

FOOD PROCESSING

Towards Sustainable Growth Opportunities

SECTOR PROFILE

MILLETS

National Event Partner



Investment Facilitation Partner



Knowledge Partner





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ABSTRACT

The Indian food processing sector has witnessed remarkable growth, surpassing a 9% average annual growth rate since 2014-15. The Gross Value Addition (GVA) in the food processing sector has shown a Compound Annual Growth Rate (CAGR) of 7.27% in the past five years. The sector contributes approximately 20% to the overall GVA at basic prices, highlighting its competitiveness and ability to cater to international markets. India's processed food exports have experienced a significant surge, reaching US\$13.07 billion in 2022-23. The Ministry of Food Processing Industries has provided support and incentives to the sector through its flagship schemes, such as the Pradhan Mantri - Kisan Sampada Yojana, Pradhan Mantri Formalisation Micro Food Processing Enterprises, and the Production Linked Incentive Scheme.

The document provides an overview of the millets industry, with a focus on India's role as the largest producer of millets in the world. Millets are small-seeded annual grasses cultivated primarily in dry regions and are classified into major millets (such as Pearl Millet and Sorghum) and minor millets (including Foxtail millets, Proso millet, Kodo Millet, and others). These crops play a crucial role in food security and have gained attention for their resilience to climate change. The United Nations has declared 2023 as the International Year of Millets, recognizing their potential in promoting sustainable food systems.

Millets are experiencing an upward trend in global consumption due to their nutritional benefits and recognition as "Nutri Cereals," as people are becoming aware of their positive impact on health. The trade of millets has witnessed significant growth, with both imports and exports showing an increase in value and volume. India has the opportunity to capitalize on this growth by exporting millets as food crops in their raw form, as well as by taking advantage of the growing demand for processed millet products, such as food mixes, baby foods, pastas and noodles, millet-based flours, and bakery products. Unlike wheat and rice, which are water-intensive crops, millets offer a sustainable alternative considering the diminishing global water resources. Additionally, millet is gluten-free nature which makes it a suitable dietary option for individuals with gluten sensitivities. In the food industry, there is growing demand for gluten-free options which presents a market opportunity.

Overall, India has the potential to take the lead in millets production and processing, given the increasing global demand for these grains. This presents significant opportunities for India to capitalize on the demand for processed millets in both domestic and international markets.

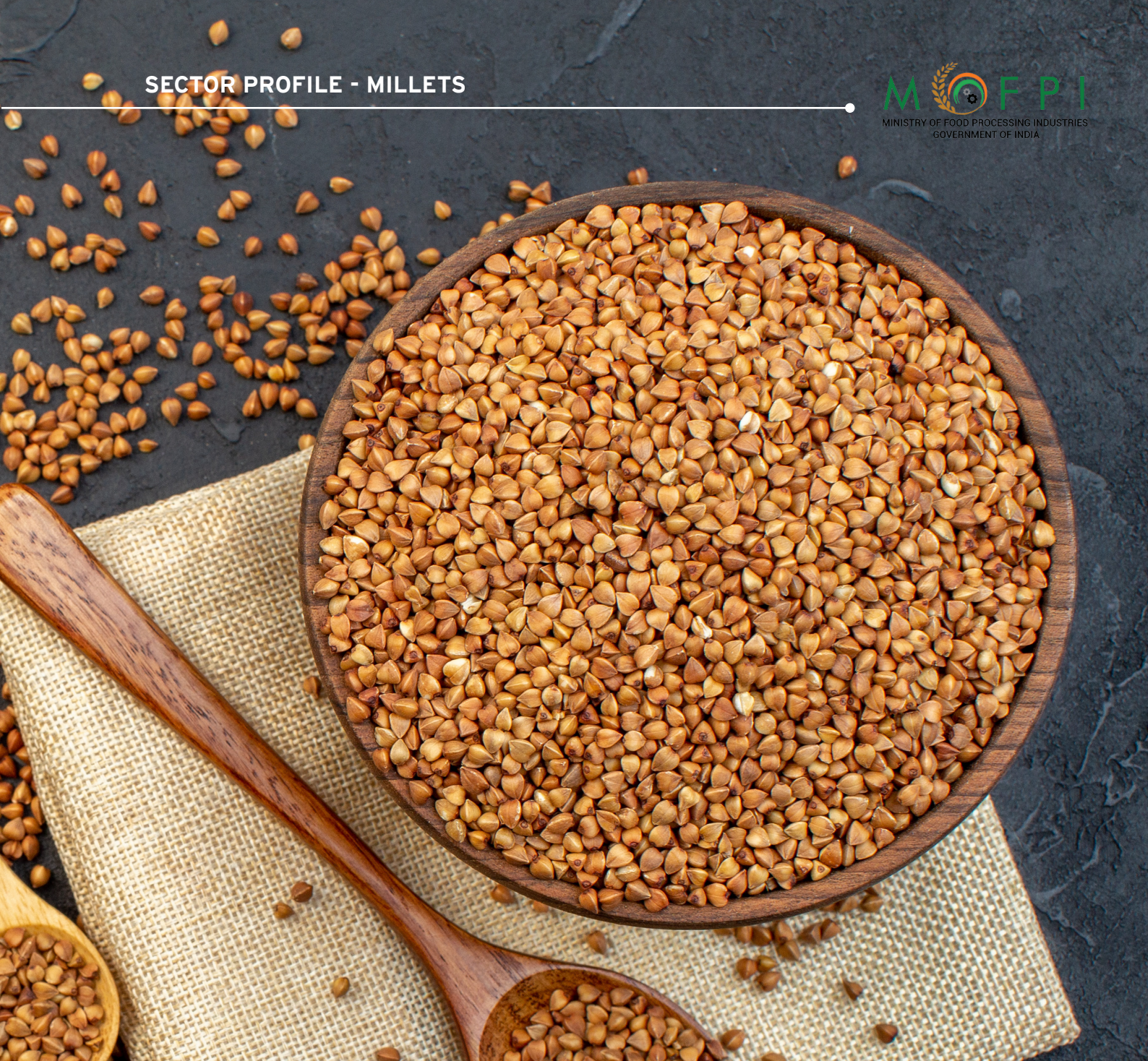
01.

