed the evolution of value breakdown since 2007. The results are provided below.

First of all, the end consumer price of rice appears to be strongly lowering over the last decade (once corrected for inflation). This is probably a result of the transformation of the structure of the whole value chain which is streamlining, modernizing and gaining economies of scale. As a result, the prices of rice for consumers is getting cheaper and the product more accessible for urban citizens.

Looking at the other stages of the chain, our estimates tend to show that all actors are following the same trend of lowering their share of value from 2007 to 2014, then maintaining it until 2017. However, this downward trend may have been compensated by the increase of volumes sold at all levels, albeit for farmers which productivity has remained more stable over the past few years. Their farmgate price has been reduced by 10% between 2014 and 2017, potentially compensated by lowering costs of production.

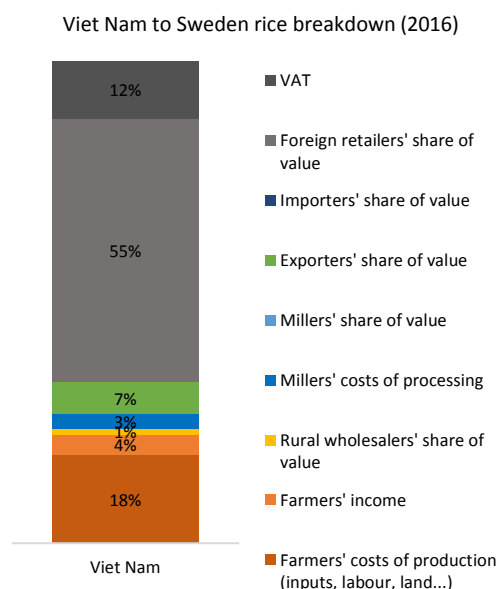
This overall trend over the past decade seem to illustrate the wider transformation of rice value chains in Asia analysed by Reardon et al. in China, India and Bangladesh: a modernization of all stages which concentrate, intensify and grow in scale while providing cheaper and more accessible products to consumers.

Rice value breakdown in Export markets (Sweden)

Average value breakdown in 2016

Below is our estimation of value breakdown of rice produced and consumed in Viet Nam and consumed in Sweden, based on data series and ground research publicly available (see methodological section for further details).

Fig. 24 Value breakdown of rice produced in Viet Nam

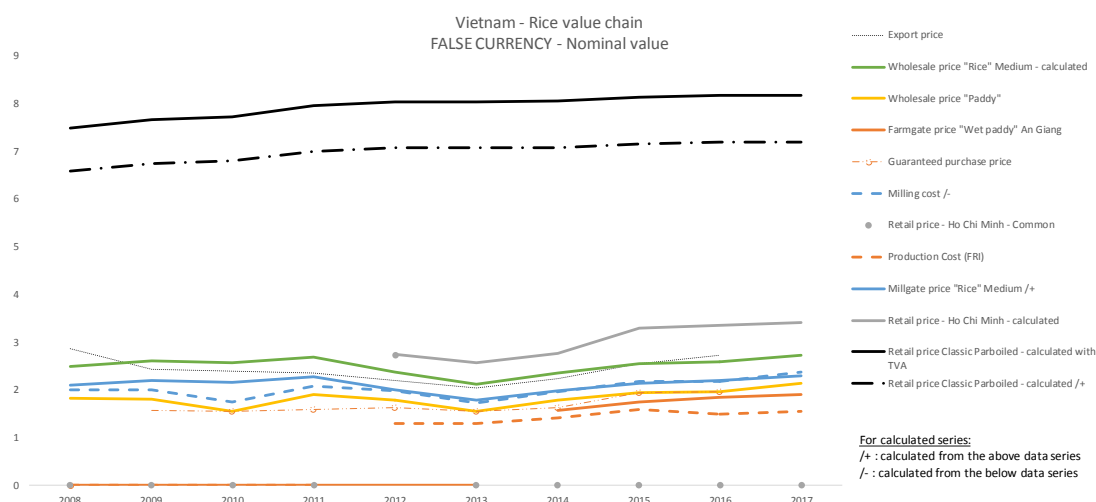


Source: BASIC, based on data from national statistics offices, research institutes and academic papers (see section on methodology for further details).

As in the case of Pakistan, the main outstanding result of our estimates is the high proportion of value generated in the consumer country (Sweden) compared to the value left in Viet Nam: only 27% of the end consumer price is captured by Vietnamese actors (farmers, wholesalers, millers and exporters) and at the other end of the chain, the share of value of Swedish retailers is greater than 50%. In particular, the Vietnamese rice growers appear to only capture 4% of the consumer price of rice sold in Sweden (after deducting their costs of production), an even lower percentage than Basmati rice growers in Pakistan.

Evolution of value breakdown between 2007 and 2017

Fig. 25 Evolution of rice's value breakdown



Source: BASIC, based on data from national statistics offices, research institutes and academic papers (see section on methodology for further details).

To investigate further this situation, we have analysed the evolution of value breakdown since 2007.

As for Basmati rice from Pakistan, the case of Vietnamese rice sold in Sweden is a good illustration of many food products imported from the Global South and sold in European retailers' outlets. The (very) high share of value captured by supermarkets enable them to keep prices stable for consumers (in nominal values in the diagram above to prevent distortions between currencies). They easily buffer price fluctuations at origin, while the actors in Viet Nam, especially farmers are the ones who bear the consequences of price volatility.

Ability of small farmers to earn a living income

Our estimations of the average income earned by small farmers are approx. 11,570,000 VND per family in 2016 (based on an average farm as a size of 2.5 hectares, a productivity of 5,000 kg/ha/year and 4 people making their living on the farm).

These numbers can then be compared with the estimates on living income conducted by the Global Living Wage Coalition (based on a daily caloric intake and a reference food diversity index as well as education, health, housing and minimum savings). According to their estimates, the total household costs for basic but decent living standard for reference family can be estimated at 44,900,000 VND per year for a typical rural family, if considering that most food is produced on the farm (and 80,000,000 VND if food is bought on the market)¹⁰⁹.

This means that the rice farmers only gain 26% of a living income through their rice activity. Even taking into account that rice is not the sole source of liquidity of farmers, these estimates show that the income of rice farmers is still below the living income threshold: almost 1/3 lower than what would be required, considering that rice makes on average 35% of their revenue in the Mekong region. Our calculations are based on average values and do not take into account the wide variety of situations of rice farmers which is likely to be worse in many cases. To conduct a more reliable estimate, there would be a need to collect mean values from ground studies.

4 TRANSVERSAL ANALYSIS

Our 3 case studies provide different insights into 3 rice producing countries, in the context of a profound modernization and transformation of rice value chains in Asia:

- Vietnam is clearly engaged in this process through the intensification of rice growing, the concentration of wholesalers and millers, the vertical integration of actors, the emergence of supermarkets... This results in the streamlining of operations and increasing economies of scale along the chain. It translates into a downward trend of prices at all stages with urban consumers gaining better access to cheaper products while producers are maintaining their low share of value.
- Pakistan seem to be only beginning such a transition, as it still has a high – but decreasing – influence of local traders over the rice value chain. The millers are becoming the new leading actors and beginning to consolidate and increase in scale. This is particularly visible in the case of IRRI rice, which is illustrated by an evolution of prices over the last decade somehow similar to the one in Viet Nam (cf. the line charts on price breakdown between 2007 and 2017 in the corresponding country sections). In contrast, the Basmati rice appears to evolve quite differently because of its specific positioning as a quality and relatively expensive product on the market.
- Nepal, in comparison with the to previous countries, appears to have retained traditional rice value chains which have not began transitioning. It is still characterized by a wide number of actors of low scale with a high influence of local traders and especially millers. Most of all, its rice sector is quite vulnerable to the evolution of international trade, especially cheap imports from India, in order to secure enough rice availability for its consumers.

