





Contribution of Non-alcoholic Beverage Sector to Indian Economic Growth & Atmanirbhar Bharat

A Report by
Indian Council for Research on International Economic Relations

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IBA INDIAN BEVERAGE ASSOCIATION

ICRIER

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LIST OF ABBREVIATIONS

AAGR	average annual growth rate
AARC	Action Alliance for Recycling Beverage Cartons
ABCL	Australian Beverages Council
ABIA	Brazilian Association of Food Industries
ABIR	Brazilian Association of Soft Drink and Non-Alcoholic Beverage Industries
AIR_TRAN	Air transport
AMIS	Agricultural Marketing Infrastructural Scheme
ASEAN	Association of Southeast Asian Nations
ASI	Annual Survey of Industries
BCI	Balance Calories Initiative
BMI	body mass index
BPL	Below Poverty Line
BRC	British Retail Consortium
CAGR	compound annual growth rate
CBOC	Conference Board of Canada
CCS	Cost of Cultivation of Principal Crops Studies
CFD	carbonated fruit drinks
CMIE	Centre for Monitoring Indian Economy
COVID-19	Coronavirus Pandemic
CSDs	carbonated soft drinks
CSO	Central Statistical Office
DGFT	Directorate General of Foreign Trade
DW	Durbin-Watson
ECSIP	European Competitiveness and Sustainable Industrial Policy
EoDB	Ease of Doing Business
EU	European Union
EUR	Euro
FAO	Food and Agriculture Organization
FC	Food crops
FDI	foreign direct investment
FOP	Frequency of Purchase
FoP	Front-of-Pack
FPOs	Farmer Producer Organisations
FRVEG	Fruits & vegetables
FSSAI	Food Safety and Standards Authority of India
GAP	Good Agricultural Practices
GBP	Great British Pound
GDP	gross domestic product
GST	goods and services tax
GVA	gross value added
HCCB	Hindustan Coca-Cola Beverages
HPMC	Horticulture Produce Marketing & Processing Corporation
HS	Harmonised System
IBA	Indian Beverage Association
IMF	International Monetary Fund
INR	Indian National Rupees
IO	Input-Output
IOTT	input-output transaction table
IWSR	International Wines and Spirits Record
MISC_FP	Miscellaneous Food Products
MISMANF	Miscellaneous manufacturers
MNCs	multinational companies
MoFPI	Ministry of Food Processing Industry
MoSPI	Ministry of Statistics, Planning and Implementation
MQ	Mining and Quarrying
MRP	Maximum Retail Price
MRSI	Market Research Society of India
MSE	Mean Square Error
MSMEs	Micro, Small and Medium Enterprises
MSP	Minimum Support Price
NABARD	National Bank for Agriculture and Rural Development
NALCBEV	Non-alcoholic Beverages
NAS	National Accounts Statistics
NCDs	non-communicable diseases
NFC_ALL	Non-food crops and allied
NIC	National Industrial Classification
NIP	Nutrition Information Panel

NSSO	National Statistical Survey Office
NZIER	New Zealand Institute of Economic Research
OTH_SER	Other Services
PAP_ETC	Paper, Paper Products and Newsprint
PET	Polyethylene terephthalate
PHP	Philippine peso
PKVY	Paramparagat Krishi Vikas Yojana
PLI	Production Linked Incentives
PMFBY	Pradhan Mantri Fasal Bima Yojana
PMKSY	Pradhan Mantri Krishi Sinchai Yojana
PWM	Plastic Waste Management
R&D	Research & Development
RBI	Reserve Bank of India
RSP	Retail Selling Price
RTD	ready-to-drink
SAM	Social Accounting Matrix
SDGs	Sustainable Development Goals
SDIL	Soft Drinks Industry Levy
SECs	socio-economic classes
SHC	Soil Health Card
SHG	Self Help Group
SMEs	Small And Medium Enterprises
SSBs	Sugar-sweetened Beverages
SUT	Supply and Use Table
SWRDM	Sustainable Water Resource Development and Management
TCL	Town Class
TTM	Trade and Transport Margin
UHDP	Ultra-High-Density Plantation
UK	United Kingdom
UPS	Usual Principal Status
USA/US	United States of America
USD	United States Dollar
USS	Usual Subsidiary Status
VAT	Value-Added Tax
VCL	Village Class
WAT_TRAN	Water Transport
WBCIS	Weather based Crop Insurance Scheme
WCO	World Customs Organization
WHO	World Health Organization

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Anita Praveen, IAS

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भारत सरकार
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Secretary
Government of India
Ministry of Food Processing Industries

Foreword

India has natural advantage to become a global non-alcoholic beverage processing hub. In terms of revenue generation by the sector, India ranks among the top 20 countries, with a compound annual growth rate (CAGR) of 14.5 per cent in terms of total sales volume and at 13.72 per cent in terms of total sales value in the past decade. With an increasing production of horticultural products, which was estimated to be 329.86 million metric tons in 2020-21, the highest ever, coupled with continuous government efforts to improve ease of doing business in the country, India can aspire and achieve its potential to be a global leader in the processing of non-alcoholic beverages. India also makes an attractive investment destination with growing per capita income, a large middle-class, the willingness of ever-growing young consumer segment to experiment with different products and evolving consumer lifestyle which are creating demand for ready-to-eat (RTE) and ready-to-drink (RTD) food products.

A study by the Indian Council for Research on International Economic Relations (ICRIER) has been commissioned by the Indian Beverage Association to analyse strengths, identify challenges and suggest a way forward for India in the field of processing of non-alcoholic beverages. Based on extensive data analysis, in-depth interactions with companies and their supply chain agents, and a field survey of farmers, the study has come out with some interesting findings. The sector faces unmet potential for growth and employment, less than one per cent foreign investment inflows and exports that are much behind what is required to become a USD17 trillion economy by 2047. The study also identified and analyzed some key issues such as the negative perception about the sector, large counterfeit product market, applicable goods and services taxes (GST) and requirement for alignment of the GST rates and the FSSAI product definition.

I hope that the findings of this report would help address the challenges in the growth and development of this sector and would be taken note of while designing the sector's tax policy. This would not only help the sector grow, but also make India one of the world's leading beverage processing hubs, aligned with the overall objective and vision for the food processing industry as we move towards "*Amrit Kaal*" for the next 25 years. I also extend my compliments to the ICRIER team for conducting a thorough study of the non-alcoholic beverage sector – both in terms of global best practices and the Indian market.

The Ministry of Food Processing Industries (MoFPI) targets supporting and encouraging the dynamic food processing sector. The ministry has launched a number of programmes in its endeavour like the most recent Production Linked Incentive scheme, to which the companies have responded positively. The sector can rest assured of ample support from MoFPI in its path of growth in future as well.

18 May, 2022

(Anita Praveen)

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EXECUTIVE SUMMARY

1. Background

India's aspiration to be a global leader in food processing and non-alcoholic beverages is a core component of the food processing industry. On the supply side, India is the largest global producer of several raw materials such as banana, mango, lime, lemon, papaya, milk and sugar used in manufacturing non-alcoholic beverages. Beverage processing will not only help reduce the wastage in the supply chain but enable the doubling of farmers' income, create jobs, and enhance investment in manufacturing. On the demand side, with a large middle-class and young consumers who are willing to experiment with different products, India is an attractive investment destination for beverage companies. In the past decade, many global and domestic companies, including start-ups, have invested in this sector and are experimenting with different products focusing on juice-based carbonated drinks, sports drinks, energy drinks, organic drinks, pulp/puree-based beverages, zero-calorie/no sugar drinks and other varieties of nutritious products. The government is supporting the sector through various schemes and subsidies. Yet, domestic production is much below potential and that of other developing countries in Association of Southeast Asian Nations (ASEAN) and exports are low. Estimates of the Ministry of Food Processing and Industries show that around 25 per cent to 30 per cent of fruits and vegetables are wasted in the supply chain.

Objective

The objective of the report is to understand the contribution of the non-alcoholic beverages sector towards the Indian economy, examine the strengths and best practices, identify challenges and suggest a way forward to make India one of the world's leading beverage processing hub as the country sets its vision for Amrit Kaal – India @2047

2. Methodology

The study is based on secondary data analysis and a primary survey. The secondary data has been used to (a) examine growth, recent trends and developments in the sector, globally and in India; (b) analyse retail sales, consumption trends and trade flows; (c) forecast future growth trends under different growth scenarios; and (d) examine the economic impact of the sector in terms of its contribution to the national economy through an input-output (IO) model.

Given the lack of disaggregated data on the non-alcoholic beverage sector, the primary survey captured the contribution of the sector to the economy, perception of the companies and their supply chain partners, issues that they face and what factors will enhance investment in this sector and help India develop as a global manufacturing hub. The survey covered 20 companies, 21 supply chain partners and over 500 farmers across the six states of Karnataka, Bihar, Andhra Pradesh, Himachal Pradesh, Tamil Nadu and Maharashtra. Farmers were divided into two equal groups – those in the supply chain of the beverage companies and those located in close proximity and producing the same crop but not a part of the supply chain of the beverage companies.

3. Key Findings

3.1 Global Overview

The global non-alcoholic beverage market was worth USD1180 billion in 2020 and is projected to reach USD2175 billion in 2026, with a compound annual growth rate (CAGR) of 7.3 per cent. In 2019, the United States of America (USA), China, Japan, Germany and the United Kingdom (UK) were the top five revenue generating markets, while India ranked 19th, much below other developing countries like Mexico (6th), Brazil (7th), Indonesia (8th) and Nigeria (10th). Global trade was USD77.36 billion in 2019.

Over 60 per cent of the global market was accounted for by carbonated soft drinks (CSDs), ready-to-drink (RTD) tea/coffee, energy drinks and sports drinks. The per capita consumption of CSDs is lower in India compared to other countries like the USA. Mineral water (packaged drinking water/ natural mineral water) has the highest growth projection in Asia, with India being one of the largest markets. Globally, there is an increase in health awareness and companies are innovating new products to cater to such need, leading to a proliferation of nutritious products. Sales through e-commerce channels are growing; there was a 50 per cent growth in sales through e-commerce between 2019 and 2020.

Limited Exports – Huge Untapped Potential

By product categories, in 2020, in fruit and vegetable juices (HS code 2009), India ranked 59th among global exporters while Brazil ranked first; in natural or artificial mineral waters and aerated waters (HS code 2201), India ranked 65th while France is the topmost exporter followed by China. Thus, in spite of being the topmost producer of many raw materials, India is a small player in global trade.

The report examined the regulations and best practices of several developed and developing countries and found that high taxes on sugar sweetened beverages (SSBs) have given mixed results, with high incidence of the burden of taxation on lower-income groups. The impact of higher taxes vary depending on the price elasticity of the product, income group and consumer purchase behaviour. Therefore, countries have adopted labelling, awareness campaigns and advertisement regulations to make consumers aware of high sugar content foods. International brands have been roped in by countries to make commitments to reduce sugar. Tax concessions and subsidies are given to healthier products.

3.2 Indian Market

In India, around 80 per cent of the non-alcoholic beverage sector is non-corporate/informal; therefore, it is difficult to estimate the sales and revenues of this sector. The sector has been growing between 2010 and 2019 at a growth rate of 14.5 per cent in terms of total sales volume, and 13.72 per cent in terms of total sales value. The market size was valued at USD12.15 billion in 2019 compared to USD3.5 billion in 2010. By product categories, Indians consume carbonated beverages the most, followed by bottled water and fruit beverages and juices. The growth rate is lower in the case of CSDs, while consumption in segments like mineral water, sports drinks, and tea/coffee based drinks is increasing. Existing companies are diversifying their product portfolio and many start-ups and small and medium-sized enterprises have entered this sector in the last 10 years. The survey found that 35 per cent of the companies have introduced new products in the Indian market, which include zero-sugar/ sugar free products and other products like tea/coffee based drinks and organic drinks.

The study found that the non-alcoholic beverage sector contributes significantly to the Indian economy in terms of value addition and job creation. The combined value added to the economy is estimated at INR7,91,539 million from upstream and downstream effect. The total job creation from this sector is estimated to be 6,91,491, which includes employment creation both in the upstream and downstream operation. The labour to output ratio for the non-alcoholic beverage sector is 0.49, which means that in order to produce INR1 crore of output in this sector, an estimated 4.9 persons are directly employed in this sector. The Input-Output model estimates that for every INR1 crore of output produced in the "non-alcoholic beverage sector", a total of 8.9 additional jobs are created in the economy due to both the direct as well as indirect impact. However, employment creation is still below potential, as processing is much lower than in other developing countries in the ASEAN or in China. Foreign investment inflows are below one per cent and exports are much behind what is required for India to become a USD17 trillion economy by 2047.

India's Exports vs. Exports from China and Thailand in 2020 (USD Million)

Country	HS Code 2009: Fruit Juice/ Vegetable Juices	HS Code 2201: Waters: natural or artificial mineral waters and aerated waters: without added sugar or sweetening matter	HS Code 2202: Waters: mineral and aerated waters: with added sugar or sweetening matter
China	541.32	660.10	202.79
Thailand	560.76	23.37	1,605.45
India	9.46	0.45	19.98

India's per capita sales (21.36 litres in 2018) is much lower than per capita sales in other developing countries like Philippines (111.89 litres) and Vietnam (69.75 litres). India's revenue per person was only USD8.89 in 2019, compared to around USD1030 in the USA, USD67.05 in China, USD148.94 in Brazil and USD275.20 in Mexico. While the market share of CSDs is the highest, the highest socio-economic class (SEC A) is moving away from the consumption of CSDs.

Purchase Volume by Socio-Economic Groups: CAGR (2012-13 to 2019-20) in Percentages

	Carbonated Soft Drinks	Mango-Based Drinks	Juices
SEC: A	-2.59	3.96	1.42
SEC: B	3.49	3.49	10.98
SEC: C	6.73	4.23	15.33
SEC: D/E	13.74	17.79	13.78

From a taxation perspective, if the highest socio-economic group is reducing the consumption of CSDs while lower socio-economic groups are increasing their consumption, higher taxes can be regressive.

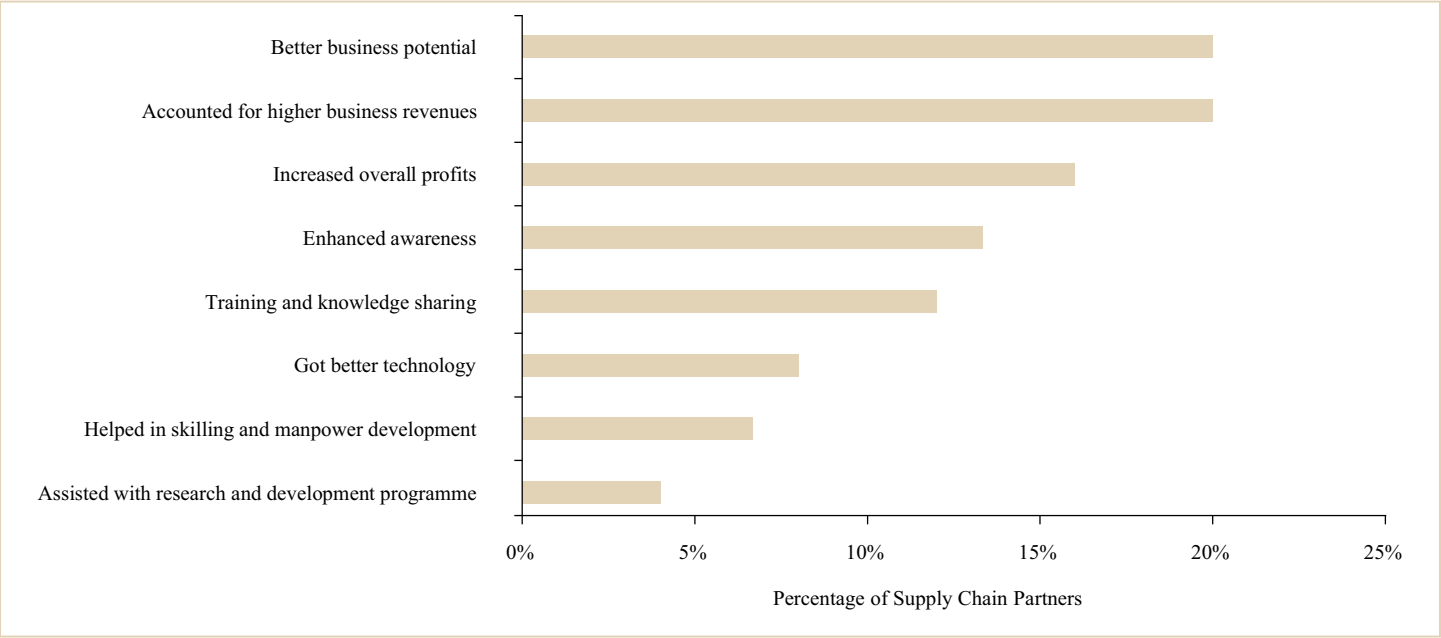
A growth forecasting model with three scenarios, namely realistic, optimistic, and pessimistic from 2020 to 2030 found that if the GDP grows at 7.88 per cent, 9.76 per cent, and 6.0 per cent respectively, the sector is expected to grow at 8.70 per cent in the realistic scenario, 10.77 per cent in the optimistic scenario and 6.66 per cent in the pessimistic scenario. The size of the market was estimated at INR671 billion in 2019, which is projected to reach around INR1472.33 billion in 2030, in the realistic scenario. Overall, the growth estimates have slowed down compared to the previous recorded growth of over 13 per cent for 2010-2019. Within similar food product categories, the growth of non-alcoholic beverages is lower than others like chocolate and sugar confectionery and salty snacks.

In the Financial Year (FY) 2018, 2019 and 2020, large companies in the CSD business have seen a decline in revenue, but small companies with innovative products in the beverages sector have seen revenue growth. Despite the highest tax rate of 40 per cent, tax contribution from CSD has declined in the past three years due to inadequate revenue growth.

4. Supply Chain Partner Survey

The supply-chain partners of the non-alcoholic beverage companies range from farmer producer organisations (FPOs),

Benefits to Supply Chain Partners: Primary Survey



Note: Multiple choice question.

contract manufacturers, packaging companies, and logistics service providers, to wholesalers/distributors. The survey showed that supply chain partners had several benefits from the partnership with non-alcoholic beverage companies – 32 per cent of the respondents attribute the share of contribution of the non-alcoholic beverage sector to their business to be above 50 per cent but below 75 per cent, while 21 per cent of respondents felt that the share is above 75 per cent but below 99 per cent. Around 16 per cent of the respondents were completely dependent on such collaborations for 100 per cent of their revenues.

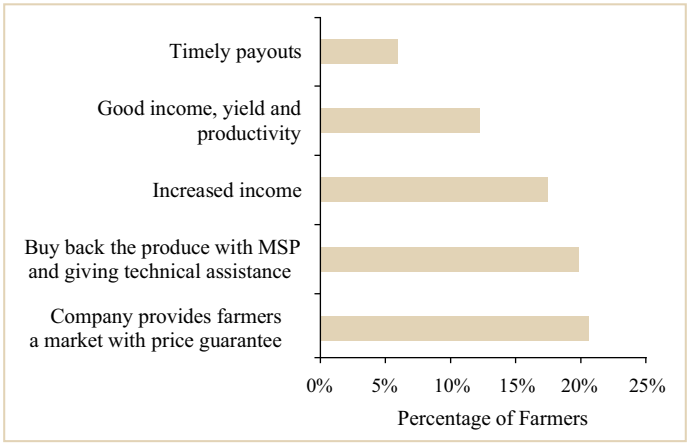
5. Farmers' Survey

Several of these non-alcoholic beverage companies source their fruits/vegetables and other raw materials directly from farmers. The greatest benefit the farmers received was a confirmed market with price guarantee. Farmers in the supply chain said that 51-75 per cent of their income comes from fruits supplied to non-alcoholic beverage companies and a majority saw an increase in productivity through various projects supported by these companies. These farmers are also more likely to export, have higher income and lower household debts.

Apple farmers in the supply chain of the non-alcoholic beverage companies got a 20 per cent higher yield per hectare following training by beverage companies, 5 per cent higher prices and earned 59 per cent more income per harvest season, vis-à-vis their counterparts located in the same district. In the case of mangoes, there has been 8 per cent higher yield and 23 per cent higher price for those in the company supply chain.

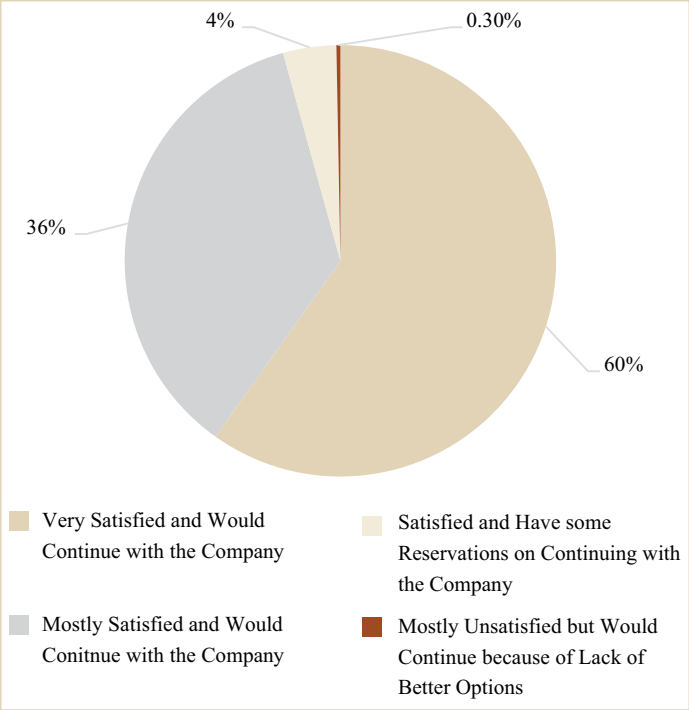
Benefits vary by product category and duration of engagement. Around 62 per cent of farmers received high yielding plant material from the companies. The other key areas of support included technology and equipment for drip irrigation.

Top 5 Benefits of Contract Farming for Farmers



Farmers identified the need for government support in three areas (a) financial assistance (b) training and knowledge enhancement and (c) logistics and transportation. Private partnership can play a major role in training, increasing productivity and improving infrastructure.

Overall Experience of Working with the Non-alcoholic Beverage Companies



6. Challenges

The top four challenges to the growth of this sector are (a) unfair competition from the unorganised sector and counterfeit products (b) negative perception regarding the industry (c) high goods and services tax (GST) and additional "sin tax" (as applied based on the Subramaniam Committee Report) and (d) infrastructure related issues. While the government is trying to improve infrastructure, the other three issues continue to pull down the growth of this sector. Irrespective of the ingredients used and nutrition content or scientific study and evidence in the context of India, there is a negative perception that non-alcoholic beverages are detrimental to health. This perception is so high that the Subramaniam Committee Report of 2015, titled "Revenue-neutral Rate and Structure of Rates for Goods and Services Tax", classified all carbonated drinks, irrespective of their nutrition content or sugar levels, as "sin goods" and imposed an additional compensation cess of 12 per cent as in the case of alcohol and tobacco while other food products like chocolates and sugar confectionery were not in this category. Along with this, the highest GST slab is imposed on CSDs of 28 per cent, taking the total tax burden to 40 per cent. At the same time, the largest segment, the unorganised sector, does not pay any taxes. To avoid taxes, there has been a large and growing counterfeit industry and the survey found gaps in (a) monitoring food safety and quality standards (b) trademark enforcement and protection and (c) efforts to bring the informal sector into a formal tax regime.

Most of the non-alcoholic beverages are taxed at a standard rate of 12-18 per cent or at the highest rate of 28 per cent. Further, in a country where there is a shortage of clean and safe drinking water, natural/mineral water and aerated water are taxed at 18 per cent when the quantity is less than 20- litres, but water packed in a 20-litre bottle is taxed at 12 per cent (discouraging smaller purchases) whereas in other countries, it is taxed at an average of 5 per cent as it is part of the Sustainable Development Goals (SDG - 6). Cross-country comparative analysis shows that India has one of the highest tax rates in non-alcoholic beverages globally.

Tax-related Challenges and Impacts

- **Low Per Capita Consumption and Low Revenue Collection:** As high tax slabs are not based on an analysis of consumer demand, the per capita consumption on these beverages in India is low, and thus results in lower revenue collection through taxes.
- **Burden of Taxes on Low-Income Groups:** As the consumption of CSDs among the highest socio-economic class is reducing and that in the lower socio-economic class is increasing, the tax burden for revenue generation falls on the low-income groups.
- **Increase in Counterfeit Products:** The rise in the prices of non-alcoholic beverages coupled with low affordability of a majority of the consumers has led to the sale of spurious/counterfeit products on the basis of cost arbitrage.
- **Deterring Scale Expansion and Investments:** A high tax rate deters companies from expanding and increasing their investments, preventing India from becoming a global beverage production hub despite being a large producer of fruits and vegetables.
- **Lack of a Level-playing Field with Similar Food Products:** Although SSBs are clubbed with other food products such as chocolate and sugar confectionery items, irrespective of the beverage type and nutrition level, other food products with similar health impact are not treated as adversely as CSDs in the current tax regime.

Further, GST rates are not aligned with the Food Safety and Standards Authority of India's (FSSAI) Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011, which beverage companies need to comply with. This regulation states that processed fruit beverages/fruit drinks/ready-to-serve fruit beverages require no less than 10 per cent fruit juice content (no less than 5 per cent for lime/lemon beverages). For carbonated fruit beverages or fruit drinks, the requirement is the same. However, a carbonated/aerated beverage attracts 40 per cent tax (28 per cent GST plus 12 per cent compensation cess), irrespective of the percentage of fruit content.

7. The Way Forward

Taking into consideration India's abundant supply of raw materials, its drive to promote manufacturing and the strong linkages of the non-alcoholic beverage sector with other sectors

like tourism and hospitality, government policies need to support and promote "Make in India". In the Union Budget of 2023-24, the GST rates should take into consideration the fruit pulp/puree/juices bought from Indian farmers and nutrition levels, and taxes should be designed in a way that it drives consumers to healthy consumption. For example, carbonated sugar-based drinks can have the highest GST slab of 28 per cent, but those with pulps/puree/juices should be at a lower tax slab. At the same time, to attract investment in manufacturing, non-alcoholic beverages should be taken out of the category of "sin goods" proposed by the Subramaniam Committee Report of 2015 and put in the category of food products like chocolate and confectionery. Further, healthier products like fruit juices/ beverages or mineral water should be levied the lowest tax. The GST tax slabs must also be aligned with FSSAI regulations.

With abundant raw materials, India has a natural advantage in producing fruits and vegetable based products. Currently, non-carbonated fruit and vegetable based juices and beverages (containing fruit pulp/juices in the range of 10-100 per cent) has a market size of approximately INR12,000 crore in revenue.

At the policy level, there is significant focus on improving farmers' income, which is possible only if beverage industry uses the fruit pulp/puree/juices bought from farmers, and hence, it is pertinent to look into taxes for beverages and juices made from fruits. To encourage the growth of the Indian fruit and vegetable based juice/beverage industry and Indian farmers, the report proposes that the tax on fruit pulp/puree-based products should be reduced to 5 per cent from 12 per cent, taking care of the inverted duty, if any.

It is important for the GST council to look at the data on their tax collection by different product categories over time, its impact on consumers of different income groups, and examine the experiences of other countries. Moderate taxation can lead to more revenue collection, enhance investment in R&D and product innovation, reduce supply chain wastages, increase farmers' income and make India one of the leading world beverage hubs.

Consumers should be encouraged to consume healthier products through awareness building programmes, labelling, etc. Companies may be encouraged through a subsidy policy to produce healthier products. Beverage companies and their associations should actively participate in government initiatives like the "Eat Right Campaign" of the FSSAI. There is need for more partnerships between companies, their associations and the government to address the negative perception and promote India as the world's beverage manufacturing hub and develop "Brand India" in this segment. There is need for more investment in research and product innovation and in linking more and more farmers to the domestic and export supply chain of beverage companies. As India signs multiple trade agreements, to promote exports, there is a need for a clear export strategy. Also, more partnership between companies, their association and the government, is required to address the negative perception and promote India as a leading global beverage manufacturing destination. The contributions of this sector need to be highlighted through regular data collection and presentation.

1

INTRODUCTION

Non-alcoholic beverages are a core component of the food processing industry and comprise all beverages that are alcohol-free and include sub-sectors, such as carbonated soft drinks (CSDs), carbonated fruit drinks (CFDs), fruit and vegetable juices, tea/coffee, sports drinks, energy drinks and mineral water. The global market for non-alcoholic beverages is large, accounting for almost 40 per cent of the overall beverage market, with many multinational companies and regional and domestic players operating in this segment.[1] However, there is no official data on the global market size. The sector realised a revenue of USD1180 billion in 2020, up from USD868 billion in 2013. It is expected to generate a revenue of USD2175 billion in 2026, with a compound annual growth rate (CAGR) of 7.3 per cent (Statista, 2021).

The major markets for non-alcoholic beverages are developed countries, owing to high incomes and consumer spending behaviour (Mukherjee et al, 2013). Among the developed countries, the United States of America (USA/US) and Europe are the top markets.[2] However, developing countries such as India and China are now fast-growing markets for non-alcoholic beverages due to the large population, rising middle class and proliferation of many products.

India is the second-largest producer of several fruits and vegetables in the world, which is a raw material in the production of non-alcoholic beverages. It is the topmost producer of bananas, mangoes, lime, lemon and papaya. It is the world's largest producer of milk and sugar.[3] With abundant raw materials, the country has a natural advantage in the manufacturing of non-alcoholic beverages, which is a key component of India's food processing industry. The sector has evolved significantly over the past years and has been a major contributor to the Indian economy in terms of output, exports, employment and investment (Mukherjee et al., 2013). With a population of 1.36 billion,[4] and a large middle class and young population willing to experiment with a variety of non-alcoholic beverages, the country is a fast-growing market for the non-alcoholic beverage sector. From 2010 to 2019, according to Euromonitor International data, the non-alcoholic beverages market[5] expanded at a CAGR of 14.49 per cent, in terms of total volume. Exports under this category have increased from USD13.44 million in 2015-16 to USD23.11 million in 2019-20 (an increase of approximately 72 per cent).[6] Data from the Annual Survey of Industries (ASI), 2017-18, indicate that 12.2 million workers are engaged in the organised beverage sector. Companies such as Coca-Cola India Private Limited and PepsiCo India together provide direct and indirect employment (through the procurement, supply and distribution network) to over 3,00,000 people at present.[7] Besides, the unorganised beverage sector also provides employment. It should be noted that the unorganised sector is generally more labour intensive than the organised sector.

In India, the non-alcoholic beverage sector has been experiencing growth in the past decade across various categories, especially juices, mineral water, and non-cola carbonates (especially lemon-based ones) due to demand side factors such as favourable demographics, higher income and rising aspirations of the middle class, rising affordability, growing spending on packaged products, and supply side factors such as innovations in product packaging and size, especially in rural India.[8] The consumer preference for healthy beverages has prompted companies in this sector to re-examine their product strategies and build a portfolio of multi-category product variants with zero calorie, no sugar or micro-nutrient content.

Globally, the non-alcoholic sector has strong backward and forward linkages. Processing of fruits and vegetables and modern supply chains can reduce wastage and help increase income across the value chain. In India, estimates by the Ministry of Food Processing and Industries (MoFPI) show

1. Authors' calculation. Extracted from https://www.statista.com/forecasts/696641/market-value-alcoholic-beverages-worldwide; https://www.statista.com/forecasts/1206691/market-value-non-alcoholic-beverages-worldwide (last accessed July 6, 2021)
2. Source: https://www.statista.com/forecasts/758664/revenue-of-the-non-alcoholic-drinks-market-worldwide-by-country (last accessed May 26, 2021)
3. Source: http://apeda.gov.in/apedawebsite/six_head_product/FFV.htm; http://www.fao.org/dairy-production-products/production/en/; http://www.fao.org/faostat/en/#rankings/countries_by_commodity; https://www.investindia.gov.in/sector/food-processing/fruits-vegetables (last accessed May 26, 2021)
4. Source: https://data.worldbank.org/indicator/SP.POP.TOTL?locations=IN (last accessed March 4, 2021). The latest available figure is for 2019.
5. Non-alcoholic beverages, in Euromonitor International, for the purpose of this study, comprises flavoured milk drinks, sour milk products, bottled water, carbonates, concentrates, 100 per cent juice, juice drinks, ready-to-drink (RTD) tea, energy drinks and sports drinks.
6. Source: https://tradestat.commerce.gov.in/eidb/ecom.asp (last accessed June 30, 2021). The data is for HS Code 2202.
7. Source: Compiled from http://www.in-beverage.org/cocacola.htm; Indian Beverage Association (in-beverage.org) (last accessed April 26, 2022)
8. Source: https://varunpepsi.com/wp-content/uploads/2019/03/VBL-Annual-Report-2018.pdf (last accessed March 3, 2021)

that around 25 per cent to 30 per cent of fruits and vegetables are wasted in the supply chain due to inadequate processing and logistics facilities, including lack of refrigerated storage, supply chain delays at interstate borders, poor transport and underdeveloped marketing channels. By sourcing directly from farmers, many non-alcoholic beverage companies contribute to an increase in farmers' incomes and welfare. They have set up state-of-the-art manufacturing facilities and have implemented best practices across the supply chain from packaging to logistics. They have also been implementing sustainable business and supporting government initiatives like "Make in India" and "*Aatmanirbhar Bharat*". Yet, there is no clear measure of the contribution of the sector to the Indian economy. The sector is characterised by various challenges, the primary among them being the negative perceptions regarding the impact of certain types of beverages on consumer health, due to which this sector has been clubbed with goods such as tobacco from a taxation perspective. In 2015, the Arvind Subramanian Committee on Possible Tax Rates under Goods and Services Tax (GST) recommended fixing a '*sin*' or *demerit* GST tax on commodities that create negative externalities for the economy (for example, carbon taxes, taxes on cars that create environmental pollution, taxes to address health concerns, and taxes on luxury goods, etc.), and proposed that a demerit rate of 40 per cent be fixed for sectors such as luxury cars, paan masala, tobacco and tobacco products and aerated beverages.[9] At present, aerated beverages are placed in the highest GST slab of 28 per cent with a compensation cess of 12 per cent (total 40 per cent), and non-aerated drinks (including fruit juice-based drinks) largely fall under the GST slab of 18 per cent or 12 per cent, depending on the percentage of fruit content. According to the Food Safety and Standards Authority of India (FSSAI) regulations, non-alcoholic beverages containing fruit content of more than 5 per cent cannot be classified as aerated waters, and 12 per cent GST rate is applicable instead of 18 or 28 per cent with an addition of 12 per cent compensation cess.[10]

Moreover, while the government has imposed a higher tax on aerated beverages and beverages with less than 5 per cent fruit content to deter consumption, it is incentivising production through various schemes such as the Production Linked Incentives (PLI) scheme,[11] or the *Pradhan Mantri Kisan SAMPADA Yojana* (Scheme for Agro-Marine Processing and Development of Agro-Processing Clusters),[12] without taking into account the fact that companies will only produce when there is demand for their products. Overall, the tax policy seems to ignore the contribution of the industry through its backward and forward linkages.

Beverage companies have voiced concern regarding the negative ripple effect of this high GST rate on the non-alcoholic beverage ecosystem, including on the ability of companies to invest across their value chains, and on research and innovation, but there is no recent comprehensive study on the contribution of this sector to the economy that can be used to justify their views and help in mitigating these negative perceptions. This study aims to address this lacuna.

1.1 Objective of the Study

This study (a) analyses the direct and indirect contribution of the non-alcoholic beverage sector to the Indian economy, focusing on its forward and backward linkages (b) presents some of the company-level best practices to address the negative perceptions and to show how non-alcoholic beverage companies have aligned themselves to the government agenda, policies and objectives (c) examines the taxation policy of select developed and developing countries to showcase best practices in taxation (d) identifies the key barriers that impede the growth of the sector and adversely affect the ease of doing business (EoDB) (e) identifies the impact of taxes on investment, research and innovation, etc., and points out how higher taxation can inhibit the sector's growth, and in light of these (f) suggests policy recommendations on how the non-alcoholic beverage industry can contribute to make India a bigger consumption economy in the next 5-10 years, and contribute to growth, employment, exports and foreign direct investment (FDI). The study also suggests what the industry should do and outlines a roadmap for the Indian Beverage Association (IBA) on how to address negative perceptions.

1.2 Coverage, Definition of the Sector

There is no universal definition and coverage of the non-alcoholic beverage sector, and the coverage of the sector varies across countries and regions (see Box 1.1 for some examples). Broadly, non-alcoholic beverages comprise all beverages that are alcohol-free. It includes a wide range of segments, such as CSDs, fruit and vegetable juices, ready-to-drink (RTD) tea/coffee, sports drinks, energy drinks and mineral water.

In India, the National Industrial Classification (NIC) 2008 is used to classify industries. Under this, food and beverages come under manufacture of beverages (Division 11), wholesale of food, beverages and tobacco (Group 463), retail of food, beverages and tobacco in specialised stores (Group 472) and food and beverages service activity (Division 56). From the perspective of manufacturing, the non-alcoholic beverage sector is classified as shown in Figure 1.1. Note that it excludes milk-based items (*kulfi*, ice cream and pouched milk) as well as coffee, tea and maté products.

9. Source: https://www.prsindia.org/sites/default/files/bill_files/Subramanian_Committee_Report_Summary-_RNR_for_GST.pdf (last accessed March 3, 2021)

10. Source: http://www.gstcouncil.gov.in/sites/default/files/CEA-rpt-rnr.pdf ; Tax fizz: Is fruit juice an aerated drink? - The Hindu BusinessLine (last accessed February 9, 2022)

11. Source: Production Linked Incentive (PLI) Schemes in India (investindia.gov.in) (last accessed January 31, 2022)

12. The Central Sector Scheme includes various schemes such as mega food parks, integrated cold chain and value addition infrastructure, and creation/expansion of food processing/preservation capacities. For more details refer *Pradhan Mantri Kisan SAMPADA Yojana* | Ministry of Food Processing Industries | GOI (mofpi.gov.in) (last accessed January 31, 2022)

Box 1.1

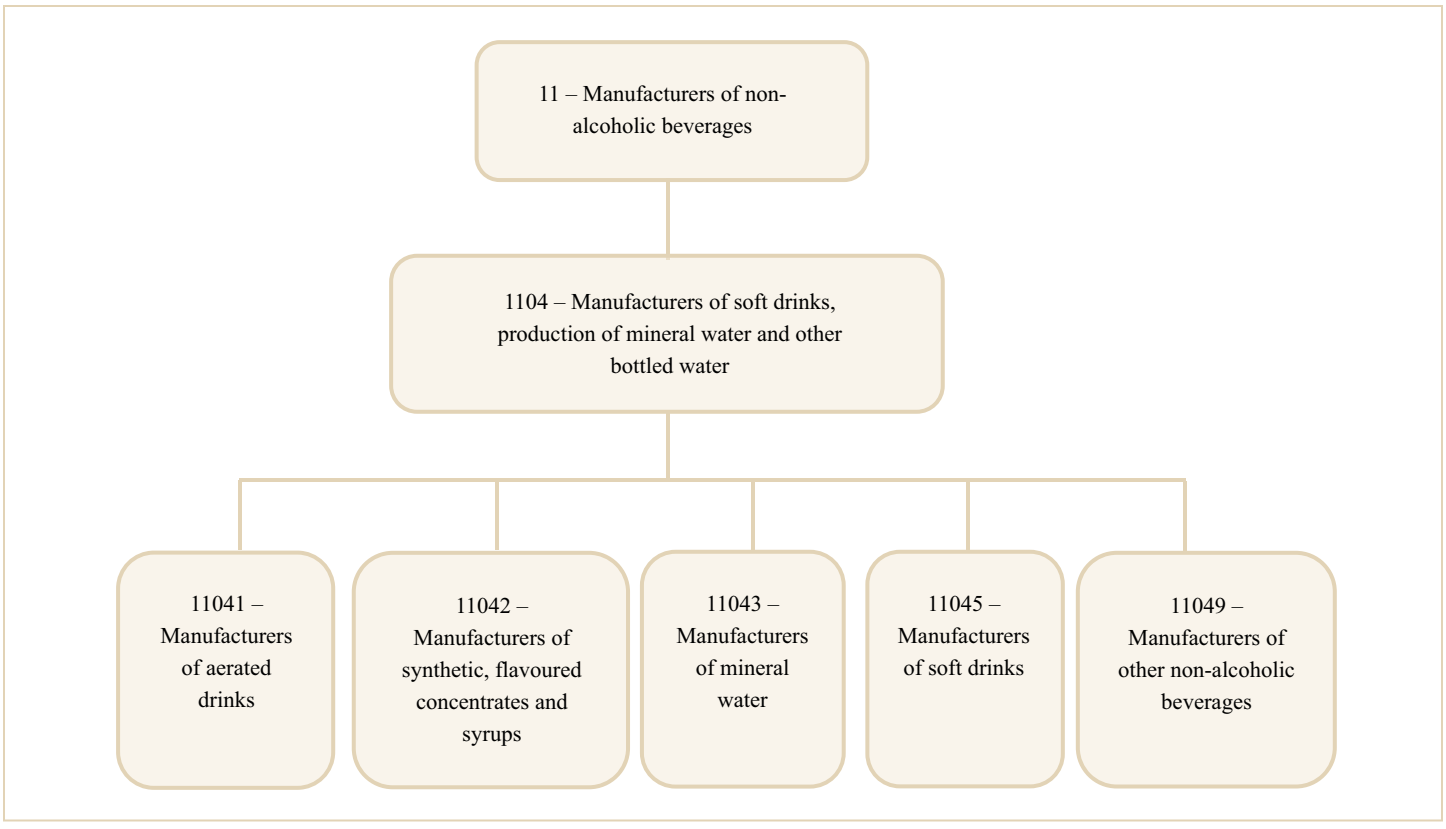
Definition and Coverage of Non-Alcoholic Beverages in Select Countries

- The **European Union (EU)** defines non-alcoholic beverages as "*non-carbonated or carbonated beverage made from potable, spring or natural mineral water with or without the addition of various nutritional substances, flavourings and/or food additives, with alcohol content that does not exceed 0.5 per cent by volume*", as per its notification no. 2008/269/LT, which was adopted in 2009. Subsequently, new beverage categories such as refreshing juice drinks and concentrated juice drinks were added to the list.
- In the **USA**, non-alcoholic beverages include (a) dry goods beverages; vegetable juices and drinks, ready-to-drink fruit drinks, isotonics, powdered soft drinks, mineral water, (b) dairy beverages like flavoured milk, (c) frozen beverages such as fruit drinks and fruit juices as per the US Department of Agriculture.
- As per the **Australia-New Zealand Food Standards Code, 2016,** non-alcoholic beverages refer to packaged water or a water-based beverage that contains other foods (other than alcoholic beverages) or an electrolyte drink but does not include a brewed soft drink.

Source: Compiled by authors from https://www.legislation.gov.au/Details/F2017C00721#:~:text=non%2Dalcoholic%20beverage%3A,include%20a%20brewed%20soft%20drink.; https://www.ers.usda.gov/webdocs/publications/44702/29810_err1_002.pdf?v=1827.3; https://ec.europa.eu/growth/tools-databases/tris/en/search/?trisaction=search.detail&year=2018&num=172 (last accessed May 17, 2021)

Figure 1.1

Classification of the Non-Alcoholic Beverage Sector as per National Industrial Classification (NIC), 2008



Source: Compiled from http://mospi.nic.in/sites/default/files/main_menu/national_industrial_classification/nic_2008_17apr09.pdf (last accessed March 5, 2021)

The non-alcoholic beverage sub-categories covered in this report are given in Table 1.1.

Table 1.1

Sub-Categories of Non-Alcoholic Beverages

Sub-Category	Definition
Mineral water	Includes packaged water, spring water, still water, flavoured and sparkling water
CSDs	Any flavoured beverage containing dissolved carbon dioxide
Energy drinks	Drinks that contain stimulants, such as caffeine, which boost energy levels
Fruit based drink	Drinks that contain up to 20-30 per cent fruit juice with sugar, colour and flavour
Fruit juices	Contains some percentage of fruit pulp
Organic/*ayurvedic* drinks	Drinks prepared from organic products
Sports drinks	Drinks used after exercise to replace lost body fluids
Tea/coffee based drinks	Iced tea, lemon tea, iced coffee, etc.
Vegetable juices	Contains some percentage of vegetable pulp
Vegetable or fruit concentrate/ powder/syrup	Liquid and powder concentrate that can be dissolved in other liquids such as water

Source: Compiled by authors from various sources.

1.3 Methodology

This study is based on secondary data and information analysis, and a primary survey as described below.

1.3.1 Secondary Data Analysis

For secondary data analysis, Statista, Euromonitor International's Passport and Kantar's World Panel India, have been used to analyse retail sales and consumption trends in the non-alcoholic beverage sector. While Euromonitor gives data in terms of retail sales at the national level, Kantar gives panel data on household consumption trends at both the state and all-India levels. Kantar has covered 81,200 households (66,100 households in urban areas and 15,100 households in rural areas). Further, it has covered 17 states and town classes by urban areas and 13 states and village classes by rural areas in its survey.