INTRODUCTION

Millets, also referred to as "Shree Anna," are an essential group of small-seeded annual crops that are cultivated as grains, primarily in dry areas of temperate, sub-tropical, and tropical regions. They are typically grown on marginal lands and are broadly classified into two main categories: major millets, including Sorghum, Pearl millet, and Finger millet, and small or minor millets, which consist of Foxtail millets, Proso millet, Kodo Millet, Barnyard millet, Little Millet, and Pseudo Millets such as Buck wheat(kuttu) and Ameranthus(chaulai). These crops play a vital role in the food and nutritional security of millions of people, particularly in developing countries, and have gained increased attention due to their resilience to climate change and their potential to contribute to sustainable food systems.

Millets have gained recognition for their significant potential, which aligns with multiple UN Sustainable Development Goals (SDGs), leading the Government of India (GoI) to prioritize their cultivation. Millets also align with several Sustainable Development Goals (SDGs) of the United Nations (SDG 2 (Zero Hunger), SDG 3 (Excellent Health and Well-being), SDG 8 (Decent Work and Economic Growth) SDG 12 (Sustainable Consumption and Production), SDG 13 (Climate Action) and SDG 17 (Global Partnership), the Government of India (GoI) prioritized Millets by promoting them between 2011-12 to 2013-14, under the Nutritional Security program. In April 2018, Millets were rebranded as "Nutri Cereals", followed by the year 2018 being declared as the National year of Millets, aiming at larger promotion and demand generation. In April 2018, Millets were rebranded as "Nutri Cereals," and the year 2018 was declared as the National Year of Millets by the GoI.

The United Nations General Assembly at its 75th session in March 2021 declared 2023 the International Year of Millets (IYM 2023). This marks a significant milestone in recognizing the immense potential of Millets in promoting sustainable food systems, ensuring food security, and addressing malnutrition in the world. With the aim to generate mass awareness, increase production, productivity and strengthen the Millet value-chain towards enhanced Millet consumption, Under the leadership of Hon'ble Prime Minister Shri Narendra, "The United Nation's General Assembly (UNGA) declared 2023 as the International Year of Millets (IYM) on 5th March 2021. The proposal submitted by the Government of India was supported by 72 countries."



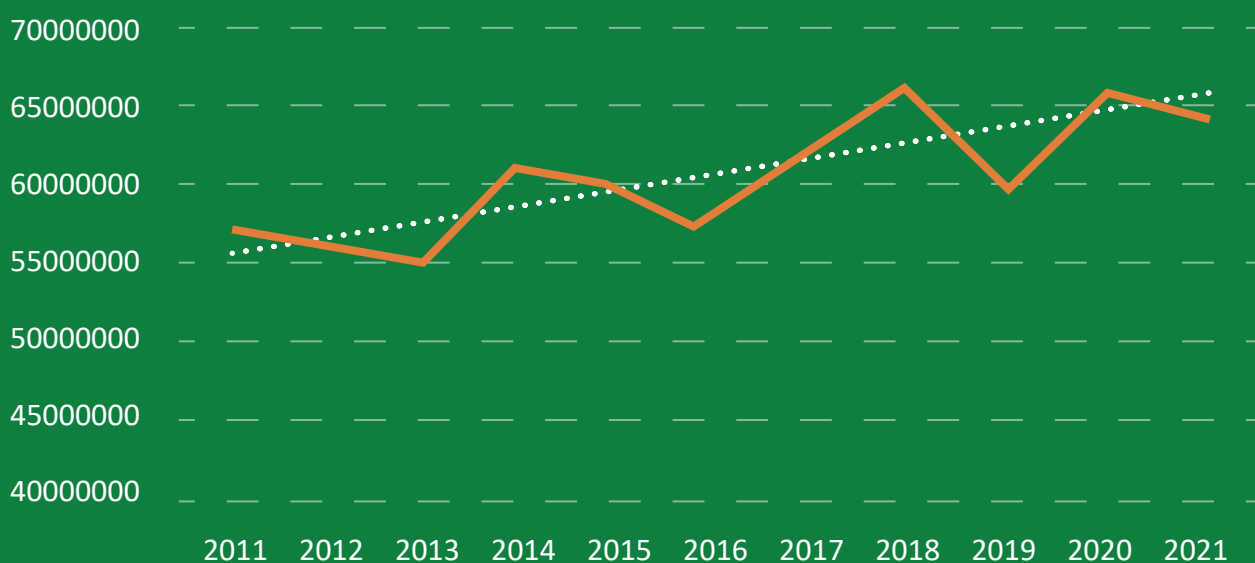
Processed millet products' demand has increased globally, especially in the emerging economies. Higher adoption rate is expected in Europe and USA considering the sustainable nature of Millets production.

This report will discuss the production of Millets in India, the global potential for processed millets and India's strength in millet processing through innovative R&D, skill development, regulatory reforms and a robust ecosystem.

2. GLOBAL OVERVIEW IN MILLETS

Over the past decade, Millet production has witnessed a favourable trend across the world¹. Moreover, the increasing awareness of Millets has led to a rise in their consumption and processing.

