

X-raying the Nigerian tomato industry

Focus on reducing
tomato wastage



Nigeria's tomato industry at a glance



World



14th
largest producer

13th
largest importer
of tomato paste



Africa



2nd
largest producer

3rd
largest importer of
tomato paste

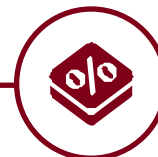


Production

Number of
farmers

Contribution to
tomato production
in Africa

% of fresh
tomato wasted



Nigeria

2.3
million tonnes

200,000

10.8%

45%

Sources: FAO, GEMS4, PwC Analysis
All data as at 2016

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Review of the global tomato industry



Tomato production on the rise, driven by improved yields

Tomato accounted for about 60% of the global vegetable production¹ at 177 million tonnes in 2016. With about a quarter of tomatoes produced used in the processing industry, tomato is the world's leading vegetable for processing – pastes, juices and powders.

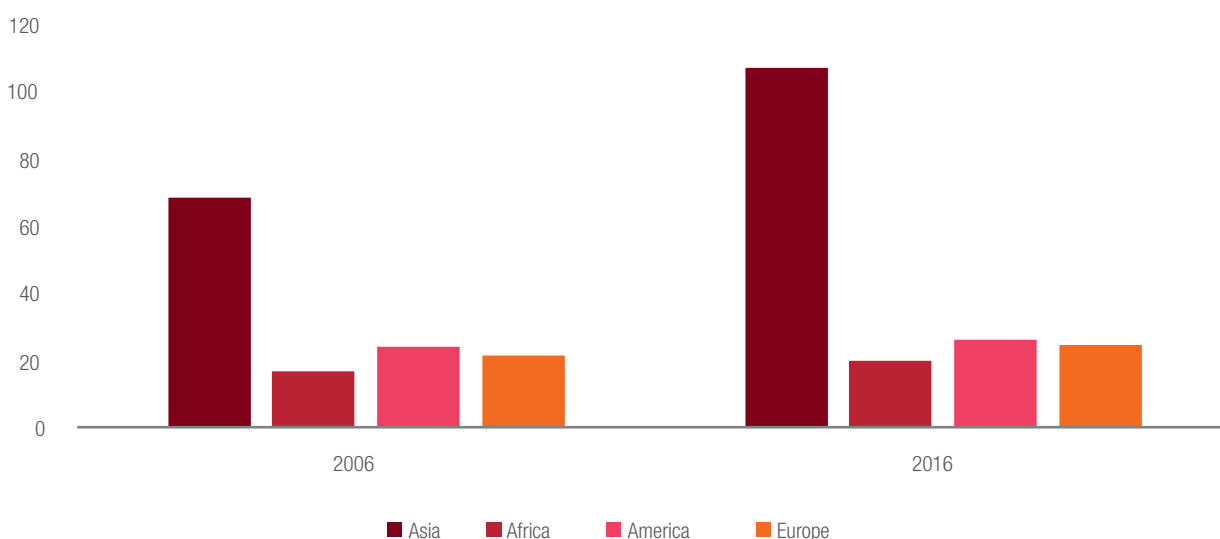
Asia accounted for about 60% of global tomato production between 2006 and 2016. Specifically, China and India are the largest producers with a share of 31.87%^e and 10.39%^e of global production in 2016.

In other regions of the world, tomato production has grown steadily, accounting for ~40% of global production in 2016.

Improved yields have been the major driver of tomato production across most regions. Globally, Europe has the highest tomato yield with some countries having tomato yield exceeding 400tonne/ha – ten times the global average. Specifically, the Netherlands, Belgium and United Kingdom have yields of 507.04tonne/ha, 506.90tonne/ha and 416.19 tonne/ha respectively².

In contrast, many countries in Africa have low tomato yield – Nigeria 3.91 tonne/ha, Angola 2.70 tonne/ha and Somalia 1.44tonne/ha. Rising tomato production in Nigeria has been driven by expansion in area under cultivation, which has increased by 5% annually in the last decade².

Tomato production by region (million tonnes)



Sources: FAO, PwC Analysis



Tomato wastage continues to be a global menace

The fragility and short shelf span of tomatoes facilitate wastage across many tomato producing regions. Inadequate logistics and storage facilities have further increased tomato wastage.

Wastage cuts across the value chain, from production to the consumer segment. In 2008, an estimated 400,000 tonnes of tomatoes were reported wasted at the consumer level in the United States. This amounted to USD4.01 million for fresh tomatoes and USD1.56 million for canned tomatoes³.



