

ESG Summer Series

Millets – the superfood is back

- ◆ While rice, maize and wheat dominate globally, the nutrient-packed millets are staging a captivating comeback in our diets
- ◆ Millets are more climate-resilient ancient grains and could be pivotal for global food security as extreme weather spikes
- ◆ Given the resurgence in India, we think brands play a pivotal role in millet market expansion, although hurdles exist

This is the 8th report in our [ESG Summer Series](#) – looking at sustainability issues in less obvious places. These issues could grow to become bigger trends in the future.

Cropland crisis: Currently, just three cereal crops – rice, maize, and wheat – command a formidable 60% share of our global calorie intake. However, these cereals captivating our palates have a substantial environmental impact, contributing to water stress and biodiversity loss. Further, their vulnerability to climate change exacerbates the risk to food security. In a world grappling with a changing climate and extreme weather events, millets, a crop staple for millions in Asia and Sub-Saharan Africa, assume a pivotal role in fortifying global food security.

Millets – the superfood: Millets are a wide range of small-seed cereals grown and consumed as a staple diet in arid and semi-arid regions. They are traditionally grown for their nutritional richness, low water and input (fertiliser) requirements and climate resilience. The benefits of this super-grain go beyond the environment and climate, offering numerous health benefits as well. Millets help in the prevention and management of type 2 diabetes, lower cardiovascular disease risks, blood pressure and cholesterol, and contribute to improved gut health.

Rediscovery of millets: Millets, an integral part of diets for centuries, faded from the scene in India with the rise of high-yielding crops, such as rice and wheat, during the Green Revolution in the 1960s. However, millets are now slowly gaining recognition and a remarkable comeback is underway. Millets recently claimed the spotlight at the White House state dinner in honour of India's Prime Minister Modi and have also secured their place on Michelin-starred restaurant menus. India is the largest millet producer globally and is incentivising cultivation. Furthermore, 2023 was declared as the 'International Year of Millets' by the United Nations, adding to the momentum.

Looking through a corporate lens: According to the Indian Institute of Millet Research, India's market size for millets is expected to triple from USD9bn to USD25bn by 2025. Several large brands, such as ITC and Britannia, and start-ups have already begun to tap into the niche market of millet-based food products, capitalising on the rising demand for healthier and sustainable dietary options. Although challenges exist, the market for millets is poised for expansion in India, as well as globally, in our view. Embracing technological advancements that can catalyse improvements in millet handling and enhance grain quality will be critical to enabling this growth.

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ESG & Climate Change -
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Anushua Chowdhury
Analyst, ESG Research
HSBC Securities and Capital Markets (India) Private Limited

Wai-Shin Chan, CFA
Head, Climate Change Centre; Head, ESG Research
The Hongkong and Shanghai Banking Corporation Limited

James Rydge
Head, ESG Research, EMEA
HSBC Bank plc

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Sowing the crop of future past

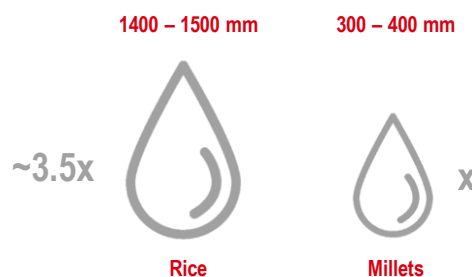
The UN's Food and Agriculture Organization (FAO) estimates the world's population will reach 9bn by 2050, 34% above the present figure. To avoid hunger and malnutrition, annual cereal production will need to increase to about 3bn tonnes, compared to 2.1bn tonnes at present.¹ However, climate change poses significant risks, causing crop yields to decline 1.3% per decade since the 1960s. It is imperative that the agricultural sector innovates, adapts and mitigates the impact of climate change to meet the demands of a burgeoning global population. As we look for ways to safeguard our future food supply, millets offer a promising path towards resilience, health and well-being.