Beyond these differences, the rice farmers in all 3 countries appear to earn an income which is substantially lower than the living income (except for Basmati rice which might be achieving such a level if they earn enough liquidity from other crops):

- 50% lower in the case of IRRI rice farmers in Pakistan
- 75% to 80% lower in the case of rice farmers in Nepal
- 30% lower in the case of rice farmers in Viet Nam

On average, domestic retailers appear to have a limited capacity to “buffer” the required increase of rice farmers’ prices (to ensure living income levels) and would need to rise the consumer prices of rice in order to achieve it. However, in the case of Viet Nam, and to a lower extent Pakistan, the current transition of rice value chains creates new opportunities; firstly, through the development of economies of scale, and secondly, thanks to the diversification of rice products sold to consumers and the emergence of higher value products in supermarkets.

This is all the truer in the case of export markets as shown by the example of Sweden: given that the consumer country captures 75% of the total value, there is a much bigger capacity of Swedish retailers to buffer the required increase of farmers’ prices in order to enable them to earn a living income (which would represent a very low percentage of the consumer price).

Beyond issues of value distribution, the achievement of a living income for most rice farmers in the 3 case studies - Pakistan, Nepal and Viet Nam – would require important structural changes and regulation mechanisms to be implemented by governments (in coordination) such as guaranteed minimum price, control of traders and contractual arrangements with farmers...

APPENDIX: OBJECTIVES, PERIMETER & METHODOLOGY

OBJECTIVES

In connection with Oxfam International's GROW campaign "Behind the BarCode" launched in June 2018, Oxfam's Asian regional platform is building a campaign on inequality in agriculture across the region which focuses on the rice sector.

The regional platform is developing a briefing paper which will build on Oxfam programme work in a number of countries across Asia. It will identify the major problems which occur in the rice sector, and the structural factors which explain why rice farmers, especially women, are struggling in poverty and vulnerability. It will also propose solutions and a wider theory of change to address the issues at stake.

The paper will seek to start – at the regional level – a policy debate and mobilization around inequality in the rice sector and agriculture in general, and to support national-level advocacy and programming. Its primary audience will be national governments, policy-makers and regional/national media (its secondary audience being civil society organisations and private actors of the rice sector).

In this context, Oxfam's Asian regional platform is willing to commission a complementary investigation which builds on the research work & methodology on value distribution in agricultural chains which was conducted for the GROW campaign "Behind the BarCode".

This investigation aims at examining how value is shared along rice value chains in different countries, more specifically estimating historical and projected share of value received by rice farmers compared to the other actors along the rice value chain, primarily in domestic markets.

RESEARCH QUESTIONS & COUNTRIES

The central research question is: "How has the distribution of value along food value chains changed over the last 10-20 years, and why?", in particular:

- How do consumer prices compare today with 10-20 years ago, and what factors could account for any change?
- How does the proportion of the value captured by intermediaries and/or retailers compare today with 10-20 years ago, and what accounts for any change?
- How does the proportion of the final consumer price reaching producers/workers compare today with 10-20 years ago, and what accounts for any change?
- How do the costs of production and costs of living of the producers & workers in rice value chains compare today with 10-20 years ago, and what accounts for any change? What increase/redistribution of value would be needed to enable farmers to reach a living wage?

The study focuses on rice value chains in the following countries:

Country	Focus Market	Key issues (messages)
Pakistan	Domestic market	Food insecurity, inequality in value chain, plight of women farmers/workers, exports, climate change
	Export market to Europe (Sweden)	
Nepal	Domestic	Food insecurity, Minimum Support Prices, Imports of rice from India, women farmers, climate change
Vietnam	Domestic	Inequality in value chain, food insecurity, women farmers
	Export market to Europe (country to be defined)	

METHODOLOGICAL APPROACH

Conceptual framework

Our analysis of value chains is both quantitative and qualitative, based on the conceptual frameworks of Global Value Chains and Global Production Networks.

The concept of Global Value Chains (GVCs) derives from the world systems theory developed by Immanuel Wallerstein in the 1970's. He introduced the concept of global commodity chains (GCCs) defined as 'networks of labour and production processes whose end result is a finished commodity'¹¹⁰. In 1994, Gereffi and Korzeniewicz revived the concept in order to better understand the impacts of growing trade liberalisation, focusing on the strategies and actions of lead firms conceived as the core actors in a globalised economy¹¹¹. In 2005, Gereffi, Humphrey and Sturgeon consolidated the global commodity approach with the theory of Global Value Chains (GVC)¹¹².

More recently, the related conceptual framework of Global Production Networks (GPN) has been developed by the Manchester school of geography, as a multi-dimensional approach to understand the structuring of value chains with a particular focus on "value generation/capture", "power" (corporate, collective and institutional) and "embeddedness" (territorial and network).

In comparison with other approaches, the theories of Global Value Chains and Global Production Networks provide a radically new view on international trade¹¹³:

- They enable to analyse the whole set of economic activities and actors ranging from the production of raw materials up to the end consumption of final products, whereas traditional economic trade theory only focuses on supply and demand.
- They offer a framework to investigate the interactions between the configuration of global chains (input-output, key nodes, territories, governance and institutions...) and their economic determinants (supply and demand, value and cost breakdown, price dynamics, income distribution...)
- They focus on the institutional context of power relations in which trade is embedded, the characteristics of economic governance and share of value, with key agents setting the rules

of the game, while economic trade theory assumes that ‘buyers and sellers in different markets meet each other as independent agents’.