Table 1.2

Details of Data Compiled from Kantar and Euromonitor's Databases

Components (Source)	Purchase (Kantar)	Sales (Euromonitor)
Data components and indicators	State level: purchase volume/value	All India level analysis for key sales related parameters: volume/value of retail sales, per capita retail sales, sales by retail channel – store-based retailing (modern grocery retailers, traditional grocery retailers) and e-commerce and food service channels.
Geographical coverage	All-India and select states, both at the rural and urban level	All-India level
Data collection process	Kantar provides data on purchases of non-alcoholic beverages by various demographic characteristics. This data reflects products purchased by households through a primary survey of panel households. The dataset includes information on purchases that are taken home and excludes purchases for out-of-home consumption	Euromonitor uses various primary and secondary sources to arrive at the numbers for any specific sector. Primary sources use material from trade surveys and their own methodology for estimation. The secondary sources are largely from desk research, store checks and company research. Finally, data from all sources are collated together to estimate the sales for any product
Socioeconomic and demographic indicators	Age of household members, household size, no. of children and teenagers, town/village classes, Socio-economic Classifications (SECs) (by population)	-
Time Period	Financial Year – April to March (2010-11 to 2019-20)	Calendar Year – January to December (2005-2019)

Source: Compiled by Authors.

Table 1.3

Kantar World Panel Measures (Definitions)

Measure	Definition
Penetration Per cent	Number of Households where category or brand was purchased at least once in the given time period / Universe
Volume	Total Volumes bought by the Households for the respective segment in the considered time period
Avg Consumption	This is the Total Volume/Total Households of the respective segment
Value	This is the total sale of the respective segment in Rupees. The value is calculated on maximum retail prices (MRPs)
Avg Spent	It gives the average amount of Rupees spent by a household for the respective segment in the considered time period
Avg FOP	Frequency of Purchase (FOP)- number of months in the period considered in which the respective segment/brand was bought

However, it is important to note that there are some gaps in existing databases. First, no recent data is available from government sources for national level consumption for comparison of per capita purchase of each food group in each period with nationally available estimates of consumption. Thus, this analysis could not be done. Second, a comparison of Euromonitor's data could not be done with the Kantar Database as the sub-categories covered in the selected product categories do not match.

To analyse macro-economic trends, especially for forecasting purposes, including gross domestic product (GDP), private final consumption expenditure, disposable income, gross value added (GVA), etc., National Accounts Statistics (NAS) of the Ministry of Statistics, Planning and Implementation (MoSPI) have been used. To understand production trends and the growth rate of the food processing industry as a whole, and of the broad product categories included in our study, product-wise total output data is taken from the ASI. The latest available data is for the year 2017-18.

The Harmonised System (HS) of Classification of the World Customs Organization (WCO) has been used to understand trade in non-alcoholic beverages. The trade data on these HS categories have been compiled from the export-import data bank of the Directorate General of Foreign Trade (DGFT), Ministry of Commerce and Industry, at the HS 6-digit level, which is available for a fiscal year (the latest year being 2020-21). The non-alcoholic beverage sector has been broadly divided into three categories of 4-digit HS codes for this study. These are as follows:

Table 1.4

All HS Codes for Trade in Non-Alcoholic Beverages at 4-Digit Level

HS Code	Commodity Description
2009	Fruit Juices (including Grape Must)/Vegetable Juice unfermented and Not with Added Spirit W/N Sweetened
2201	Waters, including Natural or Artificial Mineral Waters and Aerated Waters, Not Containing Added Sugar or Other Sweeteners
2202	Waters, including Mineral Waters and Aerated Waters, Containing Added Sugar or Other Sweetening Matter or Flavoured

Note: * ITC HS Code of the Commodity has either been dropped or re-allocated from April 2019

Source: Compiled from Annual Export-Import Data Bank, Department of Commerce, Ministry of Commerce and Industry. Available at https://tradestat.commerce.gov.in/eidb/default.asp (last accessed August 13, 2021)

The GST rates have been extracted for the years 2018 to 2021 from various schedules and notifications of the Central Board of Indirect Taxes and Customs, Ministry of Finance, Department of Revenue.

- **Input-Output (IO) Modelling**

The economic impact of the non-alcoholic beverage sector in terms of output, value added and employment is estimated and presented through an input-output (IO) model in this chapter. The impact includes those arising from direct, indirect and induced effects. The impact has been quantified in two ways, downstream effects and upstream effects. The implication of measuring the direct downstream effects is to estimate the expected change in the values of macro indicators for these activities, given the change in demand arising from the growth of this sector.

To calculate these effects, the study team interacted with the businesses/stakeholders to collect financial information and employment numbers. In addition to this, information from a primary survey conducted exclusively for this study as well as from secondary sources such as Euromonitor International, Kantar and Statista have been collated. We have also drawn information from the Periodic Labour Force Survey for the year 2018-19 of MoSPI, Government of India. For the national level IO model, the authors have used the Supply and Use Table, published by MoSPI for 2015-16 and used inputs from the non-alcoholic beverage federation to reconcile the employment numbers for the non-alcoholic beverage sector.

- **Forecasting**

Forecasting the growth of demand/retail spending has been done at the all-India level. For this, the data from Euromonitor database has been utilised as it has a relatively longer time series data compared to the Kantar database, and because the database's product coverage is more aligned with the product categories selected for the study (see Table 1.1). Econometric modelling has been used to arrive at the best possible equation. The variable used for forecasting purpose is 'retail sales data' for each of the categories, while for 'predictor variables', a set of

macro-economic data has been used (see Section 5 for details). Three forecasting scenarios have been developed, namely (a) most likely (realistic), (b) optimistic and (c) pessimistic to provide a range within which the market is likely to grow. The growth assumptions for forecasting are based on the macro-economic forecasts of the Reserve Bank of India (RBI) and the International Monetary Fund (IMF).

1.3.2 Primary Survey

The objectives of the survey were the following:

A. Assess the direct and indirect contributions of the non-alcoholic beverage sector to the Indian economy, focusing on its forward and backward linkages

B. Document some of the company-level best practices to address negative perceptions

C. Understand how non-alcoholic beverage companies have aligned themselves to the government agenda, policies, and objectives – for example, how companies have worked with farmers and have helped to improve yield, income, etc., of farmers producing fruits and vegetables

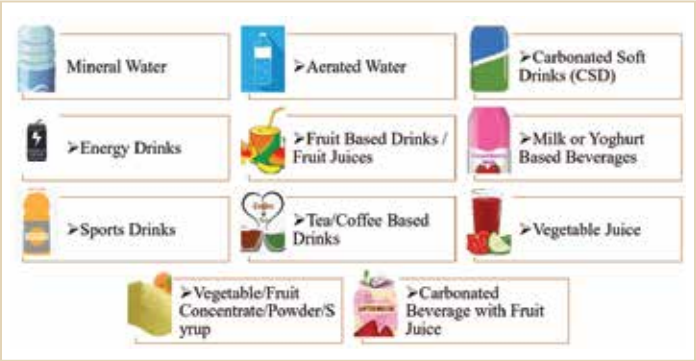
D. Identify the key barriers that impede the growth of the non-alcoholic beverage sector

E. Get company inputs regarding how the government can help the sector grow

Three sets of semi-structured questionnaires were designed to facilitate consultations. These included companies, their supply chain partners and farmers (please refer to Appendix B.1 to B.3 for the questionnaires). The survey for non-alcoholic beverage companies were conducted in both online and offline modes. A total of 20 beverage companies shared their feedback on the company questionnaire of which 7 companies participated online and the remaining 13 companies shared their inputs during face-to-face interviews. The companies surveyed covered the product categories listed in Figure 1.2.

Figure 1.2

Products Covered by the Survey



Both members of IBA and non-members were covered in the survey. To identify non-members, we used the databases of the Centre for Monitoring Indian Economy (CMIE). We did not receive responses from companies in certain segments like organic/*ayurvedic* drinks.

The beverage companies introduced the survey team to their supply chain partners; this helped capture the entire supply chain of the companies. The survey team captured the feedback of 21 supply chain partners in total with 8 online responses and 13 responses through face-to-face interaction with respondents. The supply chain partners covered both the backward and forward linkages of the beverage companies and included the following:

- Manufacturing/Processing units
- Packaging/Bottling units
- Warehouse/Cold Storage
- Farmer Groups (Farmers Producers Organisations (FPOs)/ Self Help Groups (SHGs)/Co-operatives)
- Logistics/Transport/Reefer containers
- Distribution – Domestic & Exports

In addition, farmers are a key player in the supply chain. The farmer interviews were conducted across six states, namely, Karnataka, Bihar, Andhra Pradesh, Himachal Pradesh, Tamil Nadu and Maharashtra. The survey covered fruit farmers. A total of 503 farmer interviews were conducted in these states; of these, 251 farmers were not a part of the supply chain of the beverage companies, and the remaining 252 farmers were found to be directly associated with non-alcoholic beverage companies and/or their supply chain partners.

Sixty-eight of the 503 farmer interviews were received online through the FPOs, who helped get the questionnaires filled by the farmers, and the remaining 435 interviews were conducted face-to-face through field visits and stratified random sampling. These farmers were primarily engaged in mango, apple, litchi, pomegranate and watermelon cultivation. The break-up of farmers interviews across states covered is given in Table 1.5. It is important to note that a majority of the farmers are engaged in mango production followed by those engaged in the production of apples and litchees. Orange for juices is mostly imported from countries like Brazil.

Table 1.5

Distribution of Farmers by Location and Products

Fruit	State	District		Total
Apple	Himachal Pradesh	Shimla	Solan	101
Litchi	Bihar	Muzaffarpur		102
Mango	Andhra Pradesh	Chittoor		141
Mango	Karnataka	Kolar	Dharwad	143
Mango	Maharashtra	Ratnagiri	Sindhudurg	4
Mango	Tamil Nadu	Krishnagiri	Dharmapuri	5
Pomegranate	Maharashtra	Nashik	Solapur	4
Watermelon	Maharashtra	Sangli		3

1.4 Layout

The layout of the report is as follows.

Chapter 2 provides a global overview of the non-alcoholic beverage sector. It looks at the growth of the market in terms of the size, volume and performance of this sector, the impact of the COVID-19 pandemic on the sector and the rationale for taxation of non-alcoholic beverages globally.

Chapter 3 provides an overview of the non-alcoholic beverage sector in India, focusing on trends and developments. It analyses the changes in consumption pattern across various categories of non-alcoholic beverages and among different SECs to see which groups are likely to consume which products more, and hence, are likely to be more affected by taxation. The next chapter, Chapter 4, presents the input-output model of the direct and indirect contribution of the non-alcoholic beverage sector to the Indian economy.

Chapter 5 presents future growth projections of the market size of non-alcoholic beverages from 2020 to 2030. It looks at the growth under three different scenarios, namely, realistic, pessimistic, and optimistic.

Chapter 6 and Chapter 7 present the primary survey of non-alcoholic beverage companies and their supply chain partners respectively to understand the contribution of these companies and their supply chain partners to the Indian economy. The survey also tried to understand their willingness to align with the Indian government's development agenda and their commitment to meet the United Nations Sustainable Development Goals (SDGs) by 2030.

The results of the survey of 503 farmers – 252 farmers supplying to beverage companies or Group A and 251 farmers not in partnership/contract/in the supply chain of beverage companies or Group B – spread across 16 districts in six Indian states, are presented in Chapter 8. The purpose of the survey was to understand if being part of a non-alcoholic beverage company's supply chain benefitted the farmers, vis-*à*-vis those who are not part of a beverage company's supply chain.

Chapter 9 presents the challenges faced by the non-alcoholic beverage companies and their supply chain partners and the ability of the companies to contribute to the SDGs. There are commonalities in the challenges across the supply chain from farmers to the companies.

Chapter 10 presents the key findings of this report and the way forward. It makes recommendations on how challenges can be addressed, lists the learnings from global best practices and how policies can be designed based on data and sector analysis.

GLOBAL OVERVIEW OF THE NON-ALCOHOLIC BEVERAGE SECTOR

2

This chapter presents a global overview of the non-alcoholic beverage sector. It presents the market size, revenue and growth forecasts for the sector and the factors that have enabled the sector to grow. The rationale behind using tax as a measure to curb consumption of non-alcoholic beverages has also been discussed, followed by its impact. Other measures that companies have taken for sugar and calorie reduction in their products to mitigate negative perceptions associated with the sector are elucidated in the end. The chapter also discusses the impact of the COVID-19 pandemic on the non-alcoholic beverage sector.

2.1 Market Size, Revenue and Expected Growth

There is no official data on the non-alcoholic beverage sector in most countries, making it difficult to estimate the global market size. However, various organisations have tried to estimate the market size; a few such examples are presented in Table 2.1. The studies have taken into account the impact of the COVID-19 pandemic as well. Since the coverage of the sector varies across

Table 2.1

Estimated Market Size (Current and Forecast) of the Global Non-Alcoholic Beverage Sector

In USD billion

Name of Study	Study Time Frame	Coverage	Market Size (Year)	CAGR* (per cent)	Expected Market Size (Year)
Fortune Business Insights	2016-2027	1. Carbonated Soft Drinks 2. Ready-to-Drink Coffee & Tea 3. Mineral Water 4. Fruit Beverages 5. Others 5.1 Sports Drinks 5.2 Functional Drinks	919.13 (2019)	8.20	1257.77 (2027)
Market Data Forecast	2020-2026	1. Soft Drinks 2. Mineral Water 3. Tea and Coffee 4. Juice 5. Dairy Drinks	967.3 (2020)	6.00	1600 (2026)
The Business Research Company	2020-2025	1. Coffee and Tea 2. Soft Drinks and Ice	378.38 (2020)	7.00	532.3 (2025)
Statista Consumer Outlook	2021-2025	1. Mineral Water 2. Soft Drinks 2.1. Carbonated Soft Drinks 2.2. Non-Carbonated Soft Drinks 3. Juices 3.1. Orange Juice 3.2. Apple Juice 3.3. Grapefruit Juice 3.4. Pineapple Juice 3.5. Grape Juice 3.6. Other Juice, Juice Mixtures & Smoothies	1,038 (2020)	5.68	1,441 (2025)

Note: *Compound Annual Growth Rate

Source: Compiled by authors from https://www.marketdataforecast.com/market-reports/non-alcoholic-beverage-market; https://www.fortunebusinessinsights.com/industry-reports/non-alcoholic-beverages-market-101927; https://www.thebusinessresearchcompany.com/report-preview1.aspx?Rid=non%20alcoholic%20beverages%20global%20market%20report%202020%2030%20covid%2019%20impact%20and%20recovery ; https://www.statista.com/outlook/cmo/non-alcoholic-drinks/worldwide (last accessed June 30, 2021)

these studies and cover different sub-sectors, it is difficult to compare them. For example, the Fortune Business Insight study, which has among the most comprehensive coverage of the sub-sectors, found that the non-alcoholic beverage sector will have a CAGR of over 8 per cent with 2019 as the base year, despite the pandemic shock on consumption patterns and supply chains. According to another report (Statista, 2020), sectoral revenue has grown from USD759 billion in 2012 to USD1,125 billion in 2019. It is expected to increase at a CAGR of 5.68 per cent from 2021 to 2025.

Factors such as globalisation, trade liberalisation, economic growth, increased per capita income, and better awareness of beverages and drinks among consumers have led to the growth of this sector. A reduction in trade barriers across economies made it easier for companies to establish supply chains. At the same time, companies are trying to cater to local market demand by customising products for the consumers. This is leading to product innovation and development.

2.1.1 Key Markets

Globally, developed countries, such as the United States of America (US), Japan, Germany, and the United Kingdom (UK) generate the highest revenues in the non-alcoholic beverage market. In 2019, the US market generated the highest revenue worldwide (see Table 2.2), and is estimated to have earned a revenue of USD414.83 billion; it is expected grow at a CAGR of 5.33 per cent (2021 to 2026).[13]

Developing countries made up 50 per cent of the top ten markets generating the most revenue in 2019. These countries are listed in Table 2.2. China is the only developing nation in the top five markets. The Chinese non-alcoholic beverage market generated a revenue of USD126.957 billion in 2020-21, and is expected to grow at a CAGR of 6.33 per cent (2021 to 2026).[14] India was in the top 20, having generated revenue of USD12.174 billion, in 2019. The sector is expected to grow at a rate of 7.44 per cent (with base year 2020).[15]

Table 2.2 also shows the per person revenue generated from the sale of non-alcoholic beverages in the top ten markets. The US has the highest revenue per person at USD1030; it is followed by Germany and the UK, respectively. Compared to these markets, India has a lot of growth potential, considering it is one of the top producers of raw materials for this sector.

2.1.2 Sub-Sectors

Although the product type and classification vary, all market research reports recognise the CSDs segment as the largest. According to the Fortune Business Insight study, CSDs accounted for 39.80 per cent of the total market share in 2019. Further, the market share of CSDs combined with non-CSDs like RTD teas, energy drinks and sports drinks, captured 65 per cent of the market in 2019, as reported by Statista (2020). Their combined revenue was USD728 billion in the same year. The sub-sectors were followed by bottled/mineral water (USD292 billion), and juices (USD104 billion) in 2019 (Statista, 2020).

Table 2.2

Top 10 Markets with Highest Non-Alcoholic Drinks Revenue and Revenue per Person

In USD Billion; USD

Rank	Country	Revenue (in 2019)	Revenue per Person* (in 2019)
1	United States	338.184	1,030.01
2	China	94.408	67.05
3	Japan	62.641	496.11
4	Germany	53.034	638.25
5	United Kingdom	37.113	551.87
6	Mexico	35.109	275.20
7	Brazil	31.434	148.94
8	Indonesia	24.646	91.07
9	France	24.387	362.64
10	Nigeria	22.419	111.56
19	*India*	*12.174*	*8.89*

Note: *Authors calculations. Population Data has been extracted from World Bank Data. Available at https://data.worldbank.org/indicator/SP.POP.TOTL?end=2019&locations=US-CN-JP-DE-GB-MX-BR-ID-FR-NG-IN&start=2019&view=bar (last accessed April 01, 2022)

Source: https://www.statista.com/forecasts/758664/revenue-of-the-non-alcoholic-drinks-market-worldwide-by-country (last accessed July 19, 2021)

In terms of per capita revenue growth, Table 2.3 shows that the bottled water segment has the highest growth rate in Europe, America and Asia, compared to the CSD, non-CSD and juice sub-sectors. Although CSDs and non-CSDs make up for the largest consumed segment in the US with a market volume of USD310.946 billion (2020-21),[16] the bottled water sub-sector has the highest growth projection for 2021-2025 (see Table 2.3). In Asia, the bottled water segment is the largest in the Chinese and Indian markets. The Chinese bottled water segment was worth USD66.524 billion, while the Indian bottled water segment was worth USD6.262 billion in 2020.[17]

Regions such as the Asia Pacific, followed by the Middle East and Africa, were expected to register significant growth in the non-alcoholic beverage sector prior to the COVID-19 pandemic, given that these are emerging economies with increasing levels of disposable income, westernisation and modernisation among consumers, and contain various untapped markets. According to the International Wines and Spirits Record (IWSR), these

13. Source: https://www.statista.com/outlook/cmo/non-alcoholic-drinks/united-states (last accessed July 19, 2021)

14. Source: https://www.statista.com/outlook/cmo/non-alcoholic-drinks/china (last accessed July 19, 2021)

15. Source: https://www.statista.com/outlook/cmo/non-alcoholic-drinks/india (last accessed July 19, 2021)

16. Source: https://www.statista.com/outlook/cmo/non-alcoholic-drinks/united-states (last accessed July 19, 2021)

17. Source: https://www.statista.com/outlook/cmo/non-alcoholic-drinks/china; https://www.statista.com/outlook/cmo/non-alcoholic-drinks/india (last accessed July 19, 2021)

markets will register significant growth in coming years as consumers are looking to reduce their alcohol intake.[18] It is also evident from Table 2.3 that, developing regions (such as Asia and Africa) are expected to have higher growth rates in comparison to developed regions such as Europe, Australia and America.

Table 2.3

Future Growth Projection in Revenue Per Capita by Markets and by Sub-Sectors

In per cent

Market	Carbonated Soft Drinks and Non-Carbonated Soft Drinks	Bottled Water	Juices
Europe	2.2	4.8	2.8
America	2.2	6.6	1.7
Asia	5.9	7.2	3.6
Africa	13.8	5.1	9.8
Australia and Oceania	1.0	1.4	(-) 0.98

Note: * Compound Annual Growth Rate / average growth rate per year from 2012 to 2025

Source: Extracted and compiled from https://www.statista.com/outlook/cmo/non-alcoholic-drinks/worldwide (last accessed June 2, 2021)

2.1.3 Demand and Supply Factors for Growth

Apart from the factors mentioned in Section 2.1, a shift in consumer demand has been a major driver of this sector's growth. With increasing health awareness and concerns regarding obesity, there is a shift in consumer preferences towards functional beverages with lower calorie content such as energy drinks, RTD coffee and tea, juices, and bottled water products and away from carbonated beverages, especially among young adults who are changing their diet patterns.[19] To accommodate these changes in consumer tastes and preferences, companies have been focussing on developing new products. For instance, the demand for tea and coffee are expected to register among the highest growth rates due to the beneficial health effects associated with antioxidants. RTD tea and coffee have shown a growth rate of 24 per cent between 2015 and 2019,[20] while sugared soft drink companies like PepsiCo are slowly transitioning to low-sugar drinks. Between 2006 and 2017, the company increased the share of healthier products from 38 per cent to 50 per cent in its portfolio (Statista, 2020).

2.1.4 Store and Non-Store Sales: Reaching the Consumers

There are two major ways for a retailer to deliver its products to the market and to consumers – through offline/store-based/ brick and mortar stores and online retail sales. Traditional neighbourhood stores or *kirana* stores serve as the offline vendors for the majority of food and beverage sales in countries like India while corporate retailers with supermarkets and hypermarkets cater to most of the demand in developed countries. With an e-commerce penetration of 51 per cent in 2021, technological developments in retail sales channels have increased online retail sales and helped food and beverage companies to cater to a broader consumer base (Statista, 2021).

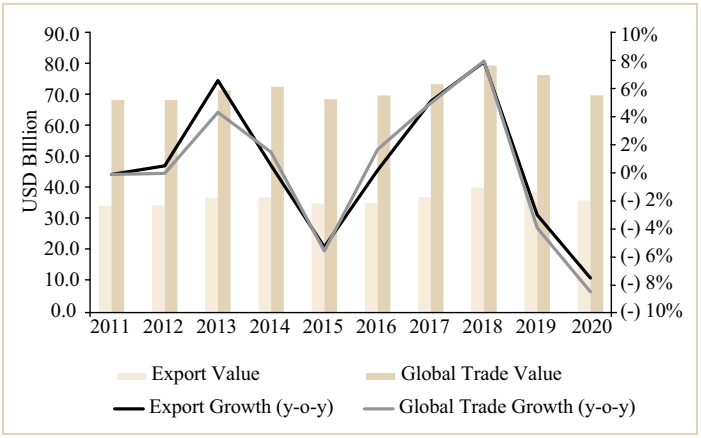
E-commerce beverage sales, along with traditional stores/offline stores, is expected to be approximately USD22.4 billion in 2020, up from USD14.9 billion in 2019, registering a growth of almost 50 per cent.[21] Given this, beverage companies around the world have increasingly begun looking at developing new online stores along with store-based retail to cash in on this opportunity.[22]

2.2 Global Trade in Non-Alcoholic Beverages

Global trade in non-alcoholic beverages has fluctuated considerably over the last 10 years. The global trade value for this sector increased from USD69.21 billion in 2011 to USD77.36 billion in 2019. In 2020, the trade value fell to USD70.8 billion due to the pandemic. While, global exports increased at a CAGR of 1.43 per cent from 2011 to 2019, the export level dropped by 7.50 per cent, from USD39.42 billion in 2019 to USD36.46 billion in 2020. This was primarily due to pandemic-related supply chain disruptions.

Figure 2.1

Global Exports of and Global Trade in Non-Alcoholic Beverages



Source: Extracted and Compiled from UNComtrade. Available at https://comtrade.un.org/data/ (last accessed August 16, 2021)

2.2.1 Global Trade by Product Category

Across the three sub-categories, at the 4-digit HS Code level, the fruit and vegetable juices sub-category, and mineral and

18. Source: https://www.industryarc.com/Research/Nonalcoholic-Beverage-Market-Research-504979; https://www.fortunebusinessinsights.com/industry-reports/non-alcoholic-beverages-market-101927 (last accessed July 19 2021)

19. Source: https://www.grandviewresearch.com/industry-analysis/nonalcoholic-beverage-market (last accessed April 18, 2021)

20. Source: https://www.fortunebusinessinsights.com/industry-reports/non-alcoholic-beverages-market-101927 (last accessed May 18, 2021)

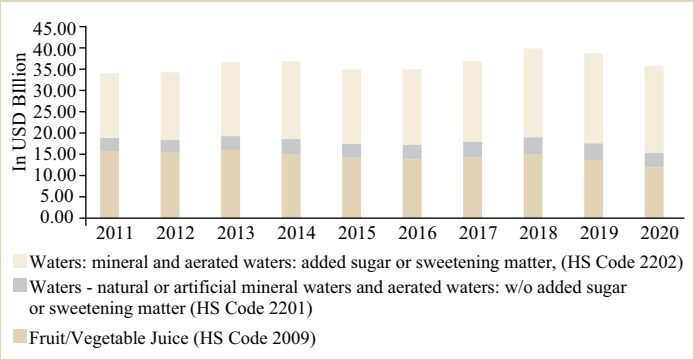
21. Source: https://stir-tea-coffee.com/tea-report/asia-dominates-non-alcoholic-beverage-market/ (last accessed May 18, 2021)

22. Source: https://www.fortunebusinessinsights.com/industry-reports/non-alcoholic-beverages-market-101927 (last accessed May 18, 2021)

aerated waters with added sugar/sweetening matter account for almost 90 per cent of global trade while natural/artificial mineral water and aerated water without added sugar/sweetening matter account for less than 10 per cent of total global exports.

Figure 2.2

Global Exports (by Product Category)



Source: Extracted and Compiled from UNComtrade. Available at https://comtrade.un.org/data/ (last accessed August 16, 2021)

Exports of the aerated waters with added sugar/sweetening matter sub-category of beverages registered the highest CAGR of 3.73 per cent from 2011 to 2019, followed by natural/artificial mineral waters and aerated water without added sugar/sweetening matter with a CAGR 2.64 per cent.

In 2020, while exports of fruit and vegetable juices and water without added sugar/sweetening matter fell by over 12 per cent, water with added sugar/sweetening matter decreased by only 3.04 per cent.

2.2.2 Global Trade by Key Markets

Table 2.4 gives the top exporting and importing countries for the sub-categories of non-alcoholic beverages. Brazil has been the topmost exporting country for fruit and vegetable juices, despite its total exports declining from USD1.925 billion in 2010 to USD1.603 billion in 2020. The Netherlands, the US and Germany are the other countries in the top five fruit and vegetable juice exporting nations. India's share across all three categories of exports was less than 1 per cent in 2020.

The US was the top importing country in 2020 across all the categories. Apart from China, all other top importing nations are developed countries. India has a percentage share of less than 1 per cent across all three categories in terms of imports. Thus, overall, despite being a key player in raw material production, India has been a small player in global beverages trade, which is a cause for concern for our farmers (this has been discussed later). Value addition and farmers' income are low when fruits and vegetables are mostly consumed raw and are not processed. Processing also enhances the shelf-life of the produce and reduces wastage.

Table 2.4

Top 5 Exporting and Importing Countries (by Product Categories) for 2020

Share in Percentage

Rank	Exporters	Share	Rank	Importers	Share
Fruit Juice/ Vegetable Juice (HS Code 2009)					
1	Brazil	13.49	1	US	15.12
2	Netherlands	12.77	2	Germany	10.87
3	Germany	7.95	3	Netherlands	10.02
4	Spain	7.56	4	France	9.25
5	US	6.58	5	United Kingdom	8.53
59	*India*	*0.08*	*49*	*India*	*0.22*
Waters: natural or artificial mineral waters and aerated waters: w/o added sugar or sweetening matter (HS Code 2201)					
1	France	23.83	1	US	22.38
2	China	19.05	2	China, Hong Kong SAR	17.39
3	Italy	17.92	3	Belgium	6.90
4	US	5.13	4	Germany	6.12
5	Belgium	3.64	5	Japan	5.16
59	*India*	*0.01*	*65*	*India*	*0.04*
Waters: mineral and aerated waters: added sugar or sweetening matter, (HS Code 2202)					
1	Austria	13.49	1	US	20.59
2	Netherlands	9.44	2	Germany	7.81
3	Germany	9.14	3	United Kingdom	6.94
4	Switzerland	8.89	4	Canada	5.03
5	Thailand	7.73	5	Netherlands	4.70
55	*India*	*0.10*	*39*	*India*	*0.53*

Source: Extracted and compiled from UNComtrade. Available at https://comtrade.un.org/data/ (last accessed July 27, 2021)

2.3 Key Players in the Global Non-Alcoholic Beverage Sector

The global market for non-alcoholic beverages comprises multinational companies (MNCs), national, regional and local players. Corporate players include global MNCs such as Red Bull GmbH, Nestle Group and regional companies such as Red Bull India Private Limited and Nestle India Limited (India) (see Table 2.5). In developing and emerging economies such as China and India, there are large number of non-corporate/informal players. In India, there are family-owned businesses/non-corporate players in the entire beverage supply chain – from manufacturing to retailing and they contribute significantly in terms of the number of players but in terms of revenue, the corporate sector takes the lead. There are also a large number of small and medium enterprises (SMEs) that manufacture and/or sell their own products or operate as contract manufacturers for large corporate companies (including beverage companies and for the own brand of corporate retailers). Table 2.5 lists the non-alcoholic beverage companies present in the Fortune Global 500 list, including details related to revenue, employment, and country of origin.

Table 2.5

Select Multinational Beverage Companies in the Fortune Global 500 List

Revenue in USD Million

Company and Rank	Total Revenue	Revenue from Beverages	Revenue from Beverages (per cent)	Country of Origin	Number of countries where the company has operations	Number of countries where the product is sold	Number of Employees	Popular Products
Nestle (82)	92,107	--	30	Switzerland	189	>200	2,91,000	Nesquik (powder, syrup and ready to drink), Nestea (Iced Tea, ready to drink, instant mixes), Nescafe Coffee, Nestle Waters
PepsiCo (160)	70,372	22,559* (North America only)	32	US	150	>150	2,67,000	Pepsi, Mirinda, Mountain Dew, 7UP, Slice, Lipton, Tropicana, Aquafina, Sting
The Coca Cola company (335)	37,266	37,266	100	US	>200	>200	86,200	Coca-Cola, Diet Coke, Thums Up, Fanta, Limca, Sprite, Maaza, Minute Maid
Danone (453)	28,303	2,190	7.7	Spain	55	120	1,02,449	Water (Evian, Aqua, Volvic), Actimel fermented milk, Silk product range
Fomento Economico Mexicano (482)	26,319	9,231	35	Mexico	>10	>15	3,14,656	Coca Cola FEMSA (Powerade, Monster, del Valle, fuzetea, ciel, Ades
Mondelez International (495)	25,868	Figures not available	N/A	US	>160	>160	80,000	Tang, Bourn Vita, Cadbury, Toblerone, Milka, 5 star

*Note**: The revenue from beverages is USD22,559 million for PepsiCo Beverages North America. No specific figure for beverages in other continents is available. For Nestle, an approximate percentage has been provided; there is no specific figure on revenue numbers available in the public domain.

Source: Compiled from various sources (https://fortune.com/global500/2020/search/?fg500_industry=Beverages; https://www.ab-inbev.com/our-locations/; https://www.reuters.com/companies/HEIO.BE; https://www.statista.com/statistics/233371/net-operating-revenues-of-the-coca-cola-company-worldwide/ (last accessed May 17, 2021)

The global market structure for this sector also varies across categories and geographies. For CSDs, energy drinks and sports drinks, companies usually require significant investments to set up production facilities, access raw materials and promote the product. These categories contain global brands such as Coke and Pepsi in CSDs and Red Bull in energy drinks. The market for products such as CSDs is oligopolistic, with a few large players at the global level and very few regional players. For fruit/vegetable juices and fruit/vegetable based drinks, there are a large number of non-corporate players, especially in emerging economies. These players have easy access to raw materials that are locally available. Even if there are established brands in these markets, non-branded products are also popular. Hence, the markets for these categories are more competitive, with a large number of global corporate players as well as regional corporate and non-corporate players.

In a scenario where there is increasing health awareness and heightened concerns among consumers, global non-alcoholic beverage companies are aligning their portfolios to reflect changing consumer preferences. Companies like the Coca-Cola Company and PepsiCo Inc. have started improving the nutritional profile of their products, providing adequate information on packaging and re-working packaging sizes. For example, in India, products such as 7UP and Pepsi are available in 7.5 oz. mini cans.[23]

23. Source: https://www.pepsico.com/sustainability/focus-areas/product (last accessed May 18, 2021)

2.4 Issues Related to Non-Alcoholic Beverages

Globally, a number of studies have indicated that the consumption of non-alcoholic beverages containing high amounts of sugar can lead to chronic diseases such as obesity, type-2 diabetes and weight gain (Malik et al., 2006 and Vartanian et al., 2007). A research study by Taylor et al. (2005) pointed out that the consumption of sugar-sweetened beverages (SSBs) is linked to an increase in the body mass index (BMI) in both adults and children. Studies also suggested that frequent intake of liquids containing sugar may lead to dental erosion and tooth decay (Department of Health and Ageing, National Health and Medical Research Council, Australian Government, 2013). Apart from the issue of chronic diseases, the non-alcoholic beverage industry also suffers from health hazards due to the sale of counterfeit beverages. Often, consumers are unable to identify counterfeit products due to reasons such as reuse of packaging material from the recycled market or imitating bottle caps, which pose a health hazard depending on the substances used for such production.[24]

Given these findings, health agencies (government and independent) have recommended certain measures to impose restrictions on SSB consumption. For example, the World Health

24. Source: https://economictimes.indiatimes.com/why-make-in-india-when-you-fake-in-india/articleshow/52088848.cms?from=mdr (last accessed August 23, 2021)

Organization (WHO, 2017a) has advocated, countries levy an effective tax as a measure to reduce consumption. Apart from taxation, a variety of other measures such as labelling guidelines, advertising regulations, awareness programmes, campaigns, etc., are undertaken by governments across the world to monitor the consumption of non-alcoholic beverages, to provide guidance to both producers and consumers and to reduce consumption of SSBs. Often, these measures are taken by the government in consultation with the industry. For example, Law No. 20.606 on the Nutritional Composition of Food and Food Advertising introduced in Chile in June 2016 comprises four measures: it (a) mandates the use of "high in" labels or "front-of-package stickers", warning about sugar/salt/saturated fat content; (b) prohibits commercial sale in all schools nationwide of a product

Box 2.1

Pledges taken by Select Non-Alcoholic Beverage Councils for Calorie and Sugar Reduction

• Australia

Major beverage players like Coca Cola, PepsiCo and Asahi Lifestyle Beverages unanimously signed a pledge as 'signatory members' and committed to reducing sugar content (average reduction in all drinks) by 20 per cent by 2025. The commitment applies to all categories of non-alcoholic drinks represented by Members of the Australian Beverages Council Ltd (ABCL) that are signatories to the pledge, including manufacturers of carbonated soft drinks, energy drinks, sports and electrolyte drinks, frozen drinks, mineral and packaged waters, juice and fruit drinks, cordials, iced teas, ready-to-drink coffees, flavoured milk products and flavoured plant milks. As per the second progress report released by ABCL in 2020, signatories have already achieved a 12 per cent reduction in sugar per 100 ml across their product range from 2015-20. This has primarily been achieved by reformulation of existing drinks, augmenting sales of low or no sugar drinks like sparkling water, sports drinks and introduction of new beverage options in the market with zero or no sugar. Other methods that have been deployed to achieve this target include increase in marketing and promotion of low/no sugar varieties, introducing smaller pack sizes, investing to impart nutritional literacy, promoting packaged mineral water, capping sugar content and supporting and empowering consumers to properly understand and interpret product labels containing important nutritional information.

• Brazil

The Ministry of Health, the Brazilian Association of Soft Drinks and Non-Alcoholic Beverages (ABIR), the Brazilian Association of Food Industries (ABIA) as well as other concerned agencies jointly signed a non-binding agreement and committed to reducing sugar content in industrialised foods and beverages in Brazil citing it as a 'national goal'. It set a target to decrease sugar consumption of Brazilians to less than 10 per cent of their daily calorie intake. Specifically in the non-alcoholic drinks segment, the organisations committed they would (1) reach a maximum sugar content of 11.0 g/100 ml by the end of the year 2020 and 10.6 g/100 ml by the end of the year 2022 for the soft drinks category and (2) reach a maximum sugar content of 11.4 g/100 ml by the end of the year 2020 and 10.7 g/100 ml by the end of the year 2022 for the juices category.

• Canada

The Canadian Beverage Association along with its various members (Coca Cola, PepsiCo, Canada Dry Mott's Inc.) in partnership with the Conference Board of Canada (CBOC) launched the Balance Calories Initiative (BCI) in order to reduce the calorie intake through non-alcoholic drinks by 20 per cent per person in Canada between 2014 and 2025. In December 2020, a CBOC report confirmed that the initiative was performing exceedingly well and there had already been a 16 per cent decline in calorie intake from beverages by 2020.

The Beverage Industry in Canada has also undertaken several initiatives to promote a healthy and balanced diet among the population. This includes imposing restrictions on marketing of soft drinks to children and removing high calorie drinks from schools. Further, through its Clear on Calorie initiative, it supported and implemented nutritional information (including calories and sugar) labelling on the front label of the product, increasing visibility and consumer-friendliness. It was intended to empower and educate the consumer and then allow them to make well-informed choices after taking into consideration all aspects of each beverage at the point of purchase. Beverage players have also frequently introduced new low-calorie drink varieties, whose share has now increased to almost 50 per cent of the total beverage volume in the market. Due to these comprehensive and impactful measures, the beverage industry in Canada had helped achieve a 20 per cent reduction in beverage calorie consumption per capita between 2004 and 2014.

Source: Compiled by authors from various sources (https://www.australianbeverages.org/wp-content/uploads/2020/10/Second-progress-report_Sugar-reduction-pledge_F_21102020.pdf; https://www.australianbeverages.org/initiatives-advocacy-information/sugar-reduction-pledge/signatories/; https://icba-bigtree.s3.amazonaws.com/files/resources/termo-de-compromisso-reducao-acucar-eng.pdf; https://balancecalories.ca/wp-content/uploads/2020/12/V7-24837_Issue-Briefing_Finding-Balance_Balance-Calories-Initiative.pdf;https://www.canadianbeverage.ca/industry-initiatives/balance-calories/; https://www.canadianbeverage.ca/industry-initiatives/clear-on-calories/#:~:text=Clear%20on%20Calories%20 is%20a,at%20every%20point%20of%20purchase)

labelled "high in" sugar/salt/saturated fat content, as defined by the Ministry of Health; (c) prohibits targeting the advertising of any product high in sugar/salt/saturated fat content (as defined by the Ministry of Health) at children under 14 years of age; and (d) mandates the inclusion of educational and physical activities that promote healthy eating habits and warn about the effects of diets high in sugar/salt/saturated fat (Food and Agriculture Organization (FAO) and Pan American Health Organisation, 2019) among pre-school, elementary and secondary schools in the country. A study by Scarpelli et al. (2020) found that this law had a positive impact on the market; foods high in total sugar/salt/saturated fat content were withdrawn from the market, along with the reformulation of products in the sugar drinks group. Non-alcoholic beverage councils from countries such as Australia, Brazil and Canada have taken a sugar or calorie reduction pledge (see Box 2.1 for details). For example, in 2018, the Australian Beverage Council announced a pledge to unanimously reduce sugar in all soft drinks (across all categories) by 20 per cent by 2025 (refer Box 2.1 for details).[25]

The kind of beverages that fall under the purview of the sugar tax needs to be noted, as each country has different considerations in this regard.

One of the most common fiscal measures to impose restrictions and monitor sugar consumption is the 'sugar tax', which aims to reduce childhood obesity, reduce the risk of chronic diseases and promote a healthier diet among the population. The 'sugar tax' as an intervention method has been discussed in the following subsections. It is then followed by the impact and effectiveness of these measures in subsection 2.4.3.

2.4.1 SSBs and Taxation

Although WHO labels tax on SSBs as a health tax due to the negative health impact (for example, increasing the chance of obesity),[26] they cannot be equated with goods like tobacco in terms of their impact on the society (see Box 2.2 for details of sin tax).

Table 2.6 shows the various tax rates levied on select goods and non-alcoholic beverages across a few select countries. It is evident from the table that there is a difference in the tax rates imposed on alcoholic beverages, tobacco products and non-alcoholic beverages and SSBs. For example, in Chile, SSBs are taxed at a value added tax (VAT) rate of 10-18 per cent, depending on the sugar levels in the drink, while alcoholic beverages and tobacco products are taxed at 19 per cent.

Box 2.2

Sin Goods and Taxes

Sin taxes are most often imposed to discourage the consumption of goods and services which are considered unhealthy, degrading or otherwise socially undesirable due to the perceived negative effects on consumers themselves.

Alcoholic beverages and tobacco are the two most common goods which attract a sin tax. The aim of the sin tax is to increase the retail price of these products, making them more expensive to obtain, as well as to raise the revenue generated from these taxes which can be used for the funding of other welfare programmes. For example, in Sweden, the excess tax collected from gambling is used to help people with gambling problems.

Source: https://www.business-standard.com/about/what-is-sin-tax (last accessed May 25, 2021) and https://journalofindia.com/demerit-goods-under-GST (last accessed May 25, 2021).

2.4.2 Taxation on Sugary Beverages as an Intervention Measure

The WHO is an advocate of taxation on sugary beverages as a measure to reduce the consumption of sugary drinks. The tax is based on the assumption that levying an excise tax on beverages containing sugar may result in higher retail prices of SSBs, discouraging consumption among households especially those from lower socio-economic backgrounds who are disproportionately affected by diet-related illnesses. A sugar tax may also lead to increased sales of healthy beverage alternatives like plain water, fruit/vegetable based drinks and fruit/vegetable juices; beverage manufacturers may be incentivised to reformulate their products and reduce the sugar content present. It can also raise substantial revenue that can be deployed towards public welfare and other health programmes or initiatives (Obesity Policy Coalition, 2019 and WHO, 2017b).

Globally, there are two commonly practised methods of levying an excise tax on SSBs – the ad-valorem tax and specific excise tax (see Figure 2.3 for definition and country examples). Excise tax by nature is paid by the manufacturer/importer/distributor and, in most cases, is passed on to the end consumer through an increase in the retail price level of the product.

In a few countries, tax policies differentiate between non-alcoholic and alcoholic beverages, while some countries do not distinguish between them. Denmark is an example where the tax rate on both alcoholic and non-alcoholic beverages are the same. Denmark has a VAT rate of 25 per cent for all. It does not offer a reduced rate or any exemptions (see Table 2.6)[27]. For countries that distinguish between the two types of beverages,

25. Source: https://www.foodnavigator-asia.com/Article/2020/05/19/Not-a-taxing-question-Australian-sugar-sweetened-beverage-consumption-slumps-as-obesity-rates-continue-to-soar (last accessed May 4, 2021)

26. Source: https://www.who.int/health-topics/health-taxes#tab=tab_1 (last accessed May 27, 2021)

27. Source: https://taxfoundation.org/value-added-tax-2021-vat-rates-in-europe/ (last accessed May 31, 2021).

Table 2.6

Select Examples of Tax Rates across Countries

In per cent

Country	Tax Rates		
	Alcoholic Beverages (Beer/Wine/ Others) *	Tobacco Products*	Non-Alcoholic Beverages
Australia	10	10	• Standard 10% for all goods • no sugar tax
Chile	19	19	• 10% on all sugary drinks with less than 6.25 g of sugar per 100 ml • 18% on all sugary drinks with >6.25 g per 100 ml of sugar
Denmark	25	25	• 25% for all beverages
France	20	20	• Reduced VAT of 10% on fruit juices, lemonade and water for immediate consumption; 5.5% if container allows for conservation • 5g of added sugar per litre taxed at EUR0.055 (USD0.630) per litre • 10g of added sugar at EUR0.135 (USD0.155)
India	Alcohol comes under the State List and remains out of the GST framework	28% GST + varied cesses**	• product-wise GST rates imposed; bottled water is taxed at 12% and 18%; fruit and vegetable juices/fruit juice based drinks are taxed at 12%; tea/ coffee based drinks are taxed at 18% • carbonated beverages (CSDs, CFDs and caffeinated drinks) have a total tax of 40% (28% GST + 12% compensation cess)
New Zealand	15	15	• Standard 15% on all goods • no sugar tax
Sweden	25	25	• reduced VAT of 12% for non-alcoholic beverages such as mineral water, fruit juices and lemonade
UK	20	20	• standard VAT of 20% is applicable on carbonated drinks such as lemonade and cola • zero VAT on beverages such as milk and milk flavoured drinks, tea, coffee • GBP0.18 per litre (USD0.25) for drinks with 5-8 g total sugar per 100 ml • GBP0.24 per litre (USD0.34) on drinks with >8 g total sugar per 100 ml

Note: *As of January 1, 2020.
** For detailed cess rates, refer https://cbic-gst.gov.in/gst-goods-services-rates.html (last accessed August 13, 2021)

Source: Authors' compilation. Extracted from Consumption Tax Trends 2020: VAT/GST and Excise Rates, Trends and Policy Issues and Taxes on Sugar-Sweetened Beverages: International Evidence and Experiences. Available at https://www.oecd-ilibrary.org/sites/fc2d6da5-en/index.html?itemId=/content/component/fc2d6da5-en#component-d1e38860; https://openknowledge.worldbank.org/bitstream/handle/10986/33969/Support-for-Sugary-Drinks-Taxes-Taxes-on-Sugar-Sweetened-Beverages-Summary-of-International-Evidence-and-Experiences.pdf?sequence=6; and https://www.avalara.com/vatlive/en/vat-rates/international-vat-and-gst-rates.html; https://www.gov.uk/guidance/food-products-and-vat-notice-70114; https://www.gov.uk/vat-rates; and https://becompliant.tax/vat-rates-france/#MANUFACTURING_Manufacture_of_beverages (last accessed April 01, 2022)

Figure 2.3

Commonly Practised Tax Methods

• Ad-Valorem Tax

• The ad-valorem tax is calculated as a percentage of the wholesale or retail price of the beverage. An ad-valorem tax may not be very effective in reducing absolute consumption of SSBs as it can lead to down trading. Examples of countries imposing ad valorem taxes are Chile, where the value added tax (VAT) system is followed, and India, which imposed the goods and services tax (GST) on non-alcoholic beverages.