Environmental benefits

Currently, just three cereal crops – rice, maize and wheat – provide 60% of our calorie intake globally.² Although these cereal crops are a source of macronutrients, such as carbohydrates, fats and proteins, they require fertilisers and pesticides, while millets can grow well in moderately arid locations with less irrigation and fewer inputs. What makes millets truly climate-resilient is the fact that when compared to rice and wheat they have a higher photosynthetic efficiency and potential to stay unaffected by increased CO₂ levels. Further, unlike rice and wheat, millets exhibit more water-use efficiency, with most varieties requiring nearly one-third of the water compared to the water required for rice (Figure 1). Millets have a deep root system that allows them to access moisture from deeper soil layers, making them less dependent on external irrigation and helping produce a good yield even in areas with low rainfall or limited access to irrigation.³ Considering the urgency of climate action and growing food insecurity, there is a compelling case to transition to crops, such as millets, that have a higher climate resilience.

Millets contribute to SDG 12 (sustainable consumption and production) and SDG 13 (climate action)

Figure 1: Water requirement for cultivation – rice versus millets



Source: FAO, HSBC

Health benefits

According to the UN's World Health Organization (WHO), 194.4m people, or 14.37% of India's population are undernourished. Within this, there is a strong prevalence of women and children suffering from stunting, wasting, anaemia and being underweight, overweight or obese. As we navigate the ongoing challenge of undernourishment, millets, also known as nutri cereals, offer a promising solution to elevate health and well-being (Figure 2). 100g of millet contains around 60-70g of carbohydrates, 6-12g of protein and 1-5g of fat. Moreover, their rich mineral and vitamin profile, containing minerals, such as calcium, potassium, magnesium, iron, manganese and zinc, and vitamin B complex, contributes to better bone health and bolsters the immune system. The National Institute of Nutrition recommends a daily consumption of 260g of cereals, including nutri cereals, on an average⁴.

¹ FAO, How to Feed the World in 2050, 2009

² UNDP, Counting on nature for the food we eat, 24 July 2023

³ TRENPA, Why Millets are a Climate Resilient Crop, 5 October 2022

⁴ My Plate for the Day, ICMR-National Institute of Nutrition, 20 December 2022

Figure 2: Nutritional composition of millets, rice and wheat

	Major millets			Minor millets					Other Cereals	
	Sorghum	Pearl	Finger	Kodo	Porso	Foxtail	Little	Barnyard	Wheat	Rice
Calories (kcal)	334	347	321	331	341	331	346	307	321	356
Carbohydrates (g)	68	62	67	66	70	60	66	66	65	78
Protein (g)	10	11	7	9	13	12	10	6	11	8
Fat (g)	2	5	2	3	1	4	4	2	1	1
Dietary fibre (g)	10	11	11	6	6	5	8	4	11	3

Source: National Institute of Nutrition

Millets' health benefits contribute to SDG 2 (zero hunger) and SDG 3 (good health and well-being)

Unhealthy lifestyle choices, particularly diet, have resulted in an increase in the number of diabetes cases in India and across the globe. Millets provide a helping hand in diabetes cases because of their low glycaemic index (GI), which, unlike rice and wheat, can help prevent the occurrence of type 2 diabetes. In addition, their nutrients can help avert cardiovascular diseases, lower blood pressure and cholesterol, and improve gut health. However, the presence of phytic acid in millets can hinder the absorption of other nutrients. Nevertheless, the significance of millets persists due to their enduring importance for both health (Figure 3) and sustainability.

Figure 3: Health benefits of millets

High dietary fiber provides hunger satisfaction and helps reduce obesity	Reduce the risk of diabetes and cardio vascular diseases	Beneficial in treating and prevention of gallstones and stomach ulcers	Nutritionally dense and reduces anaemia, liver disorder and asthma
It's hypo allergic properties help prevent allergic reactions	Lowers blood glucose response and reduce the risk of type 2 diabetes	Rich in antioxidants and hence reduce oxidative stress	Reduce the occurrence of hypertension

Source: FAO

Case of iron-enriched millets in Africa

In 1980-82 and 2016-18, the production of sorghum in Sub-Saharan Africa (SSA) doubled from 13m tonnes to 29m tonnes, while the production of millets increased from 8m tonnes to 14m tonnes.⁵ While demand in India for millets has declined after the Green Revolution, in SSA millets are still a primary staple crop. Nigeria, the second largest producer of millets after India, has recognised the role of millets to fight the issue of climate volatility. Smallholder farmers in Nigeria are looking for opportunities to bridge production yield gaps brought about by climatic stress through improved agricultural technologies like nutrient-enriched seeds⁶. Iron-enriched, bio-fortified pearl millets are being released through public-private stakeholder collaboration to ensure food and nutrition security for Nigeria's smallholder farmers.