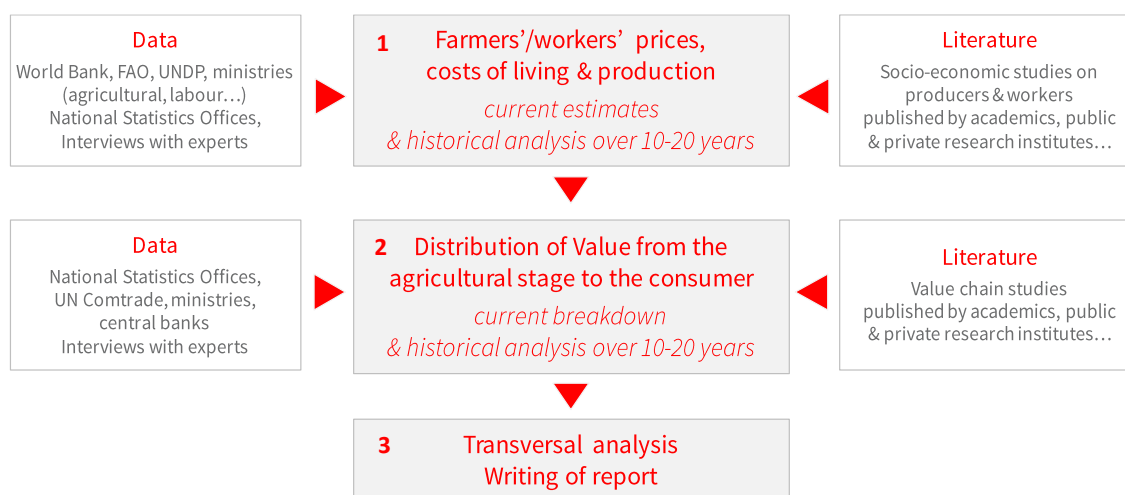
Over the past 20 years, Global Value Chain and Global Production Network analysis have been flourishing approaches used for studying the dynamics of globalisation and economic governance. Widely adopted by sociologists and geographers, it has also attracted growing interest from economists, anthropologists and historians to analyse the international organization of industries such as food, clothing and electronics¹¹⁴.

More recently, a number of international agencies such as the World Bank, the OECD, the ILO and the FAO have also started to use Global Value Chain analysis to investigate industrial upgrading and poverty alleviation.

Operational framework

Operationally, we have implemented a 5-tier research process (see diagram below):

Fig. 26 Operational research framework used for the study



Source: BASIC

The **first phase of the work** has been to estimate and analyse the creation of value and living conditions at rice farmers’ level. In order to achieve this, we have collected information at a series of reference points (the same across the 3 producer countries):

- Average farmers’ prices
- Average costs of production
- Average yield and farm size
- Living income and/or absolute poverty levels in rural areas

The necessary information has been collected through a combination of:

- Data extracted from public databases: National Statistics Offices and research institutes (FAOStat, AMIS in Pakistan, CBS in Nepal, IPSARD in Viet Nam)
- Extensive literature review on rice production and rice farmers’ situation published by public bodies and research institutions: USAID, Ministry of Agriculture and the FORWARD program in Nepal, IBMS, the State Bank, Faisalabad and Sindh

Universities in Pakistan, the National University of Agriculture, CASRAD and AgriBenchmark in Viet Nam

- Studies on living income/wage commissioned by the Global Living Wage Coalition (based on the methodology developed by R. & M. Anker), absolute poverty analysis conducted in collaboration with the World Bank

Based on these, we have conducted a quantitative and qualitative analysis of the evolution of costs of production and costs of living vis-à-vis the evolution of the value left for the small-scale farmers and rural workers analysed in the previous stage. We have investigated more particularly the causes of the observed changes, the social consequences on farmers and workers – with a focus on women – and more globally the (un)sustainability of their situation.

The **second phase of the work** has been to estimate and analyse the value distribution for each producer-consumer country (and for Sweden regarding exports). In order to achieve this, we have collected information at a series of reference points (the same across all value chains):

- Average consumer prices (end price of the product)
- VAT rate
- Intermediate prices : wholesale purchasing and selling prices ; millers' purchasing and selling prices
- For foreign markets : import prices (CIF and FOT) and export prices (FOB) and costs of shipping (including insurance)

The necessary information has been collected through a combination of:

- Data extracted from public databases:
 - National Statistics Offices and research institutes: FAOStat, World Bank, World Food Program, USDA, IPSARD (in Viet Nam), Pakistan Bureau of Statistics and AMIS (in Pakistan), MRSMP, Agribiz and Shrestha in Pakistan
 - UN Comtrade for import and export data (volume and value).
- Extensive literature review: value chain analysis published by academics, public and private institutions: World Bank, FAO, World Bank, USDA, CBI, the Ministry of Agriculture and the FORWARD program in Nepal, IBMS, the State Bank, Faisalabad and Sindh University in Pakistan, the National University of Agriculture, CASRAD and AgriBenchmark in Viet Nam. The related studies have been identified and analysed for each country under investigation in order to:
 - Understand the technical functioning of the chain from agricultural producers up to final consumers and collect complementary data on costs of processing at different point in time (in order to fill in the missing data in public databases).
 - Understand the structure and evolution of the chain at the global level as well as in each producer and consumer country analysed: main actors, market shares, power relations, public and private governance tools...
- Interviews with value chain experts and key informants from each country under investigation in order to “fill in the blanks”, make up for missing data/elements and provide qualitative analysis and insights.

Based on these, we have conducted a quantitative and qualitative analysis of the distribution of value in the selected agricultural chains, and of its evolution over the last 10 to 15 years. We have investigated more particularly the causes of the observed changes in terms of business trends, value chain structure, institutional context, market governance and power concentration.

The estimates of prices and costs along the chain, from farm inputs up to consumer prices, were consolidated between 2007 and 2017. Results were expressed systematically in 3 currencies – dollar, euro and producer country currency – adjusted for local inflation in each country and adjusted for real exchange rates in order to avoid potential currency distortions (see the boxed text below).

Real Exchange Rate Adjustment method

Objective

This method aims at correcting the effects of over/under valuation of the currency of any given country where the transaction occurs in comparison with another country chosen to express the results of calculations.

All estimated data in the graphs have to be adjusted on a same economic basis, i.e. using the same reference country whose currency is used to display the results of calculations (as an example, if we choose to express our data in US dollars, all data from other countries have to be adjusted based on the USA economic base). To adjust the data, we used the Consumer Price Indices (CPI) to calculate Real Exchange Rates (RER) in all countries.

Reference Countries

From the costs of farm inputs up to the FOB price (not included), the reference country for transactions is the producer country. From the FOB price up to the final consumer price, the reference country for transactions is the consumer country.

Method

The formulae to calculate LCU_{RER} , the local currency unit (LCU) adjusted by the real exchange rate method, is the following:

$$LCU_{RER} = USD \times \frac{\text{CPI country where the transaction is taking place}}{\text{CPI country chosen to express results in its LCU}}$$

Example

Conversion of the Vietnamese shrimp producer price, from VND to USDRER

$$USD_{RER} = \overbrace{VND \times XCR}^{\text{USD}} \times \frac{\text{CPI Vietnam}}{\text{CPI USA}}$$

Source: BASIC

LIMITATIONS

The main challenge of the study has been to collect detailed and credible data along value chains from producers up to retailers. Indeed, prices, costs and margins are some of the most confidential information in business, very difficult to access from outside and to counter-verify.

To address this challenge, this is why we have chosen to:

- Start by collecting and analysing available statistics from public and private databases (FAO, UN Comtrade, World Bank, research institutes, ministries...)

- Combine this quantitative data with the qualitative analysis emerging from a wide range of literature through different angles of investigation (sociologic, economic, historic...),
- Cross-check and enrich this information/analysis through a network of experts on value chains and sectors

The modelled value chains only provide quantitative estimates/orders of magnitude for the most common set of actors and operations from agricultural cultivation by small farmers and workers, up to the consumer purchases in retail shops. A wide variety of other organisational frameworks can be found in reality for each product analysed, leading to potential variations in the value distribution estimates. However, the prices and costs levels and trends calculated in this study provide a first comprehensive evaluation and a sound basis for discussion among actors and stakeholders of each of the value chain analysed.