MILLET PRODUCTION - TONNES



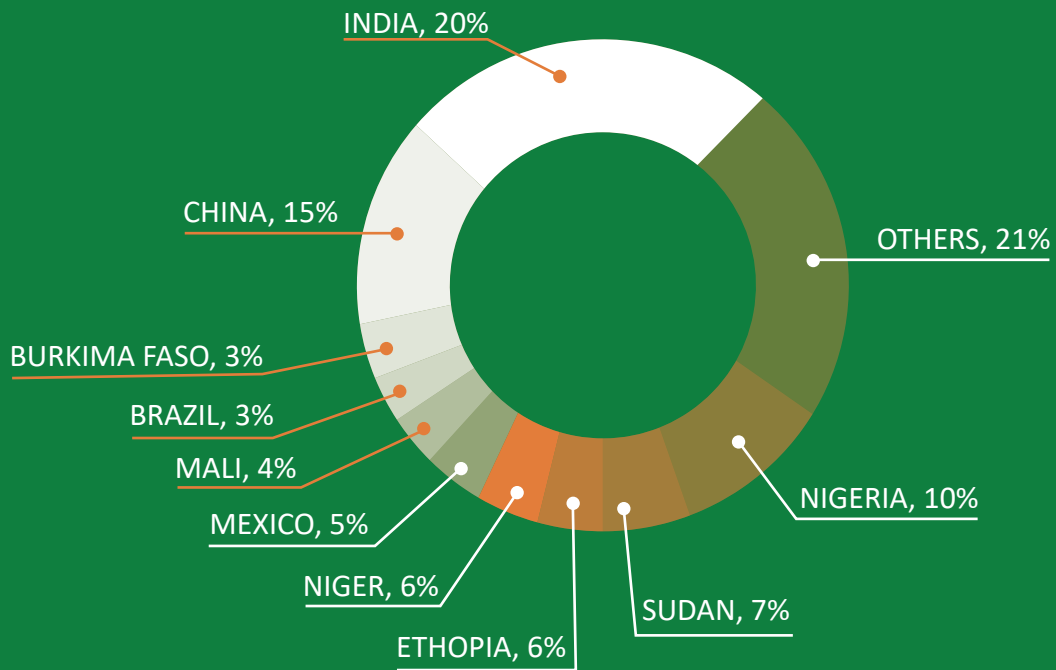
2.1 GLOBAL CONSUMPTION

The global consumption of millets reached a significant milestone in 2022, totalling 90.43 million metric tons (MT). Among the top ten countries, which collectively accounted for nearly 80% of the global millet consumption, India took the lead with 17.75 million MT, followed by China with 13.70 million MT and Nigeria with 8.80 million MT. In terms of millet varieties, sorghum emerged as the major commodity consumed across various purposes, including animal feed, food, seeds, and industrial applications. Sorghum consumption alone reached an impressive 59.55 million MT, contributing to approximately 65% of the total millet consumption in 2022.

Notably, Mexico and Brazil exclusively consumed sorghum for animal feed purposes, representing 100% of their millet consumption. Ethiopia stood out with sorghum accounting for 81% of their total millet consumption, followed closely by China (80%), Nigeria (77%), and Sudan (77%).

¹ FAO Data

These statistics shed light on the global millet consumption landscape, highlighting the dominance of sorghum as the preferred variety for diverse applications. The focus on animal feed consumption in certain countries underscores the significance of millets in livestock farming. With India leading the global millet consumption, it showcases the country's strong affinity towards millets and their integration into the dietary and agricultural practices².



2.2 GLOBAL TRADE SCENARIO

The global millets sector has experienced significant growth in trade over the past few decades. According to data, the global millet imports have shown a consistent increase from USD 2.73 billion in 2017 to USD 4.71 billion in 2021, exhibiting a compound annual growth rate (CAGR) of 14.61%. In terms of volume, the global exports of millets have grown from 2.4 billion metric tons (MT) in 2017 to 4.4767 million MT in 2021, indicating a growth rate of 16.82% CAGR over the same period³.

²
³ ITC Trade Map

TOP IMPORTERS IN 2021		TOP EXPORTERS IN 2021	
COUNTRY	VALUE IN Mn USD	COUNTRY	VALUE IN Mn USD
China	3054.17	USA	2126.32
Germany	138.27	Argentina	554.73
Japan	129.29	Australia	510.98
Spain	108.19	Poland	223.49
USA	107.09	Canada	138.80
Netherlands	78.79	France	107.78
Italy	62.17	Peru	106.49
Belgium	62.05	Russian Federation	69.87
Kenya	60.75	Bolivia	68.41
France	60.13	India	66.48

Table: Top exporters and importers of millets in India⁴

2.3 GLOBAL TRENDS⁴

The millets category encompasses eight primary commodities in global trade. Sorghum grain (excluding sowing) dominated the category in 2021, accounting for 82% (USD 3.46 billion) and 45% (11.39 million metric tons) of total millets imports in terms of value and volume, respectively. This consistent demand for sorghum is primarily due to its widespread use as a feed grain, particularly in the cattle and poultry industries, where it serves as an alternative to maize. As such, sorghum demand is closely tied to global maize prices, with a significant increase in maize prices leading to a corresponding increase in sorghum demand. The global import basket for millets in 2021 was largely comprised of grain sorghum (82%), followed by millets (excluding sorghum and seed for sowing) at 5%, and buckwheat at 4%.