• Specific Excise Tax

Here, the tax rate is a constant per chosen unit. For example, it can be (a) volumetric, based on the quantity of the liquid, or (b) based on the sugar content per 100 ml. Mexico and the Philippines are two countries that follow volume-based taxes, that is, tax rates are imposed per litre of the non-alcoholic beverage in consideration. On the other hand, the UK and France are countries that tax sugary drinks based on the sugar content per 100 ml.

Source: Compiled by authors from various sources (https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002596; https://www.obesityevidencehub.org.au/collections/prevention/the-case-for-a-tax-on-sweetened-sugary-drinks#cite1543; https://www.who.int/bulletin/volumes/97/2/18-220459/en/; https://sunpc.org.pk/wp-content/uploads/2019/05/190328_UNICEF_Sugar_Tax_Briefing_R09.pdf; and https://www.who.int/docs/default-source/searo/obesity/technical-report-taxation-for-sugar-sweetened-beverages-in-sri-lanka.pdf?sfvrsn=ca7d262b_2 (last accessed May 27, 2021)

the sugar level present in non-alcoholic beverages is considered for levying a tax. The tax thus imposed is referred to as the 'sugar tax'. For example, as mentioned in Figure 2.3 above, in the Philippines, the Tax Reform for Acceleration and Inclusion Bill (December 2017) imposes PHP6.00 per litre (approximately USD0.11)[28] for beverages sweetened with caloric or non-caloric sweeteners (except high-fructose corn syrup) and PHP12.00 per litre (approximately USD0.23) for beverages sweetened with high-fructose corn syrup.[29] Similarly in Mexico, while the standard VAT rate is 16 per cent for all beverages, from 2014 onwards, the government also levies an excise tax of MXN1 per litre (approximately USD5.5) on all non-alcoholic beverages with added sugar. The excise tax is also imposed on sodas, flavoured and sweetened water drinks, energy/sports drinks with added sugar but excludes beverages with artificial sweeteners and 100 per cent juices.[30]

28. Exchange rate PHP1=USD0.019 as on February 08, 2022.

29. Source: https://www.who.int/bulletin/volumes/97/2/18-220459/en/ (last accessed May 12, 2021).

30. Source: https://www.obesityevidencehub.org.au/collections/prevention/the-case-for-a-tax-on-sweetenedsugary-drinks#cite1543 (last accessed May 12, 2021)

The 'sugar tax' can be broadly divided into two types; higher taxes for high-sugar content drinks and lower taxes or no taxes for low-sugar content or zero-sugar drinks. France and the UK are two countries that tax SSBs based on the level of sugar content in the drink (as mentioned in Figure 2.3). In April 2018, the UK government introduced the Soft Drinks Industry Levy (SDIL), a two-tiered excise tax applicable on drinks with high sugar concentrations. For SSBs with a sugar content of more than 8g/100 ml, the tax rate applicable is GBP0.24 per litre (approximately USD0.33),[31] and for drinks with a sugar content between 5g and 8g/100ml, the tax rate is GBP0.18 per litre (approximately USD0.24). Drinks having a sugar content of less than 5g are not taxed. Pure fruit and vegetable juices and milk drinks are also exempt.[32] In France, the tax has been imposed on the quantity of sugar present in the beverage since 2018 – 5g of added sugar per litre got taxed at EUR0.05 (approximately USD0.63) per litre and 10g at EUR0.13 (approximately USD0.15) (UNICEF, 2019). In Sweden, non-alcoholic beverages such as mineral water, fruit juices and lemonade are taxed at a VAT of 12 per cent. Apart from this, the country does not have an excise duty or sugar tax specific to SSBs.[33]

2.4.3 Impact and Effectiveness of Tax Interventions

Despite various countries introducing taxation measures to monitor the consumption of sugary beverages, several studies (Colchero et al., 2015; McKinsey Global Institute, 2014; European Competitiveness and Sustainable Industrial Policy (ECSIP) Consortium, 2014; New Zealand Institute of Economic Research (NZIER), 2017) have pointed out that the taxes have had a negative impact on SSB consumers. A few of these are the regressive nature of 'sugar tax' as the burden falls on the poorest sections of society, the loss in jobs and revenues, and an increase in the sale of spurious/low-quality products (refer to Figure 2.4 for the studies). In the UK, for example, studies estimated that the introduction of SDIL can cause more than 4000 job losses across the country and lower the non-alcoholic beverage industry's contribution to gross domestic product (GDP) by GBP132 million (approximately USD178.91 million) when multiplier effects are included.[34] The 'sugar tax' in Denmark serves as another example. Until 2013, Danish people were taxed EUR0.22 per litre (approximately USD0.25)[35] of SSBs. In 2014, Denmark fully eliminated the sugar tax because it was causing regional job losses and other economic losses as residents were travelling to neighbouring countries and border shops to purchase untaxed sugary foods and beverages. The Danish government expected a loss of about EUR60.35 million (approximately USD68.96 million) per year in revenue due to scrapping of the sugar tax but added that it was likely to recover about EUR38.9 million (USD44.45 million) that was being lost to illegal soft drink sales and people crossing the border to buy cheaper soda.[36]

Apart from these, studies such as ECSIP Consortium (2014) and NZIER (2017) also reported that 'sugar taxes' have not had the desired effect of reducing sugar consumption levels and decreasing obesity. Existing research (Sharma et al., 2014; Grummon et al., 2019; Nakamura et al., 2018; Campos-Vazquez and Medina-Cortina, 2019; and ECSIP Consortium, 2014) found that sugar taxes have affected different socio-economic classes in different ways. In some cases, consumption of SSBs has decreased only among the poorer sections of society, thus indicating that as per-capita income increases, consumption will not reduce. Hence, if a country is growing and per capita income is rising, this tax may not be effective. Some studies on the impact of taxation of sugary beverages are presented in Figure 2.4.

In some cases, due to higher taxes, manufacturers may reformulate their products. For example, an analysis of available soft drinks in UK supermarkets between 2015 and 2019 revealed that the percentage of drinks with sugar content of more than 5g/100 ml fell from 49 per cent to 15 per cent as many manufacturers decided to reformulate their products to reduce the sugar content just below the 5g threshold after the UK government introduced the SDIL (see section 2.4.2).[37] Similarly, Thailand introduced taxation of SSBs by sugar content in 2017 with a proposed increase in specific tax rates every two years until 2023. Such measures may encourage manufacturers of such products to change their production processes to reduce fat/sugar content so as to reduce the tax burden (ECSIP Consortium, 2014).

Here, it is also important to understand that higher taxation on a product can deter consumption only if the product is characterised by high price elasticity. If the objective is to reduce consumption, the price elasticity of each product needs to be looked at before deciding upon tax rates. In the context of SSBs, studies (Guerrero-López et al., 2017; and Colchero et al., 2015) have found that due to high own price elasticity[38] of SSBs, a rise in the rate of taxes (and prices of the beverages) can decrease the consumption of SSBs.

Given that tax has been an ineffective intervention method, several countries have not implemented a 'sugar tax' and have

31. Exchange rate 1GBP = USD1.36 as on February 8, 2022.

32. Source: https://www.eurekalert.org/pub_releases/2021-03/bcos030821.php#:~:text=Under%20the%20SDIL%2C%20drinks%20with,no%20levy)%20are%20not%20taxes&text=Purchases%20of%20confectionery%20and%20alcoholic%20drinks%20did%20not%20change (last accessed April 21, 2021)

33. Source: https://becompliant.tax/vat-rates-sweden/#MANUFACTURING_Manufacture_of_beverages; https://taxfoundation.org/value-added-tax-2021-vat-rates-in-europe/ (last accessed May 31, 2021)

34. Source: https://www.britishsoftdrinks.com/write/MediaUploads/Publications/The_Economic_Impact_of_the_ Soft_Drinks_Levy.pdf (last accessed May 1, 2021)

35. Exchange rate used EUR1 = USD 1.14 as on February 8, 2022

36. Source: https://www.foodnavigator.com/Article/2013/04/25/Denmark-to-scrap-decades-old-soft-drink-tax (last accessed May 4, 2021)

37. Source: https://www.britishsoftdrinks.com/Position-Statements/soft-drinks-tax (last accessed May 31, 2021).

38. The own price elasticity of demand is the percentage change in the quantity demanded of a good or service divided by the percentage change in the price. This shows the responsiveness of the quantity demanded to a change in price.

Figure 2.4

Impact of Taxation Measures on Sugar Beverages Study Findings

Colchero et al., 2015

- The decline in consumption of taxable SSBs was sharper among poorer households – a 17 per cent decline in purchase against a 6 per cent decline among households of a higher socioeconomic status while sales of untaxed beverages increased by 4 per cent
- Price elasticity for SSBs in Mexico is -1.16, signifying a 11.6 per cent fall in consumption if price rose by 10 per cent

McKinsey Global Institute, 2014

- Portion control and product reformulation as measures of intervention had the highest impact on reducing obesity, while taxation was among the lowest impact interventions. That is, taxation as an intervention method has a limited impact on the health benefits and changes in BMI.

European Competitiveness and Sustainable Industrial Policy (ECSIP) Consortium, 2014

- In cases where there is a decline in demand for taxed goods, consumers may move to cheaper versions of the taxed product.
- The study cites the example of the excise duty in Finland, imposed on soft drinks, along with confectionery items. As consumption of substitute products not liable to taxation increased, it remained unclear how consumption of sugary products declined.
- Taxes targeting certain food and beverage items in as many as four European Union (EU) countries (Denmark, Finland, France and Hungary) also failed to have any discernible effect on public health.

New Zealand Institute of Economic Research (NZIER), 2017

- Sugar tax is an ineffective and regressive way of reducing obesity.

Sharma et al., 2014

•Volumetric taxes may be more effective than ad valorem taxes in reducing consumption of SSBs and thus, helping weight loss and obesity control.

Grummon et al., 2019

- Volumetric taxes that do not consider the sugar concentration "are poorly targeted to the actual health harms from SSBs". Therefore, it recommended taxing the quantity of sugar in beverages rather than the volume of liquid, suggesting that a design change like this has the potential to boost sugar tax health benefits and overall economic gains by approximately 30 per cent.

Nakamura et al., 2018

- Studying household-level grocery-purchasing data from 2010 to 2015 in Chile, the authors concluded that the SSB tax implemented in 2014, led to no significant decrease in the purchase volume of all soft drinks although there was a highly significant decrease in the monthly purchase volume of the higher-taxed, sugary soft drinks by 21.6 per cent.
- Results of the study suggested that the Chilean tax policy may have been partially effective, though not necessarily in ways that are likely to decrease socio-economic inequalities in diet-related health.

Campos-Vazquez and Medina-Cortina, 2019

- In Mexico, after the implementation of the sugar tax in 2014, there was an 11 per cent price increase in the retail price of carbonated sweetened beverages (sodas) and a slightly smaller increase in non-carbonated sweetened beverages (flavoured water, juices, energy drinks). According to a weekly price dataset of more than 500 stores, it was estimated that the tax increased the per litre price of soda by 1.12 pesos, juice by 0.25 pesos, sports drinks by 1.52 pesos, and of powdered drink mixes by 0.24 pesos (Campos – Vazquez and Medina-Cortina, 2019).
- In the two years after the law was passed, it was evaluated that the overall purchase of SSBs reduced by 9.7 per cent.

Guerrero-López et al., 2017

- Own price elasticity for soft drinks in Chile was estimated to be -1.37. This meant a decrease of 13.7 per cent in demand when price increased by 10 per cent.

taken other initiatives. For example, in New Zealand, even though the possibility of a sugar tax received widespread public support, the government has ruled it out, contending that it is an ineffective and regressive way of reducing obesity and the power should be with people to make informed decisions regarding their health and nutrition (NZIER, 2017). Similarly, in Australia, there is no sugar tax.

Impact of Higher Taxes: Key Findings of Global Studies

- Higher tax passes on the tax burden to the poorest sections of the society.
- Can deter food processing and lead to job losses.
- Impact varies depending on price elasticity of the product, consumers' income group and purchase behaviours.

Hence the better option is to raise consumer awareness and positive interventions/support for nutritious products where government and beverage companies can work together.

It is important for developing countries like India to study these global examples as it designs its own policies.

2.5 Impact of COVID-19 Pandemic on the Sector

The outbreak of the COVID-19 pandemic has disrupted global supply chains and has impeded the growth of the non-alcoholic beverage market. The lockdown-imposed trade restrictions on the movement of goods and people across the globe led to a decline in the consumption of non-alcoholic beverages in 2020. It also halted manufacturing and production processes due to lack of raw material and manpower.[39] There has also been a disruption of supply chains; for example, Coca-Cola experienced delays in its raw material supply from China and the company has flagged concerns related to products and exports.[40] In the post-COVID-19 market, the revised revenue estimates for the non-alcoholic beverage market dropped to USD1,038 billion in 2021 from the previous estimate of USD1,179 billion in 2020, a decline of 12 per cent. The decline in the estimated revenue of bottled water was the least, at (-) 11.2 per cent. It is followed by a decline of 11.4 per cent in the juices segment, and of 12.4 per cent across CSDs and non-CSDs (Statista, 2020). Although overall production and consumption levels declined, the COVID-19 pandemic has accelerated the growth of this sector through increased sales through the e-commerce/ online platforms. As mentioned in subsection 2.1.4, the global e-commerce penetration rate increased from 38 per cent in 2018 to 47 per cent in 2020; with countries like the UK and China reaching a penetration rate of 84 per cent and 64 per cent in 2020 from 79 per cent and 54 per cent respectively in 2018 (Statista, 2020).

39. Source: https://www.globenewswire.com/news-release/2021/02/01/2167291/0/en/Non-Alcoholic-BeveragesGlobal-Market-Report-2021-COVID-19-Impact-and-Recovery-to-2030.html (last accessed April 18, 2021)

40. Source: https://www.businesswire.com/news/home/20200415005321/en/Global-Food-Beverages-Industryand-the-Effects-of-COVID-19---Analysis-of-Regional-Regulations-and-Other-Government-Policies---ResearchAndMarkets (last accessed April 29, 2021)

3

OVERVIEW OF NON-ALCOHOLIC BEVERAGE SECTOR IN INDIA

India, with a population of 1.36 billion and a large consumer base, is an attractive market for the non-alcoholic beverage sector. India also has a large raw material base for the production of a variety of beverages. The Indian non-alcoholic beverage industry has grown in terms of both total volume and value at current prices, and is predicted to grow further. This growth can be attributed to reasons such as rising disposable income, increased penetration of brands, and an increase in variety and availability to name a few.[41] At the same time, it is well-known that food processing in India is low and there is scope for increased processing of fruits and vegetables into various formats like juices, which can lead to an increase in farmers' income and reduce losses in the supply chain. The government has come up with various policy incentives and subsidies to support processing.

This chapter provides an overview of the non-alcoholic beverage sector in India, focusing on trends and developments. It presents the market size and revenue of the sector and then analyses the changes in consumption pattern across various categories of non-alcoholic beverages and among different socio-economic classes (SECs) to see which groups are likely to consume which products more, and hence, which groups are likely to be more affected by taxation. It then focuses on the contribution of the non-alcoholic beverage sector to the Indian economy, based on a descriptive analysis of secondary data and information. The next chapter, Chapter 4, presents an input-output model of the direct and indirect contribution of the non-alcoholic beverage sector to the Indian economy.

While the government provides various tax incentives and subsidies to attract investment in food processing, including juices, India lags behind other developing countries like Thailand in food processing. One reason for this is higher taxation on processed foods in general and non-alcoholic beverages in particular.

3.1 Market Size, Revenue and Trends

It is difficult to estimate the sales and revenue of the Indian non-alcoholic beverage sector as a large portion of the sector is in non-corporate/informal sector. Besides, the Indian government does not record data separately for this industry but instead considers it a part of the food and beverage sector.

41. Source: https://www.prnewswire.com/news-releases/non-alcoholic-beverage-market-in-india-forecast-to-2025---marketing-activities-by-leading-brands-including-endorsements-by-leading-film-stars-driving-growth-301090802.html (last accessed June 3, 2021).

Box 3.1

Definition of Non-Alcoholic Beverages in India

Apart from the NIC 2008 (see Figure 1.1), the FSSAI defines non-carbonated water-based beverages (non-alcoholic) as beverages containing water conforming to the standards prescribed for packaged drinking water under these regulations without added carbon dioxide that may contain ingredients as specified below (singly or in combination):

Ingredients: sugar, liquid glucose, dextrose monohydrate, invert sugar, fructose, honey, salt and salt substitutes, fruits or flowers or vegetables and their products including extractives, herbs, spices and their derivatives, and permitted flavouring, singly or in combination. Non-carbonated water may contain caffeine not exceeding 145 parts per million from whatever sources it may be derived in the formulation of the product provided that added herbs shall comply with safety requirements as specified in the Food Safety and Standards Act, 2006, and the regulations made there under, and shall also be declared on the label.

Food Additives: For products covered under this standard, specific food additives permitted may be used within the limits specified.

Source: https://archive.fssai.gov.in/dam/jcr:f912d395-9a5a-4219-abbd-dcb9e2336e5e/Gazette_Notification_N on_Alcoholic_20_09_2017.pdf (last accessed May 25, 2021)

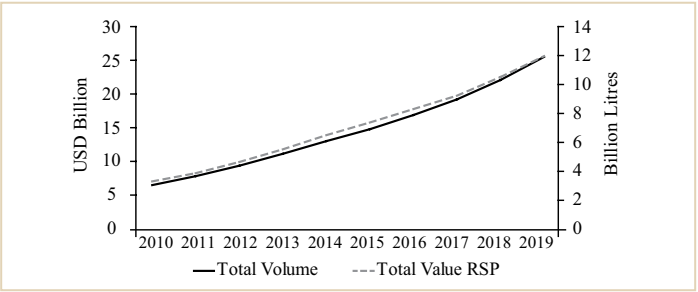
According to Euromonitor International (see Figure 3.1), the domestic market has continuously expanded over the last decade at a growth rate of 14.5 per cent in terms of total sales volume, and at 13.72 per cent in terms of total sales value. The market size, according to the organisation, was valued at USD12.15 billion in 2019 compared to just USD3.5 billion in 2010. However, growth has slowed down in the largest segment – carbonated soft drinks (CSDs) – and future growth is expected to be in single digits even if everything else remain unchanged.

Some of the major players operating in the Indian non-alcoholic beverage market include Hindustan Coca-Cola Beverages Pvt Ltd., Varun Beverages Pvt Ltd. (a franchisee of PepsiCo Ltd.), Parle Agro Pvt. Ltd, Dabur India Ltd., etc. In 2019, Hindustan Coca-Cola Beverages Pvt Ltd. held the largest market share in the country's non-alcoholic beverage market, and the company is expected to continue its dominance through 2025. Leading food

processing companies in India are focusing on expanding their beverage product portfolios to maintain sustainable growth in the market. The companies are also expanding their distribution reach by selling their manufacturing/distribution/bottling process businesses, for e.g., Varun Beverages Ltd. acquired PepsiCo India's manufacturing, marketing, selling and distributing facilities in 2015 for the north region. PepsiCo collaborated with Varun Beverages to make its distribution footprint stronger, especially in states such as Haryana, Himachal Pradesh, Uttarakhand and Uttar Pradesh.[42]

Figure 3.1

Market Size of Non-Alcoholic Beverages in India



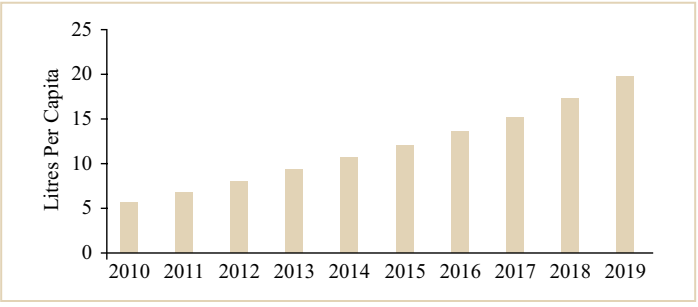
Source: Compiled by authors from Euromonitor Database.

Note: RSP - Retail Selling Price (i.e., price to consumer) including retailer and wholesaler mark-ups and sales tax and excise taxes.

Figure 3.2 below shows the increase in the per capita sales volume through the last decade. In 2010, the per capita sales volume was just 5.66 litres. With a CAGR of 13.32 per cent, the per capita sales volume level increased to 19.75 litres between 2010 and 2019. According to a report by Statista (2019), India's per capita volume sales in this sector was just 21.36 litres in 2018, compared to the per capita volume sales in, for example, the Philippines and Vietnam of 111.89 litres and 69.75 litres respectively.[43] Thus, India's per capita volume sales is lower compared to that in many developing countries.

Figure 3.2

Per Capita Sales Volume of Non-Alcoholic Beverages in India



Source: Compiled by authors from Euromonitor Database.

42. Source: https://varunpepsi.com/overview/ (last accessed April 22, 2022) .

43. Source: https://www.statista.com/forecasts/758713/per-capita-volume-sales-in-the-non-alcoholic-drinks-market-worldwide-by-country (last accessed October 4, 2021).

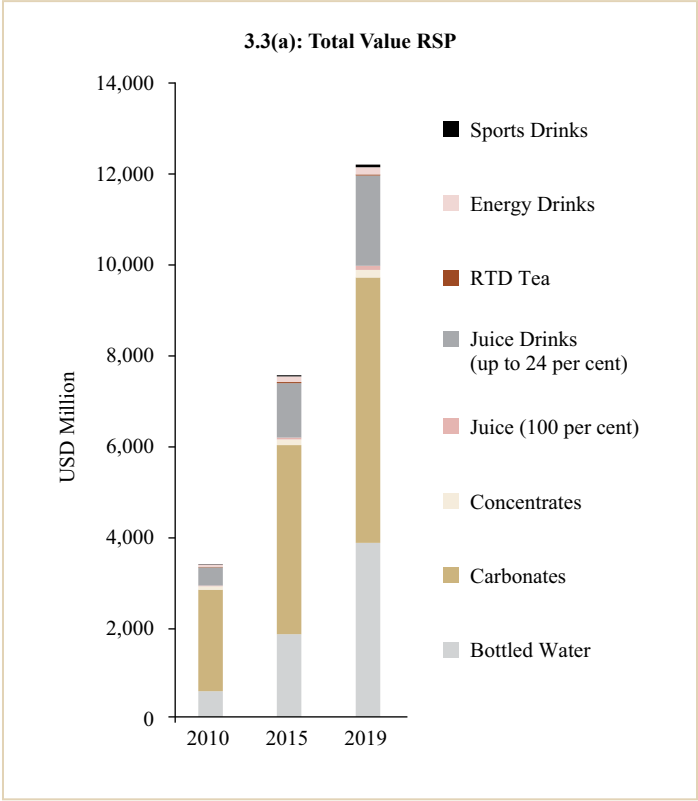
The average revenue per capita for the sector was USD8.91 in 2019 and USD9.09 in 2020; it is expected to reach USD13.06 by 2025 (Statista, 2020).

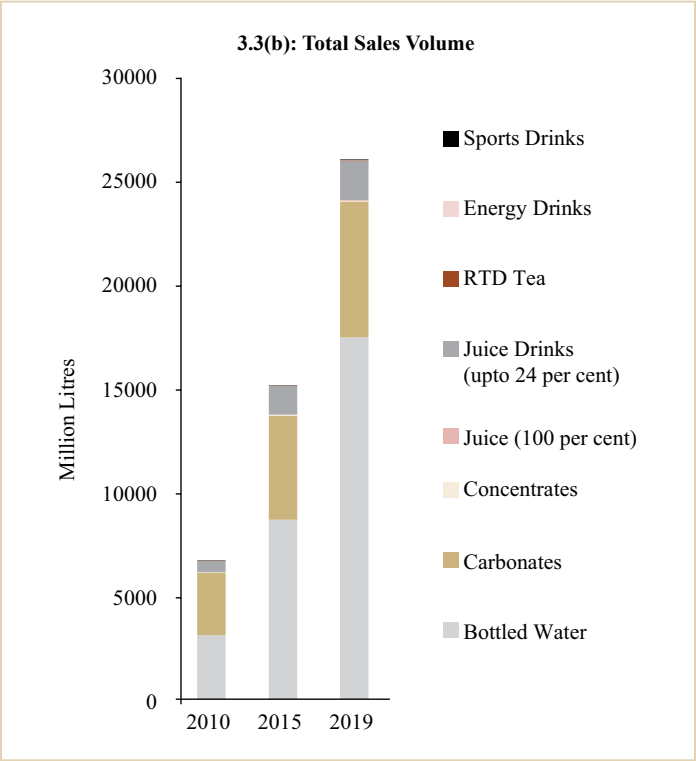
3.1.1 Trends in Non-Alcoholic Beverage Categories

For the purpose of the study, the non-alcoholic beverage sector comprises bottled water, carbonates, concentrates, energy drinks, juices (100 per cent), juice drinks (up to 24 per cent), sports drinks and ready-to-drink (RTD) tea. Across these eight categories of beverages, carbonates have the highest market share in terms of sales value (see Figure 3.3 (a)). It is followed by bottled water and juice drinks in the second and third position respectively in all the years. In terms of total sales volume (Figure 3.3 (b)), bottled water has the highest market share in all years, followed by carbonates and juice drinks. Along with these traditional products, new products like sports drinks, various types of tea and coffee based drinks and energy drinks have recently been introduced in the market and have a lower market share. For example, the market share (in terms of sales value) of energy drinks and sports drinks has increased from USD5.24 million in 2010 to USD 212 million in 2019, with a growth rate (CAGR) of over 44.78 per cent. Thus, India is going through product diversification with increasing choice for the consumer.

Figure 3.3

Non-Alcoholic Beverages: Total All India Sales Value and Volume





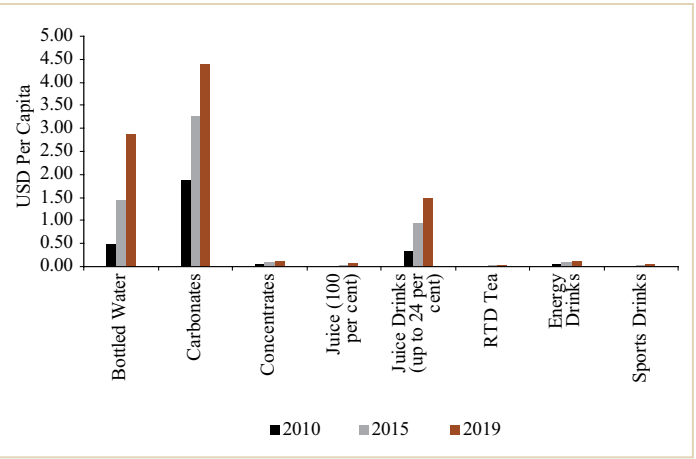
Source: Compiled by authors from Euromonitor Database.

Note: RSP - Retail Selling Price (i.e., price to consumer) including retailer and wholesaler mark-ups and sales tax and excise taxes.

In terms of per capita sales value, carbonates, bottled water and juice drinks are the top categories in this sector. Since 2010, these three categories have been the highest sold non-alcoholic beverage categories (see Figure 3.4).

Figure 3.4

Per Capita Sales Value of Non-Alcoholic Beverages over the Years in India



Source: Compiled by authors from Euromonitor Database.

While the share of the sports drink category is negligible in all the years, in terms of both sales volume and value, and per capita sales, its market value has grown the most from 2010 to 2019 at a rate of 29.22 per cent. This is followed by bottled water and juices (100 per cent), whose sales values have grown at a CAGR of 21.19 per cent and 20.13 per cent respectively.

3.1.2 Trends across Socio-Economic Classes

Global experience shows that consumption varies by socio-economic groups and taxation affects different SECs of consumers differently. Therefore, to identify heterogeneity in consumption of non-alcoholic beverages across SECs, analysis is done across SEC groups (A, B, C, D/E) and across two broad categories – town class (urban population) and village class (rural population) – across the country. Tables 3.1(a), 3.1(b) and 3.1(c) analyse consumption trends of these groups across the non-alcoholic beverage sub-categories (any type of carbonated soft drink, mango-based drink, and juice) in terms of purchase volume.

Box 3.2

Socio-Economic Classification Groups

The SEC is a measure as defined by the Market Research Society of India (MRSI). It is based on two broad parameters – 1) education of chief earner and 2) number of "consumer durables" owned by the family (from a predefined list of 11 durables, namely, electricity connection, ceiling fan, LPG stove, two-wheeler, colour TV, refrigerator, washing machine, personal computer/ laptop, car, air conditioner and agricultural land).

Here, SEC A represents the highest SEC in terms of education and possession of consumer durables (indicating higher capacity to spend), while SEC D/E represents the lowest socio-economic class. This is a proxy for household income based on the assumption that education and asset ownership reflect household income.

From a taxation perspective, if the highest SEC is reducing consumption of CSDs while the lower socio-economic groups are increasing consumption, higher taxes can be regressive. Ideally, taxation should also promote consumption of healthy drinks like juices. Therefore, consumption patterns need to be taken into account while designing tax policies.

Table 3.1 (a) analyses consumption trends of these SECs across the bottled soft drinks sub-categories in terms of purchase volume. Over a period of eight years (2012-13 to 2019-20), the highest consumption growth rate has been among SEC D/E across all CSDs and mango drinks, while SEC C had the highest growth rate in the subcategory juice in terms of purchase volume. On the other hand, there was a decrease in the purchase volume among the highest SEC, SEC A. It also registered the

lowest CAGR in the juices' subcategory during the same period (2012-13 to 2019-20).

Table 3.1 (a)

CAGR of Bottled Soft Drinks Sub-categories across SECs

In per cent

SECs	Purchase Volume CAGR (2012-13 to 2019-20)		
	Carbonated Soft Drinks	Mango-Based Drinks	Juices
SEC: A	-2.59	3.96	1.42
SEC: B	3.49	3.49	10.98
SEC: C	6.73	4.23	15.33
SEC: D/E	13.74	17.79	13.78

Source: Compiled from Kantar Database.

Note: Carbonated Soft Drinks such as Pepsi, Coca-Cola, Fanta, Limca, Thums Up; Mango-based drinks such as Frooti, Slice, Maaza; Juices such as Real and Tropicana.

• Urban Class

During the period 2012-13 to 2019-20, among all urban town classes, retail purchases of CSDs and juices sub-categories (see Table 3.1(b)) declined at a CAGR of 3.33 and 0.1 per cent in town class (TCL) 40L+. Town classes such as TCL 5-10L and TCL 1-5L observed higher growth rates in consumption of carbonated soft drinks and juices.

Table 3.1 (b)

CAGR of Bottled Soft Drinks Sub-categories across Town Classes

In per cent

Town Classes	Purchase Volume CAGR (2012-13 to 2019-20)		
	Carbonated Soft Drinks	Mango-Based Drinks	Juices
URBAN TCL: TCL 40 L+	-3.33	3.64	-0.10
URBAN TCL: TCL 10-40 L	2.32	6.06	18.17
URBAN TCL: TCL 05-10 L	4.28	-1.94	11.70
URBAN TCL: TCL 01-05 L	3.07	9.89	10.08
URBAN TCL: TCL <= 01 L	2.32	-3.27	9.54

Source: Compiled from Kantar Database.

Note: Carbonated Soft Drinks such as Pepsi, Coca-Cola, Fanta, Limca, Thums Up; Mango-based Drinks such as Frooti, Slice, Maaza; Juices such as Real and Tropicana

• Rural Class

During the period 2012-13 to 2019-20, the purchase of bottled soft drinks, in terms of retail volume has increased across all village classes (see Table 3.1(c)). Within each village class, however, growth rates differed across different sub-categories over the eight-year period (2012-13 to 2019-20). For example, for VCL≤2000, the highest CAGR of 24.16 per cent was in the mango drinks subcategory. For VCL>5000, consumption of juices was the highest at 28.70 per cent.

For the rural village class (VCL), three categories have been considered: size of population less than equal to 2000 or VCL≤ 2000, VCL 2001-5000, and VCL>5000.

For the urban town class (TCL), five categories have been considered with size of population less than and equal to 1 lakh population or TCL ≤ 01 L, TCL 01-05 L, TCL 05-10L, TCL 10-40L, and TCL 40L+ (i.e., above 40 lakh population).

Table 3.1(c)

CAGR of Bottled Soft Drinks Sub-categories across Rural Classes

In per cent

Village Classes	Purchase Volume CAGR (2012-13 to 2019-20)		
	Carbonated Soft Drinks	Mango-Based Drinks	Juices
RURAL VCL: VCL <=2000	12.92	24.16	6.33
RURAL VCL: VCL 2001-5000	13.61	16.29	34.30
RURAL VCL: VCL >5000	9.32	21.35	28.70

Source: Compiled from Kantar Database.

Note: Carbonated Soft Drinks such as Pepsi, Coca-Cola, Fanta, Limca, Thums Up; Mango-based Drinks such as Frooti, Slice, Maaza; Juices such as Real and Tropicana.

Box 3.3

Key Takeaways

- Pan-India, the domestic market for non-alcoholic beverages has been increasing rapidly from 2010 to 2019 at a CAGR of over 13 per cent. The handful of companies that have the largest market share in India have started focusing on expanding their beverage product portfolios, and a number of new companies and start-ups have entered the market, giving the Indian consumer more choices across a wide range of products.
- By product categories, Indians consume carbonated beverages the most, in terms of value followed by bottled water and juices. In terms of volume, bottled water is consumed the most. With product diversification, consumption of new products such as energy drinks, sports drinks, and coffee/tea-based drinks is also on the rise (over 44.78 per cent per cent CAGR, from 2010 to 2019), with the CAGR for sports drinks being the highest for the period, followed by bottled water and juices.
- Despite the swift increase in per capita volume sales (over 13 per cent CAGR from 2010 to 2019), India still lags behind other similar developing countries such as the Philippines and Vietnam.
- **The highest SEC group (SEC A) registered a negative growth in consumption of CSDs; the consumption of lower SEC groups has increased.**

Consumption patterns for non-alcoholic beverages may also vary across states and regions in India. To understand this heterogeneity across geography and over time, the next two sub sections present an overview of consumption trends across some select states and metro cities of India.

3.1.3 Trends across Select States and Metro Cities

Data on the purchase value/volume for state level and city level analysis is taken from the Kantar Database, which has information on 15 states (including Delhi), and nine metro cities. To incorporate state level analysis such that the trends across India are examined and granular level heterogeneity is captured, a sample of six states has been chosen. These states have been selected on the basis of a composite index, computed using three variables – per capita income, urban population and total population, which are understood as major drivers of the category of ultra-processed food[44] consumption.[45] The composite index is a linear combination of standardised data for all the three selected variables and represents the level of development in a state. To remove bias in the selection procedure, two states each are chosen from the top, middle and bottom ranks within the composite index. These states are – Maharashtra and Tamil Nadu (top ranked states); Uttar Pradesh and Andhra Pradesh (median states); and Bihar and Odisha (bottom ranked states). The nine metro cities whose consumption patterns have been analysed include Delhi, Kolkata, Mumbai, Pune, Ahmedabad, Chennai, Bangalore, Hyderabad and Surat (as available in the Kantar database).

• Trends across Select States

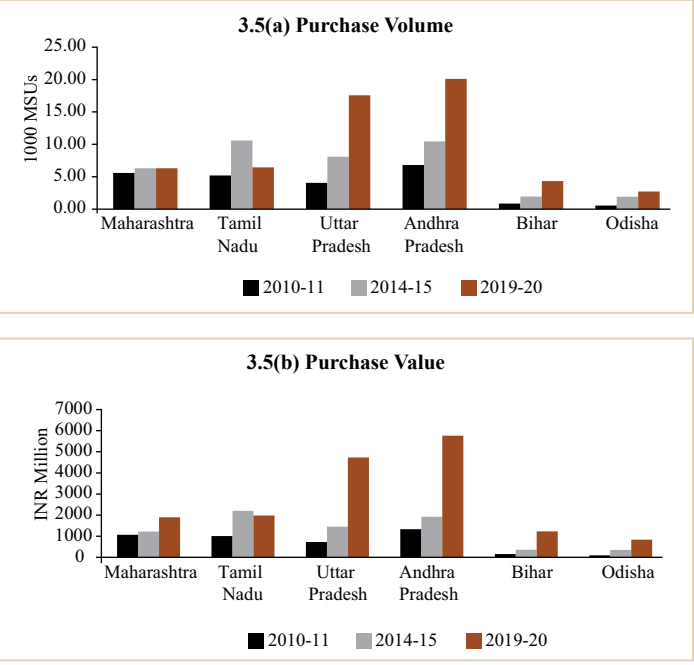
In terms of purchase volume, the median states Andhra Pradesh and Uttar Pradesh recorded the highest quantity throughout the time period from 2010-11 to 2019-20, followed by the top ranked states Tamil Nadu and Maharashtra. While all states have registered growth over the ten-year period, the purchase volume in Bihar and Odisha have increased the most with CAGRs 17.69 per cent and 17.67 per cent respectively. Maharashtra and Tamil Nadu have the lowest CAGR among the selected states, at 1.24 per cent and 2.16 per cent respectively (see Figure 3.5(a)).

In terms of purchase value, a similar trend is observed with Andhra Pradesh recording the highest purchase value over the last few years (2016-17 to 2019-20), followed by Uttar Pradesh. In terms of CAGR, the bottom ranked states of Bihar and Odisha registered the highest growth rates from 2010-11 to 2019-20 at 22.95 per cent and 24.12 per cent respectively (see Figure 3.5(b)).

Thus, while the median/top ranking states have a high purchase volume and value, the consumption of non-alcoholic beverage drinks has grown the maximum in the bottom ranked states.

Figure 3.5

Purchase Volume and Value of Non-Alcoholic Beverages across States in India



Source: Compiled from Kantar Database.

Notes: In Kantar, non-alcoholic beverages comprises carbonated soft drinks, mango-based drinks and juices.

MSU - Million Service Units.

Analysing consumption trends across all SECs, Uttar Pradesh has recorded the highest CAGR from 2015-16 to 2019-20 (see Table 3.2). Across all states, the lowest growth was registered by the most affluent category SEC A, where the lowest CAGR was observed for Odisha at a negative 6.48 per cent; for SEC B and SEC C, the lowest growth was recorded for Tamil Nadu at (-) 2.88 per cent and 1.01 per cent. In 2019-20, the lowest consumption in the most affluent population groups (SEC A and SEC B) was recorded in Odisha while in the least affluent categories, the lowest consumption was recorded in Maharashtra.

Table 3.2

CAGR of Purchase Value (2015-16 to 2019-20) – Non-Alcoholic Beverages (by States and SECs)

In per cent

Non-Alcoholic Beverages Purchase Value CAGR (2015-16 to 2019-20)				
States	SEC A	SEC B	SEC C	SEC D/E
Maharashtra	3.54	12.20	15.21	16.36
Tamil Nadu	-3.83	-2.88	1.01	-6.93
Uttar Pradesh	12.02	20.36	26.42	47.13
Andhra Pradesh	13.19	19.96	24.07	29.76
Bihar	12.33	17.15	25.70	39.41
Odisha	-6.48	10.53	19.81	22.85

Source: Extracted and Compiled from Kantar Database.

44. The ultra-processed food category, according to the WHO, consists of chocolate and sugar confectionery, salty snacks, beverages, breakfast cereals and ready-made and convenience food.

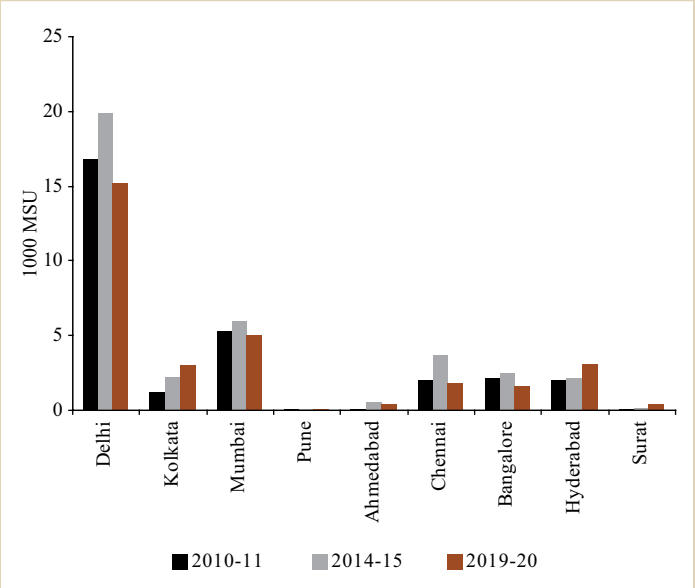
45. Data on these variables have been extracted from - http://statisticstimes.com/demographics/india/indian-states-population.php, https://www.esopb.gov.in/static/PDF/GSDP/Statewise-Data/statewisedata.pdf, http://mohua.gov.in/pdf/5c80e2225a124Handbook%20of%20Urban%20Statistics%202019.pdf (last accessed on October 21, 2020).

• Trends across Metro Cities

At the city level, Surat recorded the highest CAGR between 2010-11 and 2019-20, both in terms of purchase volume and value at 18.17 per cent and 21.08 per cent respectively. Ahmedabad and Kolkata are the other two metro cities in the top three. However, although cities such as Delhi, Mumbai, Bangalore and Chennai registered some of the highest consumption of non-alcoholic beverages (as seen in Figure 3.6), they recorded a negative CAGR for this sector with the lowest CAGR in Bangalore.

Figure 3.6

Purchase Volume for Non-Alcoholic Beverages Across Metro Cities



Source: Extracted and Compiled from Kantar Database.

Note: In Kantar, non-alcoholic beverages comprise of carbonated soft drinks, mango-based drinks and juices.

MSU - Million Service Units.

3.1.4 Impact of the COVID-19 Pandemic on Growth

The COVID-19 outbreak had a dampening effect on the entire global non-alcoholic beverage market in 2020 (see Section 2.5), with a decline in consumptions levels.

In India's case, there was an increase in consumption and growth of soft drinks at the beginning of 2020. However, in March 2020, the widening spread of the COVID-19 virus led to significant uncertainty across the domestic market too. Stringent lockdowns and logistics restrictions in combination with a shift in consumer demand resulted in a significant slowdown for the economy during the first half of 2020 and consequently, a decline in sales volume. Although at-home consumption increased, out-of-home consumption, which contributes to higher volumes, was notably affected during the first phase of the lockdown (Varun Beverages, 2021). However, with gradual relaxations in lockdown restrictions, there were notable changes in purchase patterns of consumers from basic necessities to items such as beverages, along with snacks, processed foods and ice-creams. This elevated sales for at-home consumption across regions (Varun Beverages, 2021).

3.2 Contribution of the Non-Alcoholic Beverage Sector to India's Economy

There are several studies (such as Telukdarie et al., 2020 and Ministry of Food Processing Industries (MoFPI), 2014) that show that the non-alcoholic beverage sector can contribute significantly to the GDP, employment, investment, and exports of a country. Additionally, the sector generates significant forward and backward linkages since companies work closely with farmers, distributors, and small retailers to reach consumers, thus, making both direct and indirect contributions to the economy.

Over the years, agricultural production in India has increased consistently. An abundant supply of raw materials, increase in demand for food products, and incentives offered by the government have had a positive impact on the food processing sector. During the five years ending 2018-19, the food processing sector has been growing at an average annual growth rate (AAGR) of around 10 per cent at 2011-12 prices. The entire sector has also emerged as an important segment of the Indian economy in terms of its contribution to GDP, employment and investment (MoFPI, 2020).

3.2.1 Contribution to Gross Domestic Product (GDP)

The entire food processing sector constituted as much as 8.98 per cent and 11.11 per cent of gross value added (GVA) in the manufacturing and agriculture sector respectively in 2018-19 at 2011-12 prices (MoFPI, 2020). The food processing sector is the fifth largest sector in the Indian economy, contributing approximately 13 per cent of the annual GDP.[46] Although, there is no estimate for the contribution of the non-alcoholic beverage sector, it is a key component of the food-processing sector.

3.2.2 Contribution to Employment and Skill Development

The food processing industry is one of the major employment intensive segments, accounting for 12.38 per cent (at the 3-digit NIC classification level) of employment generated in the registered factory sector in 2017-18. According to the latest Annual Survey of Industries (ASI) for 2017-18 (provisional), the total number of people engaged in the registered food processing sector was 19.33 lakhs (MoFPI, 2020). Employment can be both direct (in manufacturing) and indirect (across the entire supply chain from logistics to retail). For example, Varun Beverages, the bottling partner of PepsiCo India, has 37 production outlets that employ over 10,000 employees (Varun Beverages, 2021). Coca-Cola India Private Limited directly employs over 25,000 people and has created indirect employment for more than 150,000 people in related industries in its supply chain.[47] Other companies like Parle Agro Pvt Ltd, Dabur India Limited,

46. Source: https://www.outlookindia.com/newsscroll/food-processing-industry-has-huge-growth-potentialexperts/1941996 (last accessed June 14, 202

47. Source: https://www.coca-colaindia.com/about-us/coca-cola-worldwide-and-in-india#:~:text=The%20Coca%2DCola%20system%20in%20India%20directly%20employs%20over%2025%2C000,procurement%2C%20supply%20and%20distribution%20system (last accessed April 30, 2021)

Bisleri International Private Limited, and Britannia Industries individually employ over 4000 people in India.[48]

Employment in the entire beverage industry increased from 127,816 in 2010-11 to 161,065 in 2017-18, but it is still below potential as processing is still low.