Regarding the estimation of living incomes and living wages in the different countries, our approach only gives a first estimate; a more refined methodology would be required to collect up-to-date ground data on specific costs of living in the relevant sectors and region. Given the objectives of the study, and the time & resource constraints, we have used the most recent studies conducted on this subject in the countries and product under investigation.

READING GUIDE FOR ESTIMATES

Our value distribution estimates are always displayed according to the following framework:

Fig. 27 Operational research framework used for the study

ACTOR	CONTENT OF THE SHARE OF VALUE
Retailer' share of value	<ul style="list-style-type: none"> - profit - annual payroll of their employees - costs of their shops and offices - costs of storage and logistics from regional distribution centres to local shops - payment of tax and other financial expenses
Urban wholesalers' share of value	<ul style="list-style-type: none"> - profit - annual payroll of their employees - costs of logistics (storage, transport...) - payment of tax & other administrative expense)
Millers' share of value	<ul style="list-style-type: none"> - profit - costs of processing which include : <ul style="list-style-type: none"> • annual payroll of their employees • factory costs (equipment, energy...) • financial costs & payment of tax
Rural wholesalers' share of value	<ul style="list-style-type: none"> - profit - annual payroll of their employees - costs of logistics (storage, transport...) - payment of tax & other administrative expense)
Farmer's income	<ul style="list-style-type: none"> - income - social contribution / tax
Cost of production	<ul style="list-style-type: none"> - Workers' wages (labour) - Inputs (agrochemicals & seeds) - Land rental - etc.

Source: BASIC

It should be noted that share of value should not be mistaken for net profits or benefits: each actor along the chain uses the share of value that it manages to capture in order to cover its internal costs, and potentially make a net benefit, once all costs have been paid.

As illustrated in the previous diagram:

- The retailers' share of value is the money left when they have paid the products to their suppliers. They use this money to pay their employees, manage their stores, organise the logistics through their distribution centres, invest in marketing and communications, pay their taxes and their financial expenses...and potentially make a net profit on top of it.
- The millers' and wholesalers' share of value is the amount of money they get after deduction of the payment of their own suppliers. They use this money to cover their costs of logistics and/or processing (for millers: energy, packaging, machinery.... – for wholesalers: storage and transport), pay their employees, conduct marketing campaigns, pay taxes and financial expenses, plus a potential net profit.
- The small farmers' share of value in our estimates is what is left for them to make a living (for themselves and their family) after the payment of their workers and costs of farm inputs (agrochemicals, water, energy...)
- The last component is the costs of agricultural production (workers' wages, seeds, fertilizers, pesticides, land rental....)

NOTES

- 1 S. Mutthayya et al., An overview of global rice production, supply, trade, and consumption, Ann. N.Y. Acad. Sci. 1324 7–14, 2014 - <https://www.ncbi.nlm.nih.gov/pubmed/25224455> accessed on 12th November 2018
- 2 S. Mutthayya et al., An overview of global rice production, supply, trade, and consumption, Ann. N.Y. Acad. Sci. 1324 7–14, 2014 - <https://www.ncbi.nlm.nih.gov/pubmed/25224455> accessed on 12th November 2018
- 3 S. Mutthayya et al., An overview of global rice production, supply, trade, and consumption, Ann. N.Y. Acad. Sci. 1324 7–14, 2014 - <https://www.ncbi.nlm.nih.gov/pubmed/25224455> accessed on 12th November 2018
- 4 US International Trade Commission, Rice: Global competitiveness of the US Industry, 2015 - <https://www.usitc.gov/publications/332/pub4530.pdf> 12th November 2018 and Ir. Corné van Dooren, Rice Value Chain Analysis: Each life starts with a little seed, Condesan, 2005 <http://lib.icimod.org/record/11985/files/5197.pdf> accessed on 12th November 2018
- 5 FAO, Rice Market Monitor, 2018 - <http://www.fao.org/3/I9243EN/i9243en.pdf> accessed on 12th November 2018
- 6 S. Mutthayya et al., An overview of global rice production, supply, trade, and consumption, Ann. N.Y. Acad. Sci. 1324 7–14, 2014 - <https://www.ncbi.nlm.nih.gov/pubmed/25224455> accessed on 12th November 2018
- 7 P. Timmer, Food security in Asia and the changing role of rice, presentation to the Asian Foundation, 2010 - <https://www.asiafoundation.org/resources/pdfs/OccasionalPaperNo4FoodSecurityFinal.pdf> accessed on 12th November 2018
- 8 FAO, Rice Market Monitor, 2018 - <http://www.fao.org/3/I9243EN/i9243en.pdf> accessed on 12th November 2018
- 9 FAO, Rice Market Monitor, 2018 - <http://www.fao.org/3/I9243EN/i9243en.pdf> accessed on 12th November 2018
- 10 CBI, Exporting specialty rice varieties to Europe, 2016 - <https://www.cbi.eu/market-information/grains-pulses/specialty-rice-varieties/> accessed on 12th November 2018
- 11 USITC, Rice: Global competitiveness of the US Industry, 2015 - <https://www.usitc.gov/publications/332/pub4530.pdf> 12th November 2018
- 12 T. Reardon et al., Rapid transformation of Food Systems in Developing Regions: highlighting the role of agricultural research & innovations, Agricultural systems (forthcoming), 2018 - https://www.canr.msu.edu/fsp/publications/peer-reviewed-publications/Agricultural_Systems_-_2018_transformation_of_food_systems_ag_research_and_innovation_-_accepted_Jan2018_forthcoming_2018.pdf accessed on 12th November 2018 and T. Reardon et al., The quiet revolution in Asia's rice value chains, Ann. N.Y. Acad. Sci. 1331 106–118, 2014 - <https://nyaspubs.onlinelibrary.wiley.com/doi/pdf/10.1111/nyas.12391> accessed on 12th November 2018
- 13 CBI, Exporting specialty rice varieties to Europe, 2016 op. cit. - <https://www.cbi.eu/market-information/grains-pulses/specialty-rice-varieties/> accessed on 12th November 2018 Food & Water Watch, Grocery Goliaths: How food monopolies impact consumers, 2013 and Ebro Foods, Annual Report, 2013 - <https://www.foodandwaterwatch.org/sites/default/files/Grocery%20Goliaths%20Report%20Dec%202013.pdf> accessed on 12th November 2018
- 14 Oxfam, Cereal Secrets: The world's largest grain traders and global agriculture, 2012 - <https://www.oxfam.org/sites/www.oxfam.org/files/rr-cereal-secrets-grain-traders-agriculture-30082012-en.pdf> accessed on 12th November 2018
- 15 E. J. Wailes and E. C. Chavez, World Rice Outlook: International Rice Baseline with Deterministic and Stochastic Projections, 2012-2021, University of Arkansas, 2012 - http://ageconsearch.umn.edu/record/123203/files/March%202012%20World%20Rice%20Outlook_AgeconSearch_05-01-12%20final.pdf accessed on 12th November 2018
- 16 S. Mutthayya et al., An overview of global rice production, supply, trade, and consumption, Ann. N.Y. Acad. Sci. 1324 7–14, 2014 - <https://www.ncbi.nlm.nih.gov/pubmed/25224455> accessed on 12th November 2018
- 17 H. Yagi, Farm size and Distance-to-Field in Scattered Rice Field Areas, University of Tokyo, 2012 - <http://ageconsearch.umn.edu/bitstream/125390/2/Yagi2012IAAE16493.pdf> accessed on 12th November 2018
- 18 A. Abdullah et al., World rice demand towards 2050: Impact of decreasing demand of per capita rice consumption for China and India, 2015 - https://www.researchgate.net/publication/251535915_WORLD_RICE_DEMAND_TOWARDS_2050_IM