Bringing back the super grain to India

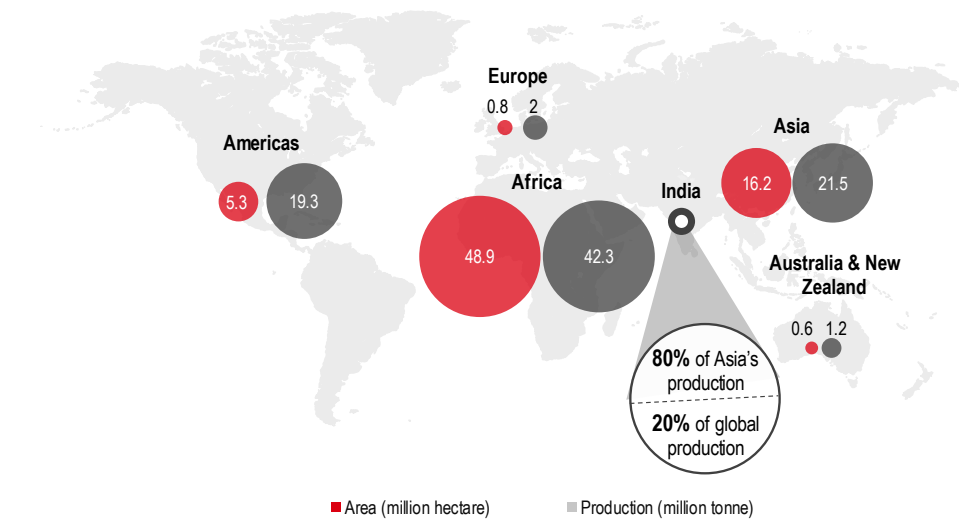
In 2021, India produced more than 17m tonnes of millet, 80% of Asia's production and 20% of the world's production (Figure 4). While the global average yield of millet is 1,229kg/ha, the yield in India is 1,239kg/ha.⁷ However, millet yields trail behind rice (c2,800kg/ha), wheat (c3,500kg/ha) and maize (c3,300kg/ha) in India⁸. While there is disparity in yields, millets are poised to shine in the vital roles of food security and health enhancements. Focusing on India unveils the significance and growth story of millets.

⁵ FAOSTAT, 2020

⁶ IITA, Iron-enriched pearl millet varieties launched in northern Nigeria, 14 April 2023

⁷ India Budget, Yield per hectare of major crops, 2023

⁸ Government of India, Yield per hectare of major crops, Economic Survey 2023

Figure 4: Millet global production and area in 2021


Source: FAO

Milletts have a strong cultural significance in India; they have been a source of nutrition for communities in hilly regions, as well as dryer regions. Millet cultivation is the major component of rain-fed farming, which provides a livelihood to nearly 50% of the total rural work force and millets sustain 60% of India's cattle population.⁹ However, the Green Revolution in the 1960s resulted in increased wheat and rice production due to government initiatives, which caused the production of other food crops, such as indigenous rice varieties and millets, to decline.¹⁰ Abandoning millet cultivation in central and eastern India contributed to serious malnutrition and the loss of genetic diversity in plants.¹¹

Did you know?