Tomato processing as an alternative for tomato preservation

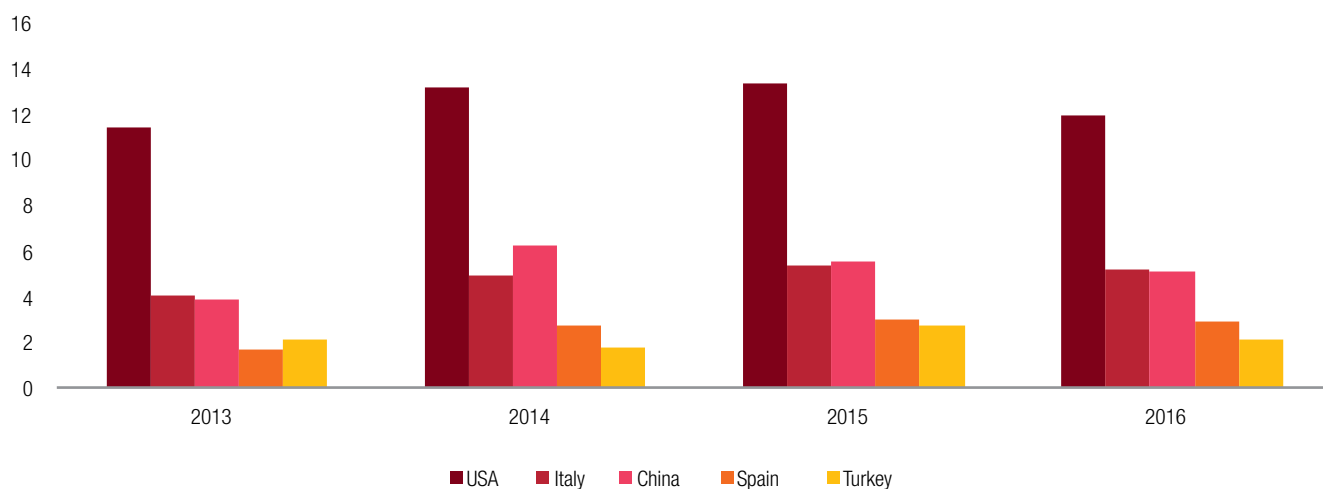
Globally, an estimated 40 million tonnes (23% of tomato produced) of tomatoes are processed.

The 5 largest global processors of tomatoes are USA (California), Italy, China, Spain and Turkey. With the USA and Italy accounting for a share of 30% and 14% of global tomato processing respectively in 2016.

Processed tomatoes serve as an alternative method of tomato preservation. This ensures tomato products are available for consumption all year round.

In commercial terms, processed tomatoes serve as a major export commodity in many countries. Specifically, Italy and China account for a share of 37% and 17% of total value of global processed tomato exports⁴.

Tomato processing by Country (million tonnes)



Sources: FAO, PwC Analysis

Review of the Nigerian tomato industry



Rising tomato production driven by increased land usage

Nigeria is currently the second largest producer of fresh tomatoes in Africa⁵, producing 10.8% of fresh tomatoes in the region. Globally, the country is the 14th largest tomato producer with 2.3 million tonnes in 2016². This accounts for a marginal contribution of 1.2% of the world's output in 2016⁷.

Over the last decade, the production of fresh tomatoes in Nigeria has grown by 25% from 1.8 million tonnes to an estimated 2.3 million tonnes. However,

this growth has been primarily facilitated by continuous increase in the harvested area for tomatoes from 265,000 hectares to 668,292 hectares in the same period.

However, between 2006 and 2016, tomato yields have remained very low at an average of 5.47 tonne/ha relative to the world average yield of 38.1 tonne/ha. The use of old seedling varieties, pest and weed invasion and low soil fertility have contributed to the low tomato yield⁶.