PACT OF DECREASING DEMAND OF PER CAPITA RICE CONSUMPTION FOR CHINA AND INDIA/download accessed on 12th November 2018

- 19 A. Abdullah et al., World rice demand towards 2050: Impact of decreasing demand of per capita rice consumption for China and India, 2015 - https://www.researchgate.net/publication/251535915_WORLD_RICE_DEMAND_TOWARDS_2050_IM_PACT_OF DECREASING DEMAND OF PER CAPITA RICE CONSUMPTION FOR CHINA AND INDIA/download accessed on 12th November 2018
- 20 A. Abdullah et al., World rice demand towards 2050: Impact of decreasing demand of per capita rice consumption for China and India, 2015 - https://www.researchgate.net/publication/251535915_WORLD_RICE_DEMAND_TOWARDS_2050_IM_PACT_OF DECREASING DEMAND OF PER CAPITA RICE CONSUMPTION FOR CHINA AND INDIA/download accessed on 12th November 2018
- 21 P. Timmer, Food security in Asia and the changing role of rice, presentation to the Asian Foundation, 2010 - <https://www.asiafoundation.org/resources/pdfs/OccasionalPaperNo4FoodSecurityFinal.pdf> accessed on 12th November 2018
- 22 T. Reardon et al., Rapid transformation of Food Systems in Developing Regions: highlighting the role of agricultural research & innovations, Agricultural systems (forthcoming), 2018 - https://www.canr.msu.edu/fsp/publications/peer-reviewed-publications/Agricultural_Systems_-_2018_transformation_of_food_systems_ag_research_and_innovation_-_accepted_Jan2018_forthcoming_2018.pdf accessed on 12th November 2018
- 23 T. Reardon et al., Rapid transformation of Food Systems in Developing Regions: highlighting the role of agricultural research & innovations, Agricultural systems (forthcoming), 2018 - https://www.canr.msu.edu/fsp/publications/peer-reviewed-publications/Agricultural_Systems_-_2018_transformation_of_food_systems_ag_research_and_innovation_-_accepted_Jan2018_forthcoming_2018.pdf accessed on 12th November 2018
- 24 T. Reardon et al., Rapid transformation of Food Systems in Developing Regions: highlighting the role of agricultural research & innovations, Agricultural systems (forthcoming), 2018 - https://www.canr.msu.edu/fsp/publications/peer-reviewed-publications/Agricultural_Systems_-_2018_transformation_of_food_systems_ag_research_and_innovation_-_accepted_Jan2018_forthcoming_2018.pdf accessed on 12th November 2018
- 25 T. Reardon et al., Rapid transformation of Food Systems in Developing Regions: highlighting the role of agricultural research & innovations, Agricultural systems (forthcoming), 2018 - https://www.canr.msu.edu/fsp/publications/peer-reviewed-publications/Agricultural_Systems_-_2018_transformation_of_food_systems_ag_research_and_innovation_-_accepted_Jan2018_forthcoming_2018.pdf accessed on 12th November 2018
- 26 T. Reardon et al., The quiet revolution in Asia's rice value chains, Ann. N.Y. Acad. Sci. 1331 106–118, 2014 - <https://nyaspubs.onlinelibrary.wiley.com/doi/pdf/10.1111/nyas.12391> accessed on 12th November 2018
- 27 T. Reardon et al., The quiet revolution in Asia's rice value chains, Ann. N.Y. Acad. Sci. 1331 106–118, 2014 - <https://nyaspubs.onlinelibrary.wiley.com/doi/pdf/10.1111/nyas.12391> accessed on 12th November 2018
- 28 T. Reardon et al., The quiet revolution in Asia's rice value chains, Ann. N.Y. Acad. Sci. 1331 106–118, 2014 - <https://nyaspubs.onlinelibrary.wiley.com/doi/pdf/10.1111/nyas.12391> accessed on 12th November 2018
- 29 T. Reardon et al., The quiet revolution in Asia's rice value chains, Ann. N.Y. Acad. Sci. 1331 106–118, 2014 - <https://nyaspubs.onlinelibrary.wiley.com/doi/pdf/10.1111/nyas.12391> accessed on 12th November 2018
- 30 T. Reardon et al., The quiet revolution in Asia's rice value chains, Ann. N.Y. Acad. Sci. 1331 106–118, 2014 - <https://nyaspubs.onlinelibrary.wiley.com/doi/pdf/10.1111/nyas.12391> accessed on 12th November 2018
- 31 T. Reardon et al., The quiet revolution in Asia's rice value chains, Ann. N.Y. Acad. Sci. 1331 106–118, 2014 - <https://nyaspubs.onlinelibrary.wiley.com/doi/pdf/10.1111/nyas.12391> accessed on 12th November 2018
- 32 State Bank of Pakistan, Basmati rice value chain in Pakistan, 2014 - <http://www.sbp.org.pk/publications/ChainReport/2015/Report%20on%20Basmati%20Rice%20Value%20Chain%20in%20Pakistan.pdf> accessed on 12th November 2018
- 33 FAO, Rice Market Monitor, 2018 - <http://www.fao.org/3/I9243EN/i9243en.pdf> accessed on 12th November 2018
- 34 FAO, Rice Market Monitor, 2018 - <http://www.fao.org/3/I9243EN/i9243en.pdf> accessed on 12th November 2018
- 35 USDA, Grain: World market and trade, Rice factsheet, August 2018 - <https://www.fas.usda.gov/commodities/rice> accessed on 12th November 2018