Table 3.3

Employment Data in the Beverage Sector from 2010-11 to 2017-18

Value in INR lakh, others in numbers

Year	Workers	Total Persons Engaged*	Wages to Workers**
2010-11	99,700	127,816	83,228
2011-12	116,706	147,482	109,633
2012-13	111,524	141,992	117,877
2013-14	121,346	158,507	141,360
2014-15	123,266	160,623	157,930
2015-16	128,534	165,321	174,412
2016-17	122,688	160,115	185,199
2017-18	126,196	161,065	195,835

Source: Extracted from Annual Survey of Industries (ASI) Summary Results. Available at http://mospi.nic.in/asi-summary-result (last assessed on Aug 4, 2021)

Note: * This relates to all persons engaged by the factory, whether for wages or not, in work connected directly or indirectly with the manufacturing process and includes all administrative, technical and clerical staff as also labour in the production of capital assets for the factory's own use. This is inclusive of persons holding positions of supervision or management or engaged in administrative office, store-keeping and welfare sections, watch and ward staff, sales department as also those engaged in the purchase of raw materials, etc. and production of fixed assets for the factory. It also includes all working proprietors and their family members who are actively engaged in the work of the factory even without any pay and the unpaid members of co-operative societies who work in or for the factory in any direct and productive capacity.

** Worker includes all persons employed directly, informally or formally or through contractor on payment of wages or salaries and engaged in any manufacturing process or its ancillary activities like cleaning any part of the machinery or any premises used for manufacturing or storing materials or any kind of work incidental to or connected with the manufacturing process.

Steps and initiatives have also been taken by non-alcoholic beverage companies to provide education, training and skill development (see Box 3.4).

3.2.3 Working with Farmers

Box 3.5 illustrates a few examples of how non-alcoholic beverage companies are working with farmers to improve productivity and earnings.

48. Source: https://www.parleagro.com/#:~:text=Headquartered%20in%20Mumbai%2C%20with%20over,market %20share%20within%20those%20categories; https://dabur.com/digital-annual-report/human-capital; http://britannia.co.in/pdfs/annual_report/Annual-Report-2018-19.pdf (last accessed April 30, 2021)

Box 3.4

Training and Skill Development

Dabur India has initiated various life skills training and livelihood projects like tailoring, beautician, food processing, vermicomposting and bee-keeping to provide employment and vocational skills training. It runs eight non-formal education centres called '*Gyan Deep Kendras'* in Uttar Pradesh and Uttarakhand that impart basic education to out-of-school underprivileged children who, upon its completion, are linked to formal schools. The company also runs adult literacy programmes and organises training and capacity-building programmes for women, thus boosting their self-confidence and developing their vocational skills through initiatives like *'Sundesh'*.

Source: https://www.dabur.com/in/en-us/csr-be-the-change/csr-policy; : (last accessed May 16, 2021)

Box 3.5

Measures to Improve the Farming technique and Productivity

The *Meetha Sona Unnati* project by Coca Cola India focuses on solving issues related to water efficiency, soil health, human rights and women's rights in farming by providing sustainable agricultural training and capacity building for more than 48,000 smallholder sugarcane farmers, including women farmers. Through mechanisation, field levelling and innovative planting techniques, the project motivates local small farmers to increase yield, improve water use and enhance soil health. By 2019, this initiative had been able to help more than 48,000 smallholder sugarcane farmers, including female farmers, and trained nearly 17,000 women farmers in new and innovative farming techniques in Uttar Pradesh.

Having begun with just six demonstration farms in India in 2017, PepsiCo's Demonstration Farm programme in India has grown to 39 farms with an 8 per cent increase in average net yield in the 2018-19 crop year. This translated into an average income increase of USD107 per acre for farmers along with reduced greenhouse gas emissions of 15 per cent per tonne of produce.

Source: Compiled from various sources. Available at : https://csrbox.org/India_Company_Coca-Cola-India-Private-Limited-Haryana_5302; https://www.dabur.com/in/en-us/csr-be-the-change/csr-policy; https://journals.sagepub.com/doi/full/10.1177/2319510X19895904; https://www.coca-colacompany.com/content /dam/journey/us/en/reports/coca-cola-business-and-sustainability-report-2019.pdf (last accessed May 16, 2021)

3.2.4 Foreign Direct Investment (FDI) and Domestic Investment

The Government of India allows 100 per cent FDI in the food processing sector through the automatic route. Hundred per cent FDI is also allowed for trading, including through e-commerce, in respect of food products manufactured or produced in India through the government approval route. This, in combination with ease of doing business reforms, has attracted global investors to India's food processing sector with total cumulative investment inflows worth USD10.38 billion, from January 2000 to March 2021. The FDI inflows account for a 1.96 per cent share of the total cumulative inflows India has received during this period. Over the last five years alone, from April 2014 to March 2019, the sector has received USD3.28 billion in FDI inflows.[49] In FY 2019-20, investment inflows reached USD0.90 billion, an increase of 44 per cent from USD0.628 billion in the previous FY 2018-19.[50] However, there is no data on FDI inflows into the non-alcoholic beverage sector.

The food-processing sector is expected to potentially attract USD33 billion worth of investments (including domestic and foreign) by 2028 ((National Bank for Agriculture and Rural Development (NABARD), 2018). For example, in June 2021, Amul announced that they would invest INR5000 crore over the next five years to expand milk processing infrastructure. In December 2020, Hindustan Foods unit announced they will invest INR125 crore to set up a manufacturing facility in north India.[51] Along with expanding their product portfolio to increase their market size, these companies also contribute to government initiatives and campaigns such as 'Make in India' or '*Aatmanirbhar Bharat*', by investing in manufacturing and sourcing from small and medium enterprises.

3.2.5 Contribution to Exports

India is the world's largest producer of milk and the second-largest producer of fruits and vegetables.[52] Thus, India has huge potential both in the production of raw materials for non-alcoholic beverage raw materials as well as finished products (Mukherjee et al., 2013).

Despite fluctuations over the previous decade, the total exports of the non-alcoholic beverage sector increased at a rate of 11.26 per cent from 2010 to 2019. Although exports decreased by 20.82 per cent in 2020, the export value had risen to USD29.88 million in 2019 from USD12.98 million in 2010, indicating a general rise in exports.

49. Source: https://www.investindia.gov.in/sector/food-processing (last accessed June 14, 2021)

50. Source: https://economictimes.indiatimes.com/news/economy/finance/fdi-in-food-processing-rises-44-pc-to-904-7-mn-in-2019-20/articleshow/76326264.cms?from=mdr (last accessed June 14, 2021)

51. Source: https://www.investindia.gov.in/sector/food-processing (last accessed June 14, 2021)

52. Source: http://www.fao.org/dairy-production-products/production/en/ ; https://www.statista.com/statistics/264662/top-producers-of-fresh-vegetables-worldwide/ (last accessed April 30, 2021)

Figure 3.7

Non-Alcoholic Beverage Sector Exports from India

Source: Extracted and Compiled from UNComtrade. Available at https://comtrade.un.org/data/ (last accessed July 27, 2021).

3.2.6 Exports by Sub-Categories

The percentage share of export of three non-alcoholic beverage categories – fruit juices (HS code 2009); water, natural/mineral/aerated without added sugar (HS code 2201) and water, natural/mineral/aerated with added sugar (HS code 2202) – has changed over the last decade. As seen in Figure 3.8, in 2010 (Figure 3.8(a)), the share of mineral and aerated waters with added sugar/sweetening matter was less than 50 per cent at USD6.13 million. In 2020, the share increased to 67 per cent of the total exports of the three sub-categories with an export value of USD19.98 million (see Figure 3.8(c)).

Simultaneously, the share of fruit and vegetable juices decreased over the 10-year period, despite an increase in export value from USD6.55 million in 2010 to USD9.46 million in 2020.

It is also important to note that despite being a leading producer of fruits and vegetables, India's exports across these three product categories are much less than the exports from countries like China and Thailand (see Table 3.4).

Table 3.4

India's Exports vs. Exports from China and Thailand across Three Years

In USD Million

Year	Country	2009	2201	2202
2010	China	864.10	324.88	133.84
	Thailand	379.30	12.50	375.70
	India	6.55	0.30	19.98
2015	China	695.87	614.70	194.92
	Thailand	629.48	13.36	998.22
	India	8.24	0.39	12.85
2020	China	541.32	660.10	202.79
	Thailand	560.76	23.37	1,605.45
	India	9.46	0.45	19.98

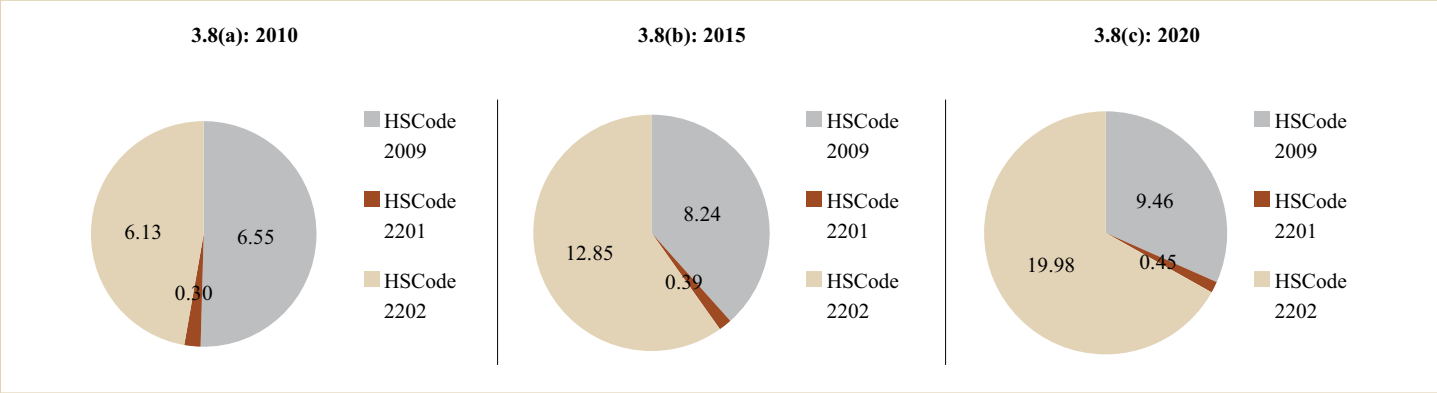
Note: HS Code 2009: Fruit Juice/Vegetable Juices; HS Code 2201: Waters: natural or artificial mineral waters and aerated waters: without added sugar or sweetening matter; HS Code 2202: Waters: mineral and aerated waters: with added sugar or sweetening matter.

Source: Extracted and compiled from UNComtrade. Available at https://comtrade.un.org/data/ (last accessed February 9, 2022).

Figure 3.8

Export Value of Non-Alcoholic Beverage Sector Sub-categories and Their Share

value in USD Million



Note: HS Code 2009: Fruit Juice/Vegetable Juices; HS Code 2201: Waters: natural or artificial mineral waters and aerated waters: without added sugar or sweetening matter; HS Code 2202: Waters: mineral and aerated waters: with added sugar or sweetening matter.

Source: Extracted and compiled from UNComtrade. Available at https://comtrade.un.org/data/ (last accessed July 27, 2021).

3.2.7 Exports by Top Export Markets

While the US has been one of India's top export destinations (see Table 3.5), there have been variations in the remaining top destinations that India exports non-alcoholic beverages to. Across the sub-category of fruit and vegetable juices, the Netherlands, the US and the UK are India's major destinations, although there has been a decline in the share of exports to both Netherlands and the UK.

Under the sub-category of natural or artificial mineral waters and aerated waters without added sugar/sweetening matter, the top destinations have changed over time. In 2020, Saudi Arabia was the top export destination, followed by the US. The percentage share of exports to the US has declined from 19.30 per cent in 2010 to 12.48 per cent in 2020 after the outbreak of the COVID-19 pandemic. Overall, India's exports are low and there is scope for diversification of exports, given the country has a lot of raw materials for beverage production.

3.2.8 Contribution to R&D and Sustainable Business Practices

Figure 3.9 presents some examples of how non-alcoholic beverage companies are contributing to R&D, and sustainable development practices.

The non-alcoholic beverage companies also contribute significantly to allied sectors such as packaging and transportation of products by promoting R&D and innovation. For example, Hindustan Coca-Cola Beverages (HCCB) developed a heat-resistant tarpaulin packaging material that ensures the freshness of the beverages during transportation despite the heat conditions in India. It is an in-house innovation of HCCB along with its key partners and industry experts, which serves the needs of beverage transportation in extreme summers.[53] Parle Agro Pvt Ltd. manufactures its own PET preforms along with 100 per cent recyclable PET bottles and paper-based packing material. As a contribution to the *Swacch Bharat Abhiyan* mission by the Government of India, Parle Agro Pvt Ltd. committed to investing INR50 crore to implement an end-to-end PET plastic waste management (PWM) programme.[54]

Table 3.5

India's Top Five Export Destinations in 2010 and 2020 and their Share

In per cent

2010	Share	2020	Share
1. Fruit Juice/ Vegetable Juice (HS Code 2009)			
Netherlands	20.02	Netherlands	19.86
US	11.42	US	15.44
China	10.85	United Kingdom	9.97
United Kingdom	10.79	Japan	7.97
Germany	5.76	Nepal	5.90
2. Waters: natural or artificial mineral waters and aerated waters: w/o added sugar or sweetening matter (HS Code 2201)			
Maldives	30.95	Saudi Arabia	32.25
Bangladesh	19.30	US	12.48
US	16.49	Netherlands	8.46
Colombia	7.88	United Arab Emirates	6.53
Canada	5.08	Kuwait	6.45
3. Waters: mineral and aerated waters: with added sugar or sweetening matter (HS Code 2202)			
US	26.97	US	20.97
Angola	21.12	United Arab Emirates	12.76
Canada	12.65	Nepal	11.27
Bhutan	7.95	Canada	9.92
Nepal	6.31	Bhutan	7.55

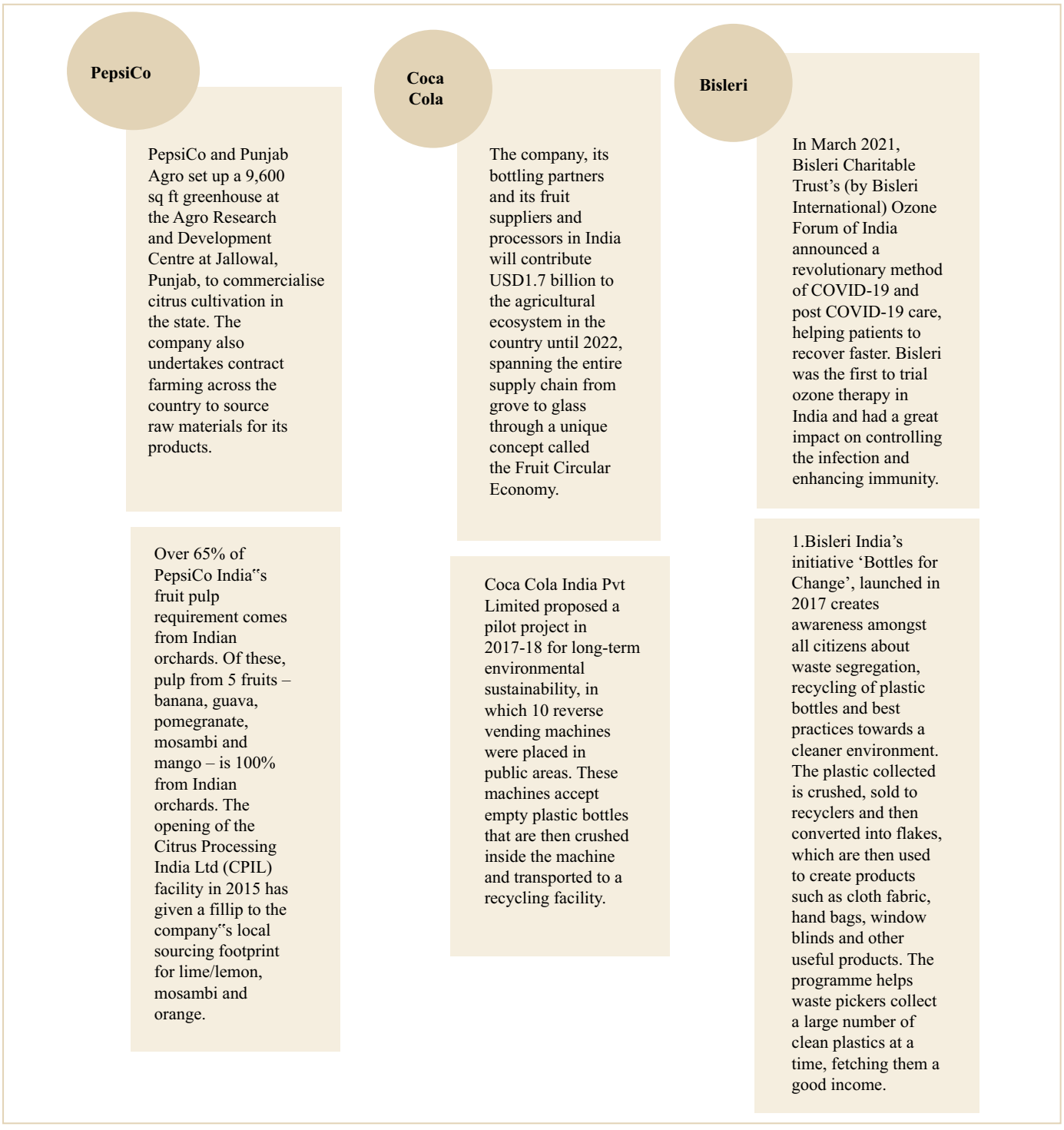
Source: Extracted and compiled from UNComtrade. Available at https://comtrade.un.org/data/ (last accessed August 20, 2021).

53. Source: https://www.coca-colaindia.com/about-us/innovation-award-for-coca-cola-getting-fresher-beveragein-your (last accessed May 12, 2021

54. Source: https://www.parleagro.com/sustainability(last accessed May 14, 2021)

Figure 3.9

Examples of Contribution by Non-Alcoholic Beverage Companies



Source: Compiled from various sources. Available at https://www.ibef.org/download/Pepsi.pdf; https://www.pepsicoindia.co.in/live/story/partnership-with-farmers#:~:text=Awaaz%20Mitti%20Ki&text=PepsiCo %20India%20established%20a%20model,technologies%20and%20sustainable%20farming%20practices; https://www.coca-colaindia.com/newsroom/coca-cola-company-partners-india-contribute-usd-1-7-bn-agri-ecosystem-2022l; https://www.avinashchandra.com/coca-cola-csr-activities; https://www.hrkatha.com/employee-health/how-bisleris-ozone-therapy-worked-wonders-for-staffs-immunity/; and https://www.bisleri.com/plastic-recycling (last accessed May 14, 2021).

Given this scenario, the next chapter, Chapter 4, presents an input-output model of the direct and indirect contribution of the non-alcoholic beverage sector to the Indian economy.

QUANTIFYING ECONOMIC IMPACT OF THE NON-ALCOHOLIC BEVERAGE SECTOR

4

In this chapter, the economic impact of the non-alcoholic beverage sector is estimated and presented in terms of its contribution to the national economy. This includes direct, indirect and induced effects. The contribution is assessed with respect to the following macro parameters:

- Output
- Value Added
- Employment

At the outset, these impacts can be quantified in two ways, downstream and upstream effects. First, we quantify the downstream effect, followed by the upstream effect.

4.1 Downstream Effect

4.1.1 Direct Impact

The direct impact of the non-alcoholic beverage sector refers to the contribution it makes to the economy due to activities that are directly related to its production. In simple terms, these are the activities that are most likely to cease to exist, if there was no production in the sector. The implication of measuring the direct impact is to estimate the expected change in the values of macro indicators for these activities, given the change in demand for non-alcoholic beverages. This change in demand may result from an increase or decrease in its output or from investment in the sector.

The components of direct impact or the activities directly related to the sector's production process can be broadly categorised as shown in Figure 4.1.[55]

To compute the direct impact of the sector, the study team interacted with businesses/stakeholders to collect financial information and employment numbers. In addition to this, the information is collated from a primary survey conducted exclusively for this study as well as from secondary sources. We have also drawn information from the Periodic Labour Force Survey for the year 2018-19 of MoSPI (Government of India).

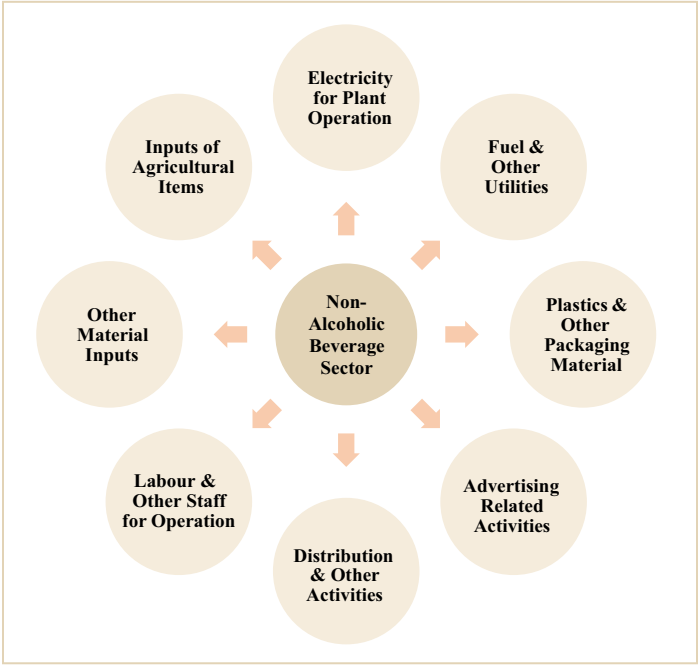
The following key methodological steps are followed to determine the direct impact:

- An input-output (IO) of India is constructed for the year 2018-19 for the non-alcoholic beverage sector and sectors that have a close link with this sector as separate entities. The detailed procedure for the construction of the IO table is given in Appendix A.

55. The list is not exhaustive but demonstrative.

Figure 4.1

Components of Direct Impact



Source: Made by Authors.

- The IO tables provide the value of output and value-added generated in the non-alcoholic beverage sector for the year 2018-19.
- The jobs generated in this sector are estimated after reconciling the estimates derived from our own primary survey and periodic labour force survey.
- Table 4.1 presents the values of output, GVA and number of jobs estimated for the non-alcoholic beverage sector for the year 2018-19.

Table 4.1

Direct Impact in terms of Output, GVA and Number of Jobs, 2018-19

	Gross Output (INR million)	Gross Value Added (INR million)	Employment (number)
Non-alcoholic beverage sector	310618	177017	154643

Source: ICRIER.

4.1.2 Direct and Induced Impact

Every economic activity has an indirect impact on the economy on account of the inter-linkages with industries in its supply chain. The same is true for the non-alcoholic beverages too. The direct impact, as mentioned above, results from activities directly related to the production process of non-alcoholic beverages. The indirect impact results from the purchases of goods and services that are essential for production to take place.

For example, if the demand for non-alcoholic beverages increases, economic activity is triggered among the industries that provide input to this sector and among industries that provide inputs to these input providers and so on. This is the indirect impact, also called the second-round impact or spill-over impact.

In addition to the indirect effects that arise due to inter-industry linkages, there are induced effects on output, gross value added and employment triggered by household consumption expenditure. In response to the direct and indirect effects, the level of household income increases. The income also increases due to increased employment and a proportion of this increased income is re-spent on the consumption of final goods and services, further giving a push to overall economic activity. This is called the induced effect. To arrive at the induced effects, the household account is endogenised into the IO framework. The household account refers to the household income (compensation of employees) and expenditure (private final consumption expenditure).

In order to quantify these indirect and induced benefits, an IO model is a widely used technique which captures the inter-relationships among the production sectors and the household sector of an economy. With the quantification of these inter-linkages, it is possible to see how additional demand in a particular sector or additional inputs for a sector affects production in other sectors of the economy.

While some of these questions can be answered by analysing the first round and second-round effects in a partial framework, the advantage of the IO model is that it quantifies the impact through a value of the multiplier by which the entire economy is expected to grow in a consistent way following such changes in a particular sector.

The schematic structure and the concept of IO model are explained in Box 4.1.

Box 4.1

Input-Output (IO) Model

The basis of an IO model is an IO table, which is the matrix representation of a nation's economy and depicts how the output of one industry is used as input in other industries, thereby making each industry dependent on other industries both as user and as supplier. A row in an IO table shows the values in which an economic sector provides inputs to various other sectors and final users. Final use refers to the sector's sales to households and government as their consumption expenditure; sector's use in fixed investment; and its net exports. On the other hand, a column shows the sector's inputs from other sectors and its primary inputs consisting of taxes less subsidies on production and the gross value-added comprising payments for labour, capital, land and imported inputs. The row total and the column total of a sector give its total value of output and hence are equal. The IO table with, say, 3 sectors is shown below:

	Sectors				
Sectors	1	2	3	Final Demand	Gross Value of Output
1	x_{11}	x_{12}	x_{13}	F_1	X_1
2	x_{21}	x_{22}	x_{23}	F_2	X_2
3	x_{31}	x_{32}	x_{33}	F_3	X_3
Primary Inputs	P_1	P_2	P_3		
Gross Value of Output	X_1	X_2	X_3		

The above matrix represents the following set of 3 balance equations, representing the sector's sales to other sectors and final users.

$$x_{11} + x_{12} + x_{13} + F_1 = X_1$$
$$x_{21} + x_{22} + x_{23} + F_2 = X_2$$
$$x_{31} + x_{32} + x_{33} + F_3 = X_3$$

where F_i is the final use or final demand.

Further, if a_{ij} is the input coefficient and is denoted by x_{ij}/X_j, we get,

$$a_{11}X_1 + a_{12}X_2 + a_{13}X_3 + F_1 = X_1$$
$$a_{21}X_1 + a_{22}X_2 + a_{23}X_3 + F_2 = X_2$$
$$a_{31}X_1 + a_{32}X_2 + a_{33}X_3 + F_3 = X_3$$

In matrix notations, these equations can be written as:

$$AX + F = X$$
$$\text{or } (I-A)\,X = F$$
$$\text{or } X = (I-A)^{-1}\,F$$

The obtained inverse matrix is called Leontief inverse matrices after W. Leontief who introduced IO analysis. The entries in this matrix reflect the direct and indirect effects of inter-industry linkages. Here, each coefficient represents the amount of output of one industry required directly and indirectly for one unit of final demand of another industry. The column sum gives the increase in gross output of all the industries that are required in the production of jth industry.

The column sum of the Leontief inverse matrix (Box 4.1), also called "output multiplier" or a measure of backward linkage, can be interpreted as the cumulative increase in the output of the economy, resulting from one additional unit of final demand from a particular economic sector. The higher the multipliers, the larger are the effects on the IO system of the economy.

The ratio of direct and indirect changes to the direct change due to a unit increase in final demand is termed as Type I output multiplier. The ratio of total change (direct + indirect + induced) to the direct change due to a unit increase in final demand is termed as Type II output multiplier.

Similarly, Type I and Type II income as well as employment multipliers resulting from a unit change in final demand from a sector can be derived as follows:

$$\textit{Type I Income Multiplier} = \frac{\textit{(direct + indirect) income change}}{\textit{direct income change}}$$

$$\textit{Type II Income Multiplier} = \frac{\textit{(direct + indirect + induced) income change}}{\textit{direct income change}}$$

$$\textit{Type I Employment Multiplier} = \frac{\textit{(direct + indirect) employment change}}{\textit{direct employment change}}$$

$$\textit{Type II Employment Multiplier} = \frac{\textit{(direct + indirect + induced) employment change}}{\textit{direct employment change}}$$

It is important to mention here that the impact estimates derived from the IO analysis is based on the economic activity during one specific year, for which the IO table is constructed. However, the IO multipliers can be assumed to remain stable during a certain period, typically up to five years, unless the economy's structure changes significantly.

For the present study, the following steps were followed for the IO analysis:

- The national level IO table was prepared using the latest Supply and Use Table, published by the MoSPI, for 2015-16. While the Supply and Use Table is a matrix with 140 products and 66 industries, this was converted to an IO table with 22 economic sectors.
- The IO table was updated for 2018-19, which is a normal year. The subsequent years are not normal due to the pandemic effect. So, the impact assessment has been done for 2018-19.
- Central Statistics Office (CSO) Supply and Use tables do not provide information on employment. To arrive at the number of persons employed in each sector of our table, the unit level data of the Periodic Labour Force Survey for 2018-19 were analysed. However, we have used inputs from the non-alcoholic beverage federation to reconcile the employment numbers for the non-alcoholic beverage sector.

4.1.3 Direct, Indirect and Induced Impact

The estimates of the direct, indirect and induced impact for the non-alcoholic beverages sector are given below:

Table 4.2

Direct, Indirect and Induced Impact on Value Added

Value in INR Million

Non-alcoholic beverage sector		
Components	Gross Output	Value Added
Direct	3,10,617	1,77,017
Indirect	2,49,727	1,42,316
Total (Direct + Indirect)	5,60,344	3,19,333
Induced	7,93,467	4,52,186
Total (Direct + Indirect + Induced)	13,53,811	7,71,519

Source: ICRIER Research.

Table 4.3

Direct, Indirect and Induced Impact on Employment

	Employment (in number)
Components	
Direct	1,54,643
Indirect	1,24,328
Total (Direct + Indirect)	2,78,970
Induced	3,95,032
Total (Direct + Indirect + Induced)	6,74,002

Source: ICRIER Research.

4.1.4 Key Findings

- The labour to output ratio for the non-alcoholic beverage sector turns out to be 0.49, which means that in order to produce INR1 crore of output in this sector, an estimated 4.9 persons are required. This labour to output ratio gives an estimate of the number of jobs created directly to produce an output valued at INR1 crore. This is used in the IO model for the derivation of direct and indirect impact.
- The model estimates that for every INR1 crore of output produced in the "non-alcoholic beverage sector", a total of 8.9 additional jobs are created in the economy due to both the direct as well as indirect impact. The ratio of this direct and indirect number of jobs to the direct number of jobs is called the employment multiplier, which works out to 1.80. This means that as a result of one additional job created in the non-alcoholic beverage sector, a total of 1.80 jobs are created in the entire economy, as its spill-over effect, owing to its linkages with other sectors of the economy.
- This sector contributed a total of INR3,19,333 million directly and indirectly to the national income in 2018-19. This amounts to 0.19 per cent of the national GVA.

- In terms of jobs, the non-alcoholic beverage sector, directly and indirectly, generated 2,78,970 jobs in 2018-19, which is 0.06 per cent of the national employment.
- On adding the induced impact too, the total gross value added generated by the sector amounts to INR7,71,519 million. With this, its share in national GVA rises to 0.45 per cent.
- Similarly, total employment generated in the economy after including induced impact too is estimated at 6,74,002.

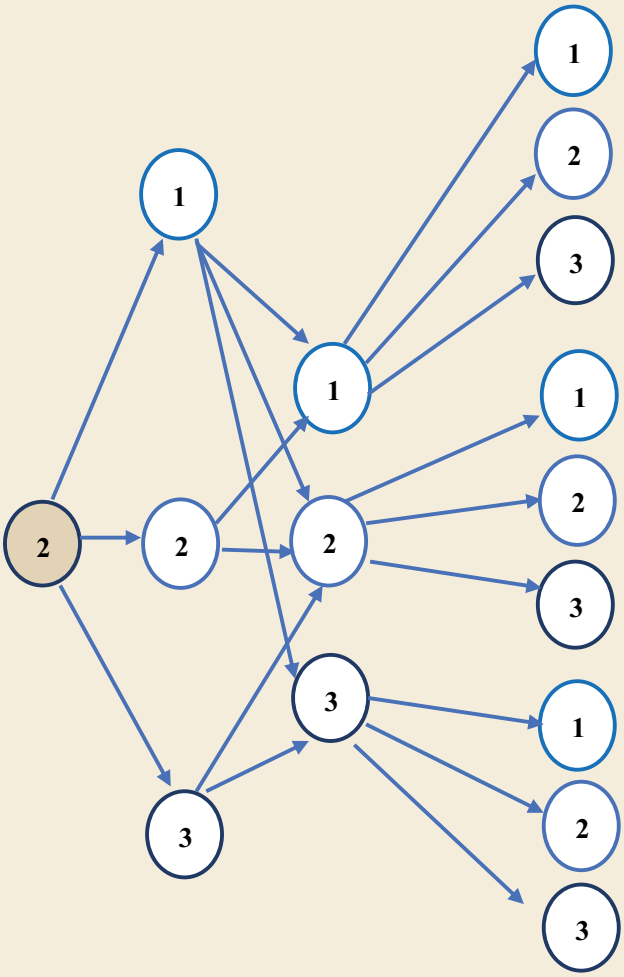
4.2 Upstream Effect

In the framework of IO analysis, production by a particular industry (sector) has two kinds of economic effects on other sectors in the economy. The first concerns the connection of the industry with its suppliers. If industry j increases its output, it will increase its demands on other sectors whose goods are used as inputs to production in j. This effect is known as backward linkage (downstream effect) and shows the direction of causation in the usual demand-side model.

The second refers to the connection of the industry with its clients. The increased output in industry j means that additional amounts of its products are available to be used as inputs in other sectors for their own production (upstream sector) – there will be increased supplies from sector j for the sectors that use its goods in their production. The term forward linkage is used to indicate this kind of interconnection, and it shows the direction of causation in the supply-side model. For instance, the hospitality sector has a significant demand for non-alcoholic beverages. Currently, the non-alcoholic beverage sector has strong forward linkages – even corporate manufacturers work closely with non-corporate retailers, providing them with the necessary technology, such as storage facilities and freezers. Around 50 per cent of corporate manufacturers have taken measures to conserve water and large companies have invested significantly in waste management and recycling technology (Mukherjee et al., 2013). In Box 4.2,

Box 4.2

Interpretation of Forward Linkages



From the perspective of a sector as a seller of its output to other industries, the seller first provides its output directly to all industries who use its output as an intermediate input in their production process. These direct sales of sector 2 to all other sectors including itself, in our hypothetical example are illustrated, by the cyan, straight lines originating in sector 2, located in the centre of the graph, and ending at sectors 1, 2 and 3. These indicate the first round of production (change) effects stemming from sector 2 through its direct sales of intermediate inputs to all other industries. This, however, also implies that sector 2's indirect sales would expand as well, which first pass through the direct purchasers of its output, and through their output, are indirectly passed on further to all the downstream sectors.

In the graph, such second- and third-round effects, representing indirect sales of sector 2, are depicted as well. From sector 2's perspective, such linkages are oriented "forward" (since as said earlier, it could be imagined that outputs leave the production process box from its front side). Thus, indicators that quantify both direct and indirect inkages of sectors in their role as sellers of intermediate inputs to other sectors are called forward linkages.

Like the Leontief inverse, we need to now estimate the Ghosh Inverse $(1\text{-}B)^{-1}$, where B is defined as

$b(i,j) = z(i,j)/x(i)$,

where x(i) is total production in sector i, z (i,j) refers to intermediate inputs flowing from sector i to sector j.

The entries in this matrix reflect the direct and indirect effects of upstream inter-industry linkages. The row sum gives the magnitude of the forward linkage of each sector.

the flow of upstream effects is shown for an economy with three sectors.

In Table 4.4, we present our estimates of direct and indirect forward linkages of value added and employment of non-alcoholic beverage sector.[56] INR1,97,037 additional value added (income) is generated in the non-alcoholic beverage sector from upstream operation along with 1,72,132 jobs.

Table 4.4

Direct, and Indirect Impact on Value Added and Employment

Non-alcoholic beverages sector		
Item	Value Added (INR million)	Employment (Number)
Total (Direct + Indirect)	1,97,037	1,72,132

Source: ICRIER Research.

4.3 Key Takeaways

The combined effect comes from both downstream and upstream effects. Adding both these effects, one can postulate the contribution of this sector to the economy. However, while adding these effects, care has to be taken to avoid double counting of direct effects as it appears in both downstream and upstream activities.

- The combined value added to the economy from the direct, indirect and induced effects emanating from downstream activities comes to about INR7,71,519 million whereas the indirect effects coming from upstream effects amounts to INR2,00,020 million. In sum, the total effects amounts to INR7,91,539 million.
- Similarly, total job creation from this sector is 6,91,491, which includes direct, indirect and induced employment creation in the downstream operation and indirect employment creation in the upstream.

Thus, there is significant contribution of this sector to the Indian economy. The next chapter looks at future growth potential.

56. Since, by construction, the direct effect of backward and forwards linkages are the same, these are not shown separately.

GROWTH OF THE INDIAN NON-ALCOHOLIC BEVERAGE SECTOR: DETERMINANTS AND DEMAND FOR THE PERIOD 2020 TO 2030

5

This chapter presents the determinants of the growth of the Indian non-alcoholic beverage sector, along with the demand forecast for the sector from 2020 to 2030. The forecasting has been done for three scenarios, namely realistic, optimistic and pessimistic to give the likely market size range in the coming years.

Often, international bodies such as the WHO divide the food processing sector into essential and ultra-processed categories and advocate higher taxation for the latter. According to the WHO, ultra-processed food includes chocolate and sugar confectionery, salty snacks, beverages, breakfast cereals and ready-made and convenience food, while the staple/essential food category includes dairy products, edible oils, processed cereals, raw frozen food and salt. For our analysis, we are using these categories to forecast the growth of the beverages sector, and its growth within the ultra-processed category under three different GDP scenarios, without any changes in taxation and other indicators. The data is taken from Euromonitor International, which shows that in 2019, the non-alcoholic beverage sector accounted for 33.11 per cent of the total ultra-processed food market in terms of retail value. It grew at a CAGR of over 13 per cent from 2010 to 2019 (see chapter 3).

The forecasting exercise was conducted in the last quarter of FY 2020-21, based on then available data, from Euromonitor International. Forecasting of growth in demand/retail spending is done at the all-India level. For this, the data from the Euromonitor database has been utilised as it has a relatively long time series data compared to the Kantar database and because the database's product coverage is more aligned with the product categories selected for the study. Besides, forecasting has been done for the entire non-alcoholic beverage sector (comprising carbonated drinks, juice, flavoured milk drinks, energy drinks and concentrates).

5.1 Forecasting

The analysis of the non-alcoholic beverage sector focuses on forecasting the market size from 2020 to 2030 for the categories identified in Table 1.1. Econometric modelling has been used to arrive at the best possible equation. The variable used for forecasting purposes is 'retail sales data' for each of the categories, while for 'predictor variables', a set of macro-economic data has been utilised. Three forecasting scenarios have been developed, namely (a) most likely (realistic), (b) optimistic and (c) pessimistic, to provide a range of the market size for the products. The growth assumptions for forecasting are based on the macroeconomic forecasts of the RBI and IMF.

While forecasting helps estimate future demand and supply trends, it is difficult in a pandemic situation since it involves several parameters and factors, including changing taxes and duties and sudden disruptions in supply chains. Some of these parameters are undergoing rapid change, and some are difficult to predict. Since the beverage sector falls under the broader category of processed food and beverages, the determinants of these are the factors that drive and set limits to the volume of consumption of these products by population. The major determinants may be classified as follows:

I. Economic factors
II. Prices
III. Affordability
IV. Demographic factors
V. Geographic factors
VI. Government and regulatory factors

Economic factors may be classified as the most important set of determinants, especially the country's income or the disposable income of the population. In the relationship between the processed food market and income, the latter can be measured in different ways through GDP and personal disposable income. It is also important to note that though disposable income might play a significant role, GDP is always a better variable from a forecasting point of view. This is because it is easier to obtain future predictions on GDP compared to disposable income.

With respect to the income factor, a significant point should be noted. First, disposable income or GDP per capita depicts an overall scenario. Therefore, it neglects the issue of income distribution within the country and is not capable of capturing the impact of skewed income distribution patterns within the country.

Another important determinant is price. However, the relative difference in the prices of products within a category is a more complicated issue. Coupled with this, the non-availability of data on prices at the category level makes it difficult to capture the impact in a robust manner. Among other determinants, one of the most important ones is the demographic factors. The size or volume and the growth of the country's population plays a key role in determining the size of the market for the processed food sector. Government regulations can also play a critical role since they may determine supply side issues.

We have used a regression model to capture the causal relationship between the processed food and beverages sector market and other dependent variables.

Let us start from the following relationship:

$$Y = f(X_1, X_2, X_3 \ldots X_n) \quad (1)$$

This can be written as:

$$Y = a + b_1X_1 + b_2X_2 + \ldots b_nX_n + e \quad (2)$$

where

Y = dependent variable, sales of processed food product in this case

$X_1 \ldots X_n$ = independent or predictor variables, which are the determining factors for non-alcoholic beverage demand

a = the intercept constant

b = slope coefficients or regression coefficients to be calculated with regression analysis

n = number of independent variables

e = error term in the equation

Equation (1) can also be a multiplicative function that can be transformed into a log-log function of the type:

$$\ln Y = \ln a + b_1 * \ln X_1 + b_2 * \ln X_2 + b_3 * \ln X_3 \ldots b_n * \ln X_n \quad (3)$$

In this case, the regression coefficients $b_1, b_2 \ldots\ldots b_n$ are the elasticities.

It is important to avoid a correlation among the independent factors, called multicollinearity. Multicollinearity leads to inaccurate estimation of the regression coefficients or elasticities. The final model needs to be selected based on the robustness of the model and after considering the presence of multicollinearity in the model.

For robust forecasting, several other additional tests are necessary. The basic ones are the coefficient of determination R^2 or adjusted R^2 (coefficient of determination adjusted for degrees of freedom) and the F-statistic. The coefficient of determination (R^2) indicates the percentage variation of the forecast variable around its mean that is explained by the independent variables; this varies between 0 and 1. A value of 1, which is exceptional, means that the explanatory variables completely explain (100 per cent) the variation in the dependent variable. R^2 is calculated by using the following formula:

R^2 = (Total variance - Residual variance)/ Total variance

The F-test indicates whether the variance in the dependent variable explained by the independent variables is sufficiently larger than its unexplained variance. Apart from these, the Durbin-Watson test (DW) is also important to capture the time-series properties of the regression results. This test indicates the presence of 'serial correlation' or 'autocorrelation'.

With this background, we have estimated the equation for select categories (carbonates, juices, flavoured milk drinks, energy drinks and concentrates) in non-alcoholic beverages covered under the study to forecast demand. As mentioned earlier, forecasting requires future projections of the independent variables to forecast the dependent variable. The sales value of each category is used as the dependent variable. However, neither in Euromonitor's *Passport* Database nor in Kantar's *Worldpanel India* Database, do we have data on independent variables at the category level for the required time period.

Beverage consumption depends on various factors with income being one of the key indicators. At a low level of income, much of the income is spent on essential food items such as edible oil, cereals, salt, etc. It is expected that consumers will consume more non-alcoholic beverages as income/affordability increases. However, studies suggest that with time, the factors that affect consumption and patterns of consumption of food and beverage products change significantly, even among the population in the lower-income group (Banerjee and Duflo, 2011). For example, consumption of beverages is now increasing among low-income households. Apart from income or affordability, other factors, especially consumer demographics and their awareness, determine consumption patterns. Some of these factors include more nuclear families now compared to earlier times, more women entering the workforce, lifestyle related factors like the emerging corporate culture in metro cities and other large towns, and a wider network of retail distribution channels, to name a few. All of these factors have a certain impact on the consumption of beverages. However, it is not known to what extent each of these factors may affect the consumption pattern.

The prime constraint for doing such analysis is the lack of detailed data on consumption by income groups and other factors. There is no data, be it from the government or private sources, in the public domain that provides information on consumption and how it changes by income and other socio-economic demographics. The forecasts that we present in this study is constrained by these data gaps. In the absence of micro-level behavioural data on consumption patterns, we had to depend only on macro-economic data. As any demand forecasting depends on income, price and preference, we considered macro-economic variables like GDP, disposable income, average price, and inflation as the independent variables to test their impact on beverage demand in the country.

Another constraint in forecasting in the current scenario has been the drastic slowdown in GDP growth in the year 2020. With a high negative GDP growth, it is difficult to capture how food consumption would be affected. While, on the one hand, households may have to reduce the consumption of aerated beverages and focus on essential purchases with a reduction in income, on the other, they may increase food purchases and reduce other purchases. Lockdown and uncertainty may lead to stock piling and increased purchases of food products. Given the paucity of data, this paper uses elasticity and the growth rate of the economy from 2020 onward for forecasting purposes.

There are two other data gaps. First, the time-series data from 2005 to 2019, is technically not adequate for any regression modelling for a forecast of 10 years. However, this is the longest time series available for the processed food sector. Any other database that provides market size information for this sector has time series data for 8-9 years or even less. Thus, there is a gap in longitudinal data. Second, demographic parameters are

Table 5.1

Results from the Forecasting Models

Category	Independent variable	No of observations	Prob >F	R-Squared	Root MSE	Elasticity	P>| t|	DW Statistics
Beverages	Disposable income	14	0.000	99.60%	0.0445	1.219	0.00	0.76

Source: Computed by Authors.

also available only for 8-9 years. Therefore, we could not use demographic parameters to look at their causal relationship with processed food product market size. We, therefore, used macro-economic variables apart from price to establish causal relationships.