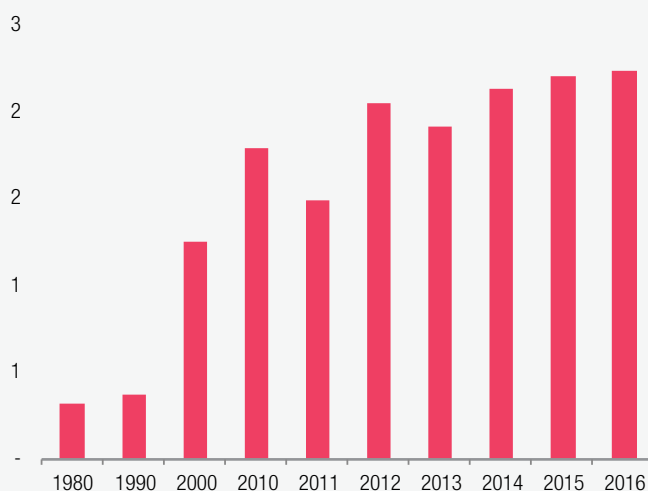


Tomato consumption not met by domestic production

Nigeria is one of the largest consumers of vegetable in Sub-Saharan Africa with about 22kg per capita⁸. Specifically, Nigerians consume an estimated 2.3 million tonnes of tomatoes annually⁹, with tomato consumption per capita at 12 kg in 2016².

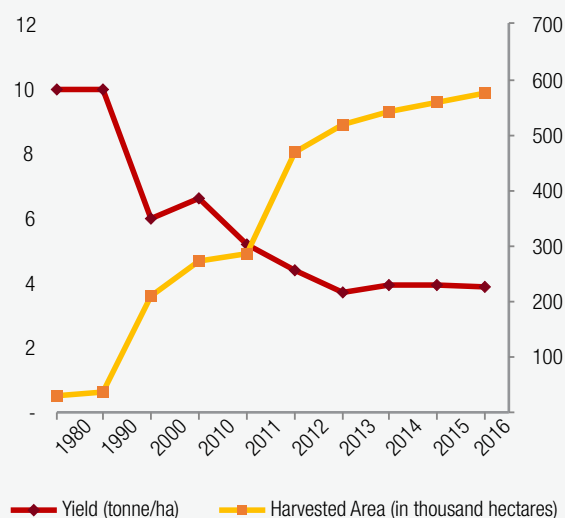
However, domestic production less the tomato wasted along the value chain - 1.3 million tonnes - is not sufficient to meet the demand. Hence, the country continues to rely on tomato paste importation to meet the existing gap.

Tomato Production (million tonnes)



Sources: FAO, GEMS₄

Yield versus Harvested Area





Wastage continues to promote increasing tomato importation

In 2017, about 45% of fresh tomatoes produced annually was lost⁶. The post-harvest losses can be attributed to poor supply chain management such as inefficient storage facilities and poor transportation systems. As a result, in 2016 and 2017, Nigeria imported tomato paste estimated at USD360m annually⁹.

In 2016, the country experienced a major pest attack – the tuta absoluta outbreak – resulting in 80% tomato post-harvest

loss¹⁰. This resulted in shortage of tomatoes for the processing industry, a significant hike in the market prices and increased imports.

High demand for imported tomato products makes the country vulnerable to changes in global prices. A significant hike in the price of tomato paste can result in food insecurity issues for the country's growing population.



Government introduces policies to improve domestic tomato production

Government is working towards increasing domestic production. In an effort to boost and increase domestic production, improve value and attract more investment, the Federal Government announced a new tomato policy in 2017¹¹. The policy aims to discourage importation by increasing tariffs on tomato concentrate from 5% to 50% and introducing USD1,500 levy per tonne¹².