- 36 B. Ahmad, Spatial Differences in Rice Price Volatility: A Case Study of Pakistan 1994–2011, The Pakistan Development Review 2017 - <http://www.pide.org.pk/pdf/PDR/2017/Volume3/265-289.pdf> accessed on 12th November 2018
- 37 State Bank of Pakistan, Basmati rice value chain in Pakistan, 2014 - <http://www.sbp.org.pk/publications/ChainReport/2015/Report%20on%20Basmati%20Rice%20Value%20Chain%20in%20Pakistan.pdf> accessed on 12th November 2018
- 38 USITC, Rice: Global competitiveness of the US Industry, 2015 op.cit. - <https://www.usitc.gov/publications/332/pub4530.pdf> 12th November 2018
- 39 B. Ahmad, Spatial Differences in Rice Price Volatility: A Case Study of Pakistan 1994–2011, The Pakistan Development Review 2017 - <http://www.pide.org.pk/pdf/PDR/2017/Volume3/265-289.pdf> accessed on 12th November 2018
- 40 B. Ahmad, Spatial Differences in Rice Price Volatility: A Case Study of Pakistan 1994–2011, The Pakistan Development Review 2017 - <http://www.pide.org.pk/pdf/PDR/2017/Volume3/265-289.pdf> accessed on 12th November 2018
- 41 B. Ahmad, Spatial Differences in Rice Price Volatility: A Case Study of Pakistan 1994–2011, The Pakistan Development Review 2017 - <http://www.pide.org.pk/pdf/PDR/2017/Volume3/265-289.pdf> accessed on 12th November 2018
- 42 Z. Jobbar et al., Analyzing Marketing System of Rice in Punjab, Pakistan, Nature and Science 16(4), 2018 - http://www.sciencepub.net/nature/ns160418/15_33440nsj160418_85_95.pdf accessed on 12th November 2018
- 43 B. Ahmad, Spatial Differences in Rice Price Volatility: A Case Study of Pakistan 1994–2011, The Pakistan Development Review 2017 - <http://www.pide.org.pk/pdf/PDR/2017/Volume3/265-289.pdf> accessed on 12th November 2018
- 44 B. Ahmad, Spatial Differences in Rice Price Volatility: A Case Study of Pakistan 1994–2011, The Pakistan Development Review 2017 - <http://www.pide.org.pk/pdf/PDR/2017/Volume3/265-289.pdf> accessed on 12th November 2018
- 45 B. Ahmad, Spatial Differences in Rice Price Volatility: A Case Study of Pakistan 1994–2011, The Pakistan Development Review 2017 - <http://www.pide.org.pk/pdf/PDR/2017/Volume3/265-289.pdf> accessed on 12th November 2018
- 46 State Bank of Pakistan, Basmati rice value chain in Pakistan, 2014 - <http://www.sbp.org.pk/publications/ChainReport/2015/Report%20on%20Basmati%20Rice%20Value%20Chain%20in%20Pakistan.pdf> accessed on 12th November 2018
- 47 State Bank of Pakistan, Basmati rice value chain in Pakistan, 2014 - <http://www.sbp.org.pk/publications/ChainReport/2015/Report%20on%20Basmati%20Rice%20Value%20Chain%20in%20Pakistan.pdf> accessed on 12th November 2018
- 48 State Bank of Pakistan, Basmati rice value chain in Pakistan, 2014 - <http://www.sbp.org.pk/publications/ChainReport/2015/Report%20on%20Basmati%20Rice%20Value%20Chain%20in%20Pakistan.pdf> accessed on 12th November 2018
- 49 State Bank of Pakistan, Basmati rice value chain in Pakistan, 2014 - <http://www.sbp.org.pk/publications/ChainReport/2015/Report%20on%20Basmati%20Rice%20Value%20Chain%20in%20Pakistan.pdf> accessed on 12th November 2018
- 50 State Bank of Pakistan, Basmati rice value chain in Pakistan, 2014 - <http://www.sbp.org.pk/publications/ChainReport/2015/Report%20on%20Basmati%20Rice%20Value%20Chain%20in%20Pakistan.pdf> accessed on 12th November 2018
- 51 State Bank of Pakistan, Basmati rice value chain in Pakistan, 2014 - <http://www.sbp.org.pk/publications/ChainReport/2015/Report%20on%20Basmati%20Rice%20Value%20Chain%20in%20Pakistan.pdf> accessed on 12th November 2018
- 52 <https://www.globallivingwage.org/countries/pakistan/> accessed on 12th November 2018
- 53 Nepal Leadership Academy, Rice Value Chain in Nepal, 2018 (forthcoming)
- 54 USAID Office for Food for Peace, Nepal USAID-BEST Analysis, 2013 - <http://www.cashlearning.org/downloads/nepal-usaid.pdf> accessed on 12th November 2018
- Concerns have also been voiced that direct distribution of rice has changed consumption habits/preferences of people in Hill and Mountain communities where other cereals are traditionally grown, thus increasing dependency on markets and possibly food aid.
- 55 Nepal Leadership Academy, Rice Value Chain in Nepal, 2018 (forthcoming) .
- 56 USAID Office for Food for Peace, Nepal USAID-BEST Analysis, 2013 - <http://www.cashlearning.org/downloads/nepal-usaid.pdf> accessed on 12th November 2018
- 57 USAID Office for Food for Peace, Nepal USAID-BEST Analysis, 2013 - <http://www.cashlearning.org/downloads/nepal-usaid.pdf> accessed on 12th November 2018

- 58 Nepal Leadership Academy, Rice Value Chain in Nepal,2018 (forthcoming).
- 59 USAID Office for Food for Peace, Nepal USAID-BEST Analysis, 2013 - <http://www.cashlearning.org/downloads/nepal-usaid.pdf> accessed on 12th November 2018
- 60 FAO, Rice Market Monitor, 2018 - <http://www.fao.org/3/I9243EN/i9243en.pdf> accessed on 12th November 2018
- 61 Nepal Leadership Academy, Rice Value Chain in Nepal,2018 (forthcoming).
- 62 Nepal Leadership Academy, Rice Value Chain in Nepal,2018 (forthcoming).
- 63 Nepal Leadership Academy, Rice Value Chain in Nepal,2018 (forthcoming).
- 64 USAID Office for Food for Peace, Nepal USAID-BEST Analysis, 2013 - - <http://www.cashlearning.org/downloads/nepal-usaid.pdf> accessed on 12th November 2018
- 65 Government of Nepal, Ministry of Agriculture and Cooperatives, Price Escalation along the Value Addition on Paddy, 2013 - http://www.agribiz.gov.np/downloadfile/rice%20milling%20book_1377507728.pdf accessed on 12th November 2018
- 66 Government of Nepal, Ministry of Agriculture and Cooperatives, Price Escalation along the Value Addition on Paddy, 2013 - http://www.agribiz.gov.np/downloadfile/rice%20milling%20book_1377507728.pdf accessed on 12th November 2018
- 67 USAID Office for Food for Peace, Nepal USAID-BEST Analysis, 2013 - - <http://www.cashlearning.org/downloads/nepal-usaid.pdf> accessed on 12th November 2018
- 68 Government of Nepal, Ministry of Agriculture and Cooperatives, Price Escalation along the Value Addition on Paddy, 2013 - - http://www.agribiz.gov.np/downloadfile/rice%20milling%20book_1377507728.pdf accessed on 12th November 2018
- 69 Nepal Leadership Academy, Rice Value Chain in Nepal,2018 (forthcoming).
- 70 Nepal Leadership Academy, Rice Value Chain in Nepal,2018 (forthcoming).
- 71 Government of Nepal, Ministry of Agriculture and Cooperatives, Price Escalation along the Value Addition on Paddy, 2013 - http://www.agribiz.gov.np/downloadfile/rice%20milling%20book_1377507728.pdf accessed on 12th November 2018
- 72 Government of Nepal, Ministry of Agriculture and Cooperatives, Price Escalation along the Value Addition on Paddy, 2013 - http://www.agribiz.gov.np/downloadfile/rice%20milling%20book_1377507728.pdf accessed on 12th November 2018
- 73 USAID Office for Food for Peace, Nepal USAID-BEST Analysis, 2013
- 74 Government of Nepal, Ministry of Agriculture and Cooperatives, Price Escalation along the Value Addition on Paddy, 2013
- 75 USAID Office for Food for Peace, Nepal USAID-BEST Analysis, 2013 - <http://www.cashlearning.org/downloads/nepal-usaid.pdf> accessed on 12th November 2018
- 76 Nepal Leadership Academy, Rice Value Chain in Nepal,2018 (forthcoming).
- 77 USAID Office for Food for Peace, Nepal USAID-BEST Analysis, 2013 - <http://www.cashlearning.org/downloads/nepal-usaid.pdf> accessed on 12th November 2018
- 78 Nepal Leadership Academy, Rice Value Chain in Nepal,2018 (forthcoming).
- 79 USAID Office for Food for Peace, Nepal USAID-BEST Analysis, 2013 - <http://www.cashlearning.org/downloads/nepal-usaid.pdf> accessed on 12th November 2018
- 80 USAID Office for Food for Peace, Nepal USAID-BEST Analysis, 2013 - <http://www.cashlearning.org/downloads/nepal-usaid.pdf> accessed on 12th November 2018
- 81 <https://purnaa.store/a-living-wage-in-nepal/> accessed on 12th November 2018
- 82 Dao The Anh et al., Rice value chain study in Mekong river delta in Viet Nam, Journal of Science – 2015, Vol. 2 (2), 36 – 46 Part B: Political Sciences, Economics and Law 36, 2015 - http://www.agu.edu.vn:8080/bitstream/AGU_Library/2743/1/Dao%20The%20Anh%20-%20Nguyen%20Ngoc%20Vang.pdf accessed on 12th November 2018
- 83 FAO, Rice Market Monitor, 2018 - <http://www.fao.org/3/I9243EN/i9243en.pdf> accessed on 12th November 2018