⁴ ITC Trade Map

⁵ ITC Trade Map

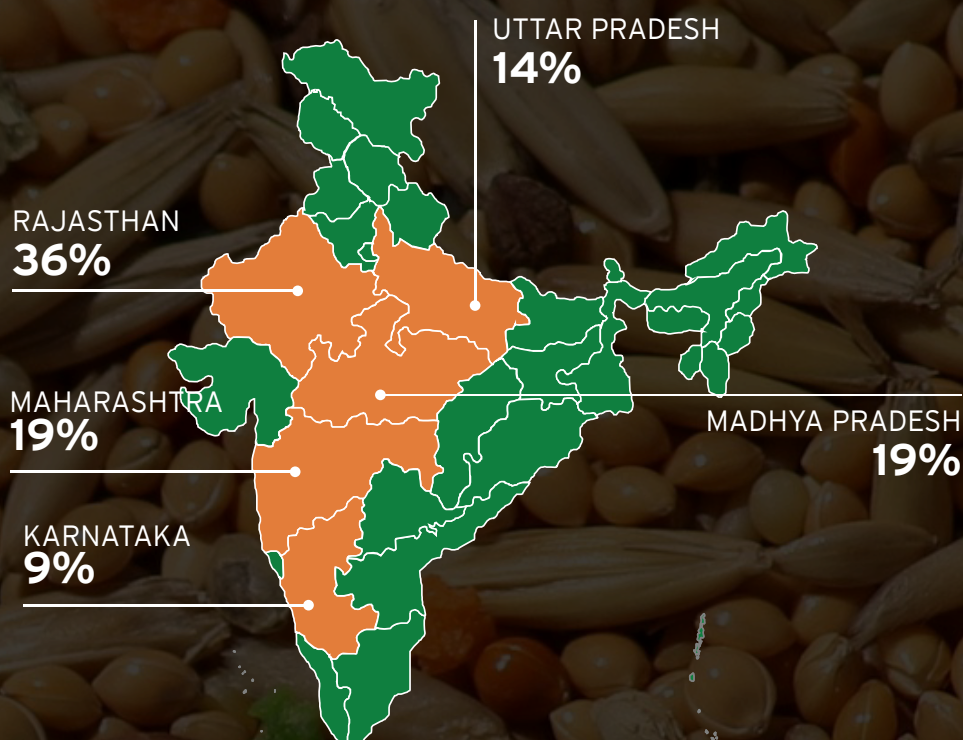
03. OVERVIEW OF MILLETS SECTOR IN INDIA

In India, millets are currently being cultivated across 23 states with a total production of 18.02 million metric tonnes across the area of 12 million hectares during the year 2021-22. An interesting trend can be seen in the concentration of millet farming in India, where the top five states account for a sizable percentage of the overall planted area. Rajasthan leads the pack, contributing 41% of the total millet production area, according to the third advance estimate. Maharashtra comes in second with 16%, followed by Karnataka with 19%, Uttar Pradesh with 9%, and Madhya Pradesh with 5%. These five states collectively control an amazing 83% of India's total millet cultivation area. This distribution emphasises the geographical relevance of millet production, highlighting the significant contributions made by various states to the development of the millet industry and the nation's agricultural landscape.

Table: Production of Nutri Cereals of last five years from 2015-16 to 2021-22

CROPS	RABI/ KHARIF	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22 (4TH ADVANCE ESTIMATES)
JOWAR	Kharif	1.82	1.96	2.27	1.74	1.70	1.99	1.59
	Rabi	2.42	2.60	2.53	1.74	3.08	2.83	2.64
	Total	4.24	4.57	4.80	3.48	4.77	4.81	4.23
Bajara	Kharif	8.07	9.73	9.21	8.66	10.36	10.86	9.62
Ragi	Kharif	1.82	1.39	1.99	1.24	1.76	2.00	1.70
Small Millets	Kharif	0.39	0.44	0.44	0.33	0.37	0.35	0.37
Nutri Cereals	Kharif	12.10	13.52	13.91	11.97	14.19	15.19	15.19
	Rabi	2.42	2.60	2.53	1.74	3.08	2.83	2.83
	Total	14.52	16.12	16.44	13.71	17.26	18.02	18.75

Source: Directorate of Economics and Statistics



3.2 KEY GROWTH DRIVERS

Key growth of processed dairy products is driven by the following key drivers.

Demographics:

India has a large vegetarian population and millets being nutritionally rich, contains calcium, iron and fibres which helps to fortify essential nutrients for the healthy growth. Furthermore, a huge cohort of young population in India is inclined to consume more millets-based products aided by nutrition drives at school level through Mid-day meal schemes and through Anganwadi centres.⁶

Rising health awareness:

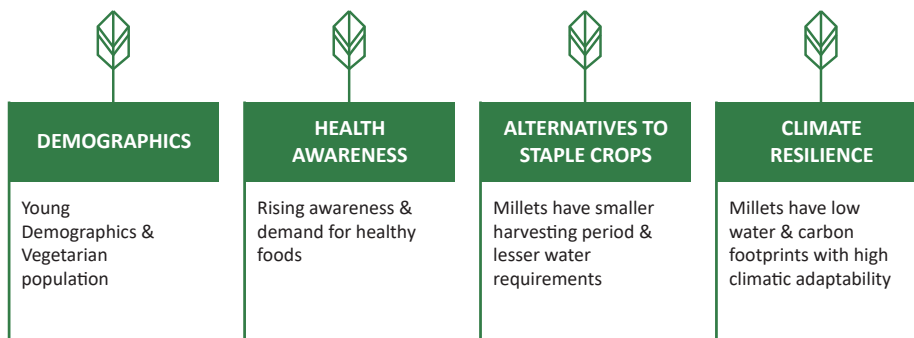
There is a rising awareness and demand for healthy foods across the Asia Pacific region. With nutria-cereals being nutritionally superior to its counterparts, the demand for them is likely to be robust over the years. Further, with a surge of diseases like COVID – 19 over the years, the importance of a nutritional diet and a healthy lifestyle has become extremely important to the consumer. Millets are a wonderful source of vital nutrients like protein, fibre, and micronutrients like iron, zinc, and B vitamins. They also have valuable nutritional characteristics. They also have a low calorie count and glycaemic index, which makes them a good option for people with diabetes or other metabolic problems. Millets are positioned as a viable dietary alternative due to their intrinsic nutritional advantages, which support general health and wellbeing.