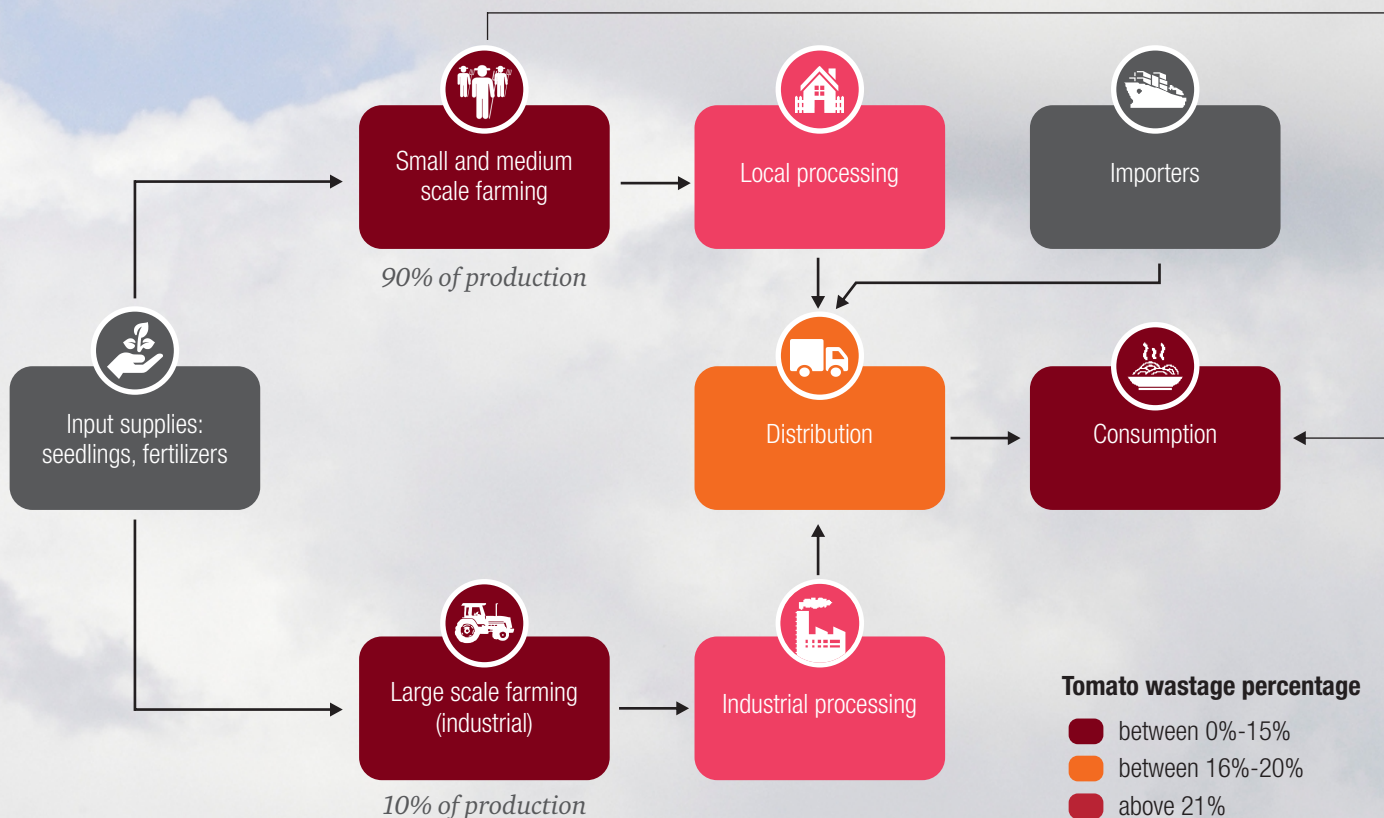
Subsequently, the inclusion of tomato production and processing activities for investment incentives is a positive

development. Incentives such as tax holiday and the introduction of zero percent import duty on greenhouse equipment are expected to increase investments in the tomato industry¹¹.

Prior to the introduction of the policy, the industry experienced the exit of many industrial tomato processors. This was primarily driven by difficulty in sourcing local fresh tomatoes. Hence, there is also a need to attract investment towards improving production and reducing wastage along the value chain.



Wastage and challenges across the tomato value chain



Poor Transportation and Limited Storage Facilities

Impact of tomato wastage in Nigeria

Increased imports of tomato paste



High importation of tomato pastes

Despite Government efforts, limited supply of fresh tomatoes has promoted the importation of tomato paste and concentrates in Nigeria.

In the last 2 years, importation of tomato paste has remained high, amounting to USD 360 million annually⁹.

Low income and poor welfare of farmers



Decline in farmers' income and welfare

Tomato farmers in Nigeria lose a significant portion of their income as a result of increasing tomato wastage. A study conducted in 2014, assessing the impact of tomato loss on the income and welfare of farmers in the South-western region of the country indicated that the farmers' gross margin reduced from ~80% to ~17% as a result of post-harvest losses¹³. This negatively impacts the welfare of the farmers and their families.

Recently, a programme organized by Coffey International is targeted at reducing tomato losses while increasing incomes for 500,000 tomato farmers by a minimum of 15%¹⁴.

Reduced supply of fresh tomatoes



Tomato shortage forces processors to shutdown facilities

Tomato processing factories require adequate and continuous supply of tomatoes for optimal performance. High tomato wastage has resulted in limited supply of tomatoes, thus discouraging processing in Nigeria.

In recent years, many processors have exited the market, primarily due to unavailability of fresh tomatoes.

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The utilization of the water dump tanks and chlorine have significantly reduced the amount of contamination or pathogens capable of infecting tomatoes.