- 84 Dao The Anh et al., Rice value chain study in Mekong river delta in Viet Nam, Journal of Science – 2015, Vol. 2 (2), 36 – 46 Part B: Political Sciences, Economics and Law 36, 2015 - http://www.agu.edu.vn:8080/bitstream/AGU_Library/2743/1/Dao%20The%20Anh%20-%20Nguyen%20Ngoc%20Vang.pdf accessed on 12th November 2018
- 85 B. Liese, T. Mollman et al., Economics of Southeast Asian Rice Production, Agri Benchmark, 2014 - <http://www.agribenchmark.org/fileadmin/Dateiablage/B-Cash-Crop/Reports/Report-2014-1-rice-FAO.pdf> accessed on 12th November 2018
- 86 Dao The Anh et al., Rice value chain study in Mekong river delta in Viet Nam, Journal of Science – 2015, Vol. 2 (2), 36 – 46 Part B: Political Sciences, Economics and Law 36, 2015 - http://www.agu.edu.vn:8080/bitstream/AGU_Library/2743/1/Dao%20The%20Anh%20-%20Nguyen%20Ngoc%20Vang.pdf accessed on 12th November 2018
- 87 Dao The Anh et al., Rice value chain study in Mekong river delta in Viet Nam, Journal of Science – 2015, Vol. 2 (2), 36 – 46 Part B: Political Sciences, Economics and Law 36, 2015 - http://www.agu.edu.vn:8080/bitstream/AGU_Library/2743/1/Dao%20The%20Anh%20-%20Nguyen%20Ngoc%20Vang.pdf accessed on 12th November 2018
- 88 Dao The Anh et al., Rice value chain study in Mekong river delta in Viet Nam, Journal of Science – 2015, Vol. 2 (2), 36 – 46 Part B: Political Sciences, Economics and Law 36, 2015 - http://www.agu.edu.vn:8080/bitstream/AGU_Library/2743/1/Dao%20The%20Anh%20-%20Nguyen%20Ngoc%20Vang.pdf accessed on 12th November 2018
- 89 Dao The Anh et al., Rice value chain study in Mekong river delta in Viet Nam, Journal of Science – 2015, Vol. 2 (2), 36 – 46 Part B: Political Sciences, Economics and Law 36, 2015 - http://www.agu.edu.vn:8080/bitstream/AGU_Library/2743/1/Dao%20The%20Anh%20-%20Nguyen%20Ngoc%20Vang.pdf accessed on 12th November 2018
- 90 Dao The Anh et al., Rice value chain study in Mekong river delta in Viet Nam, Journal of Science – 2015, Vol. 2 (2), 36 – 46 Part B: Political Sciences, Economics and Law 36, 2015 - http://www.agu.edu.vn:8080/bitstream/AGU_Library/2743/1/Dao%20The%20Anh%20-%20Nguyen%20Ngoc%20Vang.pdf accessed on 12th November 2018
- 91 Dao The Anh et al., Rice value chain study in Mekong river delta in Viet Nam, Journal of Science – 2015, Vol. 2 (2), 36 – 46 Part B: Political Sciences, Economics and Law 36, 2015 - http://www.agu.edu.vn:8080/bitstream/AGU_Library/2743/1/Dao%20The%20Anh%20-%20Nguyen%20Ngoc%20Vang.pdf accessed on 12th November 2018
- 92 Dao The Anh et al., Rice value chain study in Mekong river delta in Viet Nam, Journal of Science – 2015, Vol. 2 (2), 36 – 46 Part B: Political Sciences, Economics and Law 36, 2015 - http://www.agu.edu.vn:8080/bitstream/AGU_Library/2743/1/Dao%20The%20Anh%20-%20Nguyen%20Ngoc%20Vang.pdf accessed on 12th November 2018
- 93 B. Liese, T. Mollman et al., Economics of Southeast Asian Rice Production, Agri Benchmark, 2014 - <http://www.agribenchmark.org/fileadmin/Dateiablage/B-Cash-Crop/Reports/Report-2014-1-rice-FAO.pdf> accessed on 12th November 2018
- 94 Dao The Anh et al., Rice value chain study in Mekong river delta in Viet Nam, Journal of Science – 2015, Vol. 2 (2), 36 – 46 Part B: Political Sciences, Economics and Law 36, 2015
- 95 B. Liese, T. Mollman et al., Economics of Southeast Asian Rice Production, Agri Benchmark, 2014 - <http://www.agribenchmark.org/fileadmin/Dateiablage/B-Cash-Crop/Reports/Report-2014-1-rice-FAO.pdf> accessed on 12th November 2018
- 96 Dao The Anh et al., Rice value chain study in Mekong river delta in Viet Nam, Journal of Science – 2015, Vol. 2 (2), 36 – 46 Part B: Political Sciences, Economics and Law 36, 2015
- 97 B. Liese, T. Mollman et al., Economics of Southeast Asian Rice Production, Agri Benchmark, 2014 - <http://www.agribenchmark.org/fileadmin/Dateiablage/B-Cash-Crop/Reports/Report-2014-1-rice-FAO.pdf> accessed on 12th November 2018
- 98 B. Liese, T. Mollman et al., Economics of Southeast Asian Rice Production, Agri Benchmark, 2014 - <http://www.agribenchmark.org/fileadmin/Dateiablage/B-Cash-Crop/Reports/Report-2014-1-rice-FAO.pdf> accessed on 12th November 2018
- 99 Dao The Anh et al., Rice value chain study in Mekong river delta in Viet Nam, Journal of Science – 2015, Vol. 2 (2), 36 – 46 Part B: Political Sciences, Economics and Law 36, 2015 - http://www.agu.edu.vn:8080/bitstream/AGU_Library/2743/1/Dao%20The%20Anh%20-%20Nguyen%20Ngoc%20Vang.pdf accessed on 12th November 2018
- 100 B. Liese, T. Mollman et al., Economics of Southeast Asian Rice Production, Agri Benchmark, 2014 - <http://www.agribenchmark.org/fileadmin/Dateiablage/B-Cash-Crop/Reports/Report-2014-1-rice-FAO.pdf> accessed on 12th November 2018
- 101 Dao The Anh et al., Rice value chain study in Mekong river delta in Viet Nam, Journal of Science – 2015, Vol. 2 (2), 36 – 46 Part B: Political Sciences, Economics and Law 36, 2015 - http://www.agu.edu.vn:8080/bitstream/AGU_Library/2743/1/Dao%20The%20Anh%20-%20Nguyen%20Ngoc%20Vang.pdf accessed on 12th November 2018
- 102 Dao The Anh et al., Rice value chain study in Mekong river delta in Viet Nam, Journal of Science – 2015, Vol. 2 (2), 36 – 46 Part B: Political Sciences, Economics and Law 36, 2015 -