⁶ https://agricoop.nic.in/Documents/Crops_0.pdf

According to a report by WaterAid India called "Beneath the Surface: The State of the World's Water 2019," producing one kilogramme (kg) of rice uses about 2,800 litres of water, whereas producing one kilogramme (kg) of wheat uses about 1,654 litres. Millets, on the other hand, require substantially less water than rice, typically 2.5 times less water. This variation in water use emphasises millet cultivation's water-efficiency and highlights its potential as a sustainable crop that can aid in water conservation initiatives. With depleting water resources around the globe, production of such crops is highly unsustainable going forward. Millet is gluten-free, therefore an excellent option for people suffering from celiac diseases often irritated by the gluten content of wheat, rice and other more common cereal grains.⁷

Climate Resilience:

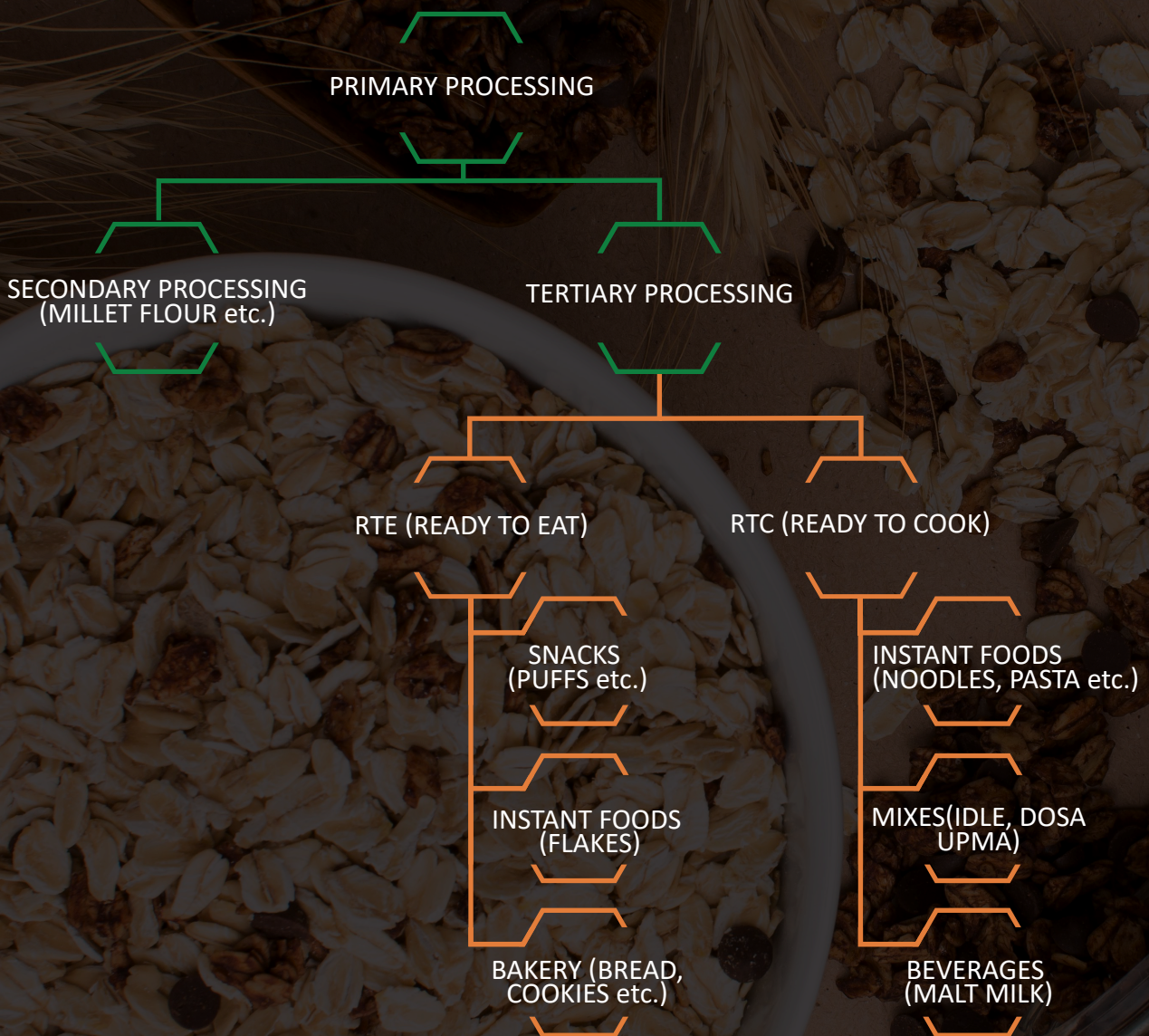
Millets are nutritionally rich alternative to existing food crops and have smaller harvesting period and lesser water requirement. Also, such crops are resilient to climate change having have a low carbon and water footprint and can grow on nutrient soils with little or no external inputs. Accordingly, a shift in production behaviour can be expected.



⁷ Issoufou Amadou1* , Mahamadou E. Gounga2 and Guo-Wei Le1. Millets: Nutritional composition, some health benefits and processing – A Review. Emir. J. Food Agric. 2013

3.3 KEY PROCESSED MILLETS PRODUCTS IN DOMESTIC MARKET

Millets products are an essential ingredient of Indian cuisine, forming an integral part of India's collective tradition and culture. India's millets consumption patterns vary across the states.



3.4 KEY INDUSTRY PLAYERS

In 2022, India produced 17.60 million metric tons of millets⁸. With India being an agrarian economy and having a large cultivable area, it poses a huge capacity for production of such crops in the country.

The millet crops production in India has majorly been unorganised with farmers engaged in the agriculture sector. However, the country has seen emergence of various players from organised sectors such as Louis Dreyfus, Archer Daniels Midland Company (ADM), Cargill Inc., ITC Limited etc.

Further, various FMCG Companies such as Britannia Industries, Hindustan Unilever Limited, Marico, Nestle, ITC Ltd, Tata Consumer etc have shown interest in processing millets-based products.