The forecasting results are presented in Table 5.1. The forecasting results indicate that 'disposable income' explains the model in the best possible way and other variables were found to be insignificant. The results show that disposable income itself is able to explain about 99 per cent or more of the demand for processed food categories.

As mentioned earlier, three scenarios were generated for forecasting purposes – realistic, pessimistic, and optimistic. Although disposable income is identified as the determinant variable for the non-alcoholic beverage market, GDP growth rates as previously predicted by IMF have been used. The IMF forecast for Indian GDP was (-)10.3 per cent for 2020-21. It had also forecast that GDP growth will be about 8 per cent for 2021-22. No forecast was made for the year beyond 2021-22 because of uncertainty due to the COVID-19 pandemic. Therefore, it is assumed that the country's GDP will grow at 8 per cent for the rest of the years until 2030. We predicted disposable income growth based on the expected GDP growth rates. These growth rates are used to predict realistic scenarios of processed food product forecasts. To obtain optimistic and pessimistic, we have used the standard deviation in disposable income for the last ten years. For the optimistic scenario, we used the realistic growth plus the standard deviation in disposable income between 2005 and 2019 for projection purpose. For the pessimistic scenario, we used the realistic growth minus standard deviation. These projections provide a range within which the market size of processed food sector should be under differing economic scenarios (see Table 5.2). For all the three scenarios, growth assumptions are as follows – realistic scenario: disposable income growth of (–) 8.28 per cent for 2020 and 7.88 per cent for the rest of the period; optimistic scenario (–) 8.28 per cent for 2020 and 9.76 per cent for the rest of the period; and pessimistic scenario (–) 8.28 per cent for 2020 and 6 per cent for the rest of the period.

5.2 Key Observations

Using 2019 as the base year for the forecasting in the three scenarios, realistic, optimistic, and pessimistic, we have the following observations:

1. As the ultra-processed food category grows over the years, the share of the non-alcoholic beverage market is expected to decline between 2019 and 2030. The share declines from 33.11 per cent in 2019 to 31.52 per cent in the realistic scenario, 31.04 per cent in the optimistic scenario and 32.02 per cent in the pessimistic scenario for the year 2030 (due to overall fall in the ultra-processed market) (see Tables C1(a), C1(b) and C1(c) in Appendix C). One of the reasons for the decline is higher taxes, which if continued, will have an adverse impact of this sector.
2. In the realistic scenario, when disposable income growth is assumed to be 7.88 per cent in the period from 2021 to 2030 and the total ultra-processed food market is estimated to grow at a CAGR of 9.28 per cent from INR1759 billion in 2020 to INR4670 billion in 2030, the non-alcoholic beverage market is expected to grow at a CAGR of 8.70 per cent (see Table 5.2).
3. In the optimistic scenario, when disposable income growth is assumed to be 9.76 per cent in the period from 2021 to 2030 and the total ultra-processed food market is estimated to grow at a CAGR of 11.49 per cent from INR1809 billion in 2020 to INR5986 billion in 2030, the non-alcoholic beverage market is estimated to grow at a CAGR of 10.77 per cent (see Table 5.2).
4. In the pessimistic scenario, when disposable income growth is assumed to be 6.0 per cent in the period from 2021 to 2030 and the total ultra-processed food market is estimated to grow at a CAGR of 11.49 per cent from INR1710 billion in 2020 to INR3624 billion in 2030, the non-alcoholic beverage market is estimated to grow at a CAGR of 6.66 per cent (see Table 5.2).
5. As the disposable income growth varies over the three scenarios, the retail sales value of the non-alcoholic beverage market fluctuates accordingly. According to the estimated forecasts and the CAGR calculated, it is evident that the non-alcoholic beverage sector's growth will slow down in the years from 2020 to 2030 when compared to the CAGR for 2010 to 2019. The estimated CAGR for the years 2020 to 2030, across all three scenarios, is much less than the previously recorded CAGR of over 13 per cent for the years 2010 to 2019.

Box 5.1

Key Findings of Forecasting

The key findings of the forecasting exercise show that within the ultra-processed food category, the growth of the non-alcoholic beverage sector is lower than that of all the other ultra-processed categories such as chocolate and sugar confectionery, salty snacks, breakfast cereals and ready-made and convenience foods. This is primarily because non-alcoholic beverages are taxed at the highest level within the ultra-processed category.

The taxation affects not only the present but future growth of this sector. Due to taxation, India is not able to develop as a hub for non-alcoholic beverage processing despite having strength in terms of availability of raw materials and manufacturing competence.

Table 5.2

Forecast of Retail Sales of Non-Alcoholic Beverages from 2020 to 2030

In INR Billion

Categories	Realistic Scenario	Optimistic Scenario	Pessimistic Scenario
2019	671.17	671.17	671.17
2020	587.98	603.37	572.58
2021	644.50	675.22	614.50
2022	706.46	755.62	659.48
2023	774.38	845.59	707.75
2024	848.83	946.27	759.56
2025	930.43	1058.95	815.16
2026	1019.88	1185.04	874.83
2027	1117.92	1326.14	938.87
2028	1225.39	1484.05	1007.59
2029	1343.20	1660.76	1081.35
2030	1472.33	1858.51	1160.50

Source: Based on Authors' calculation

Note: For realistic scenario, the disposable income growth is assumed to be (-)10.16% during 2020-21 and 7.88% for rest of the years; For optimistic scenario, the disposable income growth is assumed to be (-)8.28% during 2020-21 and 9.76% for rest of the years; For pessimistic scenario, the disposable income growth is assumed to be (-)12.04% during 2020-21 and 6.0% for rest of the years; Projection is from 2020 to 2030. Base Year is 2019.

PRIMARY SURVEY ANALYSIS: NON-ALCOHOLIC BEVERAGE COMPANIES

6

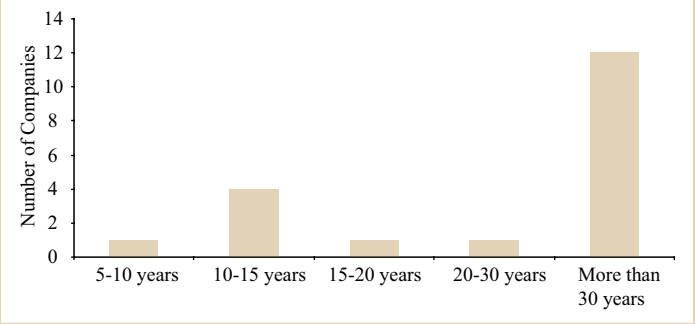
The purpose of the primary survey was to understand the contribution of the non-alcoholic beverage companies to the Indian economy, their willingness to align towards the Indian government's development agenda and their commitment to meet the Sustainable Development Goals (SDG) by 2030. The survey included global multinationals, large domestic companies, mid-sized companies, and small and medium enterprises. There are companies that operate across a range of beverages from carbonated drinks to juices while there are others who operate in specialised categories like tea-based drinks or organic drinks. More recently, a number of companies are coming up in tea, coffee, fruit and milk-based beverages. The survey was online and we received filled-in questionnaires from 20 beverage companies; the results are presented in this chapter. Some of the companies operate in milk-based beverages but carbonated drinks and juice and new areas have been the focus of the survey and beverage companies with only milk-based products are not covered in the survey. The survey only covers the corporate sector.

6.1 Years of Operation in India

The number of years of presence in India is important to understand the economic impact of the companies and their willingness to align towards the Indian government's development agenda. The longer the presence, the more positive the impact is likely to be. Sixty per cent of the survey participants entered the Indian market in the early 1990s with only one of the participants entering the Indian market in the last five-year period.

Figure 6.1

Duration of Operation in India



Source: Primary Survey.

Note: The total sample size is 20.

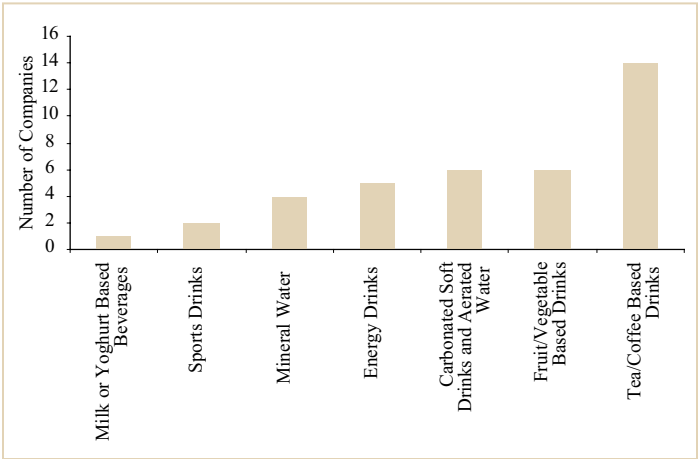
6.2 Products and Domestic Market

Carbonated soft drinks (CSDs) dominate the market with the largest share in terms of volumes and revenue. Most new entrants focus on non-carbonated drinks, which are tea/coffee based and fruit/vegetable based products. Seventy per cent of the respondents (mostly smaller sized companies) are engaged in tea or coffee based products and around 30 per cent of the participants are engaged in producing CSDs and aerated water. Further, 30 per cent are engaged in fruit or vegetable based products, followed by other categories such as mineral water and sports drinks (see Figure 6.2). According to the survey participants, currently, the non-carbonated fruits and vegetables-based juices and beverages (containing fruit pulp/juices in the range of 10-100 per cent) has a market size of approximately INR12,000 crore in revenue. This market is likely to grow through the right policy initiatives as India has an abundant supply of raw materials.

Respondents also felt that the Indian market has lower per capita consumption of CSDs as compared to many developed and developing countries and there is a growing preference for nutritious drinks, i.e., beverages with less sugar and tea/coffee based drinks and fruits/vegetable based products. Companies are moving into these product categories to cater to the demand. Companies also pointed out that there has been an increase in the demand for energy drinks and such products have come up in the market. Some respondents also mentioned that they are keen on entering the milk-based beverages segment.

Figure 6.2

Product Categories



Source: Primary Survey.

Note: This is a multiple-choice question where a respondent company can be involved in more than one product category.

6.2.1 Products Added or Removed in the Last 5 Years

Among the survey participants, 35 per cent of the companies have introduced new products to the Indian market in the last five years, based on evolving customer preference and demand. Many product additions include sugar-free/zero-sugar substitutes of similar products already in the market. Only 4 of the 20 companies from the survey have removed their products from the Indian market in the last five years; the removals were largely due to a decrease in demand for the product for a prolonged period of time and a reduction in sales of the specific product.

6.3 Financial Performance of Companies

6.3.1 Revenue and Growth

Companies were asked to share their revenues for FY 2017-18, 2018-19 and 2019-20. In our analysis of the revenue for the three- financial years, it was observed that large companies and key players in the industry have all experienced loss in revenue. The decline in revenues for key players is substantial with two of the leading global multinationals Coca-Cola India Private Limited and PepsiCo India Holdings Private Limited (Varun Beverages Limited) reporting losses of revenue to the tune of INR4,648 crore and INR765 crore respectively. It is observed that companies with a smaller scale of operations and those focused on tea-based products have experienced slight growth in the three-year period due to several initiatives by the government to support this industry. For example, Assam introduced four separate schemes to provide support to the tea-based beverage sub-segment.[57] Overall, most companies have experienced a substantial decline in growth in FY 2019-20. Apart from five survey participants engaged in tea-based beverages, the remaining non-alcoholic beverage companies have reported a decline in growth in FY 2019-20.

Box 6.1

Revenue and Taxation

Tax collection is dependent on industry revenue. High taxation does not incentivise the industry.

If higher taxes lead to lower revenue for companies, it may lead to decline in company's investment/growth in the sector. This in turn, will eventually mean decline in tax collection for the Government as the industry growth is adversely impacted. In a market where consumers are deciding what to consume, taxation may not be the ideal policy intervention.

Tax authorities should analyse and understand consumer demand patterns.

57. Source: https://www.hindustantimes.com/cities/assam-launches-4-schemes-to-boost-covid-hit-tea-industry/ story-UIubxPoOmIF57zP9QjbMDJ.html (last accessed February 03, 2022)

Survey participants were asked to forecast growth for FY 2021-22, 2022-23 and 2023-24. While these projections vary among companies, based on size, scale, and number of years in the business, new entrants to the Indian market expected an average growth of around 25 per cent. A respondent from a large, carbonated beverage firm has projected a strong growth of 37 per cent for FY 2021-22 as we recover from the pandemic and expects growth to average at 19 per cent for FY 2022-23 and at 15 per cent for FY 2023-24; the projections of other larger firms are between 5 and 15 per cent.

6.3.2 GST Contribution

As revenues have declined, there has been direct impact on the sector's contribution to GST. It was observed that there was a positive incremental trend in GST contributions between FY 2017-18 and 2018-19, but there has been a substantial decline for FY 2019-20, indicating the adverse impact on companies. GST from around 50 per cent of the companies has declined while 30 per cent contributed the same amount of GST as in the previous financial year; only 20 per cent of the surveyed companies saw a slight increase in GST contribution for 2020.

Box 6.2

Tax Collection and Revenue Growth

Despite being at the highest rate of GST slab, the tax collection has been lower due to insufficient revenue growth. Adequate policy measures are needed to help the non-alcoholic beverage sector to grow.

Box 6.3

Taxes and its Impact on Exports

Taxes deter consumption and this deters scale expansion by companies. Economies of scale are needed for exports.

In the case of one company, GST contribution fell from INR5786 crore in FY 2018-19 to INR3976 crore in FY 2019-20, testifying to the impact of the downturn in 2019-20.

6.4 Contribution to Employment and Training

All survey partners have created direct and indirect employment opportunities in the sector across the supply chain. While some of the smaller companies surveyed have only a few hundred employees, the large beverage companies have generated employment in the thousands with one of the respondents employing over 25,000 people directly and an additional 15,000 people indirectly. It was also observed that employment has increased during FY 2017-18 and FY 2019-20, but the increase was marginal as larger companies faced revenue issues. In addition, there were supply chain disruptions due to the pandemic.

While most companies said that they offer training to their supply chain partners, some provided more details. For example, Coca-Cola India Private Limited said that they provide training to farmers for sustainable sugarcane farming. During the survey, around 48,000 farmers had been trained on good agricultural practices in 2,250 villages in Uttar Pradesh. In addition, more than 5,000 women have been trained in the classroom and in mobile vans in good agri-water management practices (GAWMP). The company is training farmers in good agricultural and sustainable practices for fruits like mangoes, litchi, oranges, apples and grapes.

6.5 Investment

All companies have significantly focused on investment to create state-of-the-art manufacturing facilities, and in new products and technologies, etc. (see Table 6.1). Cumulative investments by survey participants alone amounted to over INR44,000 crore. Coca-Cola India Private Limited is one of the largest investors with investments upward of INR36,900 crore, followed by PepsiCo India Holdings Private Limited (Varun Beverages Limited) with INR6,527 crore, in the beverage segment. Table 6.1 shows the areas where investment has been made by survey participants. Investment in R&D has been fairly low; barring R&D on new blends and flavours to enhance product quality, none mentioned R&D investment.

Table 6.1

Investments by Non-Alcoholic Beverage Companies

Key Areas of Investment	Number of Companies who have Invested
Creation and expansion of manufacturing facilities	16
New product development and technology	16
Sales and distribution including logistics	6
R & D	4
Others	4

Source: Primary Survey.

Note: This was a multiple-choice question. The category "Others" include investment in domestic subsidiaries or partner companies, acquiring latest machinery, etc.

6.6 Contribution to Exports

Survey participants have been exporting certain products and the destination markets are the United Kingdom (UK), Germany, Russia, neighbouring countries and Japan. Companies have also started to move into wider markets in the EU region and are exploring the USA. Some companies have started exporting to countries in Africa. Overall, participants see huge export potential from India and want to "Make in India", both for the domestic and export market, if supported by the right tax policy. According to players, processed food in general and non-alcoholic beverages in particular face very high taxes, which deter domestic consumption and do not support scaling up for either the domestic market or exports.

6.7 Contribution to Sustainable Development Goals

All firms said that they have been directly contributing to generating employment and local area development. Ninety per cent of the companies ensure holistic growth by supporting local farmers and small enterprises in their supply chain.

Respondents were engaged in taking active initiatives to help environmental sustainability and development by bringing about innovations in packaging of the products and recycling to enable a low-carbon circular economy. All companies have recyclable packaging; companies have set specific targets to scale the process throughout to ensure that packages are collected, recycled, and never become litter. Companies have also taken initiatives to develop a 'green supply chain' by limiting the use of plastic and switching to the use of recycled paper for packaging. Point of sale materials (coolers and other machinery) are completely recycled at end-of-life. Companies are also setting up internal policies to monitor their carbon footprint. Some of the respondents have upgraded their transport systems to compressed natural gas (CNG) for better compliance with BS-4 norms. One respondent said that their company has ensured all coal-based heaters are replaced by gas-heaters to reduce carbon emissions. One of the surveyed companies said that they have invested around INR7 crore in the last 10 years for environmentally sustainable practices. When asked about specific activities related to meeting SDGs, respondents shared reports and presentations detailing the areas of focus and the initiatives undertaken. The key focus areas are presented in Box 6.4 and examples of initiatives taken in these areas are given below.

Box 6.4

Key Areas of focus of CSR from Respondent Companies

- Increasing Farmers' Income
- Water Stewardship and Conservation
- Sustainable Packaging and Recycling
- Helping in Community Development
- Elimination of Hunger and Malnutrition

Source: Primary Survey.

6.7.1 Supporting the Farmer

Companies provided various examples of how they were working with farmers and the farmer survey presented in Chapter 8 confirmed that farmers in the supply chain of companies saw a arise in productivity and higher income. For example, Coca-Cola India Private Limited partnered with Jain Irrigation and launched Project *Unnati* to help farmers double mango yields. *Unnati* is aimed at large-scale adoption of ultra-high-density plantation (UHDP) in the country and aims to scale up the project to cover the end-to-end fruit supply chain and optimise delivery. The project focuses on creating an ecosystem

that delivers higher growth and income for farmers and the 'Grove to Glass' fruit supply chain to optimise delivery. Coca-Cola India Private Limited has announced plans to contribute, along with its partners, over USD1.7 billion (INR10,943 crore) in the next five years to the Indian agriculture ecosystem.

To identify and protect environmentally sensitive species of medicinal plants and herbs, Dabur Limited partnered with NGOs and universities to offer training programmes for farmers, villagers, and tribal communities on sustainable and environment-friendly cultivation processes. The company has a fully automated state-of-the-art greenhouse in Pantnagar (Uttarakhand), in addition to over 19 satellite nurseries and demo cultivation sites across the country. Dabur Limited actively engages with local and small producers to procure rare herbs and medicinal plants that go into the production of its *ayurvedic* products. This exercise has resulted in an increase in the cultivation of rare medicinal herbs and helped supplement the household income of farmers. Farmers in the supply chain confirmed that they gained through a reduction in the number of intermediaries and continuous transfer of scientific knowledge through training programmes, workshops, and field demos (see Chapter 8). This initiative is important as India wants to enhance *ayurvedic* juice and organic juice production.

Another example is Citrus Processing India (P) Ltd, which, in collaboration with PepsiCo India Holdings Private Limited and the Government of Maharashtra, procures and processes citrus fruits such as mandarin orange, *mosambi* and *kinnow*. Citrus Processing India (P) Ltd has created a state-of-the-art facility at MIDC-Krushnoor in Nanded district, Maharashtra, spread across 50 acres of land. The procurement of raw materials from farmers and reducing intermediation levels in the supply chain has helped enhance farmers' income. The Dairy Farmers Extension Programme of Britannia Industries Limited in Maharashtra has helped farmers build capacity in dairy farming management. The programme has been extended to 26 locations in the vicinity of the Ranjangaon plant and the plant receives 36,000 litres of quality milk per day for production.

6.7.2 Water Conservation Initiatives

Anandana, the Coca-Cola India Foundation, and the bottling partners of Coca-Cola India Private Limited are working with NGO partners and community members to restore neglected and deteriorated water bodies and other water conservation projects in remote and water-stressed areas across the country. The projects pay special attention to community participation with a focus on women, who often reach supervisory roles in village *"Pani Samitis"* (water committees) to ensure maintenance and sustainability of community water projects. Given that water usage is high in beverages, Dabur Limited has implemented programmes to recycle water from effluents after treatment. The company has also implemented rainwater harvesting facilities. As part of efforts to continuously reduce usage of water, Dabur Limited conducts water audits through Confederation of Indian Industry (CII) & Federation of Indian Chambers of Commerce and Industry (FICCI). Digital water flow meters have also been installed across all units, along with piezometers to check the water level. Most major manufacturing locations have adopted a "zero discharge" strategy. By 2023-24, Britannia Industries Limited targets to reduce water consumption by 30 per cent relative to 2019 and plans for 100 per cent water recharge through rainwater harvesting.

- **Water Conservation and Community Development Initiatives**

PepsiCo India Holdings Private Limited is engaged in the Sustainable Water Resource Development and Management (SWRDM) programme, which combines community interventions for water resource development with livelihood enhancement. The programme led to the formation of several village level institutions like farmers' groups, water user associations, joint liability groups, self-help groups, etc.

Dabur Limited has developed a water management strategy that provides guidance on how the company drives water efficiencies and reduces water usage within their manufacturing facilities. It also rolled out a special initiative, Project Desert Bloom, that involves local communities in water conservation and management initiatives, particularly in water-stressed areas like Tonk District in Rajasthan and the hilly regions of Baddi in Himachal Pradesh. This project uses cost-effective, eco-friendly, community-based technologies like water harvesting, water conservation, recharging of tube wells[58] and plantation to give rural communities in Rajasthan get access to water all through the year for personal consumption and irrigation needs.

- **Rain Water Harvesting Initiative**

Bisleri International Private Limited's Project *Nayi Umeed* helps build and restore check dams, which create a water reservoir to help increase the water table in nearby wells and bore wells. Local farmers are able to use the stored water to grow multiple crops and increase their earnings. The company undertook the first check dam project in 2001 in Bara village, Kutch, Gujarat; and since then, has restored 160 check dams across Gujarat, and western and central Maharashtra. The dams have helped harvest 34.61 lakhs kilo litres of water, benefitting over 120 villages and 11,000 farmer families.

Dabur Limited said that the company is committed to implementing the 3R (Reduce, Reuse and Recycle) principle for conservation of water. Besides operating sewage treatment plants (STP) and effluent treatment plants (ETP) at each facility, rainwater harvesting systems have been set up across units to help recharge ground water.

6.7.3 Sustainable Packaging and Recycling

In 2021, 40 per cent of the cartons of Tetra Pak that were sold in India were recycled. In 2018, Tetra Pak, together with other food

58. The recharge tube wells directly feed the depleted aquifers (body of rock and/or sediment that holds groundwater) with fresh water from ground surface. The recharge through this technique is fast and has no transit losses or evaporation losses. Source: https://www.indiawaterportal.org/articles/artificial-groundwater-recharge-through-tube-wells-case-study-north-east-haryana#:~:text=Artificial%20recharge%20by%20wells%20has,transit%20losses%20or%20evaporation%20losses (last accessed May 5, 2022)

and beverage brands like Dabur Limited and Parle Agro Private Limited, created the Action Alliance for Recycling Beverage Cartons (AARC), an industry body, to represent the carton package industry and bring stakeholders together to promote recycling. Coca-Cola India Private Limited said that in 2019, they produced the first ever beverage bottle using recovered and recycled marine plastics. The company aims to make packaging 100 per cent recyclable globally by 2025 and use recycled material for 50 per cent of its packaging requirements by 2030. Dabur Limited had initiated the Plastic Waste Management programme in 2018 and has processed/recycled 27,396 MT of post-consumer plastic waste as of 2021. It has spent INR11.85 crore on this initiative. Taking forward this initiative, Dabur Limited and Bisleri International Pvt Ltd committed to become a plastic waste neutral company in the financial year 2021-22 by collecting and recycling 22,000 MT and 31,002 MT respectively of post-consumer plastic waste from across the country. Dabur Limited surpassed the 20,000 MT target three months ahead of schedule and enhanced its target to around 27,000 MT. Dabur Limited became a 100 per cent 'Plastic Waste Neutral company' in January 2022, having collected, processed and recycled 26,952 MT of post-consumer plastic waste from all over India in the 2021-22 financial year. In 2020, PepsiCo Foundation committed to investing USD39 million in India, including investments in four leading companies in India that use technology and innovation to scale and transform India's waste management and recycling value chain. This is an example of how other companies and innovative start-ups are benefiting.

6.7.4 Supporting the Goal of Elimination of Hunger and Malnutrition

In partnership with the Akshaya Patra Foundation and Manthan Sansthan, Coca-Cola India Private Limited supports the mid-day meal programme in government and government-aided schools.

7

PRIMARY SURVEY ANALYSIS: SUPPLY CHAINS

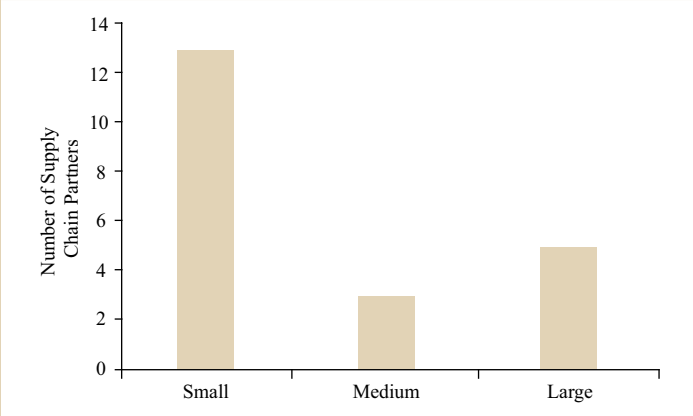
Supply chain partners of the non-alcoholic beverage companies range from farmer producer organisations, contract manufacturers, packaging companies, logistics service providers, to wholesalers/distributors. We asked the non-alcoholic beverage companies to share contact details of their supply chain partners. A maximum of five supply partners were then selected for each company randomly and online questionnaires were sent. We received filled in questionnaires from 21 supply chain partners and the results are presented in this chapter.

7.1 Size of Supply Chain Partners

The survey found that a majority of the supply chain partners of the beverage companies are small and medium sized. Out of 21 companies, 61 per cent of the supply chain partners are small enterprises, 14 per cent are medium sized and 23 per cent run large scale operations. Many of them have gained scale after their partnership with the non-alcoholic beverage companies.

Figure 7.1

Size of the Supply Chain Partners



Source: Primary Survey.

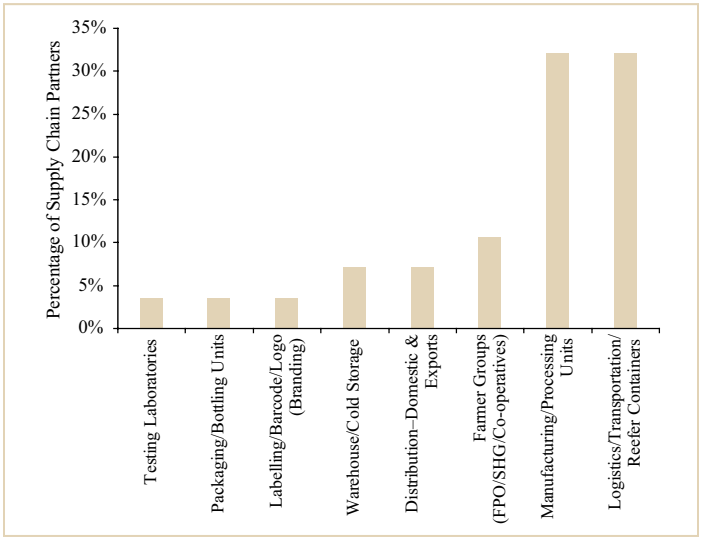
Note: The total sample size is 21.

7.2 Areas of Operation

Thirty-two per cent of the supply chain partners are manufacturing/processing units while another 32 per cent are engaged in logistics/transportation/reefer containers; 11 per cent of the participants belong to farmer groups (FPO/SHG/co-operatives).

Figure 7.2

Areas of Operation



Source: Primary Survey.

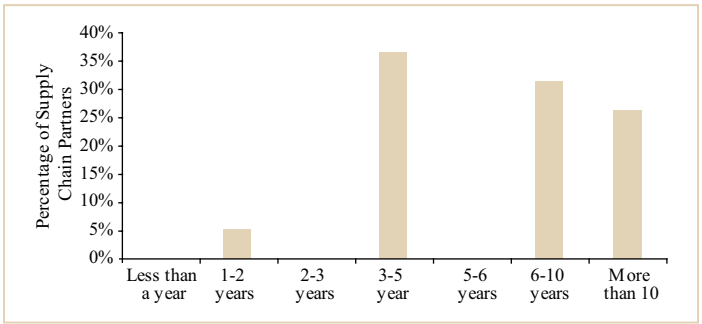
Note: This is a multiple-choice question and a company can be in more than one area of operation for example manufacturing and labelling.

7.3 Period of Partnership with Non-Alcoholic Beverage Companies

Thirty-seven per cent of the supply chain partners have been in partnership with the non-alcoholic beverage companies for three to five years while 26 per cent have been in partnership for over 10 years. Thus, a majority of the survey respondents have had a long (more than 3 years) partnership with the non-alcoholic beverage companies and are in a position to explain the impact of their partnership.

Figure 7.3

Duration of Partnership with the Non-Alcoholic Beverage Companies



Source: Primary Survey.

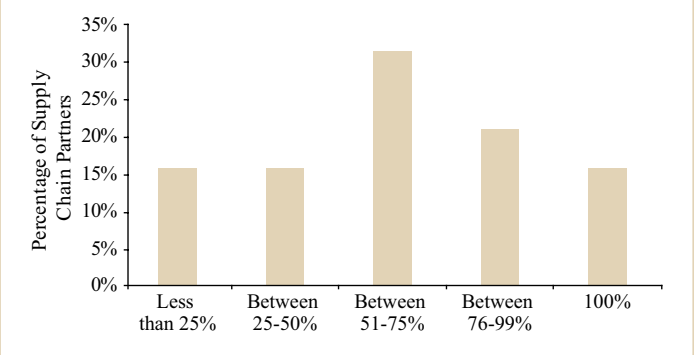
Note: The total sample size is 19.

7.4 Share of Revenue from the Partnership

The share of revenue that comes from the partnership with a non-alcoholic beverage company has been substantial for most of the respondents. Thirty-two per cent of the respondents attribute the share of revenues in their business from the partnership to be above 50 per cent but below 75 per cent, while 21 per cent of respondents felt that the share is above 75 per cent but below 99 per cent of business revenues. Around 16 per cent of the respondents were completely dependent on such collaborations as 100 per cent of their revenues accrued from catering to the non-alcoholic beverage company. Long association with the companies has created a good understanding with the companies and, for some respondents, the collaborating company has served as a lifeline by being a fixed client. Further, respondents mentioned that companies have helped in balancing exports and domestic sales, which has resulted in an increase in overall revenue.

Figure 7.4

Share of Revenue from Partnership



Source: Primary Survey.

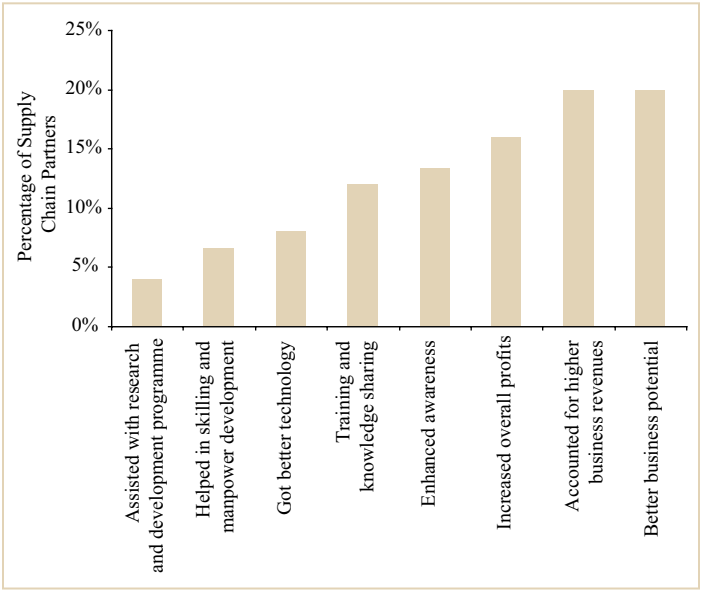
7.5 Benefits to Supply Chain Companies

A series of questions were asked to determine the benefit that the supply chain partners have received while collaborating with non-alcoholic beverage companies. There can be more than one benefit; these are summarised in Figure 7.5 and discussed below:

- **Increase in Business Potential and Higher Revenue**: The revenue of supply chain partners is dependent on the non-alcoholic beverage companies and their performance. Respondents felt that collaborations with companies have resulted in increased business and contributed to higher revenues. At the same time, given their high dependency on the non-alcoholic beverage companies for revenue, they can grow only if non-alcoholic beverage companies grow.
- **Increase in Profits**: It is important to note that the survey was conducted during a difficult economic situation and companies in general were worried about profits. Over 15 per cent of the respondents felt that collaborations have increased their overall profits.
- **Support in Enhancing Quality and Standards:** Supply partners in manufacturing and farmer organisations said that the partnership with non-alcoholic beverage companies has helped them increase quality to a global standard and they are now more aware of internationally accepted certifications and guidelines. One respondent said that they upgraded their food safety system and supporting infrastructure beyond the basic standards like BRC (British Retail Consortium), and Food Safety System Certification (for example, FSSC22000) as a direct result of collaboration with companies.
- **Training and Skill Development:** The respondents noted that non-alcoholic beverage companies have conducted regular training sessions, which have helped them. However, the specific details of such training were not elaborated on by the survey participants.
- **Support in Product Development:** The partnership has helped in new product development and has provided support to set up advanced testing facilities, according to respondents. While respondents have benefited from this support and facilitation from companies, specific details of the positive impact were not provided by survey participants.

Figure 7.5

Benefits to Supply Chain Partners



Source: Primary Survey.

Note: This is a multiple-choice question and the company could have benefited from the collaboration in more than one way.

7.6 Impact of the Pandemic on Supply Partners

The COVID-19 pandemic has led to significant disruptions in the supply chain and over 85 per cent of our survey participants have observed a disruption. There have been significant delays in procurement, production and delivery, which has had a direct

impact on revenue and sales. Table 7.1 summarises the findings on the pandemic induced disruptions among supply chain partners.

Table 7.1

Adverse Impact of the Pandemic on Supply Chain Partners

In per cent

	Social Distancing Norms	Loss of Lives of Employees	Workers Moved back to Hometown / Village	Supply Chain Disruptions
Minimal Impact	56	94	67	11
Short-term Impact	22	0	22	32
Significant Impact	11	6	0	32
Major-Short Term Impact	6	0	11	21
Major Long-Term Impact	6	0	0	5

Source: Primary Survey.

Note: The total sample size is 18.

Over 80 per cent of the supply chain partners have had a negative growth trajectory induced by the pandemic. The smaller companies along the value chain have been affected a lot more than the larger players due to the pandemic.

Over 71 per cent of the supply chain partners registered a decline in revenues of between 1 and 10 per cent, but, at the same time, over 50 per cent said that they would like to continue with investment or expansion plans. A small number of participants have put on-hold all expansion and investment plans until a relatively stable post-COVID environment is established.

In terms of the effect of the pandemic on employment, 76 per cent of the survey participants felt that the impact is now minimal/insignificant. However, earlier in the year 2020, labour migration during the lockdown has had a substantial impact on supply partners; over 42 per cent of the partners said that they had faced a short-term impact/labour shortages due to the pandemic-induced migration. They further said that a complete vaccination programme will provide safer working conditions for employees to return to work. Survey participants opined that the supply-chain has been disrupted in the short term, but they remain optimistic about their long-term growth through their continued partnership with non-alcoholic beverage companies, if supported by the right policies.

7.7 Growth Projection

Participants were asked if the non-alcoholic beverage sector would continue to grow, remain constant or see a decline in growth over the next five years. Only eight of the 21 respondents replied to this question. All eight participants who responded are optimistic about the sector and felt that the industry would grow in the next five years.

When asked about the rate of growth, 50 per cent of the respondents predict a growth of 10-15 per cent over the next five years while 25 per cent of the participants predict a growth of over 15 per cent. None of the survey participants felt that growth will be below 5 per cent.

7.8 Conclusion

A majority of the supply chain partners of non-alcoholic beverage companies are SMEs, who are dependent on these companies for their growth and revenues. They have referred to several benefits that have been derived from the partnership. At the same time, supply chain partners are going through a tough time due to the pandemic and felt that some support is needed from the government in the form of tax reductions or investment subsidies in the beverage sector to spur growth across the supply chain.

8

SURVEY ANALYSIS: FARMERS

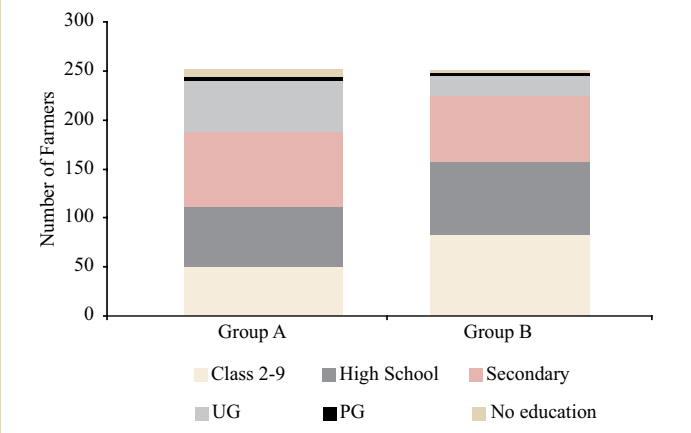
This survey tried to understand how being part of a non-alcoholic beverage company's supply chain benefited farmers, if at all, *vis-à-vis* those who are not a part of the supply chain. We received responses from 503 farmers – 252 farmers supplying to beverage companies or Group A, and 251 farmers not in partnership/ contract in the supply chain of beverage companies or Group B, spread across 16 districts in six Indian states.

8.1 Age and Education

A majority of the farmers surveyed were in the age group of 35-45 years (45 per cent). Fifty-six per cent of them received education at least up to high school (Grade X) or secondary school (Grade XII). The educational level of most farmers in Group A (30 per cent) was at the secondary school level while that of most farmers (33 per cent) in Group B was between Classes II and IX. About 27 per cent of Group B farmers had up to secondary school level of education (see Figure 8.1). Hence, farmers in Group A seem to have a better level of education than Group B farmers.

Figure 8.1

Education Qualifications: Group A vs. Group B Farmers



Source: Primary Survey.

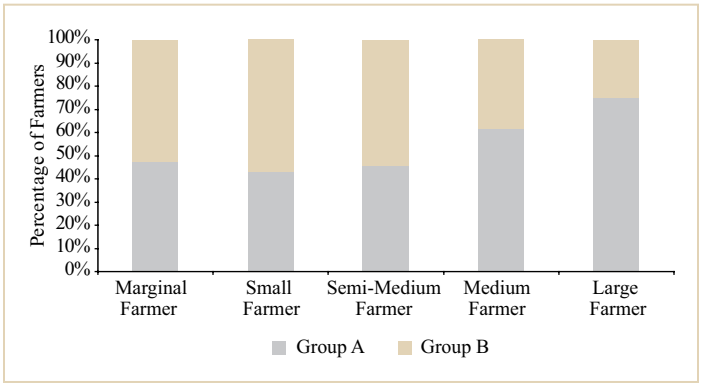
Note: Responses received from all 503 surveyed farmers.

8.2 Landownership, Farming Model and Crop Grown

Respondents were identified so as to comprehensively cover farmers with different landholdings, ranging from marginal (land holding of less than 1 hectare) to large (land holdings more than 10 hectares). In total, 98 per cent of surveyed farmers owned the land they toiled on. There is an almost equal representation of marginal, small and semi-medium farmers in Group A and Group B. But, as evident from Figure 8.2, the medium and large farmers surveyed tend to belong more to Group A than Group B, with Group A farmers constituting 62 per cent and 75 per cent respectively of the two categories.

Figure 8.2

Landholdings: Group A vs. Group B Farmers



Source: Primary Survey.

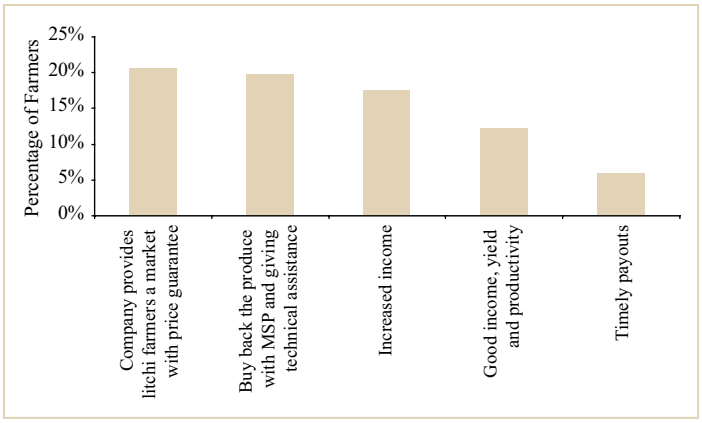
Note: Responses received from all 503 surveyed farmers.

8.2.1 Model of Farming and Benefits

While all 252 farmers in Group A followed contract farming, all Group B farmers (251 farmers) followed their own farming model. In Group A, over 20 per cent farmers said the major benefit of contract farming was that companies provided a confirmed market with a guaranteed price. The other top benefits are shown in Figure 8.3 below.

Figure 8.3

Contract Farming Benefits for Group A



Source: Primary Survey.

Note: Responses received from 206 farmers out of a total of 252 Group A farmers.

8.2.2 Types of Crop Grown

Farmers from both groups are engaged in growing a diverse range of produce such as apples, wheat, litchi, cabbage, mangoes, beans, etc., some of which can be used for juice production. However, three fruits – apples, mangoes and litchis – constitute 88 per cent and 93 per cent of crops grown by Group A and Group B farmers, respectively.

8.3 Living Conditions and Equipment Ownership

While certain marginal differences can be observed between Group A and Group B farmers *vis-à-vis* living standards (in terms of *pakka* houses with toilets, smartphone, bikes/scooter ownership, etc.), it was noticed that Group A farmers were more likely to own tractors and equipment (46 per cent) than Group B farmers (27 per cent).

In general, farmers connected to the supply chain of non-alcoholic beverage companies earned 75 per cent more income per harvest season as compared to their counterparts who are not connected to the supply chain of non-alcoholic beverage companies.

8.4 Ownership of Government Identification

All 503 farmers surveyed hold an *aadhaar* card and a voter card. Forty-six per cent of the farmers had below poverty line (BPL) card. There is no major difference in ownership of government IDs across the two groups of farmers.

Table 8.1

Ownership of Government Identity Cards: Group A vs. Group B Farmers

	Ration Card	Aadhaar Card	Bank account/ Jan Dhan Account	Voter card	PAN card	BPL card
Group A	202	252	250	250	250	87
Group B	251	251	250	251	199	96
Total Respondents	453	503	500	501	445	232
Percentage of Respondents	90	100	99	100	88	46

Source: Primary Survey.

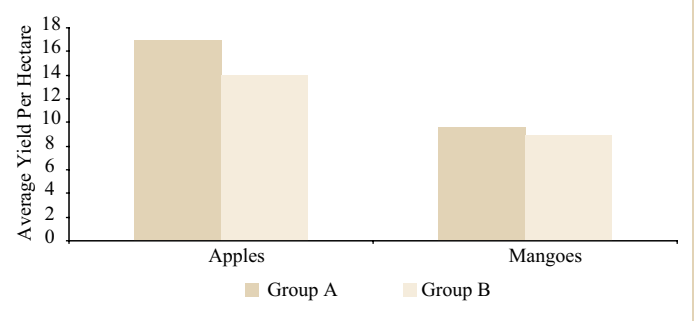
Note: Response received from all 503 farmers.
Percentage of respondents rounded off.

8.5 Yield and Income

Group A farmers fared better on most parameters such as yield per hectare and earning per harvest and got better prices for their crops (see Figure 8.4). For example, in the case of apples, a Group A farmer said he had a 20 per cent higher yield per hectare, got a 5 per cent higher price and earned 59 per cent more income per harvest season than his peers in Group B whose farms were in the same district. In the case of mangoes, a farmer in Group A had an 8 per cent higher yield per hectare and obtained a 23 per cent higher price compared to Group B farmers.

Figure 8.4

Comparing Per Hectare Yield of Apple and Mango Production: Group A vs. Group B



Source: Primary Survey.

Note: (1) The survey includes 101 apple growers – 51 in Group A and 50 in Group B; (2) The survey includes 293 mango growers – 142 in Group A and 151 in Group B; (3) The yield per hectare is the average yield per hectare reported by all 101 apple growers and 293 mango growers.

An interesting thing to note is that in the case of Group A farmers, 51-75 per cent of their household income comes from fruits that are supplied to non-alcoholic beverage companies whereas only 26-50 per cent of household income of Group B farmers comes from fruits.