- http://www.agu.edu.vn:8080/bitstream/AGU_Library/2743/1/Dao%20The%20Anh%20-%20Nguyen%20Ngoc%20Vang.pdf accessed on 12th November 2018
- 103 Dao The Anh et al., Rice value chain study in Mekong river delta in Viet Nam, Journal of Science – 2015, Vol. 2 (2), 36 – 46 Part B: Political Sciences, Economics and Law 36, 2015 - http://www.agu.edu.vn:8080/bitstream/AGU_Library/2743/1/Dao%20The%20Anh%20-%20Nguyen%20Ngoc%20Vang.pdf accessed on 12th November 2018
- 104 Dao The Anh et al., Rice value chain study in Mekong river delta in Viet Nam, Journal of Science – 2015, Vol. 2 (2), 36 – 46 Part B: Political Sciences, Economics and Law 36, 2015 - http://www.agu.edu.vn:8080/bitstream/AGU_Library/2743/1/Dao%20The%20Anh%20-%20Nguyen%20Ngoc%20Vang.pdf accessed on 12th November 2018
- 105 M. Demontt and P. Rutsaert, Restructuring the Vietnamese Rice Sector: Towards Increasing Sustainability, Sustainability 9-325, 2017 - <https://www.mdpi.com/2071-1050/9/2/325/pdf> accessed on 12th November 2018
- 106 M. Demontt and P. Rutsaert, Restructuring the Vietnamese Rice Sector: Towards Increasing Sustainability, Sustainability 9-325, 2017 - <https://www.mdpi.com/2071-1050/9/2/325/pdf> accessed on 12th November 2018
- 107 DBS Group Research, Industry Focus: ASEAN grocery retail, 2015 - www.dbs.com.sg/treasures/aics/pdfController.page%3Fpdfpath%3D/content/article/pdf/AIO/150722_in_sights_whetting_asean_appetite.pdf accessed on 12th November 2018
- 108 B. Liese, T. Mollman et al., Economics of Southeast Asian Rice Production, Agri Benchmark, 2014 - <http://www.agribenchmark.org/fileadmin/Dateiablage/B-Cash-Crop/Reports/Report-2014-1-rice-FAO.pdf> accessed on 12th November 2018
- 109 <https://www.globallivingwage.org/countries/vietnam/> accessed on 12th November 2018
- 110 Hopkins and Wallerstein (1986: 159) - <https://www.jstor.org/stable/40241052> accessed on 12th November 2018
- 111 Gereffi and Korzeniewicz, Commodity Chains and Global Capitalism, 1994 - https://edisciplinas.usp.br/pluginfile.php/4209363/mod_folder/content/0/Gary%20Gereffi%20Commodity%20Chains%20and%20Global%20Introductory%20C3%A7%20C3%A3o.pdf?forcedownload=1 accessed on 12th November 2018
- 112 Gary Gereffi, John Humphrey, and Timothy Sturgeon. “The Governance of Global Value Chains.” Review of International Political Economy 12, no. 1 (February 2005): 78–104 - http://www.fao.org/fileadmin/user_upload/fisheries/docs/GVC_Governance.pdf accessed on 12th November 2018
- 113 Gibbon, Bair and Ponte (2008) “Governing Global Value Chains: An Introduction,” Economy and Society, Vol. 37, No. 3, pp. 315-338 - https://research-api.cbs.dk/ws/portalfiles/portal/46585232/stefano_ponte_governing_global_value_chains_postprint.pdf accessed on 12th November 2018
- 114 The Global Value Chains approach initiated a wave of interdisciplinary literature which investigated the ways in which organizationally fragmented and geographically dispersed processes of production have been a critical feature of economic globalization: fresh fruit and vegetables (Raynolds; Dolan et al.), tropical commodities such as coffee, cocoa, cotton, sugar, rubber, tobacco, etc. (Ponte, Raynolds, Fold, Gibbon, Daviron, Gwynne, Barrientos), exports of apparel from East Asia, Mexico and the Caribbean (Gereffi, Palpacuer), electronics (Kenney and Florida), automobile industry (Hill; Doner; Barnes, Kaplinsky and Morris), semi-conductors (Henderson), tourism (Clancy), services (Rabach & Kim)...

ACKNOWLEDGEMENTS

This report has been jointly produced by the whole team of BASIC (Bureau for the Appraisal of Societal Impacts for Citizen information).

In BASIC, Christophe Alliot was the lead author of the final report and led the research team. Theodore Fechner played a key role in gathering and analysing the extensive quantitative data and analysis required for this study.

Important support and key inputs were also provided by several people in partner organisations, in particular Oxfam International and Oxfam national teams in Asia.

Oxfam Research Reports

Oxfam Research Reports are written to share research results, to contribute to public debate and to invite feedback on development and humanitarian policy and practice. They do not necessarily reflect Oxfam policy positions. The views expressed are those of the author and not necessarily those of Oxfam.

For more information, or to comment on this report, email [XXX research contact or author email if needed]

© Oxfam International Month 20XX

This publication is copyright but the text may be used free of charge for the purposes of advocacy, campaigning, education, and research, provided that the source is acknowledged in full. The copyright holder requests that all such use be registered with them for impact assessment purposes. For copying in any other circumstances, or for re-use in other publications, or for translation or adaptation, permission must be secured and a fee may be charged. Email policyandpractice@oxfam.org.uk

The information in this publication is correct at the time of going to press.

Published by Oxfam GB for Oxfam International under ISBN XXX-X-XXXXX-XXX-X in Month 20XX.
Oxfam GB, Oxfam House, John Smith Drive, Cowley, Oxford, OX4 2JY, UK.

OXFAM

Oxfam is an international confederation of 20 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 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.ibis-global.org)
Oxfam India (www.oxfamindia.org)
Oxfam Intermón (Spain) (www.intermonoxfam.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)

Observer:

Oxfam Brasil (www.oxfam.org.br)