The following table lists major players engaged in millets sector:

KEY PLAYERS

MILLETS PRODUCTION

LOUIS DREYFUS
ARCHER DANIELS MIDLAND COMPANY(ADM)
CARGILL INC.
ITC LIMITED

PROCESSED MILLETS-BASED PRODUCTS

BRITANNIA
NESTLE
ITC LTD
HUL
MARICO

⁸ APEDA

04. GOVERNMENT INTERVENTIONS FOR SUPPORTING MILLETS SECTOR

Government of India has taken up various initiatives to boost the millets production

4.1 GOVERNMENT POLICIES

Government of India has from time to time adopted policies that benefit the millets sector directly. Some of the prominent policies are

POLICIES	DETAILS
Easing FDI regulations	The government of India has allowed 100% FDI in the food processing industry through the automatic route, to promote investments in the sector.
International year of Millets- 2023⁹	Government of India had proposed to United Nations for declaring 2023 as International Year of Millets (IYOM). And the same was on 5th March 2021. Under the initiative the government has been showcasing millets at various national and international events. The government has also been consulting with various processors and chefs for Development of recipes, books & online modules relating to millets-based products.
Income Tax exemptions	The government supports the sector through 100% exemption of Income Tax on profits and gains for new Food Processing Units for initial 5 assessment years.
Enabling environment	The government classified food processing sector including millet production under 'agricultural activity' and is considered under Priority Sector Lending for ensuring credit availability in the sector.

⁹ https://agricoop.nic.in/Documents/Crops_0.pdf

4.2 GOVERNMENT SCHEMES

The following schemes by various ministries support the millets production sector in India

A.

PRADHAN MANTRI KISAN SAMPADA YOJANA (PMKSY):

PMKSY is a comprehensive scheme implemented by MoFPI which aims to create modern infrastructure with efficient supply chain management from farm gate to retail outlet. The key objectives of PMKSY are

- Creation of modern infrastructure for food processing mega food parks/ clusters and individual units
- To create effective backward and forward linkages - linking farmers, processors and markets
- To create robust supply chain infrastructure for perishables

B.

PLISMBP:

Government of India approved Production Linked Incentive Scheme for Millet-based products. Under the scheme INR 800 crore incentive will be distributed during 2022-23 to 2026-27 focusing on infrastructural and technical development of the industry.

C.

PM FORMALIZATION OF MICRO FOOD PROCESSING ENTERPRISES (PMFME):

The PMFME is a centrally sponsored scheme with an outlay of INR 10,000 Cr to be implemented over a period of five years from 2020-21 to 2024-25. The scheme provides financial, technical and business support for existing micro food processing enterprises. As of 2023, a total of 1222 millet-based processing units got support from the scheme to the tune of INR 67 Cr across the country¹⁰. As part of the millet processing initiative, a total of 17 incubation centers equipped with millet processing lines have been approved across 10 states. These centers aim to promote millet-based products and support local entrepreneurs in the millet industry. To further bolster the initiative, three brands have been actively supported. One such brand is Somdana, which was launched on January 5th, 2022, in Thane, Maharashtra, focusing on millet flour production.

¹⁰ PMFME Scheme Division, MoFPI

Another brand, Bhimtadi, has been promoted for Ragi (Nandurbar and Thane) and Sorghum (Solapur) products. It supports 160 units, including Self-Help Groups (SHGs), Farmer Producer Organizations (FPOs), and cooperatives, operating under a Special Purpose Vehicle (SPV) to manufacture various millet-based products like Nachni Papad, Nachni Satva, Flour, Ladu, Kadak Bhakri, Cookies, and more. Additionally, the Seemi brand has been introduced in Karnataka districts, specifically Davangere and Chitradurga, with a focus on millet-based products. This brand was launched in January 2023, further expanding the range of millet offerings in the market. These initiatives and brand support signify the concerted efforts to promote millet processing, encourage local entrepreneurship, and diversify the range of millet-based products available to consumers.

D.

AGRI-INFRASTRUCTURE FUND SCHEME:

The scheme is being popularised by the government to invite farmers/FPOs/Entrepreneurs to avail the benefit of interest subvention on loans up to 2 crores for setting up primary processing units in millets (Shree Anna). To encourage farmers to take up millet cultivation, higher Minimum Support Prices (MSP) to Jowar, Bajra and Ragi has been announced.¹¹

E.

SUB-MISSION ON NUTRI-CEREALS (MILLETS) UNDER NATIONAL FOOD SECURITY MISSION (NFSM)

Department of Agriculture and Farmers Welfare (DA&FW) has been implementing the mission in 212 Districts of 14 States since 2018-19.¹² latest guidelines are from 2018-19 to 2019-20. Under the scheme, incentives are provided to the farmers, through the states/UTs, on crop production and protection technologies, cropping system based demonstrations, production & distribution of certified seeds of newly released varieties/hybrids, Integrated Nutrient and Pest Management techniques, improved farm implements/tools/resource conservation machineries, water saving devices, capacity building of farmers through trainings during cropping season, organizing events/workshops, distribution of seed mini kits, publicity through print and electronic media etc. The interventions such as setting up Centers of Excellence (CoEs) and seed hubs for Nutri Cereals have also been supported under NFSM.

¹¹ <https://pib.gov.in/PressReleaseDetail.aspx?PRID=1910361>

¹² National Food Security Mission Portal

05. GOVERNANCE AND REGULATORY LANDSCAPE

The regulatory landscape for non-alcoholic beverages sector in India comprises of guidelines and regulations mandated by AEPDA, FSSAI, BIS, AGMARK. The details of all the regulatory bodies are given below.

5.1 FSSAI

In 2008, FSSAI was established under the aegis of the Ministry of Health and Family Welfare (MoHFW) to enforce the provisions of the Food Safety and Standards Act 2006.