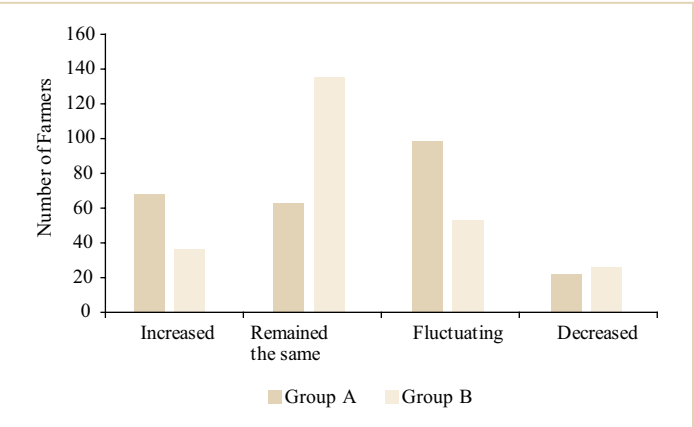
Group B farmers said that they receive good prices for litchi and apples in the open market and *mandis* (95 per cent).

8.6 Productivity over the Last Three Years

When asked about crop productivity over the last three years, nearly 40 per cent of the farmers felt that it had remained the same. More farmers in Group A said that productivity has increased (see Figure 8.5).

Figure 8.5

Productivity in Financial Year (FY) 2018, 2019 and 2020: Group A vs. Group B Farmers



Source: Primary Survey.

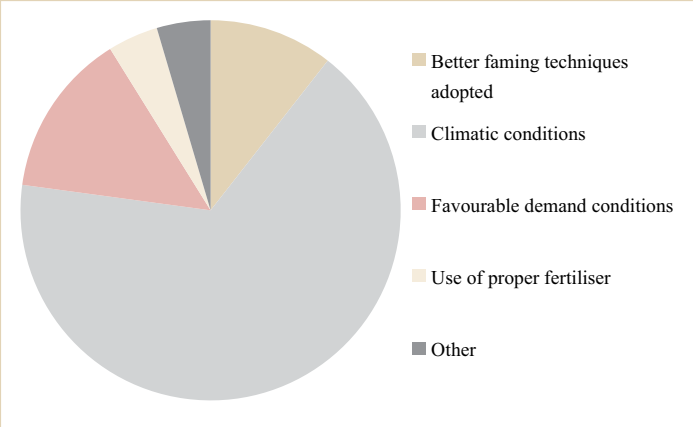
Note: Responses received from all 503 surveyed farmers.

8.6.1 Reason for Productivity Changes

Farmers were asked to give reasons for productivity changes; 70 per cent cited climatic conditions, followed by demand and price factors (especially in the case of litchi) and techniques of production and favourable agricultural practices. Ninety-eight per cent of respondents who said that their productivity has been decreasing mentioned unfavourable climatic conditions as the reason.

Figure 8.6

Major Factors Affecting Productivity



Source: Primary Survey.

Note: 320 (out of 503) farmers responded to this question.

A farmer was allowed to state more than one factor. The total responses were 345 (accounting for more than one response by a farmer).

Other factors included availability of water and inputs, fungal diseases, usage of pesticides, etc.

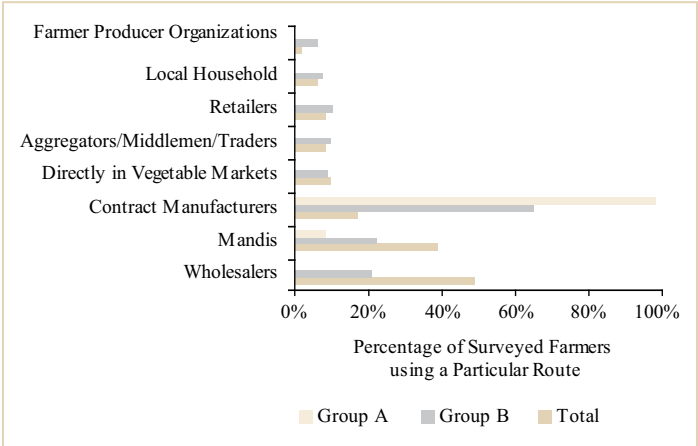
Most farmers attributed the rising productivity in the past three years to the use of sophisticated technology and techniques; some attributed increased crop yield to the proper use of fertilisers, and better price realisation due to favourable demand (especially for litchi pulp).

8.7 Route-to-Market

Nearly 50 per cent of surveyed farmers sell their fruits/ vegetables to wholesalers and wholesalers in turn supply to the non-alcoholic beverage companies. About 40 per cent of the farmers supplied to the *mandis* and 17 per cent to contract manufacturers of beverage companies, but there are wide differences across the two groups (see Figure 8.7).

Figure 8.7

Supply Routes Used by Farmers



Source: Primary Survey.

Note: Responses received from all 503 farmers.

One farmer can use more than one route; this is a multiple-choice question.

In the Group A, 99 per cent of the farmers said that contract manufacturers are the most preferred buyers of the produce (see Figure 8.7), as it is the only route for most of them.

Only 8 per cent of Group A farmers sell through *mandis*. Group B farmers, on the other hand, are most likely to sell their produce to more than one type of buyer (see Figure 8.7). In terms of means of transport, tractors, tempos, and pickup vans are the most prominent for both groups of farmers.

8.8 Domestic and Foreign Markets

Exports can help fetch a better price and increase farmers' income. The survey revealed that only Group A farmers were producing for exports. Almost 47 per cent of Group A farmers were exporting and the top export destinations were Sri Lanka and the Netherlands.

Table 8.2

Supplying to Domestic and Foreign Markets: Group A vs. Group B

Market	Group A	Group B
Domestic	134	251
Exports	118	No Exports

Source: Primary Survey.

Note: Responses received from all 503 farmers.

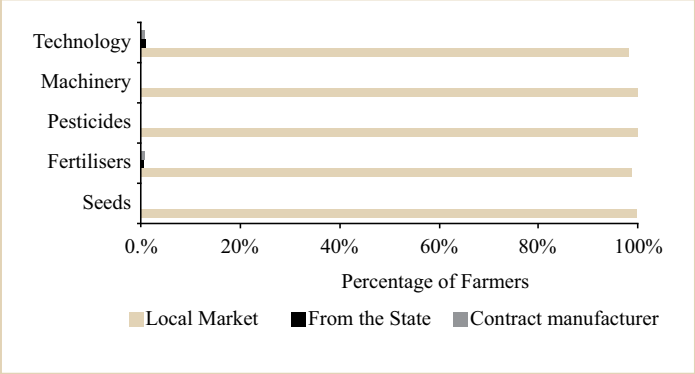
8.9 Sourcing of Inputs

Almost all farmers of both Groups A and B source their key inputs such as fertilisers, pesticides, seeds, machinery and technology, from local markets. While most inputs are sourced from the local market (see Figure 8.8), certain inputs like fertilisers and technology are also sourced from the state or

contract manufacturers of the non-alcoholic beverage companies. In some cases, the contract manufacturers provide a "package of practices" and train the farmers in the use of inputs.

Figure 8.8

Sources of Key Inputs for Farmers



Source: Primary Survey.

Note: Responses received from all 503 surveyed farmers; Farmers can have more than one key source of input.

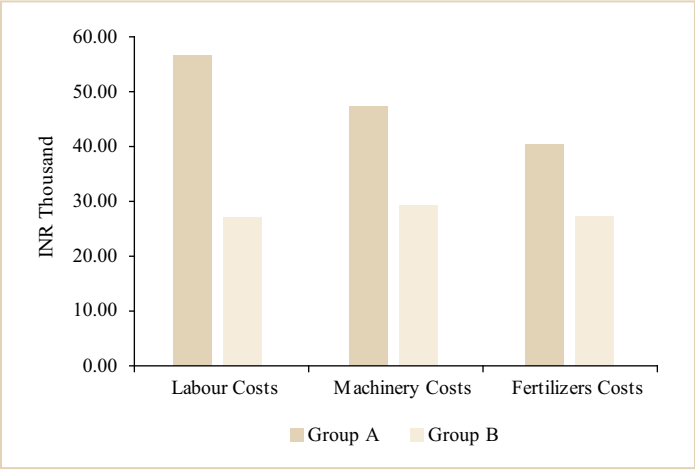
8.9.1 Input Costs

The survey covered the cost of machinery, labour, seeds and plants, fertilisers, energy, rent and licences as major input costs in farming. The top three input costs were as shown in Figure 8.9.

In general, Group A farmers tend to incur higher input costs in terms of labour, machinery and fertilisers as compared to Group B.

Figure 8.9

Average Cost in 2020: Group A vs. Group B



Source: Primary Survey.

Note: Response not received from all 503 farmers.

8.10 Storage of Produce

Most farmers (87 per cent) lacked access to adequate storage facilities. The problem is the same for both Group A (88 per cent) and Group B (85 per cent) farmers.

Table 8.3

Storage of Produce

Storage Facility	Number of Respondents		
	Total	Group A	Group B
Company Warehouse	8	8	--
Himanchal Dan Bhandar Warehouse	4	4	--
Local Cold Storage	11	--	11
Local Warehouse	13	6	7
No Storage Facility	436	223	213
Own Godown	16	5	11
Own House	15	6	9
Total	503	252	251

Source: Authors' calculations.

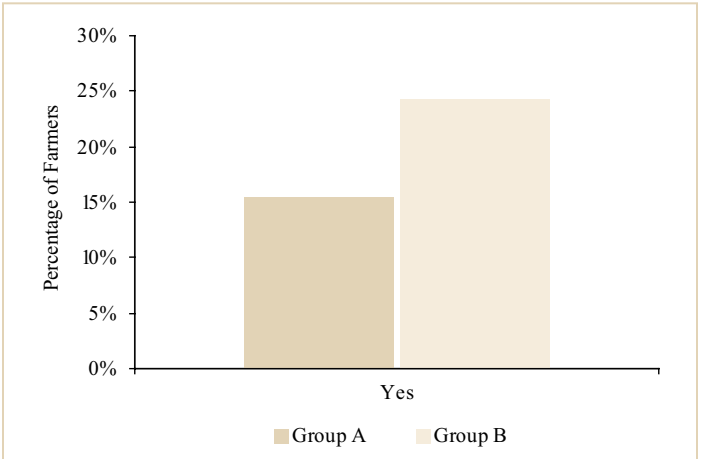
Note: Responses received from all 503 surveyed farmers. This was not a multiple-choice question. Most farmers (97 per cent) also reported that they receive no support from any government/agency for storage and transport of goods.

8.11 Loans and Debts

Out of the 503 farmer households, 20 per cent were in debt. Of these 100, a majority of households (73 per cent) took loans from formal institutions like banks and the remainder from family and friends. More farmers in Group B (24.30 per cent) were in debt compared to farmers in Group A (only 15.48 per cent) (see Figure 8.10). The popular source of loans for both farmer groups are formal institutions such as banks.

Figure 8.10

Household Debt: Group A vs. Group B



Source: Primary Survey.

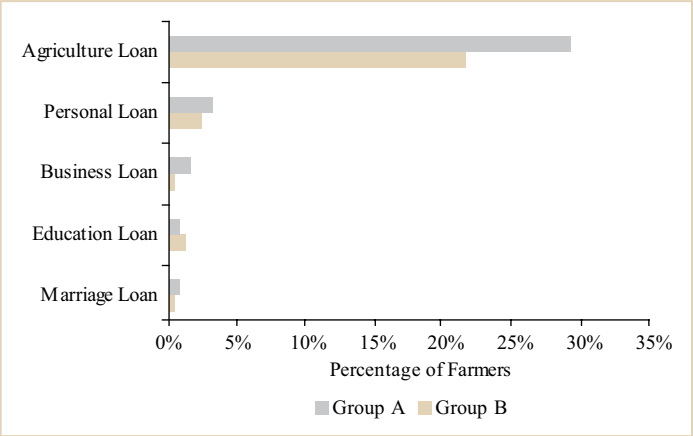
Note: Response received from all 503 farmers.

8.11.1 Purpose of the Loan

Out of 503 farmers, a majority of farmers took loans for agricultural purposes, followed by personal reasons. Less than 5 per cent of farmers took loan for other purposes like marriage, education, home loan and business loan (see Figure 8.11). This was true of farmers in both Group A and Group B, as evident from Figure 8.11 below.

Figure 8.11

Purpose of the Loan: Group A vs. Group B



Source: Primary Survey.

Note: Response received from 89 (out of 252) Group A farmers and 69 (out out 251) Group B Farmers.

8.11.2 Support from Non-Alcoholic Beverage Companies

No farmer from Group A received any help and support to secure loans by using the company contract as a collateral, or in any other way.

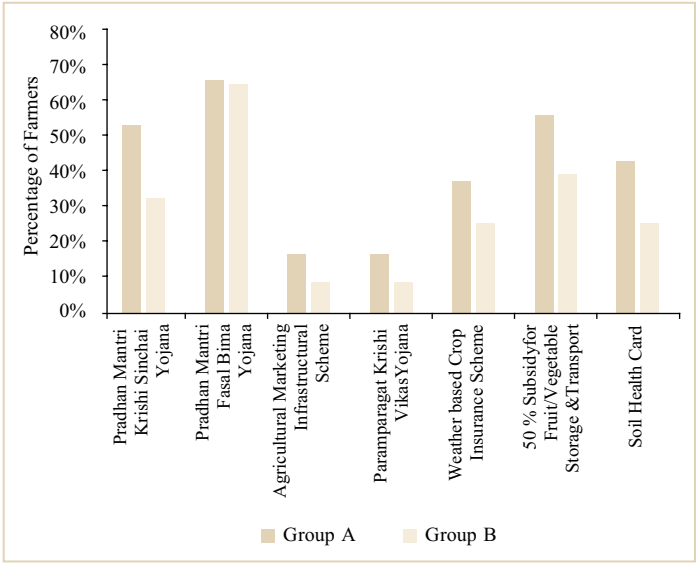
8.12 Government Scheme Awareness and Availed Benefits

Farmers, both in Group A and Group B were surveyed regarding their awareness of existing government schemes and whether they availed any benefits or not. The list of government schemes is listed in Appendix D, Table D1.

As evident from Figure 8.12, while 54 per cent of the Group A farmers are aware of the *Pradhan Mantri Krishi Sinchai Yojana,* only 33 per cent of Group B farmers were aware of the scheme; this pattern was observed across all schemes. Thus, Group A members are overall more aware about the mentioned schemes than Group B farmers.

Figure 8.12

Awareness of Government Schemes: Group A vs. Group B



Source: Primary Survey.

Note: Response received from all 503 farmers.

8.12.1 Benefits Availed

Although several farmers in both groups were aware of the schemes available to them, not all availed the benefits offered. Between the two farmer groups, Group A farmers did not take advantage of the schemes available as much as Group B farmers. For instance, in Group A, only 35 per cent of aware farmers availed the benefits of *Pradhan Mantri Krishi Sinchai Yojana*, while in Group B, the scheme was availed by all the aware farmers, i.e., 100 per cent. Similarly, only 10 per cent of Group A farmers availed the benefits of the *Pradhan Mantri Fasal Bima Yojana* compared to 100 per cent who were aware in Group B (see Table 8.4).

Table 8.4

Availed Benefits: Group A vs. Group B

	Pradhan Mantri Krishi Sinchai Yojana	Pradhan Mantri Fasal Bima Yojana	Agricultural Marketing Infrastructural Scheme	Paramparagat Krishi Vikas Yojana	Weather based Crop Insurance Scheme	50% Subsidy for Fruit / Vegetable Storage & Transport	Soil Health Card
Group A	48	17	0	0	0	70	1
Group B	82	165	0	0	0	36	0

Source: Primary Survey.

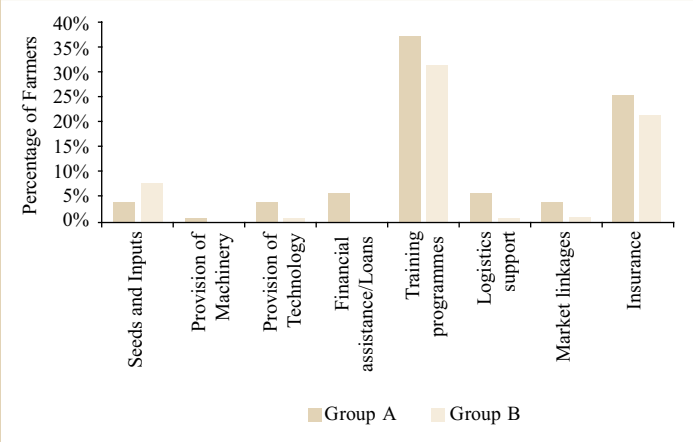
Note: Group A comprises 252 farmers and Group B comprises 251 farmers.
Not all farmers availed the Schemes.

8.13 Support or Assistance by the Government (Central / State) or Any Other Agency

Out of 503 respondents, almost 76 per cent of farmers said that they received support from the government or another agency. For example, the maximum number of farmers, 35 per cent, received support in the form of training programmes from the horticulture department, farmer producer organisations (FPOs), the non-alcoholic beverage company they are associated with or *Krishi Kalyan Abhiyan*. Crop insurance (24.06 per cent), seeds and inputs (5.96 per cent), logistics and transportation (3.18 per cent) and financial assistance/loans (2.98 per cent) are the top assistance measures provided by a government department or other organisations.

Figure 8.13

Number of Respondents Who Received Assistance: Group A vs. Group B



Source: Primary Survey.

Note: Responses received from all 503 farmers.

Between the two groups, Group A has received more support from various agencies than Group B (see Figure 8.13). Both the groups received the maximum assistance in training programmes (38 per cent Group A farmers and 32 per cent Group B farmers), and crop insurance (26 per cent Group A farmers and 22 per cent Group B farmers). In areas such as provision of machinery or financial assistance, while a small number of Group A farmers received support (1 per cent and 6 per cent), no farmer from Group B received any support.

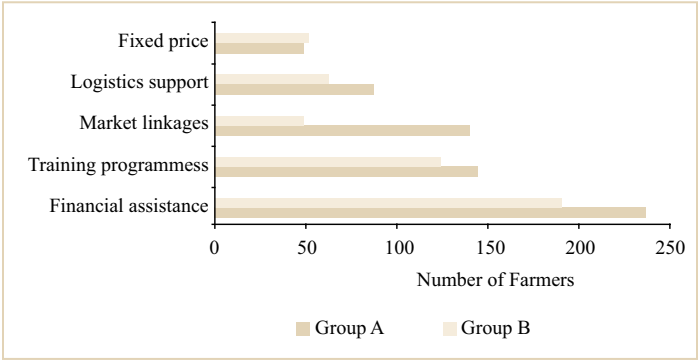
8.13.1 Support Expected from the Government

Over 85 per cent of the total farmers surveyed expect assistance from the government in the areas of financial assistance, followed by training programmes for skill development (53.88 per cent), market linkages (37.77 per cent) and logistics and transportation support (30.02 per cent).

Between the two groups of farmers, Group A and Group B, the former has more expectations in terms of support from the government. For example, almost 95 per cent of Group A farmers expect financial assistance, 57.94 per cent expect training programmes for skill development and almost 56 per cent expect better market linkages, both forward and backward. In comparison, only 76.49 per cent of Group B farmers want financial assistance, 50 per cent want training programmes and 20 per cent want market linkages.

Figure 8.14

Support Expected from the Government: Group A vs. Group B



Source: Primary Survey.

Note: This was a multiple-choice question. A farmer can have multiple expectations from the government.

Proportionately larger numbers of farmers who received little or no benefits under certain heads expected to be provided with such assistance. Among Group B farmers, none of whom received any financial assistance, 76 per cent expected such assistance as did 239 farmers in Group A where the number of farmers who received financial assistance was low at 15. Similarly, farmers from both groups expected transportation assistance and market linkages from the government; only 15 per cent of Group A farmers received transportation assistance and only 1 per cent benefited from market linkages. The corresponding coverage in the case of Group B farmers was 10 and 1 per cent respectively.

8.14 Challenges faced by Farmers: Group A vs. Group B

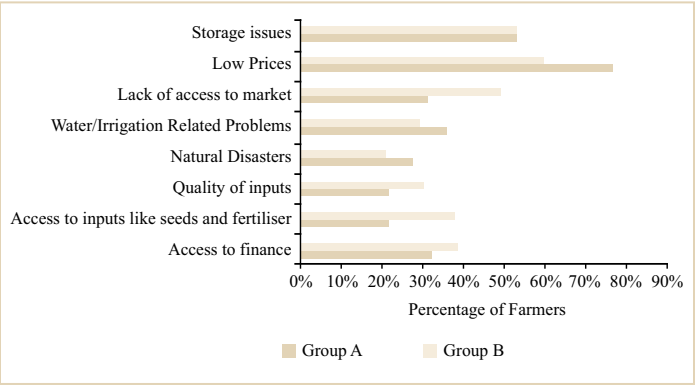
All farmers were asked to list the challenges they faced, ranging from access to finance or other key inputs like seeds and fertilisers, debt burden to storage or price issues.

Between the two groups, a higher percentage of farmers not in the supply chain of the non-alcoholic beverage companies faced challenges pertaining to accessing finance, inputs such as seeds and fertilisers, poor quality inputs, and market access.

Of the 252 farmers in Group A, the top issue related to low prices, was faced by 81 per cent of the farmers, compared to only 63 per cent of the Group B farmers. Storage issues (56 per cent) and water/irrigation issues (38 per cent) were the second and third challenges faced by farmers. Storage issues mainly related to the lack of cold storage facilities and availability of storage at the farm level. Water/irrigation issues were a result of complete dependence on nature – low underground water level and lack of rain on time. Access to finance in the form of delayed payments, unsupportive banks, and inability to get loans on time, was faced by almost 34 per cent of the farmers.

Figure 8.15

Key Issues Faced by Farmers Supplying to Non-Alcoholic Beverage Companies: Group A vs. Group B



Source: Primary Survey.

Note: This was a multiple-choice question and farmers could face issues in more than one area.

8.15 Farmers Sourcing to Companies in the Non-Alcoholic Beverage Sector

The following set of questions were administered only to Group A farmers to better understand how they benefit by being part of a company supply chain.

Of the 94 per cent of farmers who responded, a majority of the farmers had entered into a partnership/contract with a company between the years 2015 and 2018. In 2016, 30.80 per cent respondents started working with a company. Horticulture Produce Marketing & Processing Corporation (HPMC) Juice Company, Jain Farm Fresh Foods Ltd. and David Foods Pvt Ltd are a few examples of companies who were working with farmers who participated in the survey.

Out of the 252 farmers in Group A, over 85 per cent said that they do not have a formal written contract. Irrespective of the nature of the contract (verbal or written), 94 per cent of the farmers are engaged with the companies for one cycle of production only.[59]

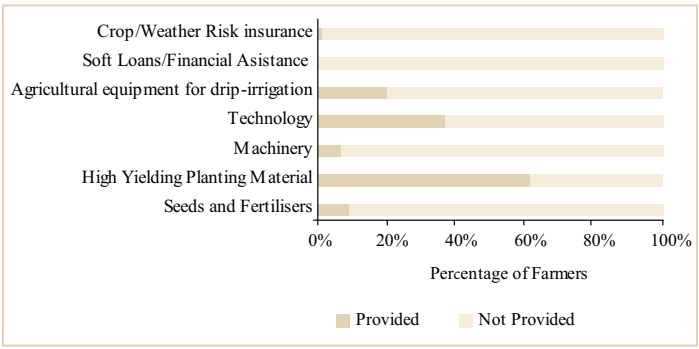
Despite the lack of formal contracts, farmers cite various reasons for supplying to companies. These include assured purchase and payment guarantees, timely payments, better price realisation and increased income, and the co-operative nature of company officials.

8.15.1 Support Provided by Companies

Around 62 per cent of farmers received high yielding plant material from the companies. The other key areas of support included technology and equipment for drip irrigation (see Figure 8.16).

Figure 8.16

Support Provided/ Not Provided by Non-Alcoholic Beverage Companies



Source: Primary Survey.

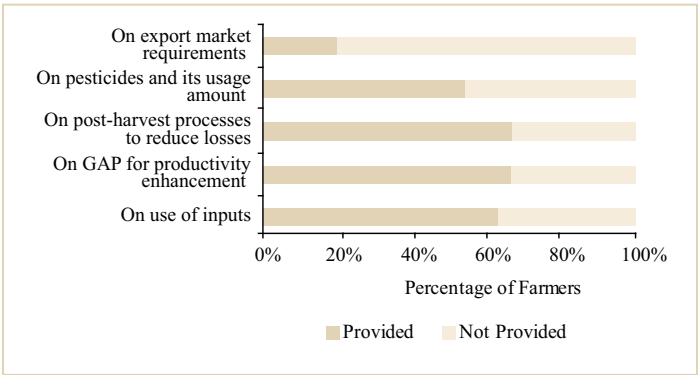
Note: Responses received from all 252 Group A farmers. Farmers can receive more than one form of support.

8.15.2 Training and Field Visits

A majority of Group A farmers did receive some form of training; however, there is still considerable scope for more farmers to be included in company's training activities and for the training activities to be much wider and comprehensive. For example, only 30 per cent farmers received information from companies about weather conditions and farmers highlighted that they need training on export requirements and on use of inputs (see Figure 8.17).

Figure 8.17

Training Provided/Not Provided by Non-Alcoholic Beverage Companies



Source: Author's calculations.

Note: Responses received from all 252 Group A farmers. Farmers can receive more than one form of training.

• Field Visits

Over 65 per cent of Group A farmers said that the companies visit fields regularly. One of the most common objectives is to provide technical or agronomical support to the farmers. Other reasons for field visits are to provide training on use of inputs, to analyse crop conditions and fields, and to guide he farmers for better quality output.

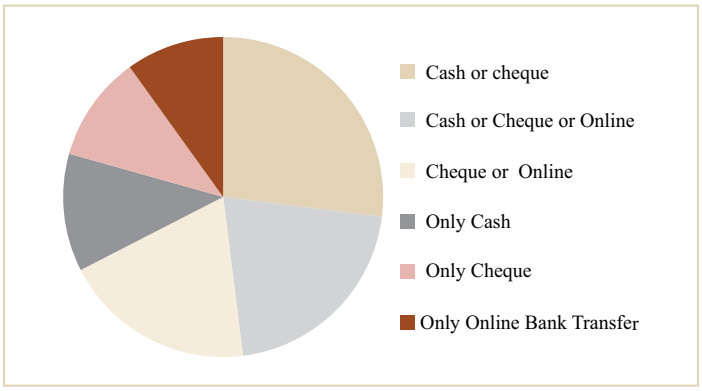
59. Out of 252 farmers, 237 farmers responded to the question.

8.15.3 Mode of Payment

Farmers received payments received through several modes – in the form of cash, cheques or through online payments. Payment in cash or through cheques were the most preferred options, with almost 27 per cent farmers opting for it. Almost 21 per cent farmers received payment through cash/cheque or through online payments. The other preferred payment modes are shown in Figure 8.18.

Figure 8.18

Group A: Preferred Mode of Payment



Source: Primary Survey.

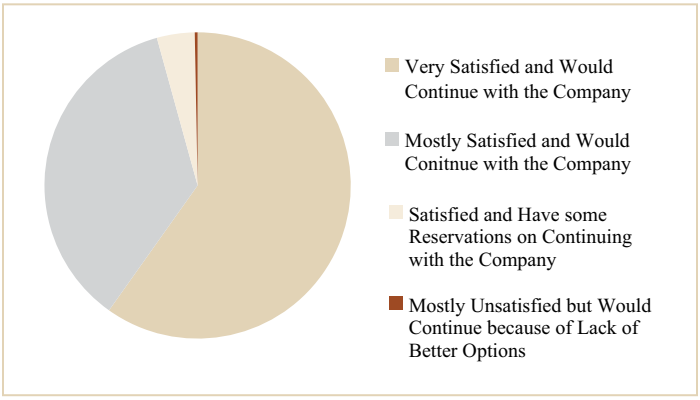
Note: All Group A Farmers (252 farmers) responded to the question.

8.15.4 Overall Experience of Working with a Company

On being asked about their overall experience of working with non-alcoholic beverage companies, 60 per cent of the farmers said they were very satisfied and would continue to work with the companies (see Figure 8.19). Only one farmer said he was dissatisfied as a result of low market prices but would like to continue to work with the company due to lack of better options.

Figure 8.19

Overall Experience of Working with the Company



Source: Primary Survey.

Note: All Group A Farmers (252 farmers) responded to the question.

8.15.5 Natural Disasters and Company Support

While 50 per cent of the surveyed Group A farmers have not faced any major natural disaster yet, 28 per cent said they have been supported agronomically by companies to minimise crop loss caused due to a natural disaster. Almost 20 per cent farmers said they should be provided with insurance by the companies, which can include covering 70 to 75 per cent of the cost of the crop. The remaining farmers were of the opinion that companies should either provide technology to protect the crops, or pre-harvest the crops and store the supply in company cold storages to prevent loss due to natural disasters.

• COVID-19

All Group A farmers said that during COVID-19, there has been no change in the company requirements or in the nature of the contract. Almost 60 per cent farmers said they received additional support from the company during COVID-19 in the form of free masks, sanitisers, other spraying and safety equipment, spreading awareness about the pandemic and PPE kits. The farmers mentioned some additional support that the company could have provided, including providing horticultural equipment, bearing charges for irrigation, pesticides and ploughing, increasing procurement prices for litchi and mango, transportation facilities, short-term loans, changed payment methods, and fixed price support.

8.15.6 Impact of Contract

A majority of the farmers strongly agreed/agreed that entering into a contract with non-alcoholic beverage companies has improved their earnings, living standards, and yield and that they have benefited greatly from the training the companies provided (see Table 8.5). The farmers also agreed that by supplying for the company, they have gained knowledge about better seeds and production techniques. Group A farmers were undecided (neither agreed nor disagreed) that they were able to attain financial assistance/access to a loan by using the contract as collateral.

Table 8.5

Impact of Contract on Group A Farmers

In per cent

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	Not Applicable
Improved earnings	0	0	16	34	50	0
Standard of living	1	10	24	30	35	0
Improved yield	2	9	13	21	55	0
Better seeds & production techniques	0	12	24	53	11	0
The training provided by company was helpful	0	15	17	38	29	0
Financial assistance	3	14	30	0	0	53

Source: Primary Survey.

Note: Response received from all 252 farmers.

9

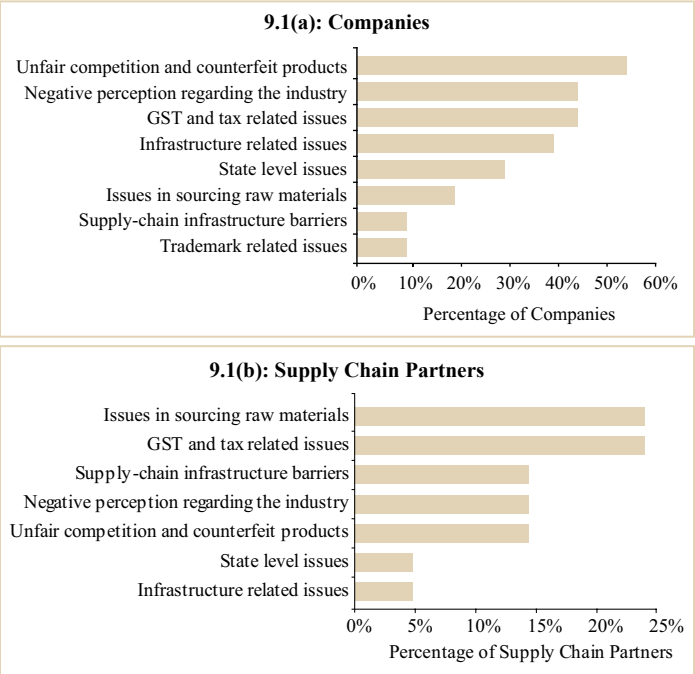
BARRIERS AND CHALLENGES

This chapter discusses the bottlenecks and challenges faced by three groups of survey participants, namely non-alcoholic beverage companies, their supply chain partners and farmers. The challenges have been substantiated through literature review. While the challenges may differ among the three different groups depending on where they are located in the supply chain, the surveys highlighted certain common challenges like higher taxes that have been raised by all three groups as impediments to the growth of the non-alcoholic beverage sector.

The non-alcoholic beverage companies and supply chain partners were given a set of challenges and asked to tick all the challenges that are applicable. The key challenges identified by the non-alcoholic beverage companies and their supply chain partners are presented in Figure 9.1 (a and b). Interestingly, there are many common challenges across the two groups and some of the challenges related to procurement from farmers have also been highlighted in the farmer survey. Broadly, there are nine key challenges, ranging from unfair competition and counterfeit products to issues related to the tax structure or infrastructure and logistics. These are discussed below.

Figure 9.1

Key Challenges Faced by Companies and Supply Chain Partners



Source: Primary Survey.

Note: This was a multiple-choice question and respondents can face challenges in more than one area.

9.1 Unfair Competition and Counterfeit Products

The survey participants highlight that one of the main challenges is counterfeit products. Fifty-five per cent of the surveyed companies agreed or strongly agreed that unfair competition and counterfeit products are major challenges as did around 14 per cent of the surveyed supply chain partners.

The volume of such counterfeit products is rising and poses a huge health risk to consumers. It is observed in some cases that packaging material gets leaked out of the company's own supply chain and dubious manufacturers pick original packaging from the recycled market and refill it with substandard liquid.[60] This is a major issue in the case of mineral water. There are several reasons for counterfeit products. First, the market for the non-alcoholic beverage sector has only a few corporate players, and a large number of players in the unorganised sector. Second, while the organised sector faces high taxes, the informal sector can evade taxes and other compliance requirements.

Third, there is lack of government monitoring of quality standards in the informal sector and/or measures to increase tax collection from this sector. The lack of implementation of regulations enables some players to skip meeting all necessary compliance measures and procedures. This causes unfair competition within the sector, where the organised sector pays higher taxes and higher price for quality raw materials and ingredients while some companies are neither using quality raw materials nor paying taxes.

Fourth, the lack of trademark enforcement and protection is a persistent issue, according to survey respondents. They indicate that well-known trademarks have not been given appropriate protection, resulting in spurious and counterfeit products in the market. The application process is complex and is time consuming. One of the participants pointed out that the registered trademark was issued after three years of the initial application.

9.2 Negative Perceptions Regarding the Industry

Around 45 per cent of non-alcoholic beverage companies and 14 per cent of supply chain partners felt that there is a negative perception about the industry, which has been fuelled by the perception that all carbonated beverages, irrespective of the ingredient used, are SSBs, and can cause chronic diseases like obesity and type-2 diabetes. Apart from this, there is a perception

60. Source: https://economictimes.indiatimes.com/why-make-in-india-when-you-fake-in-india/articleshow/52088848.cms? utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst (last accessed February 10, 2022).

that beverage companies use excessive water and contribute to plastic usage and pollution. Such negative perceptions have adversely affected the sector. Often, all CSDs are clubbed with products like tobacco, irrespective of any scientific evidence on their health impact and nutrition level or sugar content. There are a variety of sugar alternatives and different types of beverages, but Indian policymakers often do not take that into account while designing policies (see Section 9.3.1). At the same time, international organisations like the WHO also advocate a "sin tax" for non-alcoholic beverages as in the case of other ultra-processed food (see Section 2.3.1) and club all kinds of non-alcoholic beverages in the ultra-processed food sector. This negative perception of the non-alcoholic beverage industry is also reflected in the higher tax imposed on this sector in India. Some companies that manufacture juices and tea-based beverages mentioned that there is limited knowledge about the contribution of the industry to the economy and to farmers, leading to the negative perception. This was also the view of supply chain agents.

9.3 GST and Tax Related Challenges

9.3.1 Indian Tax Structure for Non-Alcoholic Beverages

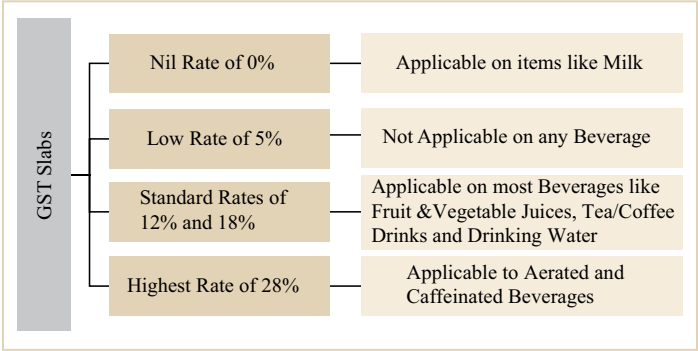
In India, the central government introduced the GST with effect from July 1, 2017, to replace multiple taxes (such as central excise duty, service tax, countervailing duties, and special additional duty) that were being levied earlier. The GST structure has been developed as a four-tiered tax system with four separate rates: zero-rate, low-rate, two standard-rates and a high-rate (see Figure 9.2). For certain items, there is also a compensation cess (12 per cent) applicable above the GST rate. Prior to the implementation of the GST, the Subramanian Committee released a report in 2015 titled 'Revenue Neutral Rate and Structure of Rates for the Goods and Services Tax (GST)', which recommended a sin/demerit rate to be fixed at 40 per cent (centre plus states) in line with growing international practice. This was applicable on goods and services that create negative externalities for the economy and is mostly levied on alcohol, tobacco, luxury cars, *paan* masala and aerated beverages. One key reason for imposing high rate on aerated beverages is that in the pre-GST regime, aerated beverages were a high tax commodity attracting a tax rate of 40 per cent. It was reduced to 28 per cent with the implementation of GST (the highest GST slab). To compensate for the revenue loss to states, the committee advocated the implementation of a compensation cess of 12 per cent (Subramanian Committee, 2015).

Non-alcoholic beverages subject to compensation cess under SSBs include aerated water, lemonade, and others. While the compensation cess on aerated beverages of 12 per cent is still applicable to the products, the 37th GST Council Meeting, on September 20, 2019, recommended that GST rates on caffeinated beverages (such as Red Bull) also be increased to 28 per cent from the existing rate of 18 per cent. This is over and above the compensation cess of 12 per cent already applicable on these products. The motive was to bring parity in the rates of caffeinated beverages and aerated drinks.

After the implementation of GST, the tax rate structure for non-alcoholic beverages is as shown in Figure 9.2.

Figure 9.2

GST Tax Slabs across Various Non-Alcoholic Beverage Categories



Source: Compiled by Authors.

9.3.2 Issues Related to Tax-Structure

There are three key issues in the way non-alcoholic products have been taxed. These are discussed below:

• High GST Rates irrespective of Nutrition/Sugar Content

Carbonated drinks face the highest GST rates, irrespective of whether they are low sugar drinks or zero sugar drinks, and while imposing taxes, policymakers have not considered low sugar drinks or alternative sweeteners as different categories of beverages as has been the case in other countries (see chapter 2). Again, both natural/mineral water and aerated water are taxed at 18 per cent; carbonated beverages with and without fruit content are taxed at 28 per cent and have an additional 12 per cent compensation cess (see Table 9.1). In other words, health implications may not have been considered while designing the GST rates, as mentioned in the Subramanian Committee (2015) report.

While this model of taxation may have been designed to collect revenue, it may not justify the concept of "sin tax" as mentioned in the Subramanian Committee (2015) report. If taxation needs to be used as an economic instrument to deter consumption of unhealthy beverages and promote healthy drinks, survey participants felt that the nutritional value must be taken into consideration when deciding on tax rates as has been done by some countries (see chapter 2).

• High GST Rates irrespective of Volume

The GST structure also does not take into account the volume of the non-alcoholic beverage as is evident from Table 9.1. While water, including natural/mineral water, is taxed at 18 per cent GST, water packed in 20 litres bottle is taxed at 12 per cent. Ideally, both large size package and smaller size package of water should be in the same GST slab and, given that there is a need for safe drinking water in India, GST should be in the lower tax slabs.

Table 9.1

GST Rates of Non-Alcoholic Beverages (FY 2019-20 to FY 2022-23)

In per cent

Non-Alcoholic Beverage Categories		IGST#				
IBA Category	Product Descriptions (4/6/8 HS Code)	FY 2019-20	FY 2020-21	FY 2021-22	FY2022-23 (as on 14.02.2022)	
					IGST	SGST
Bottled Water	Waters, including natural or artificial mineral waters and aerated waters, not containing added sugar or other sweetening matter nor flavoured other than drinking water packed in 20 litres bottles (220110)	18	18	18	18	9
	Drinking water packed in 20 litres bottle (2201)	12	12	12	12	6
Carbonated Soft Drinks	Aerated Waters (22021010)	28*	28*	28*	28*	14*
	Lemonade (22021020)	28*	28*	28*	28*	14*
	All goods (including aerated waters), containing added sugar or other sweetening matter or flavoured (220210)	28	28	28	28	14
Energy Drinks	Caffeinated Beverages (22029990)	N. A	28	28	28	14
Fruit and Vegetable Juices	Fruit juices (including grape must)/vegetable juice unfermented and not with added spirit, whether or not sweetened (2009)	12	12	12	12	6
Fruit based Drinks	Carbonated beverages of fruit drink or carbonated beverages with fruit juice (2202)	28*	28*	28*	28*	14*
	Fruit juices (including grape must) and vegetable juices, unfermented and not containing added spirit, whether or not containing added sugar or other sweetening matter (22029920)	12	12	12	12	6
Milk or Yoghurt-based Beverages	Beverages containing milk (22029930)	12	12	12	12	6
	Buttermilk/Lassi (0403)	0	0	0	0	0
Tea/Coffee based Drinks	All goods i.e., extracts, essences and concentrates of tea or mate, and preparations with a basis of these extracts, essences or concentrates or with a basis of tea or mate (210120)	18	18	18	18	9
	Extracts, essences and concentrates of coffee, and preparations with a basis of these extracts, essences or concentrates or with a basis of coffee (i.e., instant coffee, coffee aroma, etc.) (210111, 21011200)	18	18	18	18	9
Vegetable or Fruit Concentrate/ Powder/ Syrup	Soft drink concentrates (2106)	18	18	18	18	9

Source: Extracted from Recommendations for Rate of GST in Goods (2017) Changes in GST/IGST Rate (2017), Updated Schedule of CGST rates on goods (2018), Available at Central Board of Indirect Taxes and Customs, Ministry of Finance, https://cbic-gst.gov.in/gst-goods-services-rates.html; http://gstcouncil.gov.in/sites/default/files/NOTIFICATION%20PDF/goods-rates-booklet-03July2017.pdf ; https://www.cbic.gov.in/resources//htdocs-cbec/gst/Ready-Reckoner-Final-27102018.pdf;jsessionid=1106989D736F448DB1D4559207009977 ; http://www.gstcouncil.gov.in/sites/default/files/gst%20rates/chapter-wise-rate-wise-gst-schedule-18.05.2017.pdf (last accessed on February 14, 2022)

IGST = CGST + SGST

* indicates the additional 12 per cent compensation cess levied on the product.

• GST Rates not aligned to FSSAI Regulations and other Government Policies

The GST rates are not aligned to the FSSAI's definition of products, which companies have to mandatorily follow. According to the FSSAI's Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011, processed fruit beverages/fruit drinks/ready to serve fruit beverages require no less than 10 per cent fruit juice content (no less than 5 per cent for lime/lemon beverages). For carbonated fruit beverages or fruit drinks, the requirement is the same, i.e., no less than 10 per cent fruit content (no less than 5 per cent lime/lemon juice).[61] Any non-alcoholic beverage company manufacturing in India needs to adhere to these standards as notified by the FSSAI. However, the existing GST tax slabs do not take into consideration these notified standards while designing taxes and taxes are not aligned with the required fruit content in CSDs. At present, a carbonated/aerated beverage will attract 40 per cent (28 per cent GST plus 12 per cent compensation cess) GST, irrespective of the percentage of fruit content. Thus, there is a need to rationalise GST to align with the FSSAI classification to remove any ambiguity in product description.

The survey respondents also pointed out that there are mixed messages in public policy where the industry and manufacturing are promoted (such as through the Production Linked Incentive (PLI) scheme, which has a budget of INR10,900 crore for the entire food processing industry, including beverage companies which use fruit and vegetables as a raw material)[62] while the taxation policy does not reflect the same intent as it places this sector in the highest tax bracket, making it difficult for scale expansion. Thus, on the one hand, subsides are given to scale up production and, on the other, higher taxes are imposed on fruit based carbonated drinks, which deters consumption and hence, scale expansion.

9.3.3 Impact of Taxes

There are five key effects of the high GST rates and the GST structure imposed on the non-alcoholic beverage sector.

• Low Per Capita Sales Volume and Low Revenue Collection

In Section 3.1, we saw that India's per capita level of sales volume is very low, compared to developing countries such as the Philippines and Vietnam. As high tax slabs are not based on an analysis of consumer demand and per capita sales in India is low, higher tax can lead to lower revenue collection. While there are companies who do not face such high GST slabs, some member companies are levied a zero-tax rate (for example buttermilk/*lassi*) or 12 per cent for milk-based beverage or fruit and vegetable juices (see Table 9.1). CSD, which is the largest segment of the industry is levied tax at a very high rate, which along with compensation cess amounts to 40 per cent. Some survey participants are of the view that higher taxes on products where per capita consumption is low will not generate tax revenue. Tax experts opined that a moderately high tax of 28 per cent in total could have generated better revenue and yet not deterred consumption of SSBs.

Companies feel that a reduction in GST slab will not only boost local horticulture but will also help improve the income of farmers supplying raw materials like sugar and fruits. High taxes levied on the beverage companies have a spill-over effect on the entire supply chain where the cost is being borne by the supply partners, farmers, and the final consumer.

• Burden of Taxes on Low-Income Groups

With a general decline in consumption of CSDs among the higher income classes (tax-paying section) (see Section 3.1.2), the burden of revenue generation through taxes falls on the lower socio-economic class in India. This is likely to be a repressive tax as the tax burden falls on the low-income groups, especially since CSD products are sold between INR10 and INR30 per unit. While the government should have a lower tax to promote healthier beverages like organic juices, milk based drinks, tea/coffee based beverages, it cannot have the highest slab of taxes in categories where consumption by low-income groups is increasing, thereby carrying the tax burden.