Recognising the significance of millets, the Government of India has declared millets as "Shree Anna", a Sanskrit word that translates to "Auspicious super grain". As part of its "Millets Mission" (under the National Food Security Mission), the government is helping to develop farm-gate processing and to empower farmers using Farmer Producer Organisations. In 2022, the government launched the Production Linked Incentive Scheme for Millet Based Products (PLISMBP) with an outlay of USD9.6bn to increase the usage of millets in food products and promote value addition. This is to be achieved through incentivising the manufacture of selected millet-based products and their sale in domestic and export markets.¹² India's nutrition mission for women and children (POSHAN Abhiyaan) is focusing on diet diversity by leveraging traditional systems of knowledge and popularising the use of millets.¹³

Milletts market scenario in India

According to the Indian Institute of Millet Research, the current market for millets in India is estimated to be USD9bn and is expected to reach USD25bn by 2025. According to government data, India's export of millets showed growth of 8.02% in the financial year 2021-22, as the export of millets was 159,332 metric tonnes versus 147,501 metric tonnes during the same period in the prior year.¹⁴ Supporting millets could spark a double benefit for India, making it an export heavyweight and bolstering its food security efforts.

⁹ Indian Institute of Millets Research, An insight into Organic Farming in Nutricereals, 2020

¹⁰ Journal of Ethnic Foods, The impact of the Green Revolution on indigenous crops of India, 01 October 2019

¹¹ FAO, Millets: Forgotten then found, 14 April 2023

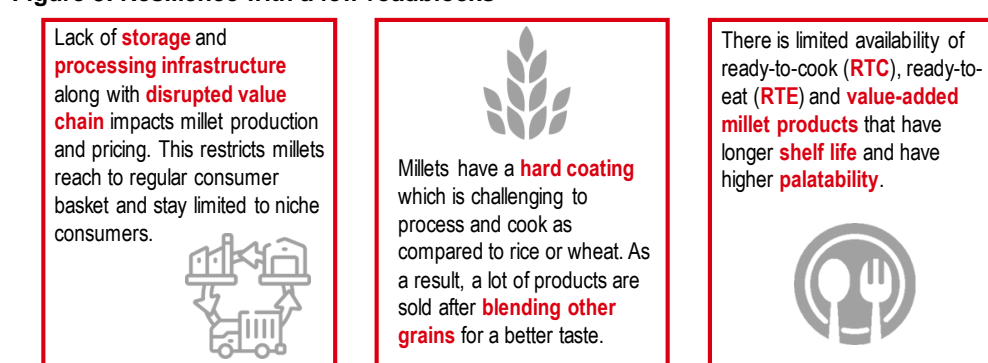
¹² Ministry of Food Processing Industries, Guidelines on Production Linked Incentive Scheme for Millet Based Products, June 2022

¹³ PIB, POSHAN Abhiyaan, 24 March 2023

¹⁴ PIB, Centre formulates action plan to promote exports of millets and value-added products of millets, 10 November 2022

Large brands in India, such as ITC, Britannia, Nestle, Marico and Tata, have made their way into the millet market by introducing a variety of daily consumable products, such as millet flours, breakfast mixes, cookies and millet milk. At the same time, start-ups are a real game changer for millets in India. Considering there is rising consumer consciousness around healthy lifestyles and fitness, start-ups have identified opportunities to introduce millet products in an innovative way. This has also generated interest from private equity investors and venture capital funds in India. Despite their nutritional and sustainability prowess, millets have encountered **roadblocks** (Figure 5) in their journey to widespread recognition. Limited consumer awareness and market access, coupled with a lack of modern processing infrastructure, have impeded their integration into mainstream diets.

Figure 5: Resilience with a few roadblocks



Source: HSBC

Way forward

With the growing severity of the climate crisis, food insecurity and poor availability of more palatable food solutions (for example, see [The menu: An exclusive edible insect excursion](#), 20 July 2023), millets' climate resilience and adaptability offer an opportunity to support food security and strengthen human well-being and economic growth. To overcome barriers to millet production, distribution and consumption, there is a need to strengthen the millet market ecosystem, in particular by establishing processing centres in proximity to producers and creating community-owned processing facilities.

From an investment perspective, seed development and investment in post-processing machinery have to be prioritised. The private sector can also play a crucial role in providing financial support and access to credit to millet producers. In our view, a shift to new technologies that improve the handling of millets and enhance their quality will help to place millets centre stage in food supply chains, not just in India but globally.

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