Some of the key functions of FSSAI under the Food Safety and Standards Act include:

- Framing regulations to lay down food standards and guidelines
- Laying down procedure and guidelines for accreditation of laboratories for food testing
- Providing scientific advice and technical support to the Government in areas that have a direct or indirect bearing of food safety and nutrition
- Collating data regarding food consumption, contamination, identification of emerging risks, introduction of a rapid alert system etc.
- Disseminating information and promoting awareness about food safety and nutrition in India
- Conducting training programs for food businesses
- Contributing to the development of international technical standards for food, sanitary and phytosanitary standards

To further enable it to meet its objectives, FSSAI enacted the Food Safety and Standards Rules, along with several other regulations as listed below

FOOD SAFETY AND STANDARDS REGULATIONS IN INDIA

PROCEDURAL REGULATIONS

Food Safety and Standards (Licensing and Registration of Food Businesses) Regulation, 2011

Food Safety and Standards (Prohibition and Restriction on Sales) Regulation, 2011

Food Safety and Standards (Laboratory and Sampling Analysis) Regulation, 2011

Food Safety and Standards (Food Recall Procedure) Regulation, 2017

Food Safety and Standards (Import) Regulation, 2017

FOOD STANDARDS

Food Safety and Standards (Food Product Standards and Food Additives) Regulation, 2011

Food Safety and Standards (Packaging and Labelling) Regulation, 2011

Food Safety and Standards (Contaminants, Toxins and Residues) Regulation, 2011

Food Safety and Standards (Food or Health Supplements, Nutraceuticals, Foods for Special Dietary Uses, Foods for Special Medical Purpose, Functional Foods and Novel Food) Regulation, 2016

Food Safety and Standards (Fortification of Food) Regulation, 2016

Food Safety and Standards (Organic Foods) Regulation, 2017

The FSSAI has specified a comprehensive group standard for millets vide Food Safety and Standards (Food Products Standards and Food Additives) Second Amendment Regulations, 2023 notified in the Gazette of India and the same will be enforced w.e.f. 1st September 2023

5.2 BUREAU OF INDIAN STANDARDS ACT, 1986

The Bureau of Indian Standards, empowered by the Bureau of Indian Standards Act, 1986, operates a product certification scheme by which it grants licenses to manufacturers covering practically every industrial discipline from agriculture and textiles to electronics.

The certification allows the licensees to use the popular ISI mark, which has become synonymous with quality products for the Indian and neighbouring markets for over 55 years. While the scheme itself is voluntary in nature, the Indian Government has, in public interest, enforced mandatory certification on various products through various quality control orders issued from time to time, under various acts. In this reference, the Food Safety and Standards (Prohibition and Restriction on Sales) Regulations, 2011 has prescribed mandatory certification under the BIS Act for the following products :¹³

- Food for Special Medical Purpose intended for Infants
- Processed cereal based complementary foods
- Milk- cereal Based Complementary foods

5.3 AGMARK

AGMARK is a certification mark for agricultural products in India, assuring that they conform to a set of standards approved by the Directorate of Marketing and Inspection, an agency of the Indian Government. AGMARK is legally enforced in India by the Agricultural Produce (Grading and Marking) Act of 1937 (amended in 1986).

The present AGMARK standards cover quality guidelines for 222 different commodities spanning a variety of pulses, cereals, essential oils, vegetable oils, fruits and vegetables, and semi-processed products such as vermicelli. The AGMARK certification is employed through fully state-owned laboratories located across the nation that act as testing and certifying centers. The Food Safety and Standards (Prohibition and Restriction on Sales) Regulations, 2011 lays down mandatory certification under AGMARK for millets (under agriculture produce) .¹⁴

¹³ <https://pib.gov.in/PressReleaseDetail.aspx?PRID=1910361>

¹⁴ National Food Security Mission Portal

5.4 STANDARDS OF WEIGHTS AND MEASURES IN INDIA

The Standard of Weights and Measures Act, 1976 was enacted primarily to establish standards of weights and measures, to regulate trade or commerce in weights, measures and other goods that are sold or distributed by weight, measure or number.

Further, the Legal Metrology Act, 2009 was passed by the Indian Parliament to replace the Standards of Weights and Measures Act, 1976 and the Standards of Weights and Measures (Enforcement) Act, 1985. The aim of Legal Metrology Act is protecting consumer interests while simultaneously keeping the industry free from external interference. Consequently, The Legal Metrology (Packaged Commodities) Rules, 2011 were prescribed in order to regulate pre-packaged commodities. Under the said rules, pre-packaged commodities are required to comply with certain mandatory labelling requirements.

5.5 EXPORT INSPECTION COUNCIL

The Export Inspection Council (EIC) is the official export –certification body of India which ensures quality and safety of products exported from India. EIC was set up by the Government of India under Section 3 of the Export (Quality Control and Inspection) Act, 1963 to ensure sound development of export trade of India through quality control and inspection and matters connected therewith.

Export Inspection Council assures the quality and safety of the products through either quality assurance or food safety management-based certification or a consignment wise inspection. The council also provides Quality Certification for export goods by installing quality assurance procedures as well as Quality Certification for exportable food items by installing Food Safety Management Systems (FSMS) in the food dispensation units, that are on par with international guidelines.

06. R&D AND SKILL DEVELOPMENT ECOSYSTEM FOR MILLETS PROCESSING

R&D is at the core of a promoting the millets sector in India. India hosts numerous technical institutes, universities, centres of excellence etc to support the millets industry in adopting latest processing technologies, promoting products as well as process, ensure skill development etc. Some of the key institutions forming the backbone of R&D ecosystem in India are listed below.