• Increase in Counterfeit Products

An increase in price due to a rise in the taxes, along with low affordability of the majority of consumers, also helps spurious and counterfeit manufacturers to sell their products on the basis of cost arbitrage. There is high incidence of sale of counterfeit products in India, which adversely affects genuine companies and tax collection (see Section 2.3.3).

• Deterring Scale Expansion and Investments

A high tax deters scale expansion and investment by companies in India. Despite the inherent benefit of having abundant raw materials, India has not been able to become a global production hub. Over the last 10 years, (2010 to 2020), the share of fruit and vegetable juices in India's exports has decreased, despite an increase in export value from USD6.55 million in 2010 to USD9.46 million in 2020. While companies are keen to invest in innovative products like juice based carbonated beverages, which has good export potential, or zero sugar carbonated beverages, which has a growing demand globally, they are unable to do so due to high taxes. Despite India being a large producer of fruits and vegetables, it is much behind countries such as China and Thailand in terms of exporting non-alcoholic beverages (see Table 3.4.). Apart from high taxes, high import duties on certain ingredients make it difficult to import ingredients and process these in India. To avoid this problem, some companies have now established processing facilities in other countries and import the finished products through free trade agreements with India. The customs duties and cess on imported ingredients and raw materials for processing in India have to be streamlined for certain products like tea-based drinks.

61. Source: https://fssai.gov.in/upload/uploadfiles/files/Food_Additives_Regulations.pdf (last accessed February 14, 2022).

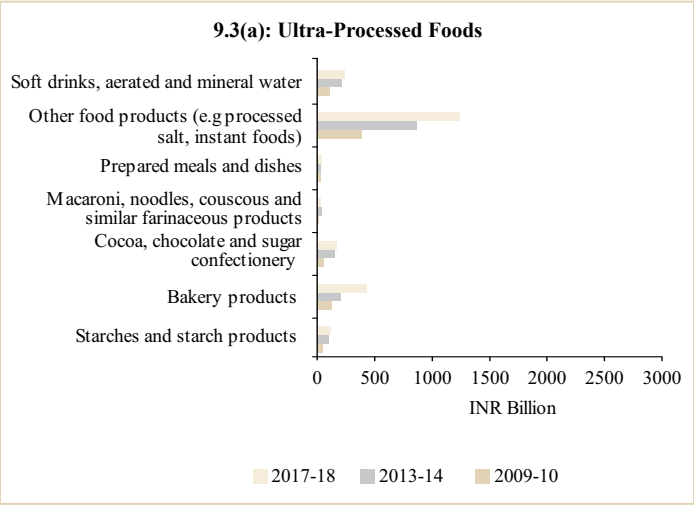
62. Source: https://www.ibef.org/news/pli-scheme-for-food-processing-formulated-with-rs-10900-cr-outlay-says-centre (last accessed February 16, 2022).

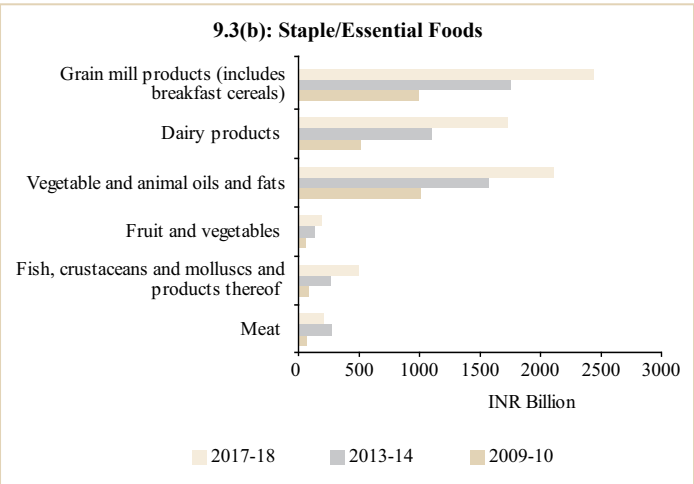
• Lack of Level-playing Field with Other Ultra-Processed Goods

Often, the data on soft drinks, aerated and mineral water is clubbed under the ultra-processed food category, irrespective of the type of beverage and its nutrition level. The size of total output in this sector is small according to the government's own data (see Figure 9.3), but when it comes to taxation, this sector faces the highest taxes, which affects the development of processing. In mature food processing markets, ultra-processed food face higher taxes but food, in general, attracts lower tax than other categories. In India, higher taxes on an industry like beverages, which is developing, restricts its growth. Hence, the objective of the government to develop food processing is countered by high GST. Further, within ultra-processed food, companies pointed out that some are treated as "harmful goods" while others with high sugar content or similar health impact are not, resulting in the lack of a level playing field. For example, the GST rates for chocolates was reduced from 28 per cent to 18 per cent in 2017. [63]

Figure 9.3

Total Output of Ultra-Processed versus Staple/Essential Foods by Sub-Categories





Source: Compiled from National Statistical Survey Office (NSSO) – Industrial Statistics Wing and ASI Summary Results, Ministry of Statistics and Programme Implementation. Available at http://www.csoisw.gov.in/CMS/cms/Feedback.aspx.; http://mospi.nic.in/asi-summary-results/107 (last accessed on July 15, 2020)

Note: The data on total output in the food processing sector for the year from 2010-11 to 2017-18 is collected from NSSO-Industrial Statistics Wing, Volume 1, and for the year 2008-09 and 2009-10, the data is collected from ASI Summary Results, MoSPI.

9.3.4 Effectiveness of Taxes

As mentioned in Section 2.3.3, it is important to understand that higher taxation can deter consumption only if the product is characterised by high price elasticity. Otherwise, an increase in tax rate will not help reduce consumption. If the objective is to reduce consumption, one needs to investigate the price elasticity of each product before deciding upon the tax rates. Unfortunately, no comprehensive study is available that deals with price elasticities of these products in the Indian context. Therefore, the linkage between price and consumption behaviour is yet to be understood.

9.4 Infrastructure-related Issues

Survey respondents pointed out that the fragmented transport and logistics infrastructure leads to high logistics costs, delays, and chances of product spoilage. In addition, the cost of electricity for the manufacturing sector is high, and supply is erratic, necessitating the setting up of diesel generators for power backup, which adds to cost. A few supply chain partners pointed out that due to infrastructure and logistics issues, they find it difficult to procure from farmers in remote regions like the North-East. Farmers said that the quality of roads in their villages makes it difficult and expensive to bring their produce to the market. The lack of cold storage facilities also added to costs. Companies, supply-chain agents and farmers all confirmed that connectivity is a key challenge in both backward and forward linkages and in reaching out to consumers and farmers in remote areas. Companies also pointed out that the export freight rate has been increased by more than 3 to 4 per cent in FY 2021-22 compared to 2020-21, which has increased the cost of exports.

9.5 Issues Caused by Differing State Government Compliance Requirements

India is not a single market and there are multi-layered regulatory requirements at the centre, state and local levels that manufacturing units have to meet. Several areas like land, agriculture, water bodies and environment are under the jurisdiction of states and the issues range from lack of uniformity of policies and practices to difficulties in reaching out to state governments, or delays and procedural bottlenecks. The delays are specifically in the processes for licensing, registration and certifications; the application process is long drawn and the

63. Source: https://economictimes.indiatimes.com/news/economy/policy/gst-rates-items-that-will-continue-to-beexpensive/articleshow/61598211.cms (last accessed on 17 February, 202

approval process take a lot of time to come through. Another key challenge identified by participants is that there is no continuity in policies at the state government level, where incentives given by earlier state governments are not honoured after an election by the new state government. There are policy gaps/variations across states; for example, some states do not have a robust policy on recycling while some states in South India have no incentives/schemes for pulse width modulation (PWM) for water discharge and supply.

9.6 Sustainable Production Related Challenges

There are challenges faced by this sector in terms of sustainable production, which include climate change, water shortage and water reduction related issues.[64]

9.6.1 Climate Change Related Issues

Climate change has led to water shortages in some areas and threatens the consistent supply of the main agricultural ingredients needed for the production of non-alcoholic beverages. The impact of climate change has affected production of items like coffee, tea and fruits. In the case of fruits, there are also issues related to pest infestation, variation in production and deterioration in soil quality.

9.6.2 Water Shortages Related Issues

Beverage companies are perceived to be large users of water and there are water shortages in many states. The beverage industry is often blamed for excessive water usage but their efforts to secure water bodies and reduce water wastage through recycling and other initiatives, as has been discussed in Section 3.2, goes unnoticed.

9.6.3 Packaging and Recycling-related Issues

The beverage industry is often blamed for packaging material waste generation, particularly plastic waste and the innovations and efforts in recycling are undermined by the criticism of a section of society that is probably unaware of the recent advancements in R&D in this sector.

9.7 Challenges related to Procurement of Raw Materials

There are five key issues in procurement of raw materials, especially fruits:

- India may be a large producer but the raw materials may not be of processing quality.
- There are small and mid-sized farmers and getting consistent quality supply from them is an issue.
- Even if one state has an abundant supply of raw material while another offers a good environment for setting up manufacturing units, there are inter-state issues in mobility and in procuring raw materials from one state and supplying it to another for processing. This adds to costs and does not benefit either the local supply chain or farmers in the producing state. For example, one company pointed out that they have to source bananas from Maharashtra for the plant in Ranchi, Jharkhand, leading to high freight costs, wastage and delays.
- Survey respondents also raised concern regarding the low quality and yield of the produce. For example, the key issue with Indian tomato is low yield and quality and high price fluctuations. Therefore, at times, imports are cheaper even after applying import duty and of a better quality.
- Respondents also noted that special attention needs to be paid to reach out to small farmers for raw material sourcing. During good crop seasons, some states try to impose minimum support price (MSP) whereas other states do not implement MSPs; this has led to a non-uniform pricing structure that affects small farmers adversely. They are unable to decide what to do and whether or not to be part of a company's supply chain.
- Input costs have increased consistently, leaving little room for profitability throughout the supply chain and reducing the income earned by farmers. Many contract farmers have reached out to beverage companies to highlight the supply deficit in and the rising cost of fertilisers, for which the price increase has been between 45 and 60 per cent. Stakeholders have also noticed instances where the black market for fertilisers has increased. Another input whose price has increased significantly are crates. Crates are a basic requirement for shipments and for reducing wastage losses as well, and they are taxed at the high GST rate of 18 per cent. Beverage companies face high input costs and high taxes.

9.8 Other Farming-related Challenges

The surveyed farmers of both Group A and B pointed out to some common challenges. Although faced mainly by Group B farmers, the issues were primarily lack of access to finance, to good quality farming inputs such as seeds and fertilisers and water/irrigation related issues. The lack of access to finance was mostly attributed to banks or other financial institutions not being supportive, or there being a delay in payments. Good quality inputs are costly or not easily available to farmers and input prices have been rising. With a majority of the farmers being small or medium farmers who depend on rainfall or ground water, erratic monsoon schedules and low groundwater levels are a major issue.

9.8.1 Some Recent Challenges

The beverage industry has suffered since 2020 due to the COVID-19 pandemic-induced lockdown, with reduced sales through the hospitality sector, tourism, cinemas, railways and airlines, which are some of the major out-of-home channels for beverage consumption. Roughly 75 per cent of the sales in

64. Source: https://www.euromonitor.com/examining-sustainability-challenges-in-the-non-alcoholic-drinks-industry/report (last accessed February 01, 2022).

beverages come from out-of-home channels. According to one of the respondents, the sale of a unit case of non-alcoholic beverage declined by 18 per cent, in Q2 of FY 2020-21 alone.

While many countries have introduced measures to support the local beverage industry, especially SMEs, there was limited support in India according to the survey participants. Other issues during the pandemic were disruptions in the supply chain, labour shortfalls and difficulties in training farmers and supply chain agents. Sixty-five per cent of the company respondents reported a negative impact on revenue due to the COVID-19 pandemic. Forty per cent of the companies feel the pandemic has adversely affected revenue by between 1 and 5 per cent while 25 per cent of the respondents indicated the revenues had been affected to the tune of between 11 and 20 per cent.

Ninety-three per cent of the Group A farmers reported that they faced labour shortage when the pandemic-induced lockdowns resulted in reverse migration of labour. The labour shortage thus resulted in a delay in the cultivation and harvest of produce, resulting in supply chain disruptions, lower price realisation and, therefore, reduced profit margins for farmers.

10

WAY FORWARD

India has the potential to become a non-alcoholic beverage hub, given its endowments of raw materials, labour and policy support for encouraging food processing in the country. In that context, this report examines the contribution of the non-alcoholic beverage sector to the Indian economy. The key findings of the report are:

- The sector has registered a CAGR of 14.5 per cent in terms of total sales volume, and at 13.72 per cent in terms of total sales value between 2010 and 2019. However, the growth rate has since slowed down, partly because of challenges such as high taxes and pandemic-induced supply chain disruptions This report found that India has one of the highest tax rates globally in non-alcoholic beverages.
- A growth forecasting model with three scenarios, namely realistic, optimistic, and pessimistic from 2020 to 2030 found that if the GDP grows at 7.88 per cent, 9.76 per cent, and 6.0 per cent respectively, the sector is expected to grow at 8.70 per cent in the realistic scenario, 10.77 per cent in the optimistic scenario and 6.66 per cent in the pessimistic scenario. The size of the market was estimated at INR671 billion in 2019, which is projected to reach around INR1472.33 billion in 2030, in the realistic scenario.
- Growth in the sector has varied by product categories. While bottled water and carbonated soft drinks (CSDs) account for the bulk of the sector; the market for juices, energy drinks, tea, milk and coffee based beverages and organic drinks is expanding. There is negative growth in the consumption of CSDs for consumers in SEC A; the consumption of lower SEC groups has increased. CSDs and CFDs are taxed at 40 per cent in India and as a result, the tax burden has moved to the lower SECs, given that they are increasing the consumption of such beverages. There is growing demand for nutritious products and healthy drinks, like juices and low sugar drinks, and companies are re-orienting their products to meet that requirement.
- In India, both per capita sales volume and exports are low, compared to ASEAN countries. India's per capita sales volume was just 21.36 litres in 2018, and exports were worth USD29.89 million in 2020. There is scope for increasing both domestic sales volume and diversifying products and export markets. For example, India can develop and export organic fruit based drinks.
- The study found that non-alcoholic beverage sector contributes significantly to the Indian economy in terms of value addition and job creation. The combined value added to the economy is estimated at INR7,91,539 million from upstream and downstream effect. The total job creation from this sector is estimated to be 6,91,491, which includes employment creation both in the upstream and downstream operations. The labour to output ratio for the non-alcoholic beverage sector is 0.49, which means that in order to produce INR1 crore of output in this sector, an estimated 4.9 persons are directly employed in this sector. The Input-Output model estimates that for every INR1 crore of output produced in the "non-alcoholic beverage sector", a total of 8.9 additional jobs are created in the economy due to both the direct as well as indirect impact.
- Companies in this sector contribute to different SDGs like water conservation and reducing waste generated through packaging, Farmers in the supply chains have also benefited in terms of support provided by companies with regards to insurance, financial assistance, technology, raw materials and training for better productivity.
- However, in spite of various subsidies and incentives given to this sector, the sector is not able to expand due to issues such as the negative perception of the industry and high taxation. There are other issues like fragmented supply chain and high logistics costs, on which the government is already working. Companies are also working on issues like reducing adverse environmental effects.

Given these findings, this chapter focuses primarily on addressing three key issues, namely, the negative perception, taxation related issues and counterfeit products. Addressing these issues is imperative to enable the sector to grow and have a positive impact on all stakeholders across the supply chain. Active collaboration between policymakers and the non-alcoholic beverage sector is pivotal to ensure and enhance the contribution of this sector to the Indian economy and for making India a global beverage processing hub.

10.1 Addressing the Negative Perception

From our secondary analysis and primary survey, it is apparent that the non-alcoholic beverage sector has been subject to negative perceptions globally. These include health concerns related to SSBs (sugar-sweetened beverages), covering sodas and soft drinks and other beverages with sweeteners or added sugars like fruit-flavoured drinks, sports and energy drinks, and sweetened coffees and teas, which are a major calorie contributors. The negative perception of these beverages is because SSBs are linked to gain in body weight and the risk of diseases like diabetes, dyslipidaemia, and hypertension. Both policymakers and the non-alcoholic beverage industry are aware of these issues.

Policymakers across the globe have taken measures to encourage healthy dietary habits through awareness campaigns, subsidising healthy drinks, adopting nutrition-based taxation and labelling that provides information to consumers to make informed choices. In the past, countries focused on increasing taxes to reduce the adverse health impact but studies in many countries showed that taxation may not be the right approach.

Classifying all beverages, irrespective of their nutrition content, and/or use of sugar or sugar substitutes as "harmful" food in some countries like India is incorrect. The lack of classification based on nutrition leads to negative perceptions. In a developing country like India where consumer awareness is low, it is the responsibility of the government to guide consumers towards right consumption choices. Indians have less than the WHO prescribed global intake of fruits and vegetables including juices, leading to phytonutrient deficiencies and hence, products like fruit and vegetable juices should be encouraged (Mukherjee et al., 2018). Some countries follow globally accepted best practices such as labelling of products to ensure that consumers are well-informed about the products that they are consuming. An initiative actively promoted by the WHO is Front-Of-Pack (FoP) labelling, defined as "nutrition labelling systems that are presented on the front of food packages in the principal field of vision; and present simple, often graphic information on the nutrient content or nutritional quality of products, to complement the more detailed nutrient declarations provided on the back of food packages." Countries such as the UK, the USA, Chile, Brazil, and Israel have already adopted the FoP label while India still does not have a FoP labelling policy. There have been several demands by various organisations including a Delhi High-Court ruling to constitute a committee to enforce nutritional information on the front of food packs. However, in India, labelling alone cannot guide consumers as labelling in English may not be understood by a large proportion of the population. Therefore, it is important to raise consumer awareness through media publicity.

Companies need to work with the government to address the negative perception. Already, many companies in India, as is the case globally, have come up with products with low sugar content or alternative sweeteners. These products have to be publicised and marketed. Partnership in government initiatives like FSSAI's Eat Right Campaign, with participation from companies such as Fieldfresh, Delmonte, Nestle, Pepsico, Dabur India Ltd and Danone will give positive publicity to the sector.

Companies and their associations, together with the government, should promote India as a beverage processing hub. Beverage companies and their associations should start a multi-stakeholder engagement plan to build awareness and a positive perception. It may include creative food scientists, nutritionists, and marketers in the beverage industry, allied industry representatives from sectors like hospitality, to schools and worksites, and the centre and state along with multilateral agencies like the WHO. At the centre, there is need for greater engagement by beverage companies with the Ministry of Food Processing Industries (MoFPI) and the Food Safety and Standards Authority of India (FSSAI), NITI Aayog, Invest India, Ministry of Commerce and Industry, Ministry of Finance, Ministry of Agriculture, and the Ministry of Micro, Small and Medium Enterprises (MSME) to address the negative perception. There is also need for greater engagement with embassies, especially those of the USA, the UK, the EU and its member states, Japan, Korea, Australia, New Zealand and ASEAN, for discussions on best practices in other countries that can be replicated in India.

Box 10.1

Dabur India Ltd.'s Pledge to Improve and Innovate Portfolio

Dabur India Ltd has been associated with FSSAI's Eat Right Campaign and signed a pledge on July 27, 2018, to improve its beverage portfolio by reducing sugar. The salient points of the pledge included:

- **Sugar**
  - To reduce added sugar on an average, by 5 per cent on two-thirds of its beverage portfolio by the year 2021.
  - To further reduce added sugar on an average by another 5 per cent on half of its beverage portfolio by year 2023, taking it to a total of 10 per cent reduction on 2018 levels.
- **Fat**
  - The company has committed to abide by the national regulation of ensuring that its products are trans-fat free.

At the time of the survey, the company had fulfilled its pledge and had exceeded the reduction target set voluntarily, three years ahead of the promised timeline. The salient points of their achievement included the following:

- Achieved 5.4 per cent added sugar reduction in two-thirds of its beverage portfolio in FY 2019 as against 5 per cent pledged (pledged timeline of 2021)
- Further reduced added sugar on an average by 7.47 per cent on half of its beverage portfolio in FY 2020 against the pledge of 5 per cent reduction (pledged timeline of 2023).

Source: Primary Survey.

The contribution of the non-alcoholic beverage sector to the Indian economy has to be communicated through regular data collection and presentation. While policymakers have the best interest of citizens and tend to create policies that secure their well-being, there is a need for beverage companies to provide policymakers with data and evidence on the contribution of this sector to the Indian economy. In this context, there is scope to learn from the experiences of companies in other countries. For example, Coca-Cola in the USA had a "Coming

Together" ad campaign,[65] with a voice-over explaining how the company is promoting health by reducing calories in many of their products, creating smaller serving sizes for healthier soda consumption, and putting the calories per serving in plain sight on the front of the can. Similar campaign initiatives in India can go a long way in reducing the negative perception regarding carbonated sugary beverages. Companies such as Britannia India, PepsiCo India, ITC and Nestle have partnered with Abott India in the "Accelerating Nutrition Delivery Campaign" to accelerate the development and delivery of local science-based nutrition to Indian consumers and improve the public health. The objective of several of the programmes range from helping school children inculcate the habit of eating safe and eating right to addressing malnutrition among infants and children across India. Companies need to promote healthier alternatives being introduced in the market. Active efforts from individual companies and associated organisations to organise positive campaigns through traditional media channels and through social media are needed to shed the negative perception and highlight efforts by companies to increasingly cater to a health-conscious consumer base. Research and innovation undertaken by firms to address health concerns, for example by using healthier ingredients and substitutes to sugar, need to be published and brought to the attention of regulators and policymakers.

10.2 Addressing the Issue of Higher Taxes

Recent studies and the data presented in the previous chapters show that high taxes can be regressive, with lower income groups bearing the tax burden, and can lead to counterfeit products, nullifying efforts to address the adverse health impact. Therefore, tax may not be the right tool to guide consumers towards healthier choices. Building consumer awareness can be a better tool to achieve health outcomes. Positive incentives or subsidies for healthy drinks can be another option. In some countries, the revenue raised from taxes is used to subsidise healthier products. Another approach is to target ingredients used in the production of certain products, instead of the product itself, as the sugar tax in the UK. In the latter case, producers are incentivised to remove or decrease the targeted ingredient from the product.

Taxes can lead to higher revenue for products whose per capita consumption is high, and consumption is inelastic. In India, per capita consumption is low and consumers are shifting from SSBs to other products. A higher tax can induce consumers to purchase from the informal sector, giving rise to a market for counterfeits. In such cases, higher taxes on CSDs can lead to revenue losses, while a moderately high tax can lead to better revenue collection. Thus, to begin with, non-alcoholic beverages, even if taxed in the highest GST slab of 28 per cent, should not be categorised with products like tobacco. Therefore, there is a need to phase out the additional cess (12 per cent) imposed on this sector. The cess was imposed to compensate for the revenue losses of states and, therefore, should ideally be phased out.

65. Source: https://greatist.com/health/coca-cola-health-campaign-011413#1 (last accessed February 18, 2022).

While the government is encouraging the beverage companies to increase local sourcing from farmers and has allowed 100 per cent FDI in this segment and offers various subsidies and incentives to increase manufacturing, the high tax on the final product deters sourcing from farmers and domestic manufacturing. Hence, the government's taxation and subsidy policies are not aligned. Further, as discussed in Section 9.3, the GST rates need to be aligned with the FSSAI's product requirements. Besides, the difference in tax rates based on the pack size needs to be removed. For example, access to clean drinking water is a basic right and is a core Sustainable Development Goal (SDG 6 – 'Clean Water and Sanitation'); yet, water is taxed under two different slabs with natural/artificial/sweetened water taxed at 18 per cent GST when the quantity is less than 20L and at 12 per cent if it is more than 20L. In other countries/competitive markets, water attracts a tax of only 5 per cent. It is also to be noted that the existing tax structure is confusing and counter-productive as in the case of packaged drinking water. As India is moving towards a situation of water scarcity, smaller bottles taxed at a higher slab discourages optimum consumption for individual use as it is cheaper to buy at bulk and encourages wastage. Further, flavoured water attracts a GST of 28 per cent plus a compensation cess of 12 per cent, another instance of classifications being inadequate. Thus, the lack of alignment across policies of different government departments should be addressed in the Union Budget 2023-24. The GST rates should be aligned with the FSSAI product definition, should encourage sourcing from farmers, and should be linked to the nutrition content in the non-alcoholic beverages. The taxes should be designed in a way that it drives consumers to healthy consumption. For example, carbonated sugar-based drinks can have the highest GST slab of 28 per cent, but those with pulps/puree/juices from Indian farmers should be taxed at a lower rate.

At the policy level, there is a significant focus on improving farmers' income, which is possible only if Indian industry uses the fruit pulp/puree/juices bought from Indian farmers and hence it is pertinent to look into the taxes for the beverages and juices which are made from fruits to increase consumer demand. To encourage the growth of the fruit and vegetable based juice/beverage industry and Indian farmers, the report suggests that the tax on fruit pulp/puree-based products should be reduced from 12 per cent. In many countries, fruit juices are taxed at the lowest rate. For example, in Australia, 90 per cent natural fruit juices have a tax rate of zero per cent; in Malaysia, all juices have a tax rate of 6 per cent. In Canada, 25 per cent natural juice has zero tax, while in the UK, all fruit juices have zero tax.

In the framework of taxing non-alcoholic beverages, there is a myopic focus only on CSDs, while most calories consumed by people are in the form of solid food. Taxation of every 'bad calorie' that people consume may not result in a healthier lifestyle. For SSBs, taxes should be based on scientific evidence and analysis and on the actual nutrition level of the products to promote consumption of healthier drinks. For example, to guide the consumers towards juices with no added sugar, this item can be in the lowest tax bracket.

Further, an increase in taxation has a direct impact on stakeholders in the entire supply chain and has resulted in the shrinking of margins, profits, and growth of companies, supply partners and farmers as observed from the primary survey. The adverse impact of this is multi-fold. Companies with shrinking margins will not be able to contribute to GST collections as expected; companies focused on multiple CSR initiatives such as nutrition programmes, helping farmers achieve a higher income, education, etc., will have a lower budget for such activities. While there has not been any major loss of jobs in the sector in India even during the peak of the pandemic, evidence from other countries show that when taxation is increased, it has affected the growth of firms and have resulted in layoffs, contributing to unemployment. Further, the spill-over effects on smaller companies in the supply-chain and farmers are of serious concern. An increase in taxes in an environment where there is an increase in the cost of agricultural raw materials and produce with extreme price volatility may lead to lower local sourcing and lower production.

10.3 Addressing the Issue of Counterfeit Products

Our survey results also show that high taxes in the sector have led to the growth of counterfeit products by some informal sector players who evade taxation, labour laws and other health and safety compliance requirements. The unorganised sector, which has the advantage of not paying any taxes while competing with multinationals, prevents the small and medium sized Indian companies in the organised sector, including start-ups, from scaling up and expanding their product variety. The issue of counterfeit and spurious products is also visible in other sectors with high taxes such as alcoholic beverages. High and differential tax rates on alcoholic beverages across states in India have fuelled the production and distribution of counterfeit alcoholic beverages.[66]

One role of the GST was to increase the size of the formal market and reduce the unorganised sector and counterfeit products, but high tax rates have prevented this. Thus, a reasonable/moderate tax can help to increase the tax base and reduce the temptation to evade taxes; this needs to go hand in hand with strict copyright/trademark/patent policies to crackdown on fake products that pose a huge health risk to consumers who may not be able to differentiate between genuine and counterfeit products. Besides, improved vigilance and proper monitoring mechanisms have to be put in place.

66. Source: https://hospitality.economictimes.indiatimes.com/news/operations/food-and-beverages/pandemic-worsened-thecounterfeiting-problem-in-indias-liquor-industry/87522753 (last accessed April 04, 2022).

10.4 Conclusion: Rationalise Taxes to Make India a Beverage Processing Hub

To conclude, this report shows that there is immense potential for the non-alcoholic beverage sector to become a leading export-oriented sector, which has not been tapped. If the sector is encouraged through GST rationalisation, this will have a trickle-down effect on the entire supply chain. First, the compensation cess of 12 per cent may be removed so that taxes on CSDs may be brought down to 28 per cent, which is the highest GST slab. Taxes on healthier options like zero sugar drinks can be brought down to 18 per cent. Taxes on water can be a uniform 12 per cent and that on juices can be reduced taking into account the inverted duty, if any. This is still a high tax, but it will help the sector to grow, and revenue collection will increase.

Second, if industry is encouraged to invest in food clusters and agro-processing zones for fruit and vegetable processing, including non-alcoholic beverages, as has been done in ASEAN countries, it will help promote exports. This can be done through the right tax policies. In this regard, India may look at the incentives given to the industry in ASEAN and other markets like the United Arab Emirates. As India has entered into trade agreements with many countries and is negotiating more trade agreements, taxes on non-alcoholic beverages should ensure a level playing field for the Indian non-alcoholic beverage industry vis-à-vis FTA partners.

Given the government's emphasis on improving logistics to reduce wastage and ensure last mile connectivity to farmers and delivery partners, lower taxes may encourage companies to invest in the supply chain.

Last but not least, tax policies need to be designed after a thorough review of and alignment with FSSAI requirements. There is need to collect data and study consumer demand patterns across different product categories and across different socio-economic groups. There is also a need to look at global best practices on how taxes and subsides can be used to increase the consumption of nutritious products. In other words, there should be a thorough impact assessment of taxes and taxes need to be revised based on that assessment. This will help make India a beverage processing hub.

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APPENDICES

Appendix A: Construction Procedure of IO Table

At the outset, the construction of IO table begins with the identification of the sectors of our IO table. It is customary to identify sectors that have strong linkage with non-alcoholic beverage sector and incorporate them as separate entities in the proposed IO table. Taking this factor as consideration, we included the following 22 sectors in our proposed IO table (Table A1).

Table A1

Sectors of our IO Table

Sl. No	Sectors	Sl. No.	Sectors
1	Food crops	12	Petroleum products
2	Fruits & vegetables	13	Electricity
3	Non-food crops & allied	14	Water Supply
4	Mining etc.	15	Railway Transport
5	Sugar etc.	16	Land transport
6	Misc. food products	17	Water Transport
7	Non-alcoholic Beverages	18	Air transport
8	Misc. manufac. less plastic/paper/printing etc.	19	Supportive
9	Paper, Paper products and newsprint	20	Trade
10	Publishing, printing and allied activities	21	Hotels & Restaurant
11	Plastic products	22	Other services

For this work, we have indicated below the concordance map between the 140 products and 65 industries supply/use table (SUT) table and our India IO table (see Table A2).

Table A2:

Concordance map between SUT and our IO sectors

Commodities in SUT		Industries in SUT	Our Aggregated Sectors	
Sl. No	Description	Description	Sl. No	Description
1	Paddy	Agriculture	1	Food crops (FC)
2	Wheat			
3	Coarse cereals			
4	Gram			
5	Arhar			
6	Other pulses			
7	Groundnut			
8	Rapeseed and mustard			
9	Other oil seeds			
10	Sugarcane			
11	Coconut			
12	Tea			
13	Coffee			
14	Other food crops			
15	Fruits	Agriculture	2	Fruits & vegetables (FRVEG)
16	Vegetables			
17	Jute, hemp and mesta	Agriculture	3	Non-food crops and allied (NFC_ALL)
18	Kapas			
19	Rubber			
20	Tobacco			
21	Milk	Livestock		
22	Wool			
23	Egg and poultry			
24	Other livestock products			

Commodities in SUT		Industries in SUT	Our Aggregated Sectors	
Sl. No	Description	Description	Sl. No	Description
25	Industry Wood	Forestry & Logging	3	Non-food crops and allied (NFC_ALL)
26	Firewood			
27	Other forestry products			
28	Inland Fish	Fishing & Aquaculture		
29	Marine Fish			
30	Coal and Lignite	Coal & Lignite	4	Mining and Quarrying (MQ)
31	Natural Gas	Crude Petroleum		
32	Crude petroleum	Natural Gas		
33	Iron ore	Iron Ore		
34	Manganese ore	Non-ferrous metal ores		
35	Bauxite	Other Mining		
36	Copper ore			
37	Other Metallic minerals			
38	Limestone			
39	Mica			
40	Other non-metallic minerals			
41	Sugar etc.	Manufacture of other food products	5	Sugar (SUG)
42	Processed poultry meat & poultry meat products	Production, processing and preservation of meat, fish, fruit, vegetables, oils and fats	6	Miscellaneous food products (MISC_FP)
43	Processed other meat & meat products			
44	Processed fish & fish products			
45	Processed fruits & Processed Vegetables			
46	Dairy products	Manufacture of dairy products		
47	Edible Oils and Fats	Manufacture of grain mill products, etc. and animal feeds		
48	Grain Mill products, starch and starch products			
49	Bread & Bakery products	Manufacture of other food products		
50	Miscellaneous food products			
51	Alcoholic beverages	Manufacture of beverages		
52	Tea processed			
53	Coffee processed			
54	Tobacco Products	Manufacture of tobacco products		
55	Non-alcoholic beverages	Manufacture of beverages	7	Non-alcoholic Beverages (NALCBEV)
56	Cotton Yarn and Cotton Textiles	Manufacture of textiles + cotton ginning	8	Miscellaneous manufacturers less plastic/paper/printing, etc. (MISMANF)
57	Synthetic yarn and synthetic textiles			
58	Wool yarn and woollen textiles			
59	Silk yarn and silk textiles			
60	Carpet weaving	Manufacture of wearing apparel, except custom tailoring		
61	Readymade garments			
62	Misc. textile products			
63	Leather footwear	Manufacture of leather and related products		
64	Leather and leather products except footwear			
65	Wood and wood products except furniture	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting material		
66	Furniture & Fixtures			
67	Rubber products	Manufacture of rubber & plastic products		
68	Coal tar products	Manufacture of coke and refined petroleum products		
69	Inorganic chemicals	Manufacture of chemical and chemical products except pharmaceuticals, medicinal and botanical products		
70	Organic chemicals			
71	Fertilisers			
72	Pesticides			
73	Paints, varnishes and lacquers			
74	Drugs and medicine	Manufacture of pharmaceutical; medicinal chemicals and botanical products		
75	Soaps, cosmetics and glycerine	Manufacture of chemical and chemical products except pharmaceuticals, medicinal and botanical products		
76	Synthetic fibres, resin			
77	Other chemicals and chemical products			
78	Cement	Manufacture of other non-metallic mineral products		
79	Non-metallic mineral products			

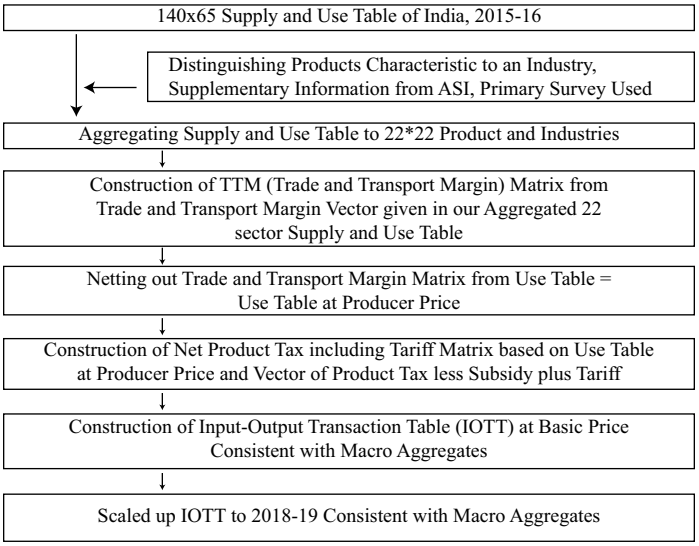
Commodities in SUT		Industries in SUT	Our Aggregated Sectors	
Sl. No	Description	Description	Sl. No	Description
80	Iron and steel ferro alloys	Manufacture of basic iron and steel + Casting of iron and steel		
81	Iron and steel casting and forging			
82	Iron and steel foundries			
83	Non-ferrous basic metals (including alloys)	Manufacture of basic precious and non-ferrous metals + Casting of non-ferrous metals		
84	Hand tools, hardware	Manufacture of machinery and equipment n.e.c.		
85	Miscellaneous metal products	Manufacture of fabricated metal products, except machinery and equipment		
86	Tractors and other agricultural implements	Manufacture of machinery and equipment n.e.c.		
87	Industrial machinery for food and textile industry			
88	Industrial machinery (except food and textile)			
89	Machine tools			
90	Other non-electrical machinery			
91	Electrical industrial machinery	Manufacture of electrical equipment		
92	Electrical cables, wires			
93	Batteries			
94	Electrical appliances			
95	Communication equipment	Manufacture of communication equipment		
96	Other electrical machinery	Manufacture of electrical equipment		
97	Electronic equipment including T.V	Manufacture of electronic component, consumer electronics, magnetic and optical media Manufacture of computer and peripheral equipment		
98	Medical precision, optical instruments	Manufacture of optical and electronics products n.e.c.		
99	Watches and clocks	Other Manufacturing		
100	Ships and boats	Manufacture of transport		
101	Rail equipment			
102	Motor vehicles			
103	Motor cycles and scooters			
104	Bicycles, cycle-rickshaw			
105	Aircrafts & Spacecraft			
106	Other transport equipment	Manufacture of transport		
107	Gems & jewellery	Other manufacturing		
108	Miscellaneous manufacturing			
109	Paper, Paper products and newsprint	Manufacture of paper/paper products	9	Paper, Paper products and newsprint (PAP_ETC)
110	Publishing, printing and allied activities	Printing and reproduction of recorded media except publishing	10	Publishing, printing and allied activities (PUBLISH)
111	Plastic products	Manufacture of rubber & plastic products	11	Plastic products (PLAS)
112	Petroleum products	Manufacture of coke and refined petroleum products	12	Petroleum products (PETROL)
113	Electricity	Electricity	13	Electricity (ELEC)
114	Water Supply	Water supply	14	Water Supply (WAT)
115	Railway Transport	Railway Transport	15	Railway Transport (RAIL)
116	Land transport	Land Transport	16	Land transport (LAND)
117	Water Transport	Water Transport	17	Water Transport (WAT_TRAN)
118	Air transport	Air Transport	18	Air transport (AIR_TRAN)
119	Supportive and Auxiliary transport activities	Supportive & Auxiliary transport activities	19	Supportive (SUPPO)
120	Storage and warehousing	Storage & warehousing		
121	Trade	Trade	20	Trade (TRADE)
122	Hotels & Restaurants	Hotels & Restaurants	21	Hotels & Restaurants (HOTEL)
123	Construction and construction services	Construction	22	Other services (OTH_SER)
124	Gas	Gas		
125	Repair & Maintenance of Motor Vehicles	Repair and installation of machinery and equipment		
126	Communication services	Communication		
127	Financial services	Financial Services		
128	Insurance services	Insurance Services		
129	Ownership of dwellings	Ownership of dwellings		
130	Real estate services	Real estate activities		
131	Renting of machinery & equipment	Renting of machinery and equipment		

Commodities in SUT		Industries in SUT	Our Aggregated Sectors	
Sl. No	Description	Description	Sl. No	Description
132	Research & Development Services	Education & Research	22	Other services (OTH_SER)
133	Legal services	Legal Services		
134	Other Business services	Other Business services		
135	Computer related services	Computer related services		
136	Public administration and defence	Public administration. & Defence		
137	Education services	Education & Research		
138	Human health and social care services	Medical and Health		
139	Community, social and personal services	Community, Social & personal services		
140	Recreation, entertainment and radio & TV broadcasting and other services	Other services		

As noted earlier, the basis of our IO table is SUT of CSO, which have been compiled at a level of disaggregation of 140 products and 65 industries. The authors have used these SUTs to prepare the symmetrical 22x22 input-output transaction table (IOTT) by making use of the industry technology and standard methodology suggested in the Handbook of input-output table compilation and analysis published by the United Nations, (1999). The flow chart A1 outlines the detailed steps in the construction.

Figure A1

Flow Chart of the Construction Procedure



Apart from the IO table, we also need the sectoral private consumption expenditure, compensation to employees at the sectoral level (wage income) and employment numbers for the various sectors of our IO table for our analysis. Among these, the first one is readily available from the IO transaction table.

To derive the second, the following procedure has been adopted:

(a) ***Agricultural related sector:*** *We have used information from Cost of Cultivation of Principal Crops Studies (CCS) of Ministry of Statistics and Programme Implementation (MOSPI) to divide the GVA into wage and capital income for agriculture related sectors. CCS give data on wages to hired labour as well as cost of family labour. The wage estimates given in the social accounting matrix (SAM) are, therefore, inclusive of the wages of the family labour.*

(b) ***Industrial sectors:*** *ASI gives the estimates of total emoluments and GVA from the registered manufacturing sector. In the case of the unregistered sector, we could not get similar data. The ratios of the registered sector are used for the unregistered sector also to get the wage and capital income. For the non-alcoholic beverage sector, this was reconciled with data collated from primary surveys.*

(c) Service sectors: *We have used data from India's National Accounts Statistics (NAS) for the year 2018-19 to decompose GVA into labour and capital income.*

Employment numbers are basically drawn from unit level data of the Periodic Labour Force Survey of MoSPI for the year 2018-19. A suitable concordance has been prepared between NIC 2008 and the 22-sector IO Table. In the case of employment, we have used job criteria for estimating the employment numbers. The concept entails adding multiple workers into the NSS definition of Usual Status workers, that is, Usual Principal Status (UPS) and Usual Subsidiary Status (USS). The methodology for estimating the workforce numbers has been explained in Kolli, Sharma, and Sinharay (2008).

Table A3 provides our estimates at the sectoral level of private personal consumption expenditure, compensation to employees and labour inputs for the year 2018-19.

Table A3

Estimates of Private Personal Consumption Expenditure at the Sectoral Level

Sl. No.	Sectors	Private final Consumption Expenditure (INR Million)	Compensation to employees (INR Million)	Labour Inputs (Number)
1	Food crops	877680	1667853	162410423
2	Fruits & vegetables	11756824	1290600	21590343
3	Non-food crops & allied	292535	5093547	40256973
4	Mining, etc.	15596748	1057202	1926647
5	Sugar, etc.	173545	79725	291171
6	Misc. food products	381388	837759	7350523
7	Non-alcoholic Beverages	960256	43762	154643
8	Misc. manufac. less plastic/paper/printing etc.	4494653	6864004	47456647
9	Paper, Paper products and newsprint	2469265	121284	762150
10	Publishing, printing and allied activities	267687	147544	907577
11	Plastic products	310012	184238	791763
12	Petroleum products	1855312	208631	318680
13	Electricity	66350	1273594	1432472

14	Water Supply	367917	156574	544932
15	Railway Transport	1368153	1094346	837986
16	Land transport	11545148	1183182	20409094
17	Water Transport	3389868	24819	180808
18	Air transport	37954707	262320	70778
19	Supportive	877680	484660	1424283
20	Trade	11756824	8655473	47905556
21	Hotels & Restaurant	292535	1072401	8922168
22	Other services	15596748	39129257	127988438

Appendix B: Survey Questionnaires

Appendix B.1: Company Questionnaire

About the Study: Background and Objectives of Survey

The non-alcoholic beverage sector has evolved significantly over the past two decades and has contributed significantly to the Indian economy in terms of output, exports, employment, and investment. Additionally, the sector has aligned itself to the Indian government's development agenda (for example, doubling farmers' income by 2022) and its commitment to meet the Sustainable Development Goal (SDG) targets by 2030. However, the sector is characterised by various challenges, primary among them being high rates of taxation and the negative perception of the sector due to rising health concerns. In this context, the objectives of data collection are the following:

- *Assess the direct and indirect contributions of the non-alcoholic beverage sector to the Indian economy, focusing on its forward and backward linkages*
- *Document some of the company-level best practices to address negative perceptions*
- *Document how non-alcoholic beverage companies have aligned themselves to the government's agenda, policies and objectives – how companies have worked with farmers and have helped to improve yield, income, etc., of farmers in the case of produce such as fruits and vegetables.*
- *Identify the key barriers that impede the growth of the non-alcoholic beverage sector*
- *Get company inputs regarding how the government can help the sector grow*

Given that we have a tight time duration, we would request you to provide full support to the study team by responding to the questionnaire. You are a vital part of this industry and your opinion is very important for the study. We guarantee the confidentiality of your responses.

As esteemed clients, we request you to fill in the enclosed questionnaire and send it to us within 10 working days. Your feedback is valuable to us. Thank you for your kind co-operation.

A. Preliminary Questions

- *Name of the Company:*
- *Address:*
- *Year of Establishment:*
- *Name of the respondent:*
- *Designation of the respondent:*
- *Phone/Fax/Email:*
- *How long have you been operating in India? Please tick the relevant option.*

Less than 5 yrs.	1	5 - 10 yrs.	2	10 - 15 yrs.	3
15 - 20 yrs.	4	20 - 25 yrs.	5	More than 25 yrs.	6

B. Product Category & Company Performance

1. *What are the core products of your firm? Please specify the share of each product in total sales.*

	Product Category	Tick if present	Few Major Brands	Sales Share of the Products mentioned
1.	Mineral Water			%
2.	Aerated Water			%
3.	Carbonated Soft Drinks			%
4.	Energy Drinks			%
5.	Fruit Based Drinks/Fruit Juices			%
6.	Milk or Yoghurt Based Beverages			%
7.	Organic/*Ayurvedic* Drinks			%
8.	Sports Drinks			%
9.	Tea/Coffee Based Drinks			%
10.	Vegetable Juice			%
11.	Vegetable/Fruit Concentrate/ Powder/Syrup			%
12.	Carbonated Beverage with Fruit Juice			%
13.	Any Others: Please Specify			%

2. *Has there been a change in the product portfolio in alignment with consumer preferences in the last five years? Please elaborate.*

New Products added to portfolio	Why were these products introduced in the domestic market?
New Products Exported	Why were these products introduced in the domestic market?
New Products Imported	Why were these products introduced in the domestic market?