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Reducing Wastage: Case studies (1/2)



Learning from the United States of America

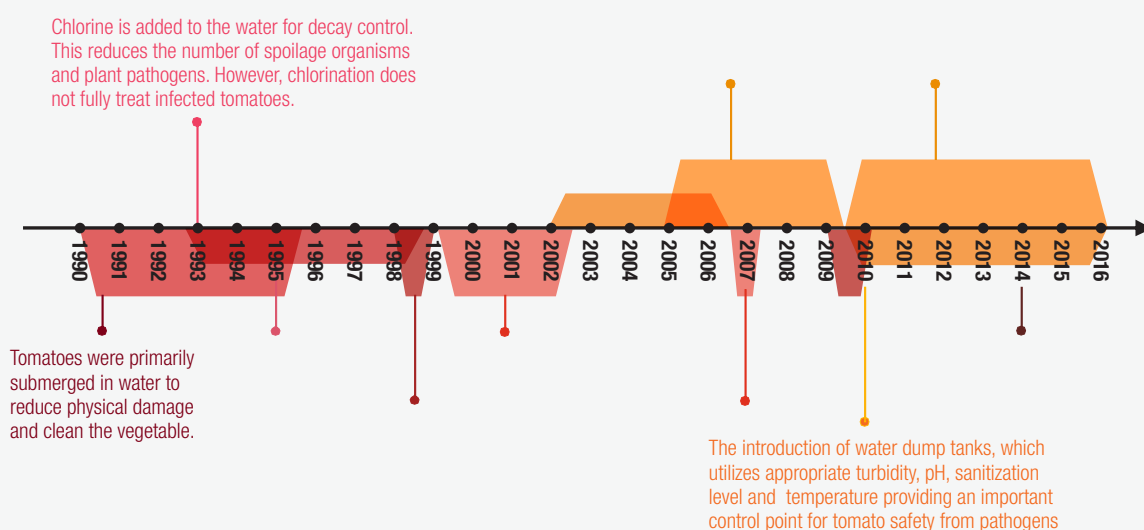
The United States of America is the third largest producer of tomatoes in the world. In 2016, the country produced 13 million tonnes of tomatoes accounting for 7.36% of global production.

Notably, the country utilizes only 144,410 hectares. This represents 25% of Nigeria's harvested area for its tomato production.

Florida also known as the "Sunshine State" is the second largest tomato producing state after California in the USA. The State accounts for 11.33% of tomato production in the USA¹⁵.

However, the state has experienced high tomato waste across the value chain. Florida generates 396,000 tonnes of tomato waste every year¹⁶. Towards the reduction of tomato waste, Florida has introduced various methods and processes.

Establishment of tomato water dump tank reduces wastage



Result

The utilization of the water dump tanks and chlorine have significantly reduced the amount of contamination or pathogens capable

of infecting tomatoes. Also, this method assists in prolonging the lifespan of tomatoes being distributed across various channels.

Reducing Wastage: Case studies (2/2)



Learning from India

India is the second largest producer of tomatoes in the world with production volume of 18.4 million tonnes annually, accounting for 11% of global production². In recent years, the country's tomato export have increased significantly

surpassing 300,000 tonnes in 2014; valued at USD 67 million in 2015¹⁷. However, India wastes up to 2.2 million tonnes of tomatoes yearly as a result of poor transportation services and ineffective storage facilities¹⁸.

Learning from India

Intervention 1: Improved access to cold facilities

A major challenge causing tomato wastage in India is inadequate storage facilities - it is reported that 40% of vegetable wastage is facilitated by inadequate cold storage¹⁹. Majority of farmers in India are very poor and have limited access to advanced storage facilities like cold storage.

Over the years, government has assisted by subsidizing the cost of constructing cold storage facilities. Also, government removed price fixing regulations, this allows cold storage owners determine prices freely. A mutual agreement is made between the cold storage owners and farmers, wherein the farmers pay a rental rate for storing their tomatoes²⁰.

Intervention 2: Usage of plastic crates

A large percentage of tomato production (25-39%) is lost at the transportation and handling segment of the value chain. This is attributed to transporting tomatoes over long distances exposing it to unfavourable weather conditions and poor roads.

However, the usage of plastic crates can reduce tomato wastage as the tomatoes are compacted to withstand adverse road and weather conditions. The Indian government and private sector investments are working to reduce wastage by subsidizing the prices of crates - up to 50%- in the major tomato producing regions (e.g. Maharashtra) to allow easy access to low income farmers.

Result

The use of plastic crates has reduced wastage by 75%. In the future, an increase in the usage of newer packages such as foldable plastics or nestable containers is expected. This

will improve truck utilization rates as crates can be more efficiently stored, resulting in an increase in the profitability of tomato producers.

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