INSTITUTIONS	DESCRIPTION
<p>ICAR-Indian Institute of Millets Research (IIMR)¹⁵</p>	<ul style="list-style-type: none"> ● Indian Institute of Millets Research (IIMR) is a premier agricultural research institute engaged in basic and strategic research on sorghum and other millets under Indian Council of Agricultural Research (ICAR) ● It is being developed as a Global Centre of Excellence for sharing best practices, research and technologies in millets. IIMR is working to strengthen the millets ecosystem by developing each component of the value chain. <ul style="list-style-type: none"> ● The Indian Institute of Millet Research, has incubated 250 Start-ups under RKVY-RAFTAAR. ICAR-IIMR have developed 32+ millets-based value-added products, which together has helped in formation of 400+ brands across the country. ● IIMR has licensed 67 value added products to 124 entrepreneurs in 2022. ● Promotes Basic and strategic research to increase productivity of millets and their diversified utilization for enhancement of profitability ● Coordination and development of improved crop production and protection technologies of millets ● Training and consultancy on millet production and utilization
<p>Central Food Technological Research Institute (CSIR-CFTRI) -Mysore¹⁶</p>	<ul style="list-style-type: none"> ● The institute came into existence during 1950 ● Research focus of CSIR-CFTRI has been revolved around broadly into the following areas: <ul style="list-style-type: none"> ● Engineering Sciences ● Technology Development ● Translational Research ● Food Protection and Safety ● CSIR-CFTRI has been undertaking R&D projects to tackle the bottle necks in millet processing, value addition & product development ● Conducted several training and skill development programmes to enhance competitiveness of existing individual micro-enterprises, including millet-based industries in the unorganized segment

¹⁵ <https://www.millets.res.in/about-institute.php>

¹⁶ <https://cftri.res.in/csir>

¹⁷ <https://www.nin.res.in/aboutus.html>

INSTITUTIONS	DESCRIPTION
ICMR-National Institute of Nutrition ¹⁷	<ul style="list-style-type: none"> ● ICMR-National Institute of Nutrition founded the year 1918 ● The Institute pioneers studies on various aspects of nutrition research and its activities are broad-based, encompassing the whole area of food and nutrition ● The institute has been conducting R&D activities on millets such as on nutritional values of various processed and cooked millets, efficacy of cooked millet diet, effect of finger millet based dietary supplementation.
Agricultural and Processed Food Products Export Development Authority (APEDA)	<ul style="list-style-type: none"> ● AEPDA was established in 1985 ● Provides technical assistance in product/process development, equipment design, packaging solutions to the sector ● Conducts training in various aspects of the industries and engages in Promotion of export oriented production
Technical Institutions	<ul style="list-style-type: none"> ● NIFTEMs



07. MILLETS PROCESSING: HIGH POTENTIAL OPPORTUNITIES

The global trends in millets production and processing and overview of millets sector in India discussed in earlier sections, analysed parallelly brings into light immense opportunities the sector beholds. Increased demand projections both in domestic and global markets, impacts millets processing sector positively. The following sectors within millets processing show promising potential

7.1 MILLETS PROCESSING TECHNOLOGY & MACHINERY

India has the potential to be the global hub of millets processing technology and processing machinery. Technologies incorporating agronomic practices for enhanced productivity, irrigational infrastructure, farm mechanisation can revolutionise millets production and processing landscape and also address issues related to food safety concerns, etc. Processing machinery and equipment for grading, destoning, testing etc also has high potential. Further, post-harvest technologies enhancing the economic value of millet by way of reducing waste, enhancing shelf life etc have immense potential.



7.2 SUSTAINABLE PACKAGING SOLUTIONS

With a growing market for processed millets and millets-based products, demand for packaging products is also increasing. The industry has been looking for innovations and creativity in packaging which can improve the shelf life of the products, improve sustainability, reduce plastic and cost-effective innovative packaging solutions. Thus, packaging industry with sustainable eco-friendly solutions exhibits great potential for large scale adoption in India.

7.3 FORTIFIED / FUNCTIONAL FOODS

Processed millets products are expected to witness a growing demand both globally and in domestic market.

7.3.1 FOR DOMESTIC MARKET

Owing to strong growth drivers like increasing health awareness and nutritionally superiority, the demand for processed millets products is expected to increase in the upcoming years. The following products have immense potential in domestic market.

- Bakery Products such as biscuits, cookies, snacks, etc
- Millet Flour
- Pastas and noodles
- Cereals flakes and popped products
- Instant food mixes
- Gluten free breweries
- Baby food, Maternity food etc

7.3.2 FOR EXPORT MARKETS

The processed millet product sector is expected to witness sustained global demand in the long term. With India being one of the largest exporters of millets in the world, it would be looking to further strengthen its position as a leader in the global markets.

India can focus on exporting of millets in raw form as food crops as well as can also take advantage of rising millets based processed products by exporting commodities like food mixes, baby foods, pastas and noodles, millets based flours, bakery products etc.

CONCLUSION

Milletts have gathered global attention recently due to their potential for sustainable agriculture, nutritive advantages, and climatic resilience. In the backdrop of International Year of Milletts, concentrated efforts are being made to promote production as well as global consumption of Milletts.

The Government of India has actively encouraged millet farming, processing, and market linkages through various schemes, captive consumption through Mid-Day Meal scheme and Public Distribution System as well as promotion of the creation of millet processing facilities. Infrastructure improvements, financial incentives, and raising awareness about nutritional benefits of milletts was undertaken across the country.

The government has proactively encouraged investment, provided regulatory support, and facilitated R&D in the sector. These actions have prioritised upholding quality and safety standards, encouraged innovation, and fostered an atmosphere that is favourable for business in the sector.

It is possible to increase the sector's competitiveness in both domestic and international markets by bolstering the millet value chain, adoption of technology, enhancing post-harvest processing and storage, and encouraging innovation in millet-based goods. The sector's expansion also depends on strengthening small-scale farmers, encouraging partnerships among industry participants, and increasing millet consumption through nutrition education programmes. In both domestic and international markets, embracing digital technology, e-commerce platforms, and efficient marketing methods can expand market reach and consumer involvement.

The Indian milletts industry has the potential to enhance farmer livelihoods, advance sustainable agriculture, and establish India as a millet production and exporting powerhouse on a worldwide scale.

In conclusion, proactive government policies, robust regulatory framework, and industry initiatives are positioned to accelerate expansion in the Indian milletts sector.

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