3. *Have you removed some products from your portfolio in the last 5 years?*

Products removed from domestic market	Why were these products removed?

C. Economic Contribution Future Projections

4. Annual Performance of the Company (INR/USD); please mention the currency

Indicator	2015	2016	2017	2018	2019	2020
a) Total Revenue of Company (INR/USD)						
b) Total Revenue from Non-Alcoholic Beverages (INR/USD)						
c) GST contribution from Non-Alcoholic Beverages (INR/USD)						
d) Rate of Growth of the Non-Alcoholic Beverage segment	%	%	%	%	%	%

5. What are your top 3 export markets for non-alcoholic beverages (INR / USD); please mention the currency

Top Export Markets (INR / USD)	2015	2016	2017	2018	2019	2020
(i)						
(ii)						
(iii)						

6. Please share the number of direct and indirect employment provided by the company year-on-year

Indicators	2015	2016	2017	2018	2019	2020
a) Employment in Non-Alcoholic Beverage Sector (Direct)						
b) Employment in Production, Supply Chain & Distribution (Indirect)						

7. How much has your company invested in the last 10 years in the non-alcoholic beverage sector in India? Please provide the aggregate amount in INR or USD but mention the currency.

Investment Type	Amount (INR / USD)	Areas for Investment
Domestic Investment		
Foreign Investment		

a) If foreign direct investment, please specify the top 5 countries from where FDI is received.

b) In which area was the investment made? Tick the relevant options.

Areas for Investment			
Expansion of manufacturing facilities	1	New products	2
Creation of manufacturing facilities	3	New technology	4
Sales and distribution including logistics	5	R & D	6
Any Other, please mention:			

D. Future Projections

8. What are your projections for India operations in the next three years?

Indicators	2021 - 22	2022 – 23	2023 - 24
Growth %	%	%	%
In-house employment to be created			
Employment to be outsourced			

9. What are your plans for investing in the next 10 years in India?

Proposed Amount of Investment in next 10 years (INR / USD)			
Proposed Region for Investment			
Proposed Products for Investment			
Proposed Areas of Investment			
Expansion of manufacturing facilities	1	New products	2
Creation of manufacturing facilities	3	New technology	4
Sales and distribution including logistics	5	R & D	6
Any Other, please mention:			

E. COVID-19 and its effects

10. Has the COVID-19 pandemic impacted revenue, investment and growth of the sector in India?

(a) Impact on Revenue

Negative	1	Positive	2

Less than 1%	1	1 – 5%	2	6 – 10%	3	11 – 15%	4	16 – 20%	5	More than 20%	6

(b) Impact on Investments (Current or Planned)

Negative	1	Positive	2

Less than 1%	1	1 – 5%	2	6 – 10%	3	11 – 15%	4	16 – 20%	5	More than 20%	6

(c) Impact on Employment (Please mark according to severity of impact (1- minimal/insignificant impact to 5 – catastrophic/major long-term impact)

Indicators	Minimal Impact	Short-term Impact	Significant Impact	Major-Short Term Impact	Major Long-Term Impact
Social Distancing Norms	1	2	3	4	5
Loss of Lives of Employees	1	2	3	4	5
Moved back to Hometown / Village	1	2	3	4	5
Supply Chain Disruptions	1	2	3	4	5
Any Other Indicator, please specify					

F. Sourcing from Farmers and Farmer Linkages

11. Are raw materials for non-alcoholic beverages sourced from India or abroad?

Percentage of raw materials sourced from India	%	Percentage of raw materials sourced from abroad	%

(a) If sourced from abroad, reasons for doing so

12. If raw materials are sourced from India, kindly answer the following questions. From which Indian states do you source the raw materials? Please elaborate in the table below.

Category	Types (e.g., Mango in fruit and Tomato in vegetables, etc.)	Sourcing State	District, Block, Villages
Fruits	(i)		
	(ii)		
	(iii)		
Vegetables	(i)		
	(ii)		
Spices			
Milk			
Sugar			
Others (please specify)			

13. Please specify your mode of sourcing for three products and specify their percentage.

Products	State	Own Farm	Farmers through contract farming	FPO/Farmer Associations/ Farmer Cooperatives	Procurement from middlemen	Others, specify:
i)		%	%	%	%	
ii)		%	%	%	%	
iii)		%	%	%	%	

14. Please specify the number of farmers you have entered into a contract/agreement with by state, and by product:

State	Products	No. of contract farmers	No. of FPOs, etc.	District, Block, Villages
a)	i)			
	ii)			
b)	i)			
	ii)			

15. What kind of support does your company provide to contract farmers/FPOs, etc.? You may attach presentations or notes in a separate sheet for this. Please share videos or pictures if any.

Indicators	Tick if appropriate	Give some examples
Provided seeds and inputs		
Training on use of inputs – insecticides, pesticides, water (drip irrigation)		
Training on GAP (good agriculture practices) or any training related to enhancement of productivity		
Training on post-harvest processes to reduce losses		
Provided Machinery		
Provided technology		
Weather forecasting and other support (please mention the support)		
Financial Assistance		
Created logistics and transportation facilities		
Helped them to get government schemes and benefits		
Provided other facilities like toilets, schools, etc. through CSR funding in the villages, etc.		
Any other training (please specify)		
Any other incentive (please specify)		

16. What measures has your company taken to ensure (a) sustainable sourcing and (b) reducing use of pesticides? How has this benefited the farmers? (Benefits can be in the form of higher income, lesser post-harvest losses, etc.). Please Share 1- 2 Impact Stories/Best Practices.

17. Could you present some examples of best practices/projects that your company has initiated in order to improve crop productivity, yield and net income of farmers in your areas of operation. Could you additionally provide some statistics to show the net income of farmers and/or yield has gone up?

G. Mapping the Supply Chain

18. Please provide the total number of manufacturing units and provide the numbers for the following:

Type of Manufacturing Units	Numbers	Location in State, District / City
1. Own Manufacturing Units		
2. Contract Manufacturing Units		
3. Other Manufacturing Units		

19. Do you engage with MSMEs (micro, small and medium enterprises) in your supply chain in terms of sourcing, packaging and transportation, etc.? If so, give the approximate number of SMEs and in what stage they are engaged in. Please give some examples.

20. Do you provide any training to MSMEs involved in your supply chain? If yes, how frequently?

21. Please elaborate on your entire supply chain from farm to final consumers. How many companies/enterprises are present in your supply chain; manufacturing, logistics, packaging, distribution (If done by your company itself, fill as 'own'). These details are needed for the survey.

Supply value chain	Total no. of Enterprises involved in 2020-21	Name of Companies / Enterprises Involved in 2020-21	Location in State, District / City, 2020-21
Manufacturing/Processing units			
Labelling/Barcode/Logo (Branding)			
Packaging/Bottling units/ Testing labs			
Warehouse/Cold Storage			
Logistics/Transportation			
Refrigerated container/ Reefer shipping container			
Distribution – Domestic & Exports			
Any other, please specify:			

22. Could you provide an estimate of the number of organised and unorganised retail outlets through which your products are being sold in the market?

Retail Outlets	Approx. Nos.
Organised retail outlets	
Unorganised retail outlets	

23. Please elaborate on a few of the best practices given to the supply value chain agents, if any. How have they benefited from the contract?

24. What measures have you taken to improve the supply chain infrastructure and help reduce wastage and food losses in the supply chain? Please give some examples in the following categories.

Categories	Tick if yes	Examples of Measures Taken
Packaging		
Transportation		
Other Logistics		
Implementation of technology to reduce wastage		
Any others, please specify		

25. What measures have been taken to ensure product safety and quality?

26. Have you taken any initiatives towards development of a 'green supply chain'? How much have you invested in this in the last 10 years?

H. Contribution to SDGs and Economic Agenda of the Government of India

27. How has your company contributed to the 'Make in India' programme of the Government of India (manufacturing, innovation, investment etc.) and the 'Aatmanirbhar Bharat Abhiyan'? Have you introduced any 'Made in India' products? Please provide details.

28. Has your company been involved in the implementation of/ pledged support to any specific development policy of the Government of India? If yes, please elaborate.

I. Sustainable Business Practices and CSR Initiatives

29. Please provide details of programmes initiated by your company to forward sustainable development goals; this will include efforts to promote sustainable business practices and CSR initiatives.

Domain	Tick if yes	If yes, Name of Programme	Target of Programme and Achievements	Collaborating Agency, if any
a. Awareness Generation Regarding Healthy Food				
b. Training, Skill Development & Entrepreneurship				
c. Women Empowerment				
d. Climate Sustainability				
e. Water Stewardship				
e. Sustainable Packaging				
f. Sanitation and Hygiene/Waste Management				
g. Uplifting Farmers and Improving Income				
h. Promotion of Education				
i. Others, please specify:				

30. What steps does your company intend to take in the near future in order to contribute further to your sustainable business practices? Do you have any targets in this regard?

J. Research & Innovation

31. Do you have an R & D Centre in India? If yes, please give some examples of research initiatives and patents, trademark etc. from India?

32. Do you work with start-ups on new technology and innovation? If yes, please give some examples?

33. Have you partnered with any academic organisation, CSIR laboratory for R & D? If yes give examples.

K. Trade: Exports and Imports

34. Specify the details of imports of raw materials, intermediate products and final products in the following table.

Imports of Raw Material	Countries from which it is imported
a)	i)
b)	ii)
c)	iii)
Imports of Intermediate Products	Countries from which it is imported
a)	i)
b)	ii)
c)	iii)
Imports of Final Products	Countries from which it is imported
a)	i)
b)	ii)
c)	iii)

35. Specify details of exports of intermediate products and final products in the following table

Exports of Intermediate Products	Countries to which it is exported
a)	i)
b)	ii)
c)	iii)
Exports of Final Products	Countries to which it is exported
a)	i)
b)	ii)
c)	iii)

36. Do you plan to expand your export basket? If yes, list the following:

Products that you want to export	Countries you want to export to
a)	i)
b)	ii)
c)	iii)

L. Barriers and Key Challenges

37. In your opinion, which are the key challenges to the growth of the non-alcoholic beverage sector in India (for example, regulatory gaps or lack of co-ordination between policies). Please specify your level of agreement to the issues mentioned in the table below. Please rank as follows: 1-strongly disagree; 2-disagree; 3-neither agree or disagree; 4-agree; 5-strongly agree

Issues	Rank Accorded	Give examples to justify why you think that the barrier is extremely important or not important
Negative perceptions regarding the industry		
High GST slabs and other tax related concerns		
Infrastructure related issues		
State level issues (mention the issues)		
Difficulties in raw material sourcing		
Unfair competition and counterfeit products		
Barriers associated with supply chain infrastructure		
Delays in trademark processing, documentation and data filing requirements for patents		
Any others (Specify)		

38. Are there any additional central government, state government related or product specific barriers? If yes, please provide details with some examples.

39. Are there any other issues/barriers which have impacted the following? If yes, please give details on the barrier.

Issues / barriers which have impacted	Details on this issue / barrier.
a) Investment	
b) Ability to connect to more farmers	
c) R & D with Innovation	
d) Profits	
e) Lead to higher price for consumers	
f) Delayed investment in manufacturing	
g) Any others – please specify	

M. Expectations from the Government

40. How can the government (centre and state) support you to grow your business?

a) Proposed support from state government:

b) Proposed support from central government:

41. Can you share some other country best practices which can be replicated by India?

42. Are there any other details which we may have missed, and you would like to add?

Thank you

Appendix B.2: Supply Chain Questionnaire

About the Study: Background and Objectives of Survey

The non-alcoholic beverage sector has evolved significantly over the past two decades and has been instrumental in contributing to the Indian economy in terms of output, exports, employment, and investment. Additionally, the sector has aligned itself to the Indian government's development agenda (for example, doubling farmer's income by 2022) and its commitment to meet the Sustainable Development Goals (SDG) targets by 2030. However, the sector is characterised by various challenges, primary among them are the negative perceptions due to rising health concerns and high rates of taxation. In this context, the objective of data collection is to:

- *Assess the direct and indirect contributions of the non-alcoholic beverage sector to the Indian economy, focusing on its forward and backward linkages.*
- *Document some of the company-level best practices to address the negative perceptions*
- *Document how non-alcoholic beverage companies have aligned themselves to the government agenda, policies and objectives, for example, how companies have worked with farmers and have helped to improve yield, income, etc., of farmers in produce such as fruits and vegetables.*
- *Identify the key barriers that impede the growth of the non-alcoholic beverage sector*
- *Get company inputs regarding how the government can help the sector grow*

Given that we have a tight time duration we would request you to provide full support to the study team by responding to the questionnaire. You are a vital part of this industry, and your opinion is very important for the study. We guarantee the confidentiality of your responses

As esteemed clients, we request you to fill in the enclosed questionnaire and send it to us within 10 working days. Your feedback is valuable to us. Thank you for your kind cooperation.

A. Preliminary Questions

- *Name of the Company:*
- *Constitution: Proprietorship, Partnership, Corporate, Cooperative, FPO, SHG*
- *Address:*
- *Year of Establishment:*
- *MSME Registration No. if any:*
- *Name of the respondent:*
- *Designation of the respondent:*
- *Phone/Fax/Email:*

B. About the Supply Chain Partners

1. In which part of the supply chain are you involved? Please tick as applicable.

Farmer Groups (FPO/SHG/ Co-operatives)	1	Manufacturing/Processing units	2
Testing laboratories	3	Packaging/Bottling units	4
Labelling/Barcode/Logo (Branding)	5	Warehouse/Cold Storage	6
Logistics/Transportation / Reefer containers	7	Distribution – Domestic & Exports	8
Any other, please specify:			

2. Can you tell us the size of your company?

MSME Revised Classification applicable with effect from July 1, 2020			
Composite Criteria: Investment in Plant & Machinery/Equipment and Annual Turnover			
Classification	Micro	Small	Medium
Manufacturing Enterprises and Enterprises rendering Services	Investment in Plant and Machinery or Equipment:	Investment in Plant and Machinery or Equipment:	Investment in Plant and Machinery or Equipment:
	Not more than INR1 crore and Annual Turnover; not more than INR5 crore	Not more than INR10 crore and Annual Turnover; not more than INR50 crore	Not more than INR50 crore and Annual Turnover; not more than INR 250 crore

Micro	1	Small	2	Medium	3	Large	4

3. Can you give us names of a few non-alcoholic beverage companies that you are working with? Please tick as applicable.

Coca Cola India Pvt Ltd	1	PepsiCo India Holdings Pvt Ltd	2
Red Bull India Pvt Ltd	3	Dabur India Ltd	4
Tetra Pak India Pvt Ltd	5	Pearl Drinks Ltd	6
Monster Energy India Pvt Ltd	7	ITC Limited	8
Bisleri International Pvt Ltd	9	Parle Agro Pvt Ltd	10
Reliance Industries Ltd	11	Any other, please specify:	

4. How long have you been operating with this company/brand?

Less than a year	1	1 - 2 years	2	3 - 5 years	3	6 - 10 years	4	More than 10 years	5

5. How has the partnership with the non-alcoholic beverage company benefited your organisation? Tick as applicable. (Multiple choice question)

Accounted for higher business revenues	1	Better business potential	2
Got better technology	3	Enhanced awareness	4
Increased overall profits	5	Helped in skilling and manpower development	6
Training and knowledge sharing	7	Assisted with Research and Development Programmes	8
Any other please specify:			

6. What part of your business revenue comes from providing service to this non-alcoholic beverage company?

Less than 25%	1	25 – 50%	2	51 – 75%	3	76 – 99%	4	100%	5

7. Can you share some examples how/where you have been benefited from your partnership with non-alcoholic beverage companies? Is it only the increase of revenue or are there other examples to share?

Depending on the part of the supply chain that you represent, kindly answer the relevant sections

C. Applicable only for Farmer Groups (FPO/SHG/Co-operatives)

8. Number of shareholders/members of the FPO and Gender Composition

Number of shareholders / members				
Gender Composition	Male	%	Female	%

9. Landholding of the FPO members for the focus crops? (Rough breakup of percentage marginal, small, medium and large farmers in the FPOs)

(Marginal Farmer: Below 1.00 hectare. Small Farmer: 1.00-2.00 hectare. Semi- Medium Farmer: 2.00-4.00 hectare. Medium Farmer: 4.00-10.00 hectare. Large Farmer: 10.00 hectare and above)

Landholding percentage of marginal, small, medium and large farmers in the FPOs							
Marginal farmers	%	Small farmers	%	Medium farmers	%	Large farmers	%

10. Existing area under focus crop production under FPO?
_____ *(hectares)*

11. Existing production volumes of focus crop (in MT)?
_____ *(MT)*

12. What are the different varieties being cultivated by the FPO members? (Try to understand the area percentage of different varieties under cultivation)

Name of the Crop / Fruit / Vegetable	Area sown (mention the % age of different varieties under cultivation)	Yield per hectare

13. What are the major business activities undertaken by the FPO? Is the group involved in any sort of processing activities? If yes, whether into primary or secondary processing?

a) Major business activities undertaken by the FPO includes

b) Processing activities; if yes:

14. Is the FPO involved in aggregation and marketing of the produce? If yes, which marketing channel do they majorly follow? What are the marketing linkages?

15. Is the FPO or the member farmers part of any government aid scheme? Please mention details.

16. Major challenges for the FPO? List down the challenges including access to market, infrastructure, etc.

Key issues and challenges	Tick if relevant	Details
Access to finance		
Access to inputs like seeds and fertiliser		
Quality of inputs		
Natural Disasters		
Water/Irrigation Related Problems		
Lack of access to market		
Infrastructural issues		
Storage issues		
Huge Debt Burden		
Any Other Issues (Please specify)		

17. Future Plan of the FPO? Are you willing to invest in any infrastructure? If yes, which kind of infrastructure?

D. Applicable for Warehouse and Storage Companies only

18. Please answer the questions below:

Do you operate your own warehouse?	Yes	1	No	2
Do you operate a warehouse for others?	Yes	1	No	2

19. If you answered No to both questions, you do not need to proceed any further. If you answered Yes to either of the questions above, please respond to all of the following:

a) Please provide warehouse locations (if presence in multiple locations):

b) What type(s) of commodities/products are stored in the warehouses?

20. What procedures do you follow to control your inventory? Please choose the options below.

Is there a formal, written inventory procedure?	Yes	1	No	2
Is there a complete physical inventory (by count) at least annually?	Yes	1	No	2
Is the physical inventory verified by persons other than those who have custody or control of the property or inventory control records?	Yes	1	No	2
Is an outside auditor or independent counting service involved in the inventory process?	Yes	1	No	2

21. Can you share the following information?

a) Estimated quantity of stored products in MT (Monthly): _____ MT (Monthly)

b) Estimated inventory value of stored products (Monthly): INR _____ (Monthly)

c) Estimated Storage fees (Monthly): INR _____ (Monthly)

d) Does your cargo need air conditioning?

Yes	1	No	2

e) If yes, what percentage of your products require air-conditioning? _____%

f) For products that require air-conditioning, what is the extra cost of storage? INR _____

22. Please indicate the physical controls and checks in place to prevent a loss:

Cameras	1	Security guards/night watchmen	2
Alarms & Monitors	3	Special secured areas within the warehouse for high-value items	4
Fences/Boundary walls	5	Any other, please specify:	

E. Applicable for Transport Companies that may be engaged in entire logistics services or a part of it

23. Please tick the mode of transportation that you are engaged in? (Multiple choice)

Road Transport	1	Railways	2	Air Transport	3	Inland Waterways	4	Sea Transport	5

24. Do you cover both domestic and international destinations?

Only Domestic Trade	1	Only International Trade	2	Both Domestic and International Trade	3

25. Please mention the destinations covered and rate/km (approx. expenses) incurred for road transport across various categories of non-air-cooled and air-cooled vehicles.

Vehicle capacity (MT)	Type of Road Transport: Pick-up van, Truck, Trailers	Whether Non - Air-cooled vehicle or Air-cooled Refrigerated containers	Origin (From)	Destination (To)	Rate / Km

26. Other than road transportation, do you cater to air destinations, water destinations, train destinations, etc.? If yes, please mention the rates for each mode of transportation.

Quantity / capacity (MT)	Type of Transportation: Air / Railways / Inland Waterways / Sea	Whether Non - Air-cooled containers or Air-cooled Refrigerated containers	Origin (From)	Destination (To)	Rate / Km

27. What are the major gaps in infra-structural facilities, roads, availability and seasonality that you normally would face in your line of business? Please elaborate. Could you also share the gaps in terms of fare, distance of airport/sea port/ railway station covered, logistics issues, capacity adequacies/ utilisation, etc. if any?

a) Gaps in Road Transport:

b) Gaps in Air Transport:

c) Gaps in Transportation through Railways:

d) Gaps in Transportation through Inland Waterways:

e) Gaps in Transportation through Sea:

F. Applicable only for Testing Laboratories

28. What are the standardised tests conducted by you? Please elaborate.

Testing Lab	Rate / Test	Turnaround Time	Facility Utilization in %
Pesticide Residue Tests			
Packaging Tests			
FSSAI Tests			
Any other, please specify			

29. What do you think are the gaps in terms of tests offered and its adequacy?

G. Applicable only for companies providing primary processing infra-structure

30. Please mention your involvement with the following functions

Machines / Facility	Number	Capacity in MT	% Utilization / Year
Warehouse			
Cold Storage			
Vapour Heating Treatment			
Irradiation			
Ripening Chamber			
Weigh Bridge			
De Sapping, Sorting, Grading, Packing Platform			
Any other, please mention			

31. Are you able to avail any government subsidy/incentives in your line of operation? Please explain

32. Do you think there are gaps in terms of quality availability & adequacy of infrastructure and support facilities? If yes, can you explain?

H. Applicable only for companies providing secondary processing infrastructure related to bottling, labelling, packaging, etc.

33. Please mention your involvement with the following functions:

Machines / Facility	Number	Hourly Capacity	% Utilization / Year
Rinsing and cleaning			
Premixing			
Filling			
Capping & Sealing			
Labelling/Bar Code/Logo Branding			
Packaging			
Any other, please mention			

34. What measures have you taken to improve the supply chain efficacy and help reduce wastage and losses in the bottling and packaging operations? Please give some examples

I. COVID-19 and its effects

35. Has the COVID-19 pandemic impacted your company's revenue, growth and investments?

(a) Impact on Companies Revenue

Negative	1	Positive	2

Less than 1%	1	1 – 5%	2	6 – 10%	3	11 – 15%	4	16 – 20%	5	More than 20%	6

(b) Impact on Companies Growth

Negative Growth	1	Positive Growth	2

(c) Impact on Companies Investments (Current or Planned)

No change	1	All investments on hold	2	Not applicable	3

(d) Impact on Employment (Please mark according to severity of impact (1- minimal/insignificant impact to 5 – catastrophic/major long-term impact)

Indicators	Minimal Impact	Short-term Impact	Significant Impact	Major-Short Term Impact	Major Long-Term Impact
Social Distancing Norms	1	2	3	4	5
Loss of Lives of Employees	1	2	3	4	5
Moved back to Hometown/ Village	1	2	3	4	5
Supply Chain Disruptions	1	2	3	4	5
Any Other Indicator, please specify					

J. Way Forward

36. In your opinion, which are the key challenges to the growth of the non-alcoholic beverage sector in India (for example, regulatory gaps or lack of co-ordination between policies). Please specify your level of agreement to the issues mentioned in the table below. Please rank as follows: 1-strongly disagree; 2-disagree; 3-neither agree nor disagree; 4-agree; 5-strongly agree.

Issues	Rank Accorded	Give examples to justify why you think that the barrier is extremely important or not important
Negative perceptions regarding the industry		
High GST slabs and other tax related concerns		
Infrastructure related Issues		
State level issues (mention the issues)		
Difficulties in raw material sourcing		
Unfair competition and counterfeit products		
Barriers associated with supply chain infrastructure		
Delays in trademark processing, Documentation and data filing requirements for patents		
Any Others (Specify)		

37. Are there any additional central government, state government related or product specific barriers? If yes, please provide details with some examples.

38. Do you think that government should lower taxes on non-alcoholic beverages?

Yes	1	No	2

39. Do you think that lower taxes will help in the growth of the non-alcoholic beverage sector?

Yes	1	No	2

40. Do you think that the non-alcoholic beverage sector will grow in the next 5 years?

Foresee a growth	1	Will remain constant	2	See a decline in the growth	3

41. If you foresee growth of the non-alcoholic beverages sector in the next five years, what percentage of growth?

Below 5%	1	5 - 10%	2	10 - 15%	3	More than 15%	4

42. If you feel the non-alcoholic beverages sector will remain the same or will see a decline in growth, what are the reasons for the same?

43. How can the government (centre and state) support you to grow your business?

a) Proposed support from state government:

b) Proposed support from central government:

Thank you

Appendix B.3: Farmers Questionnaire

About the Study: Background and Objectives of Survey

Companies in the non-alcoholic beverage sector source a number of fruits and vegetables from farmers. The purpose of this survey is to find out the following:

- *What kind of fruits and vegetables, and other products such as milk or sugar are sourced from the farmers?*
- *What is the type of agreement that companies have with farmers?*
- *Compare the earnings/productivity of farmers in the supply chain of these companies vis-à-vis the others*
- *What kind of technology, inputs, training, etc., are provided by the companies and what has been the outcome of those initiatives?*
- *Issues faced and what farmers want?*

Note for the Survey Team: The questionnaire is applicable for 2 categories of farmers: 250 farmers who are linked to the supply chain of non-alcoholic beverage companies/Indian Beverage Association member companies and 250 farmers who are not linked to the supply chain of non-alcoholic beverage companies. Farmers that are cultivating a similar basket of fruits/vegetables/other products (that are sourced by non-alcoholic beverage companies) must be identified in order to enable comparison.

A. Respondent Profile

1.1 Name of the respondent: _____
1.2 Phone / Mobile No: _____
1.3 Location State, District & Village: _____
1.4 Highest level of education of the respondent: _____
1.5 Respondent Age:

15 – 25 yrs.	1	26 - 35 yrs.	2	36 - 45 yrs.	3	46 - 55 yrs.	4	More than 55 yrs.	5

1.6 Land Area: (Marginal Farmer: Below 1.00 hectare. Small Farmer: 1.00-2.00 hectare. Semi- Medium Farmer: 2.00-4.00 hectare. Medium Farmer: 4.00-10.00 hectare. Large Farmer: 10.00 hectare and above)

Below 1 hectare	1	1 – 2 hectares	2	2 – 4 hectares	3	4 – 10 hectares	4	> 10 hectares	5

Please mention if land area is in any other unit like acres, bighas, kathas, etc. _____

1.7 Land Ownership

Owned by me/family members	1	Leased	2

a) If leased, no. of years of lease _____

b) Are you working in partnership/having a contract with an IBA member company?

Yes	1	No	2

c) If yes, name of the company _____

1.8 Other basic information:

Do you have a smart phone?	Yes	1	No	2
Ownership of Tractor and Equipment	Yes	1	No	2
Ownership of Bike/Scooter	Yes	1	No	2
Presence of Electricity	Yes	1	No	2
Do you have cable TV at home?	Yes	1	No	2
Do you have a pakka house with a toilet?	Yes	1	No	2

1.9 Number of Children

No children	1	One Child	2	Two Children	3	Three Children	4	Four Children	5
Five children	6	More than five children			7				

Do your children go to school or have attended school?			Yes	1	No 2
If yes, what type of school?	Government school	1	Private	2	Others, please specify:

B. Model of Farming & Sourcing Details

2. What non-alcoholic beverage related crops/fruits/vegetables did you cultivate during the last agricultural year?

Crop/Fruit/ Vegetable	Area sown (in hectares/ acreage-mention units)	Yield per hectare	Price Sold (per kg or specify the unit)	Estimated Profits: Earnings per harvest/ per season: Specify how many months	Estimated no. of labourers during the Sowing Season	Estimated no. of labourers throughout the year

a) What is the share of the income from the mentioned fruits/ vegetables/crops in your household income?

Up to 25 %	1	26 – 50 %	2	51 – 75 %	3	76 – 100%	4

b) Can you comment your crop productivity for the last three years for the mentioned crops in Q 2?

Increased	1	Remained the same	2	Fluctuating	3	Decreased	4

c) Why do you think the productivity has increased/decreased/ remained the same?

3. What is the model of farming and what is the reason for you to operate under this model? (For instance, a contract with a corporate company gives me a good value for my produce)

Type	Tick as applicable	Details (for example, if contract farming, then with whom?)	Why / What is the benefit of such an arrangement vis-à-vis the others?
a. Own farming			
b. Co-operative farming			
c. Contract farming			
d. Partnership with corporate			
e. Farmer Producer group			
f. Any other, please specify			

4. Who are you supplying these fruits/vegetables/crops to? Tick the relevant options.

Aggregator/ Middleman /Trader	1	Mandis	2	Corporate	3	Wholesaler	4	Contract Manufacturers	5
Farmer Producer Association	6	Local household	7	Retailers	8	Co-operatives	9	Government agencies	10
Directly in vegetable markets	11	Exporter	12	Any other -please specify					

5. Do you know whether your product is for domestic markets or exports?

Yes	1	No	2

a) If it is for exports, do you know which countries it is exported to?

Yes	1	No	2	If yes, name the country:

b) Are you aware of any export requirements?

Yes	1	No	2	If yes, what are the requirements?

6. What activities are you engaged in in the off-season?

C. Inputs

7. Where do you generally source the following inputs from?

Inputs	Code: Local Market – 1 From the state – 2 Other States – 3 Imports – 4 Contract manufacturer – 5 Government – 6	If you face any difficulties in getting any of these inputs - please mention in detail
Seeds		
Fertilisers		
Pesticides		
Machinery		
Technology		
Any Other		

8. Specify the estimated costs of inputs in 2020:

Inputs	Estimated Costs in 2020 (INR)
Machinery	
Labour Costs	
Seeds and plants	
Fertilisers	

Energy	
Rent	
Licences and Fees	
Others, please specify:	

9. How do you store your produce? How do you transport it? Do you receive any support from the government/any other agency in this?

a) Storing the produce:

b) Transport:

c) Support by the government/any other agency:

D. Financial Inclusion and Indebtedness

10. Do you have a bank account with a financial institution?

a) If yes, please mention the type of accounts held by you.

Savings Account	1	Jan Dhan Account	2	Current Account	3	Fixed Deposits	4
Recurring Deposits	5	No accounts held	6	Specify Any Other:			

11. Are you or your household in debt? If you have taken loans, what is the source of the loan?

Family/Friends	1	Formal institutions – Banks, etc.	2	Money Lender	3	Employer	4
Specify Any Other:							

a) Loan Sanction Year _____

b) Duration of loan (in number of years) _____ years

c) Amount of loan (INR):

Less than 10,000	1	10,001 – 25,000	2	25,001 – 50,000	3	50,001 - 100,000	4
100,001 – 250,000	5	250,001 – 500,000	6	500,001 – 1,000,000	7	More than 1,000,000	8

d) Purpose of the loan

Agriculture Loan	1	Gold Loan	2	Personal Loan	3	Vehicle purchase loan	4
Home Loan	5	Business Loan	6	Education Loan	7	Marriage Loan	8
Any Other Loan, Specify:							

12. For farmers working with IBA Member Companies: Have you got any help and support to get loans by using their contract as collateral, etc.?

E. Awareness of and benefits from Government schemes

13. Which of the following identity documents do you have?

Identity documents	Ration Card	1	Aadhaar Card	2	Bank Account/Jan Dhan Account	3
	Voter Card	4	Pan Card	5	BPL Card	6

14. Have you heard of the following schemes and availed benefits under them?

Scheme / Incentive	Awareness: Yes-1, No-2	Availed Benefits: Yes-1, No-2 If yes, provide details:
Pradhan Mantri Krishi Sinchai Yojana		
Pradhan Mantri Fasal Bima Yojana		
Agricultural Marketing Infrastructural Scheme		
Paramparagat Krishi Vikas Yojana		
Weather based Crop Insurance Scheme		
50% Subsidy for Fruit/Vegetable Storage & Transport		
Soil Health Card		

15. Do you receive any support or assistance from the government (central/state), any other agency/organisation in the following:

Support/Assistance	Tick if relevant	Name of Organization / Department / NGO	Details
Seeds and Inputs			
Provision of Machinery			
Provision of Technology			
Financial assistance/Loans			
Training programmes			
Logistics/transportation support			
Market linkages			
Crop Insurance			
Any Other, please specify:			

16. Are you satisfied with the support provided by the government? What more do you expect from the government?

Financial assistance/loans/credit facilities	1	Training programmes for skill development	2
Market linkages (both forward & backward)	3	Logistics/transportation support	4
Others 1, please specify:	5	Others 2, please specify:	6

F. Key Challenges

17. What are the key issues that you face related to farming?

Key issues and challenges	Tick if relevant	Details
Access to finance		
Access to inputs like seeds and fertilisers		
Quality of inputs		
Natural Disasters		
Water/Irrigation Related Problems		
Lack of access to market		
Low Prices		
Storage issues		
Huge Debt Burden		
Any Other Issues (Please specify)		

18. Has the COVID-19 pandemic resulted in disruptions of your supply chain thereby impacting harvest, supply of labour, storage, affected the selling price of your products, etc.?

Disruptions in the supply chain	Tick if relevant	Details
Impact on cultivation/harvest		
Impact on labour availability		
Impact on storage of products post-harvest		
Impact on selling price of products		
Any Other, please specify:		

19. What kind of support have you received with the advent of the pandemic? Tick if applicable.

Support received in pandemic	Tick if relevant	Details
From Government		
From NGOs/CSOs		
From other players, please specify:		

a) Do you think this support is adequate?

Yes	1	No	2

G. Applicable only for farmers sourcing to companies in the Non-Alcoholic Beverages Sector

20. Name of the Company:

a) Since which year are you working with this company?

_____

b) Specify the duration of the contract

Duration of the contract	For a cycle of production only	1	Yearly renewal by company	2
	One to three years contract	3	Long term – over three years contract	4

Any other, please specify: _____

21. Nature of the Contract/Partnership:

a) Is it a formal written contract?

Yes	1	No	2

22. What factors led you to supply to the company under the present contractual method/partnership model of farming? What are the advantages of this model of farming vis-à-vis other methods?

23. What kind of support is provided by the company under their contract? Tick the relevant support provided.

Support Provided by Company	Tick if yes	Details
Seeds and Inputs		
Providing supply of high yielding planting material		
Buy-back of produce at pre-determined prices		
Training on use of inputs		
Training on GAP (Good Agricultural Practices for enhancement of productivity, etc.)		
Training on post-harvest processes to reduce losses		
Provision of machinery		
Soft loans/financial assistance		
Crop/weather risk insurance		
Agricultural equipment for drip-irrigation		
Provision of technology		
Information regarding the weather		
Logistics and transportation facilities		
Help get access to government schemes and benefits		
Provide other facilities like toilets, schools etc.		
Crop insurance		
Training and/or information on pesticides and its amount use etc.		
Training and/or information about export market requirements		
Any others (please specify)		

24. Does the company do regular or frequent field visits? What is the purpose of these visits?

25. Do you get paid as per the ongoing market price by the company?

Yes, paid as per the market price	1	Paid a higher price	2	Paid a lower price	3

a) What is the mode of payment? _____

26. Describe your overall experience of working with the company. Are you satisfied with the contract, and support provided by the company?

I am very satisfied and would like to continue with the company	1	Mostly satisfied, and would like to continue with the company	2
Satisfied, but have some reservations on continuing with the company	3	Mostly unsatisfied, but would like to continue because of lack of better options	4
Unsatisfied and would not like to continue with the company	5	Extremely unsatisfied, and would not like to continue with the company	6
I cannot say as of now	7	Others, please specify:	

a) If you are not satisfied, what, in your opinion, can the company do to support you further?

27. In case of natural disasters, are you provided any form of support by the company?

28. Please specify your level of agreement to the statements mentioned in the table below: The ranking is as follows: 1-strongly disagree; 2- disagree; 3-neither agree nor disagree; 4-agree; 5-strongly agree; Fill in NA if not applicable.

Impact of the Contract	Rank Accorded	Any examples to substantiate?
Entering into a contract with the company has improved my earnings.		
Entering into a contract with the company has improved my standard of living		
Entering into a contract with the company has improved my yield		
Have come to know about better seeds & production techniques due to the company		
The training provided by the company has been helpful		
Able to attain financial assistance/access to a loan by using the contract as collateral		

29. During COVID-19:

a) Has there been any change in the company requirements and/ or nature of the contract due to COVID- 19?

b) Have you received any additional support from the company due to COVID-19?

c) What more do you think can the company do to help you/ provide support?

Thank you

Appendix C: Forecast of Retail Sales for Ultra-Processed Foods

Table C1(a)

Forecast of Retail Sales for Ultra-Processed Foods – Realistic Scenario

In INR Billion

Categories	Chocolate and Sugar Confectionary	Salty Snacks	Beverages	Breakfast Cereals	Readymade and Convenience Foods
2019	859.36	224.57	671.17	29.40	242.85
2020	749.61	189.594	587.977	24.146	208.602
2021	823.86	212.497	644.503	27.494	231.418
2022	905.465	238.167	706.462	31.307	256.729
2023	995.152	266.937	774.379	35.649	284.809
2024	1093.724	299.183	848.825	40.593	315.96
2025	1202.059	335.325	930.427	46.223	350.518
2026	1321.125	375.832	1019.875	52.634	388.855
2027	1451.984	421.233	1117.921	59.934	431.386
2028	1595.806	472.118	1225.394	68.246	478.569
2029	1753.873	529.15	1343.198	77.71	530.912
2030	1927.597	593.072	1472.328	88.488	588.98

Note: For realistic scenario, the disposable income growth is assumed to be (-)10.16% during 2020-21 and 7.88% for rest of the years.

Projection is from 2020 to 2030. Base Year is 2019.

Source: Based on Authors' calculation

Table C1(b)

Forecast of Retail Sales for Ultra-Processed Foods – Optimistic Scenario

In INR Billion

Categories	Chocolate and Sugar Confectionary	Salty Snacks	Beverages	Breakfast Cereals	Readymade and Convenience Foods
2019	859.36	224.57	671.17	29.40	242.85
2020	769.918	196.066	603.371	25.118	214.939
2021	864.374	225.402	675.215	29.433	244.057
2022	970.418	259.126	755.615	34.489	277.119
2023	1089.472	297.897	845.587	40.413	314.66
2024	1223.132	342.469	946.273	47.356	357.287
2025	1373.19	393.709	1058.947	55.49	405.688
2026	1541.657	452.616	1185.038	65.022	460.646
2027	1730.793	520.337	1326.143	76.191	523.049
2028	1943.132	598.19	1484.05	89.279	593.906
2029	2181.522	687.692	1660.759	104.615	674.362
2030	2449.158	790.585	1858.509	122.585	765.717

Note: For optimistic scenario, the disposable income growth is assumed to be (-)8.28% during 2020-21 and 9.76% for rest of the years.

Projection is from 2020 to 2030. Base Year is 2019.

Source: Based on Authors' calculation

Table C1(C)

Forecast of Retail Sales for Ultra-Processed Foods – Pessimistic Scenario

In INR Billion

Categories	Chocolate and Sugar Confectionary	Salty Snacks	Beverages	Breakfast Cereals	Readymade and Convenience Foods
2019	859.36	224.57	671.17	29.40	242.85
2020	729.302	183.122	572.583	23.173	202.265
2021	784.306	199.965	614.496	25.62	219.11
2022	843.458	218.358	659.477	28.325	237.358
2023	907.072	238.443	707.751	31.316	257.125
2024	975.483	260.374	759.558	34.623	278.538
2025	1049.054	284.324	815.158	38.279	301.735
2026	1128.174	310.476	874.827	42.322	326.863
2027	1213.261	339.033	938.865	46.791	354.084
2028	1304.765	370.218	1007.59	51.732	383.572
2029	1403.17	404.27	1081.345	57.195	415.516
2030	1508.997	441.455	1160.5	63.235	450.121

Note: For pessimistic scenario, the disposable income growth is assumed to be (-)12.04% during 2020-21 and 6.0% for rest of the years.

Projection is from 2020 to 2030. Base Year is 2019.

Source: Based on Authors' calculation

Appendix D: Government Schemes

Table D1
List of Government Schemes referred to in Survey

Government Schemes and Benefits
Pradhan Mantri Krishi Sinchai Yojana
The primary objectives of *Pradhan Mantri Krishi Sinchai Yojana* are to attract investments in the irrigation system at the field level, develop and expand cultivable land in the country, enhance ranch water use in order to minimise wastage of water, enhance crop per drop by implementing water-saving technologies and precision irrigation.
Pradhan Mantri Fasal Bima Yojana
The *Pradhan Mantri Fasal Bima Yojana* aims to reduce the premium burden on farmers and ensure early settlement of crop assurance claim for the full insured sum, for example, insurance cover against failure of the crop, thus helping to stabilise the income of the farmers.
Agricultural Marketing Infrastructural Scheme (AMIS)
Agricultural Marketing Infrastructural Scheme aims to provide robust infrastructure for agricultural marketing to ensure better remuneration for farmers and better provision of quality products quality for consumers and processing industries.
Weather-based Crop Insurance Scheme (WBCIS)
Weather-based Crop Insurance Scheme (WBCIS) is a unique weather-based insurance product designed to provide insurance protection against losses in crop yield resulting from adverse weather incidents.
Paramparagat Krishi Vikas Yojana (PKVY)
With the help of *Paramparagat Krishi Vikas Yojana* (PKVY,) the government aims to support and promote organic farming, reduce dependence on chemical fertilisers and agricultural chemicals, improve soil health while increasing yields. Organic food, thus produced, will be linked with modern marketing tools and local markets.
Subsidy for Fruits/Vegetables Storage & Transport
The government issued guidelines to give 50 per cent subsidy in a fixed timeframe for storing and transporting fruits and vegetables to prevent post-harvest losses and distress sales by farmers when prices fall.
Soil Health Card (SHC)
A Soil Health Card is used to assess the current status of soil health and, when used over time, to determine changes in soil health that are affected by land management. A Soil Health Card displays soil health indicators and associated descriptive terms. The Soil Health Card Scheme is a very beneficial scheme for farmers. There are many farmers in India who are not aware of the types of crops they should grow to get maximum yield. Basically, they do not know the quality and type of their soil. They might know by experience what crops grow and what crops fail. But they do not know what they can do to improve the condition of the soil.

Source: Compiled from various government websites.

About ICRIER

Established in August 1981, ICRIER is a policy-oriented, not-for-profit, economic policy think tank. ICRIER's main focus is to enhance the knowledge content of policy making by undertaking analytical research that is targeted at informing India's policy makers and also at improving the interface with the global economy.

ICRIER has two office locations in Delhi; in the institutional complex of India Habitat Centre and a new office at the Institutional Area, Sector 6, Pushp Vihar, New Delhi.

ICRIER's Board of Governors include leading academicians, policymakers, and representatives from the private sector. Mr. Pramod Bhasin is ICRIER's chairperson and Dr. Deepak Mishra is Director & Chief Executive.

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Food Processing will be a key sector in meeting India's goal of achieving inclusive growth as the country sets its vision for Amrit Kaal – India @2047. Non-alcoholic beverages are a key component of the food processing sector and the growth of this sector can make all its stakeholders, from farmers to small and medium producers, supply chain agents and consumers, a part of India's successful growth story.

India is the largest global producer of several raw materials used in manufacturing non-alcoholic beverages. Today, around 25 to 30 per cent of fruits and vegetables produced in the country are wasted in the supply chain. Beverage processing can help reduce this wastage, as it has in several other countries. The government has introduced schemes like Mega Food Parks and Production Linked Incentive Scheme and several start-ups with innovative products have come up in the non-alcoholic beverages sector. Yet, domestic production is below potential and that of other developing countries in the ASEAN region, and exports are low.

This report aims to understand the contribution of the non-alcoholic beverage sector towards the Indian economy, examine its strengths and best practices, identify challenges and suggest a way forward to make India one of the world's leading beverage processing hubs. The report is based on a review of global policies and best practices, secondary data and information analysis, and a primary survey of different supply chain agents, including farmers, companies, contract manufacturers and logistics providers.

The report for the first time brings forward a detailed study of the tax regimes of different countries and India's own GST regime to understand how taxes can impact the growth of the sector. Global studies show that high taxation, in the absence of complementary reforms, will not lead to positive health outcomes and can be regressive, with the tax burden falling disproportionately on lower income groups. It could also inhibit growth, innovation and investment. At the same time, moderate taxation can achieve revenue targets as well as other government objectives related to positive health outcomes, growth of food processing, investment in manufacturing and farmers' welfare. However, few studies have looked at the effects of taxation on the non-alcoholic beverage sector in India and policies are often not driven by research and evidence. This report aims to address this lacuna.

The report will help policymakers design the right policies, based on data and evidence, and align policies across different government agencies/ministries/departments. It identifies areas where industry and government can collaborate, which is a core area of the UN Sustainable Development Goal-17. It provides the academics and researchers with a comprehensive overview of the sector and the industry with an overview of the Indian market, and aims to foster debate and discussion on how India can become a world beverage processing hub.

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